

Adolescent Health

Adolescent Health Problems

IIT scientist designs software on adolescent health problems (The Tribune: 24.2.2011)

Noted scientist Dr Sujok K Guha from the field of biomedical engineering has designed software “Adolescent Health Education”.

The Ministry of Health and Family Welfare, Government of India, will soon introduce the software designed by Guha in the schools across the country.

Dr Sujok K Guha, the emeritus scientist working at the Centre for Biomedical Engineering at IIT, Kharagpur, was here to attend the 16th National Congress of Andrology and Reproductive Medicine at Dayanand Medical College and Hospital (DMCH).

Dr Guha said the software is designed to address the multifaceted problems faced by the students between 10 to 16 years of age. The software will be attached to the computers in schools across the country to provide answers on the spot to queries of the students about health and nutrition, social interaction, sex, abuse, stress, lifestyle and career. The above subjects have been split into different categories thereby taking care of multiple aspects of the problems, he said.

The software is based upon the outcome of a nationwide studies sponsored by the government on the above subjects wherein issues, including child abuse, prostitution and malnutrition were analysed in details.

He said the software is quilted with speech in English and Hindi languages. The software will also be elemental in curtailing drug abuse among students, which has become a major concern for the nation.

A student compelled by his friends to experiment with drugs/intoxicants, would get a reply in concurrence to his psychological and physical state, after making a query on the school computer.

To ensure privacy, a must for every “adolescent”, the schools will also be asked to provide cubicles with computers, said Dr Guha.

The answer to the aggression felt by adolescents when they are denied the liberty to take decisions, depression caused due to broken relationships, loneliness felt by introverts, nervousness following examinations and the right means for entertainment will be just a click away, he said.

“Gradually we will incorporate the helpline numbers in the software so as to facilitate the students to directly talk to the experts concerned. Following the success of the software in schools, the Ministry of Health and Family Welfare, Government of India, will broadcast the adolescent health education programme on television,” Dr Guha said.

Adolescent girls

More Than half of adolescent girls in India anemic: UNICEF (The Indian Express: 28.2.2011)

HOME to about 20 per cent of the world’s adolescent population, India has a dismal track record in their health and education parameters, says a new UNICEF report.

Almost 47 per cent girls in the age group of 11 to 19 years are underweight in India — the highest in the world — says the UNICEF report on the ‘State of the World’s Children’.

“Adolescent girls also face a greater risk of nutritional problems than adolescent boys, including anaemia and underweight. In addition, over half of girls aged 15-19 (56 per cent) are anaemic,” said the report.

India has the largest population of adolescents (243 million) followed by China (207 million) and United States (44 million). The world is home to 1.2 billion individuals aged 10-19 years.

According to the report, the implications for adolescent girls in India are particularly serious, given that in the period 2000-2009, around 47 per

cent of Indian women aged 20-24 years were married by age 18.

The report says that around 25 per cent (243 million) of Indians belong to the age group of 11-19 years. Almost 40 per cent of this section is out of school and 43 per cent get married before the age of 18, out of whom 13 per cent become teenage mothers.

Although the legal age for marriage is 18, the majority of Indian women marry as adolescents. Recent data show that 30 per cent of girls aged 15-19 are currently married or in union, compared to only 5 per cent of boys of the same age, it said.

Though the girls who got married before the age of 18 years has decreased from 54 per cent in 1992-93 to 43 per cent in 2007-08, the figure is the eight highest in the world. Pakistan fares

better with just 25 per cent. It said school attendance in the 11-13 years age group is 86 per cent and 14-17 years is 64 per cent.

“Certainly, now 74 per cent of adolescents are in school. But there is a high-drop out rate afterwards,” Karin Hulshof, country representative for UNICEF said.

In Assam , every third girl marries before 18 (The Indian Express: 28.2.2011)

Every third girl in Assam gets married before reaching the legal age for marriage, 18 years.

Releasing UNICEF's 'State of the World's Children' report here on Saturday, chief of the world body's field office for Assam, Jeroo Master, said over 38 per cent girls got married before 18 years.

"Though the third National Family Health Survey -NFHS-3 -has shown there has been a steady decline in the proportion of girls marrying before 18 years, the percentage of early marriage of girls remains high," Master said. The percentage of girls in Assam getting married before attaining the legal age had come down from 44.4 in NFHS-1 (1992-93) to 40.7 in NFHS-2 (1998-99). The NFHS-3 conducted in 2005-06 putting it at 38.6, she said.

About 67.8 per cent of adolescent girls in Assam are anaemic. "Prevalence of anaemia is high among adolescents, both boys and girls, in Assam, with studies showing a significantly high proportion among girls," the UNICEF official said. ENS

Overweight adolescents

Overweight adolescents may develop weak bones (New Kerala: 7.3.2011)

Overweight adolescents may develop weak bones, besides facing a host of health problems. A study of 143 overweight 14-18-year olds shows those with risk factors such as low levels of HDL (high-density lipoprotein) cholesterol (good cholesterol) have less bone mass, an indicator of bone strength than their overweight but otherwise healthy peers.

Other risk factors included high fat levels in the blood, higher blood pressure (BP) and a larger waist size, said Norman Pollock, study co-author and bone biologist at Georgia Health Sciences University, The Journal of Paediatrics reports.

In fact, total body fat didn't seem to impact bone mass. It was fat around the middle that seemed to increase the risk for bad bones just like it does the risk of diabetes and heart disease, according to a Georgia University statement.

"The more risk factors you have, the less bone mass you have," Pollock said, noting that 62 percent of the overweight adolescents had at least one risk factor. It also indicates that the concept of "fit and fat" may apply to the bones.

Participants without one or more of these risk factors tended to get slightly more vigorous physical activity although none of the participants got the recommended 60-plus minutes of daily physical activity, Pollock said.

Vigorous activity is defined as the activity that increases the heart rate high enough to cause heavy breathing, such as jogging, tennis or jumping jacks.

Physical activity is known to prompt bones to release a hormone called osteocalcin, which helps decrease fat-related risk factors such as insulin resistance.

"We are now beginning to respect the bones as an endocrine organ like we do now with fat and muscle," Pollock noted. Activity also increases the number of bone-producing cells called osteoblasts.

The study appears to be the first analyzing bone-fat relationships and cardiometabolic risk factors in youth.

Aging

National Programme for Health Care of Elderly

"Government of India has approved the National Programme for Health Care of Elderly (New Kerala: 23.2.2011)

(NPHCE) to improve health services for the elderly," Health and Family Welfare Minister Ghulam Nabi Azad said in a written reply in the Rajya Sabha.

The plan includes setting up eight geriatric care centers across the country, he said.

Geriatric units will also be opened at 100 district hospitals in 21 states, and units will also be created at community and primary health centres. Development of manpower for this is among the highlights of the plan.

"Funds for all 21 states and eight regional geriatric centres have been sanctioned. So far, funds have been released to 3 regional geriatric centres and a state on receipt of bank account details and signing of a MoU," Azad added.

Aging Rates

Aging Rates, Gender Gap in Mortality Similar Across All Primates (Science daily: 11.3.2011)

Humans aren't the only ones who grow old gracefully, says a new study of primate aging patterns.

For a long time it was thought that humans, with our relatively long life spans and access to modern medicine, aged more slowly than other animals. Early comparisons with rats, mice, and other short-lived creatures confirmed the hunch. But now, the first-ever multi-species comparison of human aging patterns with those in chimps, gorillas, and other primates suggests the pace of human aging may not be so unique after all.

The findings appear in the March 11 issue of Science.

You don't need to read obituaries or sell life insurance to know that death and disease become more common as we transition from middle age to old age. But scientists studying creatures from mice to fruit flies long assumed the aging clock ticked more slowly for humans.

We had good reason to think human aging was unique, said co-author Anne Bronikowski, an associate professor at Iowa State University. For one, humans live longer than many animals. There are some exceptions -- parrots, seabirds, clams and tortoises can all outlive us -- but humans stand out as the longest-lived primates.

"Humans live for many more years past our reproductive prime," Bronikowski said. "If we were like other mammals, we would start dying fairly rapidly after we reach mid-life. But we don't," she said.

"There's been this argument in the scientific literature for a long time that human aging was unique, but we didn't have data on aging in wild primates besides chimps until recently," said co-author Susan Alberts, associate director at the NSF-funded National Evolutionary Synthesis Center in Durham, N.C., and a biologist at Duke University.

The researchers combined data from long-term studies of seven species of wild primates: capuchin monkeys from Costa Rica, muriqui monkeys from Brazil, baboons and blue monkeys from Kenya, chimpanzees from Tanzania, gorillas from Rwanda, and sifaka lemurs from Madagascar.

The team focused not on the inevitable decline in health or fertility that come with advancing age, but rather on the risk of dying. When they compared human aging rates -- measured as the rate at which mortality risk increases with age -- to similar data for nearly 3,000 individual monkeys, apes and lemurs, the human data fell neatly within the primate continuum.

"Human patterns are not strikingly different, even though wild primates experience sources of mortality from which humans may be protected," the authors wrote in a letter to Science.

The results also confirm a pattern observed in humans and elsewhere in the animal kingdom: as males age, they die sooner than their female counterparts. In primates, the mortality gap between males and females is narrowest for the species with the least amount of male-male aggression -- a monkey called the muriqui -- the researchers report.

"Muriquis are the only species in our sample in which males do not compete overtly with one another for access to mates," said co-author Karen Strier, an anthropologist at the University of Wisconsin who has studied muriquis since 1982. The results suggest the reason why males of other species die faster than females may be the stress and strain of competition, the authors said.

Do the findings have any practical implications for humans? Modern medicine is helping humans live longer than ever before, the researchers note.

"Yet we still don't know what governs maximum life span," Alberts said. "Some human studies suggest we might be able to live a lot longer than we do now. Looking to other primates to understand where we are and aren't flexible in our aging will help answer that question."

Elderly Care

Guided Care Benefits Elderly Patients (Med India: 16.3.2011)

Older people who receive Guided care, a new form of primary care, use fewer expensive health services when compared to older people who receive regular primary care. Guided care patients showed a tremendous improvement in terms of 30 percent fewer home health care episodes, 21 percent fewer hospital readmissions, 16 percent fewer skilled nursing facility days and a 8 percent fewer skilled nursing facility admissions.

According to the study, Guided Care produced even larger reductions in a subset of patients who received their primary care from one well managed health system. Guided Care patients in Kaiser Permanente of the Mid Atlantic States experienced, on average, 52 percent fewer skilled nursing facility days, 47 percent fewer skilled nursing facility admissions, 49 percent fewer hospital readmissions, and 17 percent fewer emergency department visits; the differences for skilled nursing facility days and admissions were statistically significant.

"These data suggest that Guided Care can reduce avoidable health service use and costs in well managed systems," said lead author Chad Boulton, MD, MPH, MBA. "Because they are part of a delivery system in which their health professionals already work as a team, Kaiser Permanente and similarly coordinated systems may be better able to achieve cost savings with a comprehensive, team-based care model such as Guided Care," said Boulton. "We would like to further explore which elements of the Kaiser-Permanente culture may have helped Guided Care reduce the use of costly health services."

Elderly

Many Elderly Men Are Undergoing Unnecessary PSA Screenings, Researchers Find (Science Daily: 29.3.2011)

A new study on the use of prostate-specific antigen (PSA)-based prostate cancer screening in the United States found that many elderly men may be undergoing unnecessary prostate cancer screenings. Using data from surveys conducted in 2000 and 2005, researchers report that nearly half of men in their seventies underwent PSA screening in the past year -- almost double the screening rate of men in their early fifties, who are more likely to benefit from early prostate cancer diagnosis and treatment. Further, men aged 85 and older were screened just as often as men in their early fifties.

Because prostate cancer tends to be slow-growing, data show that many men -- particularly those in their seventies and older -- will die of other causes before prostate cancer becomes a problem that requires medical attention. Published in the *Journal of Clinical Oncology*, the new findings underscore a long-standing concern that overuse of PSA screening and PSA-based treatment decisions may lead to unnecessary treatment of many older men and potential complications such as incontinence, impotence and bowel dysfunction.

"Our findings show a high rate of elderly and sometimes ill men being inappropriately screened for prostate cancer. We're concerned these screenings may prompt cancer treatment among elderly men who ultimately have a very low likelihood of benefitting the patient and paradoxically can cause more harm than good," said senior author Scott Eggener, MD, assistant professor of surgery at the University of Chicago. "We were also surprised to find that nearly three-quarters of men in their fifties were not screened within the past year. These results emphasize the need for greater physician interaction and conversations about the merits and limitations of prostate cancer screening for men of all ages."

While large declines in prostate cancer metastases and death rates in the last 20 years coincide with widespread use of PSA-based screening, questions remain about its use. Data have been unclear about when men should be considered for PSA screening and when screening should stop, and recent studies have provided conflicting evidence on whether routine PSA screening in the general population of men actually reduces the risk of dying from prostate cancer. Based on these concerns, major organizations such as the American Cancer Society now encourage men who expect to live at least 10 years to talk with their doctor about the risks and benefits of screening, starting at age 50 for men with an average risk or at age 45 for men with a higher risk.

In this study, the researchers examined results from health surveys of randomly selected households conducted in 2000 and 2005 as part of the federal government-sponsored National Health Interview Survey. In addition to reviewing survey data, which included information on age, smoking, mass-body index, underlying medical conditions and other factors, the investigators calculated the estimated five-year life expectancy of each man over 40 who had received a PSA test.

They divided survey results of men age 70 and older into five-year age groups (70 to 74, 75 to 79, 80 to 84, and 85 years and older). In all, 2,623 men ages 70 and older were included in the analysis, while nearly 12,000 men between the ages of 40 and 69 served as controls.

The overall PSA screening rate within the past year for men aged 40 and older was 23.7 percent in 2000 and 26.0 percent in 2005. The PSA screening rate was lowest in the 40 to 44 age group (7.5 percent). Researchers found that the PSA screening rate was 24.0 percent in men ages 50 to 54, increasing with age until a peak of 45.5 percent in ages 70 to 74. Screening rates then declined with age, with 24.6 percent of men 85 or older reporting being screened.

Among men who were 70 or older, the investigators did find that PSA screening was more common in men with a greater estimated five-year life expectancy. For example, approximately 47.3 percent of men who were unlikely to die in five years (an estimated chance of 15 percent or less) were screened, 39.2 percent of men with an intermediate chance (16 to 48 percent probability) of dying received screening, and 30.7 percent of those with the highest probability of death (48 percent or greater) in five years were screened.

Eggerer offered some possible explanations for the results, noting that screening rates may reflect how frequently men visit primary care physicians. Older men tend to have more health problems that require doctor visits, and this may in turn result in more frequent PSA testing than younger men, who see their doctors less. The authors suggest that physicians should be more selective in recommending PSA testing for older men, particularly those with a limited life expectancy, and consider more routinely screening younger, healthier men who are most likely to benefit from early prostate cancer diagnosis and related treatment. Men are encouraged to talk with their doctor about their individual risk for prostate cancer, and about the risks and benefits of prostate cancer screening.

Alcohol Dependence

Alcohol

Alcohol kills 2.5million a year: World Health Organization (New Kerala: 15.2.2011)

A World Health Organization (WHO) report, profiling 193 countries on alcohol controls, has concluded that alcohol approximately kills 2.5 million people in a year.

The report also indicated that young people were especially vulnerable to its harms, reports English.news.cn.

"One third of deaths (from alcohol) are among young people," said Shekhar Saxena, director of the WHO's Mental Health and Substance Abuse department.

He added that alcohol is responsible for nine percent of all deaths that occurred to people aged between 15 and 29.

"Alcohol is also a causal factor in 60 types of diseases and injuries," said the WHO expert.

Saxena added that alcohol consumption might lead to liver cirrhosis, epilepsy, poisonings, and mental disturbance, which very often cause road accident or violent behavior.

Alcohol - Spinal tumours

AIIMS using alcohol to cure spinal tumours (The Tribune: 21.2.2011)

The All India Institute of Medical Sciences (AIIMS) has successfully treated over 30 patients suffering from Vertebral Hemangiomas - an uncommon type of spinal tumor - using alcohol. The spirit is injected to reduce the blood supply to the tumor cells and subsequently kill them.

Dr P Sarat Chandra, Associate Professor in Department of Neurosurgery, said the department first used the technique in ten patients. On encouraging results, another 20 patients received the same treatment. The method is not only less tedious and gives better results, but is also far cheaper than the conventional method.

Citing reasons for using alcohol for the treatment of this spinal cord tumor, Chandra said, "It is doubly advantageous." Alcohol (absolute ethanol) is the most effective and inexpensive blood clogging (embolizing) material available Rs 20-30 in comparison to the Rs 2-3 lakh required for conventional embolization. The toxicity in alcohol is enough to kill the tumor cells and later encourages new normal bone formation, he said.

Treatment of such tumors includes first stopping of small blood vessels and blocking the flow of blood to a tumor. This allows the surgeon to remove the tumor compressing the spinal cord safely without any risk of bleeding.

"If we go back to history of medicine, alcohol was perhaps the most effective embolizing agent and was first used to treat a type of kidney tumor," Chandra said, adding, "it was also later used to treat vertebral hemangiomas by injecting them through the skin directly".

A K Mahapatra, professor of neurosurgery, AIIMS said, "These tumor are extremely vascular (filled with blood), and surgery would be a disaster and fatal for the patient unless the blood supply is reduced. You touch them and they start bleeding."

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Alcohol

Drinking Alcohol in Moderation Protects Against Heart Disease, Meta-Analysis Finds (Science Daily: 23.2.2011)

Individuals who drink alcohol in moderation (about one drink a day or less) are 14-25% less likely to develop heart disease compared to those who drink no alcohol at all, finds research led by Professor William Ghali from the University of Calgary, published online in the British Medical Journal.

The first paper, led by Paul Ronksley from the University of Calgary, emphasises that a balance needs to be found between the public health message that consuming large amounts of alcohol is bad for you, and the one that drinking in moderation can have health benefits.

An accompanying paper led by Dr Susan Brien, also from the University of Calgary, finds that moderate consumption of alcohol (up to one drink or 15 g alcohol per day for women and up to two drinks or 30 g alcohol per day for men) is good for health. They say moderate amounts of alcohol significantly increase the levels of 'good' cholesterol circulating in the body and this has a protective effect against heart disease.

Brien and colleagues argue that their study strengthens the case that there is a causal link between alcohol consumption and reduced heart disease.

The authors of both papers acknowledge that a number of previous studies have concluded that moderate alcohol consumption has been associated with a decrease in heart disease. However, they say that the research was out-of-date and there was a need for new material. Professor Ghali says his team's research is the most comprehensive to date.

Ghali and colleagues reviewed 84 studies of alcohol consumption and heart disease. They compared alcohol drinkers with non-drinkers and their outcomes in relation to heart disease, death from heart disease, incidences of stroke and death from having a stroke.

In the companion study, Brien and colleagues reviewed 63 studies and investigated alcohol consumption with known physical markers for heart disease such as cholesterol, levels of inflammation, fat cells and the condition of blood vessels. They also assessed the impact of the type of alcohol consumed (wine, beer and spirits).

Interestingly, Brien's research concludes that it is the alcohol content that provides the health benefits not the type of alcoholic beverage (wine, beer or spirits) that is drunk.

Professor Ghali concludes that the debate between the impact of alcohol on heart disease should now centre "on how to integrate this evidence into clinical practice and public health messages." He adds "with respect to public health messages there may now be an impetus to better communicate to the public that alcohol, in moderation, may have overall health benefits that outweigh the risks in selected subsets of patients ... any such strategy would need to be accompanied by rigorous study and oversight of impacts."

Alcohol

A drink a day is good for the heart: Lancet (The Times of India: 24.2.2011)

Here's a perfect excuse to go out for a drink tonight — a tippie a day keeps the doctor at bay, say researchers. A new study, published in 'The Lancet' journal, has found that people who down a drink or two daily are not only healthier, they also possess a lower risk of developing heart disease than those who abstain from alcohol.

In fact, for some people this risk could be reduced by as much as a quarter, the study says, boosting that far from damaging health, modest drinking will improve it. The study also revealed that low alcohol intake can actually improve blood cholesterol levels and reduce other important compounds in blood linked to inflammation; it is this process that may help protect heart and blood vessels from clogging up, the 'Daily Express' reported.

The study is actually a review of 84 researches into alcohol and deaths from heart disease. In the study, the researchers at the Calgary Institute for Population and Public Health in Canada showed that a drink a day reduced the risk of heart disease by between 14 and 25%. It also reduced the risk of dying from heart disease by a quarter and of having a stroke by 2%.

Alcohol

Heavy Drinking Associated With Increased Risk of Death from Pancreatic Cancer (Science Daily: 15.3.2011)

Heavy alcohol consumption, specifically three or more glasses of liquor a day, is associated with an increased risk of death from pancreatic cancer, according to a report in the March 14 issue of Archives of Internal Medicine, one of the JAMA/Archives journals.

Alcoholic beverage consumption -- a modifiable lifestyle factor -- is causally related to several cancers, including oral cavity, pharynx, larynx, esophagus, liver, colorectum and female breast," the authors write as background information in the article. "Heavy alcohol consumption causes acute and chronic pancreatitis but has never been linked definitively to pancreatic cancer."

Using data from the Cancer Prevention Study II (CPS-II), Susan M. Gapstur, Ph.D., M.P.H., and colleagues from the American Cancer Society, Atlanta, examined the association between alcohol intake and pancreatic cancer. The CPS-II is a long-term prospective study of U.S. adults 30 years and older. Initial data on alcohol consumption was gathered in 1982, and based on follow-up through 2006, there were 6,847 pancreatic cancer deaths among one million participants.

Of the million participants (453,770 men and 576,697 women), 45.7 percent of men and 62.5 percent of women were non-drinkers. The analyses of men only and of men and women combined showed statistically significant increased risk of pancreatic cancer death for consumption of three drinks per day and four or more drinks per day, whereas for women only the estimated risk of death from pancreatic cancer was statistically significant for consumption of four or more drinks per day.

Compared with non-drinkers, consuming three or more drinks of liquor per day was associated with an increased risk of pancreatic cancer death in the total study population, and consumption of two or more drinks of liquor per day was associated with an increased risk in both never smokers and in those who had ever smoked. This association was observed for liquor consumption but not for beer or wine.

In never smokers, there was a 36 percent higher risk of pancreatic cancer death associated with consuming three or more drinks a day compared with non-drinkers for men and women combined. In those who had ever smoked, there was a 16 percent higher risk of death from pancreatic cancer after adjustment for smoking history and other variables.

"Findings from the prospective study presented herein strongly support the hypothesis that alcohol consumption, in particular heavy intake, also is an independent risk factor for pancreatic cancer, the fourth most common cause of cancer mortality [death] in the United States," the authors conclude.

Arthritis

Back Pain

How to manage chronic back pain (Time of India: 07/02/2011)

India has seen a rise in the number of people suffering from back pain. The biggest cause for this is long hours of sedentary work in the modern workplace, says Dr Vijay Vad

Over the last decade, India has seen a rise in the number of people suffering from back pain. The biggest reason for this is long hours of sedentary work in the modern workplace.

Sitting places maximum load on the shock absorber in the spine called the disc. This load increases even more when you bend or lean forward even slightly, thereby depriving the disc of proper nutrition and oxygen, putting it at high risk of injury. A spinal disc is like a jelly doughnut. When it is injured, the jelly leaks out of the doughnut, causing significant inflammation leading to pain in the back or leg. Follow these simple yet powerful self-help measures to avoid or manage chronic back pain caused by disc-related issues.

Walk 30 minutes daily. Walking creates the right amount of compression to bring in nutrients and blood supply to keep the disc healthy or to help the disc repair itself. Walking also reduces stress.

Do simple core exercises 2-3 times per week, like gentle yoga but avoid excessive forward bends.

Daily intake of supplements such as 2,000mg of fish oil or flaxseed oil, 1,000 units of vitamin D have shown some evidence of a positive impact on chronic back pain

Apply heat 15 minutes in the morning and ice 15 minutes in the evening or after exercise. Individualize your use of heat or ice, as some people respond better to heat and others to ice.

Use a good, ergonomically designed chair at work, along with maintaining a proper posture. Keep your back straight while working on the computer and avoid leaning forward. Make sure that your monitor is at level with your eyes to reduce strain on the neck.

Give your spine a break by getting up from your chair every 30 minutes.

If you have a few extra kilos, shed them, because your back will love you if it has a lighter load to carry. Those suffering from disrelated back pain have benefited from these simple steps with less reliance on medications, medical procedures, and surgeries.

Back Problem

Turn your back to ailments (Asian Age: 09.02.2011)

“Most back problems start because of poor sitting habits.”

So, sitting right is very important. If you work for long hours in an abnormal posture, a muscular imbalance occurs.

Is posture important to health? Yes it is! Yoga says it, science says it and most importantly, your back tells the entire story. The human spine isn't a straight formation.

It has curves and is constituted in three parts, below the neck (lordosis-slight forward curve), the upper back (kyphosis-slight backward curve) and the lower back (lordosis-slight forward curve). As long as the natural curvature of the spine is maintained, there is equal distribution of load on the spine and its surrounding structures like muscles and ligaments.

However, with people spending several hours on their desks at work and at home, that too while they are seated in the wrong posture or using the wrong kind of chairs, the spine is being neglected and as a result, several people are developing back problems.

SIT RIGHT It is important to arrange your workstation ergonomically. The worst thing to do is to sit and stoop forward. If you work for long hours in this abnormal posture, a muscular imbalance occurs between the abdominal muscles and the lower back muscles and if the same continues for a long period of time, it will change the curve of your spine.

The natural lumbar spine curvatures (lordosis) will obliterate (reduce) and the lumbar spine can even become straight and this leads to other changes in the upper back and neck region. Once the natural curvature of the spine is lost, it increases the pressure on the muscles, ligaments, capsule, disc, bone, etc., and the individual is more prone to developing early arthritis, upper back and lower back syndromes, disc problems, etc.

In addition, once the natural curvature of the spine is lost, it is impossible to regain the same. Therefore, it is very important to maintain the right posture while sitting especially if you work for long hours.

KEEP THAT BACK STRAIGHT The healthiest way to sit while you work on a desk is to sit upright and always have back support as this ensures equal distribution of the load on the spine. It also helps you breathe better as lung expansion is accommodated (more oxygen intake) and this position is also a good stress reliever especially for software professionals.

CHOOSE YOUR THRONE WISELY Sitting right isn't enough. The kind of chair you sit on is also important. Select a chair with ample back support, which means that your back ought to be supported till the shoulder level.

Listed below are a few ergonomics that you must maintain at the workstation to keep your back healthy: Keep both hands on the armrest of on the armrest of your chair so that it reduces the load on your spine. Perform short abdominal and spinal muscle exercises at your workstation.

Make sure you pick the right chair. The ideal chair is one with an armrest, a reclined bottom, a backrest and an upper back support.

The author is a spine surgeon at the Yashoda Hospital in Secunderabad.

Back

Watch your back (The Tribune: 09/02/2011)

There are individuals who walk with a limp or by tilting their hip to one side. This mostly happens when a person tries to avoid pain in the lower back. Initial experiments with medicines such as local application of an analgesic ointment helps temporarily in the case of such patients. Long-term effective treatment requires accurate diagnosis to pin-point the cause.

- In the normal healthy spine, there are three curves:
- Cervical inward curve at the neck.
- Thoracic outward curve in the middle
- Lumbar curve at the low back.

These curves are visible while looking at an individual from the side.

The shape of the spine is such that it enables one to walk, run, bend and sit without exerting any stress on the muscles/ligaments of the body. Spine is stabilised in the normal position by the abdominal muscles on the front side and on the back. In situations where alignment of any part of the spine is altered, the areas like the hip, the buttock or legs have to bear the load.

Lumbar lordosis or swayback is caused by excessive weight, pregnancy, low-back problems like lumbar canal stenosis, sitting for extended periods performing desk jobs, driving car, etc.

Lordosis can be confirmed when standing aside a mirror. The curvature of the lower back will be pushed inside with protruded abdomen and hips swayed backwards. Individuals with lordosis look unattractive and often complain of pain during prolonged standing, sitting, walking, etc.

In cases of people with a pot-belly or pregnant women, the low-back curvature is increased which stretches the abdominal muscles, making them weak. This enhanced curvature exerts undue pressure on the entire back, particularly muscles, ligaments and discs causing pain and

discomfort. Certain muscles around the spine and buttocks become tight and some become weak and stretched, creating an imbalance. The muscles which become often tight and require stretching are the following:

- Low-back extensors (Quadratus lumborum, erector spinae)
- Hip flexor — iliopsoas muscle.

The muscles which become weak and require strengthening are the abdominal muscles and hip extensors - hamstrings and gluteus maximus.

Certain tips, if practiced, can lead to good posture:

- When you are standing for an extended period, rest one leg on a step/stool to support/relax the back.
- When you are sitting, place a small pillow at the hollow of the back for support with your feet flat on the floor.
- It is not advisable to lock the knees while standing.
- When you are sleeping on the back, place a pillow under the knees.
- Wearing shoes with heels of less than one inch. High heels tend to pull the spine forward, leading to instability of the back.
- Avoid sitting in a static position for prolonged periods. Get up every 20 or 25 minutes.
- EXERCISES are required to stretch the tight muscles and strengthen the weak ones.
- Pelvic tilt — Lying on the back with your knees bent; tighten the abdomen muscles to flatten the back. Hold for a count of 10 and repeat 10 times.
- Sit-up — Lying on the back with knees bent and arms across the chest. Lift the upper part of your body for not more than 45 degrees and return back. Repeat 10 times.
- Hip flexor stretch — While standing, place one leg forward. Bend the front leg and push the hip of the back leg forward. Stay in this position for a count of 10. Return back and repeat five times.
- Lower back stretch — Lie on the back and place your feet on the floor. Slowly pull your knees into your chest. Stay for a count of 10. Repeat 10 times.
- Supine hip extension — Lie on the back, place the feet flat on the floor with the arms on the sideways. Squeeze the gluteus muscles and lift the buttocks off the floor and hold in the position for a count of 10. Repeat five times.

Obesity, knee osteoarthritis

Obesity, knee osteoarthritis cut down healthy years of life (New Kerala: 17.2.2011)

Obesity and knee osteoarthritis (OA) shorten healthy years of older people's lives, says a new study.

Obesity and OA are among the most frequent chronic conditions in older people. However, how that translates into years of healthy life lost has not been accurately estimated.

Now, a new research has found that Americans aged 50 years and above collectively lose about 86 million healthy years due to these conditions.

Researchers, led by Elena Losina, at the Brigham and Women's Hospital used a mathematical simulation model to assemble national data on the occurrence of knee OA, obesity and other important conditions such as coronary heart disease, diabetes, cancer and chronic lung disease.

Their analysis examined the contribution of both obesity and knee OA to losses in quantity and quality of life. It also evaluates how those losses are distributed among racial and ethnic subpopulations in the United States.

"There are 86 million healthy years of life at stake, a disproportionate number of them being lost by Black and Hispanic women," said Jeffrey N. Katz, Director of the Orthopedics and Arthritis Center for Outcomes Research at the BWH and a senior author of the study.

"These staggering numbers may help patients and physicians to better grasp the scale of the problem and the potential benefits of behaviour change."

Biomedical Science

Brain pacemakers (New Kerala: 2.2.2011)

Brain pacemakers may help fight depression: Study (New Kerala: 2.2.2011)

Brain pacemakers are already being used to treat Parkinson's disease patients. Now, a new study has suggested that this deep brain stimulation technique could effectively help in the fight against depression

Physicians from the University of Bonn, together with colleagues from Baltimore and Washington, also hope to achieve an even better success rate and fewer side effects with the treatment.

The treatment involves placing a pacemaker under the patient's clavicle with electrodes attached to the brain.

For several years, the method has also been investigated in the treatment of the most severe cases of depression, with striking and completely unexpected success.

In patients who had undergone many years of unsuccessful treatment, the symptoms sometimes delivered significant, long-term improvements.

"Depression does not return in patients who responded to the stimulation," said Prof Thomas Schlapfer from the Bonn Hospital for Psychiatry and Psychotherapy.

"The method appears to have lasting effects - and this is in the case of the most treatment-resistant patient group described in the literature. This has never happened before," he added.

Till date, deep brain stimulation has been tested in three different areas of the brain: the nucleus accumbens, the internal capsule, and a structure known as cg25.

Surprisingly, the effects are nearly identical regardless of where the stimulation was delivered.

The researchers determined that at least two of these three areas - probably even all three - are attached to one and the same cable harness.

The so-called medial forebrain bundle forms a kind of feedback loop, which allows us to anticipate positive experiences.

"This circuit motivates us to take action," said brain surgeon Prof Volker Coenen.

"In patients with depression, it is apparently disrupted. This results in, among other things, an extreme lack of drive - a characteristic symptom of the disease," he added.

The nucleus accumbens, internal capsule, and cg25 all appear to be connected to the medial forebrain bundle.

Coenen, who was the first to anatomically describe the forebrain bundle in humans, now proposes implanting the electrode for deep brain stimulation directly into this structure.

"We would use the electrode to send the current pulses to the base of the network and not to the periphery, as before," said Schlapfer.

"We could thus potentially work with lower currents and yet achieve greater success," he added. The brain pacemaker is already being used in 80,000 patients with Parkinson's disease worldwide.

Coenen said from a medical viewpoint, deep brain stimulation should be able to help patients with severe depression.

The study has been published in *Neuroscience and Biobehavioral Reviews*.

Protein

Protein that protects against prostate cancer discovered (New Kerala: 2.2.2011)

Scientists have identified an important protein, produced naturally inside cells, that appears to suppress the growth of prostate cancer cells in the laboratory.

The findings offer promising leads for research towards new treatments.

In the new study, scientists at Imperial College London found that a protein called FUS inhibits the growth of prostate cancer cells in the laboratory, and activates pathways that lead to cell suicide.

The researchers also looked for the FUS protein in samples from prostate cancer patients. They found that in patients with high levels of FUS, the cancer was less aggressive and was less likely to spread to the bone. Higher levels of FUS also correlated with longer survival. The results suggest that FUS might be a useful marker that can give doctors an indication of how aggressive a tumour will be.

"These findings suggest that FUS might be able to suppress tumour growth and stop it from spreading to other parts of the body where it can be deadly. It's early stages yet but if further studies confirm these findings, then FUS might be a promising target for future therapies," said Dr Charlotte Bevan, senior author of the study, from the Department of Surgery and Cancer at Imperial College London.

Prostate cancer depends on male hormones to progress as these hormones stimulate the cancer cells to divide, enabling the tumour to grow. Treatments that reduce hormone levels or stop them from working are initially effective, but eventually the tumour stops responding to this treatment and becomes more aggressive.

Dr Bevan and her team began by exposing prostate cancer cells to male hormones and looking at how the levels of different proteins changed. They discovered that the hormones made the cells produce less of the FUS protein, and examined further whether FUS might influence cell growth by inserting extra copies of the gene for FUS into cells grown in culture. They found that making the cells produce more FUS led to a reduction in the number of cancer cells in the dish. The findings have been published in the journal Cancer Research.

Nanoshell Therapy

Early Tests Find Nanoshell Therapy Effective Against Brain Cancer (Science daily: 2.2.2011)

Rice University bioengineers and physician-scientists at Baylor College of Medicine and Texas Children's Hospital have successfully destroyed tumors of human brain cancer cells in the first animal tests of a minimally invasive treatment that zaps glioma tumors with heat. The tests involved nanoshells, light-activated nanoparticles that are designed to destroy tumors with heat and avoid the unwanted side effects of drug and radiation therapies.

The results of the new study are available online in the Journal of Neuro-Oncology. The researchers reported that more than half of the animals that received the nanoshell treatment for glioma tumors had no signs of cancer more than three months after treatment.

"This first round of in vivo animal tests suggests that photothermal therapy with nanoshells may one day be a viable option for glioma patients," said study co-author Jennifer West, the Isabel C. Cameron Professor of Bioengineering at Rice and chair of Rice's Department of Bioengineering. West cautioned that follow-up work in the laboratory is needed before any human testing of the therapy can begin. She said human clinical trials of nanoshell phototherapy for glioma are likely at least a year away.

Glioma is among the most aggressive and difficult-to-treat of all brain cancers. Fewer than five percent of glioma patients survive beyond five years. The disease is particularly difficult to treat because glioma tumors are often highly invasive and inoperable.

Study co-authors include pediatric oncologist Susan Blaney, deputy director of Texas Children's Cancer Center and Baylor College of Medicine professor and vice chair for research in the department of pediatrics, and Rebekah Drezek, professor in bioengineering at Rice. West, Blaney, Drezek and colleagues tested mice with abdominal tumors of human glioma cells. The researchers injected the mice with nanoshells and waited 24 hours for the nanoparticles to accumulate in the tumors. A laser of near-infrared light -- which is harmless to healthy tissue -- was shined at the tumor for three minutes. The nanoshells converted the laser light into tumor-killing heat. All seven animals that received the nanoshell treatment responded, but cancer returned in three. The other four remained cancer-free 90 days after treatment.

"The results of this study are encouraging, and we are cautiously optimistic that this process may bring us closer to finding a cure for glioma," said Blaney, also associate director for clinical research at Baylor College of Medicine's Dan L. Duncan Cancer Center and co-director of The Institute for Clinical and Translational Research. "This is very exciting, especially given the poor prognosis of the disease and the importance of finding brain tumor treatment alternatives that have minimal side effects."

Gold nanoshells, which were invented by Rice researcher Naomi Halas in the mid-1990s, are smaller than red blood cells. Nanoshells are like tiny malted milk balls that are coated with gold rather than chocolate. Their core is nonconducting, and by varying the size of the core and thickness of the shell, researchers can tune them to respond to different wavelengths of light.

Houston-based biomedical firm Nanospectra Biosciences, which holds the license for medical use of Rice's nanoshell technology, began the first human clinical trial of nanoshell phototherapy in 2008.

West, a co-founder and director of Nanospectra Biosciences, said the new glioma study is part of a larger ongoing effort within the Texas Medical Center to adapt nanoshell phototherapy for use against a variety of cancers. Researchers at Rice, Texas Children's Hospital, M.D. Anderson Cancer Center, Baylor College of Medicine and other institutions are working to develop nanoshell-based treatments for prostate cancer and pancreatic cancer.

The glioma study was funded by the National Science Foundation, the National Institutes of Health and Hope Street Kids.

Cancer Gene MMSET

How Cancer Gene MMSET Functions (Science Daily: 3.2.2011)

For several decades, researchers have been linking genetic mutations to diseases ranging from cancer to developmental abnormalities. What hasn't been clear, however, is how the body's genome sustains such destructive glitches in the first place. Now a team of Mayo Clinic scientists and collaborators provide an unprecedented glimpse of a little-understood gene, called MMSET, revealing how it enables disease-causing mutations to occur. The findings appear in the current issue of Nature.

MMSET had been known for many years, and had been shown to be mutated in several diseases, but its function had never quite been pinpointed," says lead author Zhenkun Lou, Ph.D., Mayo Clinic pharmacologist and senior author of the study.

The researchers found that normally-functioning MMSET is usually helpful. It plays a restorative role within the genome, recruiting proteins like p53-binding protein 1 to repair breaks that occur in DNA and to maintain genetic stability. But when MMSET malfunctions, the protective pathway falls short, and a cascade of mutations take place that can lead to disease processes.

"It was not clear before the study how p53-binding protein 1 was targeted to sites of DNA damage. We found MMSET regulates this critical pathway," Dr. Lou says. "But when the gene is

impaired, cells don't have the correct response to DNA damage." Misregulation of MMSET has been implicated in cancers like the plasma cell cancer multiple myeloma as well as the inherited disorder of severe retardation known as Wolf-Hirschhorn syndrome, even though the MMSET mutation looks different in the two diseases.

While the study answers a long baffling mystery about the function of the gene, it also suggests avenues for new therapeutic approaches for several disorders, notes Dr. Lou. One possible route for clinical investigation is for patients with MMSET mutations, which keep DNA from undergoing efficient repair, to be given treatment that will help minimize genetic damage. For instance, patients with defects in DNA damage-maintenance machinery often succumb to neurological disorders (e.g., ataxia telangiectasia and Wolf-Hirschhorn syndrome), since neurons are very sensitive to DNA damage spontaneously occurring in cells. These patients could be given anti-oxidative treatment to help maintain the health of DNA and preserve neurons.

The finding also suggests new thinking about treating certain cancers. MMSET protein has been found in abundance in hard-to-treat malignancies such as multiple myeloma and glioblastoma, a devastating brain tumor.

"It may be that these cancers don't respond well to chemotherapy treatment, which works by interrupting DNA, because the [MMSET producing] cancer cells are more efficient at repairing themselves," Dr. Lou says. Dr. Lou is currently working with the National Institutes of Health-Mayo Brain Tumor SPORE (Specialized Program of Research Excellence) to investigate whether MMSET levels will be a biomarker to guide glioblastoma treatment. Future investigations may involve inhibiting MMSET in proliferating cancer cells, which may make cancers more responsive to cell-killing chemotherapies

Mobile phones - Health risk

Mobile phones a health risk, says govt panel (The Times of India: 3.2.2011)

Calls for Ban on Unsafe Handsets

Radiation from mobile phones and towers poses serious health risks, including loss of memory, lack of concentration, disturbance in the digestive system and sleep disturbances, according to an inter-ministerial committee formed by the ministry of communications and information technology to study the hazards posed by mobile phones.

The committee has also attributed the disappearance of butterflies, bees, insects and sparrows from big cities to radiation from mobile phone towers.

The eight-member committee, which included representatives from the health ministry, department of biotechnology and member secretary, DoT, has recommended that mobile phones not adhering to standard levels of specific absorption rate (SAR) — a measure of the amount of radiofrequency energy absorbed by the body while using a phone — should be barred.

It has said mobile towers should not be installed near high density residential areas, schools, playgrounds and hospitals.

Think Before You Talk

Symptoms of Excess

Burning, tingling sensation in scalp, headache, ringing in ears, fatigue, dizziness, sleep disturbance, palpitation, digestive system affected

Lack of concentration, increase in reaction time,

loss of memory

Do's & Don'ts

Specific absorption rate of handsets should not exceed 1.6 watt/kg, must be displayed for buyers (SAR measures rate at which energy is absorbed by body tissue in a radio frequency electromagnetic field)

Use wireless hands-free system with low-power Bluetooth emitter

Keep your calls short, text instead, especially in case of kids and pregnant women

If you have an active medical implant, keep phone at least 30cm away

Tower Curbs

Lower radiation frequency exposure limits to 1/10th of existing level

Restrict installation of mobile towers near crowded residential areas, schools, playgrounds and hospitals

Source: Inter-ministerial committee's findings

Indians more at risk from cellphones

An eight-member inter-ministerial committee has confirmed that radiation from mobile phones and towers poses a severe health hazard.

Dr R S Sharma, ICMR scientist who represented the health ministry on the committee, said its findings are based on case studies presented by different experts. He added that the recommendations would be used to formulate a national policy and guidelines on electromagnetic frequency radiation for towers.

"The localized SAR value as per the Indian guidelines standard is 2 watt per kg, averaged over a six minute period and using a 10 gram average mass. With higher SAR values of mobile handsets, the public could potentially receive much higher radio frequency exposure," said a member.

"In the case of a cellphone user, most of the heating occurs on the surface of the head, causing its temperature to increase by a fraction of a degree. The brain blood flow is capable of disposing this excess by increasing the local blood flow and increasing body temperature," states the report.

Sharma said that compared to Europeans, Indian cellphone users are more at risk due the country's hot tropical climate, low body mass index, and low fat content. "Users of cellphone have reported feeling several unspecific symptoms, ranging from burning and tingling sensation

in the skin of the head, sleep disturbances, memory loss, disturbance in digestive system and heart palpitation,” the report says.

Zapping brain

Zapping brain brings out the genius in you (The Times of India: 4.2.2011)

Ever wished you could have thought more laterally to solve a problem? Well, you will now be able to do so by using a new mind-boosting technology — zapping your brain with mild electricity. Researchers at the University of Sydney in Australia have shown that a blast of gentle electrical current to the brain helps one discard preconceptions and think outside the box. Donning such a “thinking cap”, the scientists said, could help us solve infuriating problems from balancing budgets at work to cracking the final crossword clue, the Daily Mail reported.

For their study, researchers recruited 60 university students happy to have a gentle electrical current passed through their brain in the name of science. The men and women were shown a series of sums in which the numbers were replaced by Roman numerals made out of matchsticks. Each sum contained a mistake that could be corrected by moving just one matchstick.

After solving numerous problems containing the same sort of error, a weak current was passed through a region — called the anterior temporal lobe — which lies just in front of the ears. The students were then given another set of matchstick problems to solve, this time with a different type of error. Those who were zapped on the right side of the head did three times as well at solving the problems as the others, the researchers reported in the journal PLoS ONE.

This is likely as electricity boosted the activity of brain cells key to insight. In addition, the activity of the cells on the left side of the brain we usually use to quickly process the familiar may have been inhibited, the researchers said.

Human Blood Vessels

Scientists grow human blood vessels in Lab (The Asian age: 4.2.2011)

Off-the-shelf blood vessels could soon be a reality, as scientists have come up with a way to grow new human veins in the laboratory.

The lab-made blood vessels, which can be stored for up to a year and safely transplanted into any patient, could revolutionise heart surgery, said the researchers behind the breakthrough.

They also claimed the blood vessels could soon replace artificial versions, which easily clog and cause infection, in a number of operations, including thousands of heart bypasses a year, the Telegraph reported.

Scientists have already developed a technique to engineer blood vessels from a patient's own cells, but this process takes over nine months and patients usually cannot wait that long for surgery. The new technique, developed by a team at the East Carolina University in the US, involved making the vessels in advance by using random donor cells from human tissue to grow collagen on a biodegradable "scaffold" tube or mould made from a polymer.

Cosmetic Surgery

'Before-and-after' tool to help surgeons avoid 'cosmetic surgery surprises'(New Kerala: 4.2.2011)

A Tel Aviv University researcher has developed a three-dimensional 'before and after' tool for cosmetic surgeons avoid any unpleasant surprises post surgery.

Dr. Alex Bronstein tackled a very difficult mathematical problem in computer modelling called predicting "deformations" of non-rigid objects to build a tool that can generate an anatomically accurate after-surgery image.

"Our program is more like a virtual mirror. It gives surgeons and their patients a way to see a 3D before-and-after image as though the patient has really undergone the operation," said Bronstein. Bronstein designed the program with the help of numerous pre- and post-surgery images fed into a computer to "teach" it to more accurately generate post-surgery images.

Now under commercial development, the software will not only show women and men a much more accurate outcome, but also help surgeons achieve more favourable results for their clientele, the researchers said.

Bronstein predicted that similar tools will become even more accessible, affordable and powerful in the coming years as consumer 3D video cameras become more widespread.

Tissue Regeneration

Scientists Unlock One Mystery of Tissue Regeneration (Science Daily: 4.2.2011)

The human body has a remarkable ability to heal itself. Due to the presence of dedicated stem cells, many organs can undergo continuous renewal. When an organ becomes damaged, stem

cells in the organ are typically activated, producing new cells to regenerate the tissue. This activity of stem cells, however, has to be carefully controlled, as too much stem cell activity can cause diseases like cancer. Current research in stem cell biology is starting to unravel the control mechanisms that maintain a balance between efficient regeneration and proper control of stem cell function

Strikingly, it is becoming evident that oxidative stress is at the heart of this regulation. Researchers at the University of Rochester have now identified a genetic switch that controls oxidative stress in stem cells and thus governs stem cell function.

The work was done by biologists Heinrich Jasper, Christine Hochmuth and Benoit Biteau, and geneticist Dirk Bohmann of the University of Rochester Medical Center, who hoped to gain some insight into human stem cell processes by studying the intestinal stem cells of *Drosophila* (fruit flies), which have genetic structures that, in many ways, mimic those that are found in humans. The researchers studied the function of two genes, Nrf2 and Keap1, which were already known as regulators of cellular responses to oxidative stress. The research team was surprised to discover that, in contrast to other cell types, Nrf2 was active within the stem cells even in the absence of stress. This finding suggested that Nrf2 might have an unusual role in the control of stem cell function.

Indeed, the researchers found that Nrf2 prevents stem cells from dividing, and that only when Nrf2 is repressed can stem cell division take place. That's where the other gene, Keap1, comes into play.

When the intestine of the fruit fly is damaged, proteins secreted from the damaged cells send signals that activate stem cells. Jasper and colleagues learned that Keap1 inhibits the function of Nrf2 in stem cells experiencing such signals, making it possible for the stem cells to divide and regenerate the intestinal tissue.

Interestingly, Nrf2 controls stem cell activity by influencing the level of ROS (reactive oxygen species) in these cells. ROS are highly reactive molecules that, though occurring naturally in cells, can harm the cell structure if their concentration increases significantly. Nrf2 reduces the ROS levels in cells -- and that's the mechanism by which Nrf2 helps to determine whether stem cells divide in fruit flies: Intestinal stem cell division can only take place when ROS levels go up, and as long as Nrf2 does its job, that won't happen. But when Keap1 represses Nrf2, ROS levels increase, allowing stem cells to divide and initiate regeneration. This switch is thus a critical stress sensor that allows proper control of stem cell activity in the intestine. Accordingly, the researchers found that when Nrf2 function is disrupted, the fly intestine degenerates due to excessive production of new cells by the stem cells.

Their work is being published in the February 4 issue of the scientific journal *Cell Stem Cell*. Jasper expects other scientists to start testing whether stem cell regulation works the same way in small vertebrates and humans. "If it does, it would encourage the adaptation of these findings to new therapies. And scientists may eventually learn how to control stem cell function to safely replace damaged tissue in humans."

The University of Rochester researchers are now trying to learn more about the processes behind Keap1 and Nrf2 activity. "How does Keap1 know that there's a signal from the damaged tissue?" asked Jasper. "We're trying to understand what happens upstream and what happens downstream -- before and after Keap1 is activated."

Re-educate body's immune system

Scientists re-educate body's immune system to repel HIV (New Kerala: 4.2.2011)

Spanish scientists have hit upon a way to "re-educate" the body's immune system to repel the HIV virus.

Researchers at Barcelona's Hospital Clinic, Spain, said they were able to lower the level of the virus in infected patients using a personalised treatment that could replace expensive antiretroviral drug treatment used to keep it at bay.

A group of people with AIDS took part in a clinical trial and after 24 weeks, the majority had shown a "significant" decrease in their viral load, the Journal of Infectious Diseases reports.

"This decrease was very significant in some of them but in no case did the virus become undetectable," the hospital statement said, according to the Telegraph.

"However, this is a very important improvement with respect to previous initiatives where with a similar vaccine, there was a modest response in 30 percent of the treated patients.

"No therapeutic vaccine has achieved up to now the same level of response as in this study," the statement added.

The vaccine was made from each person's own dendritic cells, a special type of cell that is a key regulator of the immune system.

The cells were extracted and "re-educated" to attack the virus using samples of HIV also taken from individual patients. The adjusted cells were then injected back into them in three stages, two weeks apart.

An estimated 33.3 million people worldwide have the HIV virus that causes AIDS, according to the United Nations Aids agency UNAIDS.

Stabilizing Proteins

Powerful New Methodology for Stabilizing Proteins Developed(Science Daily: 4.2.2011)

A team of scientists at The Scripps Research Institute has discovered a new way to stabilize proteins -- the workhorse biological macromolecules found in all organisms. Proteins serve as the functional basis of many types of biologic drugs used to treat everything from arthritis, anemia, and diabetes to cancer.

As described in the February 4, 2011 edition of the journal *Science*, when the team attached a specific oligomeric array of sugars called a "glycan" to proteins having a defined structure, the proteins were up to 200 times more stable in the test tube. In the body, this stability may translate into longer half-lives for therapies, possibly lowering the overall cost of treatment for certain protein-based drugs and requiring patients to have fewer injections during a course of treatment. The work may have major implications for the drug industry because there are a large number of protein-based drugs on the market, more in clinical trials, and many more under development worldwide. Nearly all of these protein-based drugs have glycans attached to them and are therefore called "glycoproteins." Glycoprotein-based drugs can be quite expensive to produce and usually need to be administered intravenously.

One of the challenges in producing these drugs has been increasing their stability, which generally extends their half-life in the bloodstream -- issues that the new discovery appears to address directly.

"We've now provided engineering guidelines for glycoprotein stability," said Scripps Research Professor Jeffery W. Kelly, who is chair of the Department of Molecular and Experimental Medicine, Lita Annenberg Hazen Professor of Chemistry, and member of The Skaggs Institute for Chemical Biology at Scripps Research. Kelly led the study with Scripps Research Associate Professor Evan Powers and Staff Scientist Sarah R. Hanson, in collaboration with Research Associates Elizabeth K. Culyba, Joshua Price, and colleagues.

In Search of Stability

Making therapeutic proteins more stable by attaching glycans to them is nothing new. Scientists have known for many years that the human body widely modifies proteins in this way after they are made inside cells. By some estimates, as many as a third of all types of proteins in the human body are "glycosylated," the scientific name for the process whereby glycans are attached to proteins. Scientists also know that these modifications can be directly linked to protein stability. Attaching a glycan to one part of a protein can have a dramatic stabilizing effect, accounting for the difference between it lasting in the bloodstream for a few minutes or a few days. But attaching the same glycan to another part of the same protein can have a distinctly different destabilizing effect, turning it into the microscopic equivalent of a cooked egg -- unfolded and worthless as a medicine.

Scientists who work on these sorts of drugs often try to stabilize their therapeutic proteins with glycans, but until now nobody understood the rules that govern the process -- nobody even knew for sure if there were general rules governing it. Researchers have always made such modifications through trial-and-error -- more of a time-consuming art than an exact science.

But now, predicts Powers, "Having a rational design approach will streamline protein drug optimization quite a bit."

Simple Engineering Rules

The new research shows simple engineering rules do exist for achieving stability of glycoproteins in the test tube. In the new paper, the Scripps Research team showed that scientists could dramatically stabilize proteins by integrating the standard N-glycan into a particular part of the protein -- a structure known as a "reverse turn" containing a certain combination of amino acids. Reverse turns are found in the vast majority of proteins, making this methodology broadly applicable.

The scientists tested their ability to increase the stability of proteins by creating glycoproteins from proteins that are not normally glycosylated -- leading to increased stabilization in the test tube. These scientists have not yet looked at how long the proteins survive in the bloodstream -- that work is currently under way. But the team is confident that the principles they discovered will now give scientists a new way to predictably stabilize proteins by design.

Kelly added that this portable stabilizing structural module called the "enhanced aromatic sequon" also leads to more efficient production of glycoproteins by cells, a result that is potentially very important, since glycoproteins remain difficult to produce and purify.

In addition to Kelly, Powers, Hanson, Culyba, and Price, the article, "Protein Native-State Stabilization by Placing Aromatic Side Chains in N-Glycosylated Reverse Turns" is authored by Apratim Dhar, Chi-Huey Wong, and Martin Gruebele.

This work was supported in part by the Skaggs Institute for Chemical Biology and the Lita Annenberg Hazen Foundation, and funded through grants from the National Institutes of Health and the National Science Foundation .

Brain

As survival becomes easier, our brains shrink to make us smarter (Times of India: 07/02/2011

Human brains have shrunk over the past 30,000 years, puzzling scientists who argue it is not a sign we are growing dumber but that evolution is making the key motor leaner and more efficient.

The average size of the brain of modern males — homo sapiens — has decreased about 10% during that period — from 1,500 to 1,359 cubic centimeters, the size of a tennis ball. Women's

brains, which are smaller on average than those of men, have experienced an equivalent drop in size. These measurements were taken using skulls found in Europe, the Middle East and Asia.

“I’d called that a major downsizing in an evolutionary eye blink,” John Hawks of the University of Michigan told Discover magazine.

But other anthropologists note that brain shrinkage is not very surprising since the stronger and larger we are, the more gray matter we need to control this larger mass. The Neanderthal, a cousin of the modern human who disappeared about 30 millennia ago, was far more massive and had a larger brain.

Psychology professor David Geary of the University of Missouri said these traits were necessary to survive in a hostile environment.

Geary and his colleagues used population density as a measure of social complexity, with the hypothesis that the more humans are living closer together, the greater the exchanges between group, the division of labor and the rich and varied interactions between people. They found that brain size decreased as population density increased.

“As complex societies emerged, the brain became smaller because people did not have to be as smart to stay alive,” Geary said.

But the downsizing does not mean modern humans are dumber than their ancestors — rather, they developed different, more sophisticated forms of intelligence, said Brian Hare, an assistant professor of anthropology at Duke University

Shaina Rai (name changed), 26, has been unable to attend office over the past one week due to hundreds of itchy, fluid-filled blisters that have appeared all over her body.

“Chickenpox,” the doctor had said the moment he had looked at her. And since, the disease is highly contagious, she has been advised to stay at home for at least 10 days.

Deep Vein Thrombosis (DVT)

The clot thickens (Times of India: 08/02/2011)

“Deep vein thrombosis (DVT), that’s increasingly affecting a large number of frequent long-distance air and road travellers, is a condition that, experts say, can be avoided”

Next time you feel discomfort and swelling in your legs while in a flight, don’t ignore it. Robert Brown, a UK-based lecturer learnt this the hard way. On his flight from London to Delhi, he noticed some swelling on his left leg and that the skin over the affected area had started to look pale. By the time he landed in Delhi, Brown’s condition had deteriorated so much that

immediately after touch-down, he had to be whisked away to the city's nearest hospital for treatment.

Brown had suffered deep vein thrombosis (DVT), a condition in which a blood clot forms in one of the deep veins, usually in the leg. The symptoms of DVT include painful swelling with redness accompanied with a bulging out of superficial veins. It can sometimes even occur without symptoms. Experts say, if you notice these symptoms in the legs, you must immediately consult a physician. Your basic treatment will include a few tests and a dose of anticoagulants like heparin. However, they warn that if ignored, DVT can lead to complications such as pulmonary embolism — in which the clot travels up the blood stream to the lungs and causes a blockage. Pulmonary embolism is characterised by chest pain and breathing difficulties and can be fatal if left untreated.

According to experts, this condition can occur more in people who've just had a surgery, or those who are on certain types of medication and have a history of cancer, stroke and heart failure. People who smoke, are obese, and pregnant women are also at an increased risk.

DVT is most common

in the deep veins of the calf region. Catherine Le Gales-Camus, WHO assistant director-general for non-communicable disease adds, "Women on birth-control pills are also more susceptible." In Robert Brown's case, it was a recent leg injury coupled with limited leg movement during the flight that triggered off the clot formation.

DVT is also caused by three other factors: decreased blood flow, damage to the wall of the vessel, and an increased tendency of the blood to clot. That is why longhaul flights, lasting for over four hours can increase the risk of developing DVT.

It's no surprise then that with an increasing number of people undertaking longdistance travel by air, the incidence of DVT is on the rise. The World Health Organisation estimates that, on an average, one person is affected for every 20 long-haul flights

carrying 300 passengers. Dr Sandeep Vaishya, neurosurgeon at Delhi's Max Hospital says, "There is solid evidence to prove that sitting down without moving your feet for long periods of time, which can happen during any form

of long-distance travel, can cause DVT."

A recent study on medical issues related to commercial flights carried out at Lahey Medical Centre, US, found that 75 per cent cases of DVT were due to lack of enough movement during the flight and most sufferers were in non-aisle seats where passengers any way tend to move even less.

The easiest way to prevent the occurrence of DVT is to drink plenty of water through the flight. "Dehydration causes the thickening of blood and leads to DVT," says Dr Vaishya. It's also a good idea to avoid alcohol and caffeine as they are diuretics and lead to loss of water through increased urination. What also helps a great deal is to keep your legs and feet moving even while sitting. According to Dr Kameshwar Prasad, professor of neurology at the All India

Institute of Medical Sciences (AIIMS), without regular muscle contractions, the blood starts to pool in the legs and can create conditions for a clot to develop in deep veins. To avoid DVT, he suggests some simple exercises that can be done while being seated inflight. These include lifting your front leg upto the knee level, holding it for a second and then lowering it down. This should be repeated about 10-12 times and then do the same with the other leg. Similarly, flex your toes up and down and rotate ankles about five times each. Keep doing these exercises through the flight, or while travelling on road, to keep the blood flowing to your legs and feet, he advises. Dr Prasad goes on to add, “Wearing graded compression stockings can also help frequent fliers. Stockings keep the calf muscles under uniform pressure thereby reducing the chances of a blood clot. Otherwise, tight clothes cause constriction at one single point, consequently increasing the chances of a clot.”

Genes

Pessimism is in the genes (Time of India: 09/02/2011)

“People With Lower Levels Of Neuropeptide Are Much More Negative: Study “

London: Are you perceived to be a pessimist? Blame your genes, for researchers say that some people are genetically programmed to be negative. A new study has revealed the amount of a chemical in the brain affects how people view the world — in fact, the researchers discovered that levels of a molecule, neuropeptide Y (NPY), directly relates to whether people have a “glass half empty” or “glass half full” attitude towards life.

Those with lower levels of the substance are much more negative and find it more difficult to deal with stressful situations; they are also more susceptible to depression, say the researchers.

The team at University of Michigan believe the amount of NPY is genetically programmed and hope that the discovery could lead to early diagnosis of and prevention of psychiatric illness.

The researchers scanned the brain activity of volunteers as they viewed negatively charged words (like “murderer”). Subjects with low levels of NPY showed strong activation in the prefrontal cortex, which is involved with processing emotion, while subjects with high NPY showed a much smaller response.

Scientists also compared NPY levels with major depressive disorders. Subjects with low-expression of NPY were more likely to suffer depression, it was found.

Surgery

Now, a liquid that makes nerves glow (Times of India: 09/02/2011)

London: In what could make surgeons job far more easy during surgeries, scientists have claimed that they are inching closer to developing a new fluorescent liquid that can make hard-to-see nerves glow when injected into patients.

The peptide, developed by a team from the University of California's San Diego School of Medicine, consists of a protein fragment containing amino acids. The glow-in-the dark liquid, according to the researchers, would soon enable surgeons to see even the most sensitive nerves instead of relying on their experience and electronic monitoring.

Avoiding these during surgery is important as accidental damage can lead to severe pain or paralysis, they said. The researchers injected the liquid into mice and found that it created a distinct contrast between nerves and other tissue.

Angioedema

What Is Angioedema? (Medical News Today: 10.2.2011)

Angioedema, also known as Quincke's edema is the rapid edema (swelling) of the deep layers of skin - the dermis, subcutaneous tissue, mucosa and submucosal tissues. Although similar to urticaria (hives), urticaria only occurs in the upper dermis. A significant number of patients have both urticaria and angioedema.

Due to the risk of suffocation, rapidly progressing angioedema is treated as a medical emergency. When angioedema is the result of an allergic reaction the patient is usually injected with adrenaline (epinephrine). Adrenaline is not effective when the cause is hereditary. Some patients are given antihistamines and steroid tablets.

The edema, caused by an accumulation of fluid, can be severe and can affect any part of the body, including the hands, feet, genitals, lips and eyes.

There are four main kinds of angioedema: allergic, idiopathic, drug induced and hereditary:

Allergic angioedema - the most common type and usually affects those with some kind of food allergy. It can also be caused by insect bites, contact with latex, and some medications, such as penicillin or aspirin. In severe cases the throat can swell, making it hard for the patient to breath. There may also be a sudden drop in blood pressure. A severe allergic reaction like this is known as anaphylaxis. This type of angioedema is not chronic (long-term), because the individual soon identifies which food is causing the allergic reaction and avoids it.

Drug-induced angioedema - certain medications can cause swelling in the deep layers of skin, such as angiotensin-converting enzyme (ACE) inhibitors which are used for treating hypertension (high blood pressure). Symptoms may linger for a few months after the patient stops taking the medication. Less commonly, this type of angioedema might be caused by

bupropion, SSRI antidepressants, COX-II inhibitors, non-steroidal anti-inflammatory drugs, statins, and proton pump inhibitors. Getting angioedema from medications is uncommon.

Idiopathic angioedema - idiopathic means we are not sure what the cause is. Experts say that an infection, fear, anxiety, stress, caffeine, overheating, wearing tight clothes, and alcohol may bring it on. It may also be caused by a thyroid gland problem, iron (folic acid) and vitamin B12 deficiency.

Hereditary angioedema - the patient has inherited a faulty gene(s). Urticaria is very uncommon with this type of angioedema. This is the rarest type. Blood levels of the protein C1-esterase inhibitor (C1-INH protein) are low. C1-INH protein plays a key role in regulating our immune system. In this type of angioedema symptoms develop gradually, rather than rapidly. Patients usually start having symptoms after puberty. It can be triggered by pregnancy, contraceptive pills, infection, or trauma. Patients are usually effectively treated with medication.

According to the National Health Service (NHS), UK, up to 20% of people may experience angioedema at some time in their lives.

What are the signs and symptoms of angioedema?

The swelling deep inside the skin can affect the patient's hands, genitals, feet, the lining of the throat and bowel, and the eyes. Signs typically come on suddenly and rapidly (except for the inherited type), and may last up to three days. It is generally only itchy if the individual develops urticaria.

In some cases the swollen areas may feel hot, and even painful. If the lining of the throat and airways are affected there may be breathing problems. Vision may also be affected.

Those with hereditary angioedema may have tummy pain, nausea, diarrhea and vomiting. Less commonly, there may be difficulties when passing urine.

Fetal Surgery

Fetal Surgery Takes a Huge Step Forward in Treating Children With Spina Bifida(Science Daily: 10.2.2011)

Performing delicate surgery in the womb, months before birth, can substantially improve outcomes for children with a common, disabling birth defect of the spine. Experts at The Children's Hospital of Philadelphia (CHOP) co-led a new landmark study showing that fetal surgery for spina bifida greatly reduces the need to divert fluid from the brain, improves mobility and improves the chances that a child will be able to walk independently.

Spina bifida is the most common birth defect of the central nervous system, affecting about 1,500 babies born each year in the United States.

"This is the first time in history that we can offer real hope to parents who receive a prenatal diagnosis of spina bifida," said N. Scott Adzick, M.D., Surgeon-in-Chief at The Children's Hospital of Philadelphia, director of Children's Hospital's Center for Fetal Diagnosis and

Treatment, and lead author of a federally sponsored study reporting results of a clinical trial of fetal surgery for myelomeningocele, the most severe form of spina bifida. Adzick, who led a team at CHOP that pioneered fetal surgeries for this condition and set the stage for this clinical trial, added, "This is not a cure, but this trial demonstrates scientifically that we can now offer fetal surgery as a standard of care for spina bifida."

Myelomeningocele is devastating, occurring when part of the spinal column does not close around the spinal cord, failing to protect it during stages of fetal development. Long-term survivors of the condition frequently suffer lifelong disabilities, including paralysis, bladder and bowel problems, hydrocephalus (excessive fluid pressure in the brain), and cognitive impairments.

Fetal surgery researchers have now reported long-awaited results from an unprecedented clinical trial that compared outcomes of prenatal, or fetal, surgery versus postnatal surgery, the conventional surgery for this disabling neurological condition. The study appears in an Online First article in the New England Journal of Medicine.

Two and a half years after fetal surgery, children with spina bifida were better able to walk, when compared to children who received surgery shortly after birth. Patients who received fetal surgery also scored better on tests of motor function. Within a year after fetal surgery, they were less likely to need a shunt, a surgically implanted tube that drains fluid from the brain.

How the Fetal Surgery Trial was Conducted

Three fetal surgery centers participated in the Management of Myelomeningocele Study (MOMS) trial -- at The Children's Hospital of Philadelphia, Vanderbilt University, and the University of California San Francisco. The biostatistics center at George Washington University (GWU) served as the coordinating center and oversaw data collection and analysis, while the Eunice Kennedy Shriver National Institute of Child Health and Human Development sponsored the trial.

The MOMS study was a prospective, randomized clinical trial. One sign of its prominence is that all U.S. fetal surgery centers not participating in the trial agreed to perform no fetal surgery for spina bifida during the 7-year duration of the trial. The trial goal was to enroll 200 patients, but the NIH ended the trial in December 2010, after 183 surgeries had occurred, based on clear evidence of efficacy for the prenatal procedure.

Throughout the trial, women whose fetuses had been diagnosed with spina bifida contacted the trial's coordinating center at GWU if they chose to volunteer for the study. That center randomly assigned half of the eligible women to receive prenatal surgery, the other half to receive postnatal surgery.

Postnatal surgery entailed delivery by planned cesarean section at 37 weeks gestation, after which the surgical team repaired the opening in the newborn's spine, usually within 24 hours after birth. In prenatal surgery, done between 19 and 26 weeks' gestation, the surgical team made incisions in the mother and her uterus, then repaired the spina bifida lesion while the fetus was in

the womb. Mothers in this group stayed near the center for ongoing monitoring, then underwent delivery by planned cesarean section at 37 weeks, or earlier, because many of the babies in the prenatal surgery group arrived prematurely.

The complex requirements of this fetal surgery require a highly sophisticated multidisciplinary team. The CHOP program includes specialists in fetal surgery, neurosurgery, obstetrics, maternal-fetal medicine, cardiology, anesthesiology and critical care, neonatology, and nursing. In both study groups, surgeons used the same technique to cover the myelomeningocele with multiple layers of the fetus's own tissue. "This lesion leaves the spinal cord exposed, so it's essential to protect this tissue from neurological injury," said study co-author Leslie N. Sutton, M.D., Chief of Neurosurgery at The Children's Hospital of Philadelphia. Previous research had established that in myelomeningocele, amniotic fluid and other features of the intrauterine environment damage the exposed spinal cord.

Building on Decades of Research

Starting two decades ago, pioneering animal studies by Adzick and collaborators such as Martin Meuli, M.D. (now Surgeon-in-Chief at Zurich Children's Hospital in Switzerland) showed that the timing of the myelomeningocele repair was important, a finding borne out by clinical experience in fetal surgery done before the MOMS trial. "The damage to the spinal cord and nerves is progressive during pregnancy, so there's a rationale for performing the repair by the 26th week of gestation, rather than after birth," said Sutton.

The abnormal spinal development underlying myelomeningocele triggers a cascade of disabling consequences, including weakness or paralysis below the level of the defect on the spinal column. In addition, leakage of cerebrospinal fluid through the open spina bifida defect results in herniation of the brainstem down into the spinal canal in the neck -- a condition called hindbrain herniation. Hindbrain herniation obstructs the flow of cerebrospinal fluid within the brain, leading to hydrocephalus, a life-threatening buildup of fluid that can injure the developing brain. Surgeons must implant a shunt, a hollow tube that drains fluid from the brain into the child's abdominal cavity. However, shunts may become infected or blocked, often requiring a series of replacements over a patient's lifetime.

What the Study Found

The current study reports data on 158 patients who were followed at least one year after surgery. Clinicians who were independent of the surgical teams and blinded (not informed which of the two surgeries a given child received) evaluated the children from the study at one year of age and again at age 30 months.

--At one year of age, 40 percent of the children in the prenatal surgery group had received a shunt, compared to 83 percent of the children in the postnatal group. During pregnancy, all the fetuses in the trial had hindbrain herniation. However, at age 12 months, one-third (36 percent) of the infants in the prenatal surgery group no longer had any evidence of hindbrain herniation, compared to only 4 percent in the postnatal surgery group.

--At age 30 months, children in the prenatal group had significantly better scores in measurements of motor function. While the ability to walk depends on the level of the spina bifida lesion, the study found a twofold increase in the proportion of children able to walk without crutches or other assistive devices -- 42 percent in the prenatal group compared to 21 percent in the postnatal group.

--As with any surgery, fetal surgery carries risks. Fetal surgery in this study raised the risk of premature birth and scarring in the mother's uterus. "Additionally, the surgical site in the uterus used for fetal surgery requires that the mother will have to undergo a cesarean section for any subsequent births," said study co-author Mark P. Johnson, M.D., obstetrics director at the Center for Fetal Diagnosis and Treatment (CFDT).

"The mothers, children and families who participated in this MOMS trial, and who are continuing to be available for follow-up studies, have made an important contribution to our knowledge and treatment of spina bifida," said Lori J. Howell, R.N., M.S., Executive Director of the CFDT, and a study co-author. "Because of their involvement, we are better able to accurately counsel other families about what it will mean to have a child with spina bifida -- and to offer a rigorously tested, innovative prenatal surgical treatment."

Next Steps in Fetal Surgery Although the trial results mark a milestone in spina bifida treatment, not every woman carrying a fetus with spina bifida may be a suitable candidate for fetal surgery. For example, severely obese women were not included in the current study because they have a higher risk of surgical complications. Adzick noted that further research will continue to refine surgical techniques and improve methods to reduce the risks to mothers and fetuses.

In the meantime, concluded Adzick, "Both the experimental outcomes of animal studies and the results of the MOMS trial suggest that prenatal surgery for myelomeningocele stops the exposure of the developing spinal cord to amniotic fluid and thereby averts further neurological damage in utero. In addition, by stopping the leak of cerebrospinal fluid from the myelomeningocele defect, prenatal surgery reverses hindbrain herniation in utero. We believe this in turn mitigates the development of hydrocephalus and the need for shunting after birth."

Adzick added that this demonstrated success for fetal surgery may broaden its application to other birth defects, many of which are rarer but more uniformly lethal than spina bifida. Children's Hospital's comprehensive center already offers fetal surgery for selected life-threatening fetal conditions.

The Children's Hospital of Philadelphia began performing fetal surgery for spina bifida in 1998, three years after Adzick launched the Center for Fetal Diagnosis and Treatment. The Center's reports of neurological improvements in spina bifida, based on 58 fetal surgeries through 2003, helped lay the groundwork for the MOMS trial. For Adzick, who has been working to advance fetal surgery since performing preclinical studies in the early 1980s, "It's very gratifying to take this idea forward over 30 years, starting with a concept and now offering hope -- to families, mothers and the children themselves."

This trial was sponsored by the Eunice Kennedy Shriver National Institute of Child Health and Human Development. Additional funding for spina bifida research at the CFDT at The Children's Hospital of Philadelphia was provided by Katherine and Michael Mulligan, the March of Dimes Foundation and the Spina Bifida Association.

Male hormone

Higher level of male hormone lowers empathy (The Times of India: 11.2.2011)

Scientists have discovered that male sex hormone testosterone influences the ability to empathise with others, a finding which they say could lead to new drugs and treatments for conditions like autism.

A team of British and Dutch scientists, who gave women a small dose of testosterone, found that it makes them less able to empathise with others. The researchers said their findings add weight to the theory that the hormone is significant in the development of autism and could lead to new treatments for the condition, the BBC reported.

For their study, the team from University of Cambridge in UK and Utrecht University of The Netherlands recruited 16 women volunteers who were given a small dose of the male hormone. It was found that the women were less able to judge the mood of facial expressions they were shown, an indication that suggests exposure to the hormone in the womb may be key.

Autism is a disorder which, to varying degrees, affects the ability of children and adults to communicate and interact socially.

While genes linked to the condition have been found, precise combination of genetics and other environmental factors which produce autism is unclear. The rate of autism is much higher among boys than it is among girls. Women, on average, have lower levels of the male sex hormone testosterone than men.

Spina Bifida Surgery

Spina Bifida Surgery More Effective Before Birth (Medical News Today: 11.2.2011)

Babies who undergo surgery to repair the most serious form of spina bifida while still in the womb develop better and have fewer complications than babies who have corrective surgery after birth, said US researchers reporting on an eight-year trial that stopped early because the results were so positive.

You can read about the major multi-center trial, led by the University of California, San Francisco (UCSF), in the online 9 February issue of the New England Journal of Medicine, NEJM.

The researchers said the randomized clinical trial is the first that systematically evaluates the best treatment for myelomeningocele, the most serious form of spina bifida, where the bones of the spine do not fully form.

It is also the first to prove definitively that fetal surgery can help certain patients before birth, they told the media.

The eight-year trial stopped early because the results showed that performing surgery before birth greatly reduced the need to divert fluid away from the brain.

Doing the surgery on the babies while they were still in the womb rather than after they were born also resulted in better mental development and function and increased the chance they would one day walk unaided, said the researchers.

Senior author Dr Diana Farmer, surgeon-in-chief at UCSF Benioff Children's Hospital, told the press that:

"For a young couple, finding out their developing child has a problem is one of the most devastating things that can happen."

"This landmark study offers real hope for improving the lives of children with spina bifida worldwide, " she added, explaining that their findings now strengthen the idea that fetal surgery is a better option than waiting to treat them after they are born.

Co-author Jody Farrell, nurse coordinator for the UCSF Fetal Treatment Center, said:

"This trial was an enormous effort, and the entire team provided excellent care to the patients. The families made huge contributions that will benefit many children in the future."

The early success of the trial has been cause for celebration at UCSF, who carried out the first human fetal surgery some thirty years ago.

The surgical procedures evaluated in this trial, known as the Management of Myelomeningocele Study (MOMS), were developed at UCSF's Fetal Treatment Center, under the direction of Michael Harrison, UCSF professor emeritus of clinical surgery, pediatrics, obstetrics and gynecology.

Harrison, often referred to as the "Father of Fetal Surgery", performed the world's first open fetal surgery 30 years ago at UCSF, and the institution has also trained most of the current leaders in the field.

Spina Bifida is where an unborn child's spinal cord does not develop properly because during the first few weeks in the womb, the neural tube which later becomes the central nervous system in the growing embryo, fails to close.

Myelomeningocele is a particularly severe form of Spina Bifida because a section of the spinal cord remains exposed and sticks out through an hole in the baby's back that looks like a cyst.

Diabetes Worldwide Impact - Find research and data on the impact of diabetes around the world - www.changingdiabetesbarometer.com

Siemens answers: - Early detection & prevention: Answers for life. - www.siemens.com/answers
Gifts for Pregnant women - If you are pregnant here's a chance To get Hrithik autographed Sipper - LifeCellInternational.com/Born+Baby

Children born with it are disabled for life and hampered by weak legs or paralysis with loss of bladder and bowel control. They often can't walk without braces or they are wheelchair-bound. As if this wasn't enough, most children born with myelomeningocele also have Chiari Type II, a brain abnormality where the brain stem is pushed downward through the opening in the bottom of the skull area into the upper spinal canal.

This abnormality can change the flow of spinal fluid which then causes fluid to accumulate in the brain, causing potentially fatal hydrocephalus ("water on the brain"). This is usually treated by inserting a shunt or hollow tube to drain the excess fluid away.

The standard procedure for treating myelomeningocele is to wait until after birth and then cover it with skin. This prevents infection and returns the tissues to a more normal position, but it does not help damaged nerves work again.

By doing the same type of surgery while the baby is still in the womb, the intervention is earlier and the child may develop more normally and the damaged nerves may begin to work again, at least partially.

In fact the trial showed that some of the problems that led to conditions like hydrocephalus occurred in the second half of pregnancy, and that by closing the hole in the fetus' back at an earlier stage in the pregnancy, they could reverse the development of the condition.

MOMS was supposed to enroll 200 pregnant women carrying a child with myelomeningocele, but it stopped early, with only 183 participants enrolled, because of the significant benefits shown in the children who had the surgery while still in the womb.

The researchers randomly assigned the pregnant women to one of two groups: a prenatal surgery group and a postnatal surgery group.

The prenatal group underwent surgery to close the spinal defect in the fetus before the 26th week of pregnancy.

The babies born in the postnatal group had the standard surgery in the usual time frame. Death was rare in both groups, said the researchers.

Independent evaluaters examined the children in both groups at 12 months old and again at 30 months old.

In their 12-month evaluation they assessed whether the children would need to have shunts fitted, and found that only 39.7% of those in the prenatal surgery group needed one compared to 82.5% of the postnatal surgery group.

In the 30-month evaluation, the children completed standardized tests of their mental development and movement control (motor function tests that check how well the nerves are controlling muscles to cause movement).

In both types of test, the children in the prenatal surgery group scored higher than the children in the postnatal surgery group and 41.9% of them were able to walk without orthotics or crutches compared to only 20.9% in the postnatal group.

Farmer described the findings as "game-changing" for the field of fetal surgery.

But she stressed it was important to remember that fetal surgery is only one of the options available to families and may not suit everyone.

"The UCSF Fetal Treatment Center is all about giving families as many options as possible when there are problems. Our goal is to someday be able to treat all diseases before birth," she explained.

Fetal surgery is not without risks, and these were evident in the trial.

Babies who had the prenatal surgery were more likely to be born premature, at an average of 34.1 weeks of gestation, compared to 37.3 weeks in the postnatal surgery group.

There are also risks to the mother, who must be delivered by Cesarean section to prevent the uterus from rupturing.

Farmer said this was "serious surgery", and a woman who undergoes it risks her life to the same extent as giving a piece of her liver for transplant.

The authors said follow-up should continue to make sure the benefits to the children carry through to school-age.

Gene Disorder

Genome Research Institute: The Future Of Gene Disorder Study Is Here (Medical News Today: 11.2.2011)

A single gene disorder is the result of a single mutated gene. There are estimated to be over 4,000 human diseases caused by single gene defects. However, a new strategic plan being developed has a goal that in the next decade, scientists will be able to identify genetic bases of most single-gene disorders and gain new insights into multi-gene disorders, leading to better treatments and more accurate assessments.

The first genome sequence was analyzed 10 years ago. Molecular pathways that are implicated in single-gene disorders may hold important clues for the diagnosis and treatment of common disease.

Full genome sequencing (FGS), also known as whole genome sequencing, complete genome sequencing, or entire genome sequencing, is a laboratory process that determines the complete DNA sequence of an organism's genome at a single time. This entails sequencing all of an organism's chromosomal DNA as well as DNA contained in the mitochondria and for plants the chloroplast as well. Almost any biological sample, even a very small amount of DNA or ancient DNA, can provide the genetic material necessary for full genome sequencing.

Eric Green, M.D., Ph.D., National Human Genome Research Institute Director states:

"Researchers around the world are working towards a future when health care providers will use information about our individual genomes to better diagnose and treat disease. While significant challenges remain to our understanding of how the genome operates in health and disease, there are enough examples to say with confidence that genomics research will lead to important advances in medicine."

DNA sequencing technologies, however, are just one of the tools needed to answer the research questions that will advance human health. Technological improvements in many other areas will be critical to successfully integrate genomic knowledge into clinical care.

Mark Guyer, Ph.D., director of the NHGRI Division of Extramural Research continues:

"It took all the sequencing capacity in the world about 13 years to produce the first human genome sequence. In 2003, around the time we completed the Human Genome Project, technology had improved to the point where 100 machines could sequence a human-sized genome in about three months. In 2011, one machine can produce a human-sized sequence in about five days."

The plan also calls for new technologies to measure the interaction between the environment, behavior and genes and for routine clinical applications of genomic tools such as newborn genetic screening and other types of diagnostic screening. It also calls for electronic medical records systems that integrate family histories and genomic data to generate personalized diagnoses, treatments, and prevention plans.

Dr. Green adds:

"Our base-pairs-to-bedside plan maps the next steps in the herculean endeavor not only to discover medical secrets hidden within the human genomes, but to bring those discoveries to the practitioner and patient. All of us in this field share a sense of urgency about using genomics for clinical applications. The challenges are enormous, but we believe that, working together, the goal of improving human health is within reach."

The intention is that genomic medicine will only reach its full potential when its benefits become accessible to all, including at-risk and low-income individuals around the world. Towards this end, the plan notes the need for greater reliance on non-geneticist health care providers and a consideration of the larger societal implications of increasing genomic knowledge.

Reading Smear Tests

Manual Is Better Than Automated At Reading Smear Tests (Medical News Today: 14.2.2011)

Manual reading of cervical smear slides is better than automation-assisted reading at detecting abnormal cells, finds research published in Health Technology Assessment this week.

Cervical screening currently relies on manually reading the slides. Technology is available which can assist this process by automatically detecting abnormal fields on a slide and presenting them on an automated microscope. Previous research has suggested this could potentially achieve greater sensitivity and productivity.

Researchers, led by Professor Henry Charles Kitchener of the University of Manchester, compared the current manual technique for reading cervical smear slides against the automated technology. Over 70,000 samples were randomised and assessed either by both automated and manual reading or, manual reading only.

The results found that automation was eight per cent less sensitive than manual reading in the detection of abnormal cells. This was largely due to automation-assisted reading failing to detect cases of low grade abnormalities which were detected in manual reading.

"Although automated reading could achieve productivity gains in terms of the numbers of slide checked, on the basis of this evidence there does not appear to be sufficient grounds to recommend automation," say Professor Kitchener. "The trial also found that the cytoscreeners preferred manual reading as automation-assisted reading was monotonous."

The full results of this trial have published in Health Technology Assessment, 2011; Vol 15:03

Nasal Stem Cells

How Nasal Stem Cells Might Prevent Childhood Deafness(Medical News Today: 14.2.2011)

Australian scientists have shown for the first time in mice that nasal stem cells injected into the inner ear have the potential to reverse or restore hearing during early onset sensorineural hearing loss.

Sensorineural hearing loss occurs when hearing cells in the cochlea lose their function. Frequently inherited, and usually starting during infancy and early childhood, the condition can slow a child's development and lead to speech and language problems.

Drs Jeremy Sullivan, Sonali Pandit and Sharon Oleskevich from Sydney's Garvan Institute of Medical Research, found that stem cells appear to release 'factors', or chemical substances, that help preserve the function of cochlear hearing cells, without the stem cells becoming part of the tissue of the inner ear. Their findings are published in Stem Cells, now online.

"We are exploring the potential of stem cells to prevent or restore hearing loss in people," said project leader Dr Sharon Oleskevich.

"The mice we are using have a very similar form of childhood deafness to their human counterparts - except, of course, that mouse years are shorter. So a mouse will tend to lose their hearing within 3 months, where a person might take 8 years."

"We are encouraged by our initial findings, because all the mice injected with stem cells showed improved hearing in comparison with those given a sham injection. Roughly half of the mice did very well indeed, although it is important to note that hearing was not completely restored to normal hearing levels."

Adult human nasal stem cells were used in the procedure, because they are plentiful, easy to obtain and unspecialised (so have the ability to self-renew for long periods, as well as differentiate into cells with a variety of functions).

The same group of scientists has shown in previous publications that stem cells can also be used to improve hearing in noise-induced hearing loss - a condition that affects both young and older people.

It has taken 5 years to reach the current stage of research, and scientists anticipate that it will take a further decade at least for the findings to benefit people

Heat Therapy

Heat Therapy Could Be New Treatment for Parasitic Skin Disease(Science daily: 14.2.2011)

Scientists are hoping that heat therapy could eventually replace a complex drug regimen as the first-line treatment of a parasitic skin infection common in tropical and subtropical regions of the world.

The researchers successfully treated the skin infection with heat therapy in two patients whose immune systems were deficient, which lowered their bodies' ability to respond to medication. Both patients have remained free of the parasitic disease, called cutaneous leishmaniasis, for more than a year since receiving the heat treatment.

That long-term effectiveness, especially in people with compromised immune systems, makes this one-time application of heat to skin lesions an appealing alternative to the conventional treatment for the infection -- a series of about 20 consecutive daily drug injections that is rife with compliance problems, researchers say.

The case report about these treatments is published in the Feb. 12 issue of *The Lancet*.

"The fact that this treatment worked in immune-compromised people over the long term means it should work in healthy people, and could become the first-line treatment," said Abhay Satoskar, professor of pathology at Ohio State University and senior author of the *Lancet* case report.

Additional research on multiple patients would be required to substantiate the heat treatment's effectiveness and confirm its potential to replace drug therapy, he noted.

"If this same level of efficacy can be proved in the long term, it could revolutionize the management of cutaneous leishmaniasis in the world," he said.

This heat therapy worked on the form of the infection that attacks the skin, which is characterized by sores of various sizes that may or may not be painful. An estimated 1.5 million new cases of cutaneous leishmaniasis are diagnosed each year worldwide, according to the U.S. Centers for Disease Control and Prevention (CDC).

This therapy would not apply to the less-common visceral form of the disease that affects internal organs, or the even rarer form, mucosal leishmaniasis, which affects the mouth, nose and throat. All forms of the disease are caused by infection with *Leishmania* parasites, which are transmitted by the bite of infected sand flies.

According to the CDC, more than 90 percent of the cases of cutaneous leishmaniasis occur in parts of Afghanistan, Algeria, Iran, Iraq, Saudi Arabia, Syria, Brazil and Peru. The disease is rare in the United States, but it is showing up in border states and also affects U.S. soldiers deployed to the Middle East.

Satoskar and colleagues described the case of a 34-year-old man in Rajasthan, India, who was diagnosed in January 2009 with cutaneous leishmaniasis and HIV infection. In addition to treating his HIV, clinicians gave him twice-weekly injections of sodium stibogluconate, a commonly used compound for the skin disease, for six weeks. After 24 weeks, the leishmaniasis sores were still present.

At this point, the clinicians treated each skin sore with a single application of radio-frequency-induced heat therapy for 60 seconds under local anesthesia. He was prescribed an oral anti-inflammatory and antibiotic skin cream to treat wounds caused by the heat. The parasitic sores responded to the heat therapy, completely healing within 12 weeks. A year later, minor scars were visible where the treatments had occurred.

The therapy works by delivering radio frequencies that excite tissue molecules, producing heat that penetrates the top layer of skin and destroys diseased tissue underneath, Satoskar said.

The standard compounds used to treat cutaneous leishmaniasis, called antimonials, must be given by injection and can cause damage to veins and other unpleasant symptoms, such as nausea, vomiting or diarrhea, muscle or joint pain, and dizziness. These side effects, combined with the need to receive daily shots for three weeks, lead to poor patient compliance -- which can then allow the parasites to develop resistance to the drugs.

Previous studies have shown that radio-frequency-induced heat can be effective in treating this skin disorder, but it had not been tested before in a patient with a compromised immune system, Satoskar said. "Patients need a normal immune system for the leishmaniasis drugs to work," he said.

He added that patients in previous studies also had not been followed for as long as a year.

The second HIV-infected patient described briefly in the report had cutaneous leishmaniasis sores that did not respond to the conventional sodium stibogluconate regimen or a follow-up antibiotic treatment. The 28-year-old man also remained disease-free one year after he received radio-frequency-induced heat therapy.

The equipment used for heat therapy currently costs approximately \$14,000, and is portable so it could be used in rural environments. "That way, you don't need patients to come to a clinic, making this much easier to use in the field," Satoskar said.

He predicted that if the treatment were widely adopted, the cost of the equipment would drop.

Satoskar has received a \$2.7 million grant from the National Institutes of Health to conduct additional research in an effort to identify new drug therapies for leishmaniasis.

Nasal stem cells

Nasal stem cells put in ears can restore hearing (The Times of India: 15.2.2011)

In what could help restore hearing loss in humans, an Indian-origin scientist-led team has shown for the first time that injecting stem cells from nose into ears of mice with deafness improved their hearing.

Sonali Pandit and colleagues at Garvan Institute of Medical Research in Australia have claimed that the research has the potential to reverse or restore hearing during early onset sensorineural hearing loss in people. Sensorineural hearing loss occurs when hearing cells in the cochlea lose their function. Frequently inherited, and usually starting during infancy, the condition could slow a child's development and lead to speech and language problems.

The team found that stem cells appear to release "factors", or chemical substances, that help preserve the function of cochlear hearing cells, without the stem cells becoming part of the tissue of the inner ear.

"We are exploring the potential of stem cells to prevent or restore hearing loss in people. The mice we are using have a very similar form of childhood deafness to their human counterparts — except, of course, that mouse years are shorter. So a mouse will tend to lose their hearing within 3 months, where a person might take 8 years.

"We are encouraged by our initial findings, because all the mice injected with stem cells showed improved hearing in comparison with those given a sham injection. Roughly half of the

mice did very well indeed, although it is important to note that hearing wasn't completely restored to normal hearing levels," team member Sharon Oleskevich said.

Adult human nasal stem cells were used in the study, as they are plentiful, easy to obtain and unspecialized. Though it has taken five years to reach the current stage of research, the scientists anticipate that it will take a further decade at least for the findings to benefit people. PTI
Artificial retina helps regain partial sight

For two decades, Eric Selby had been completely blind and dependent on a guide dog to get around. But after having an artificial retina put into his right eye, he can detect ordinary things like the curb and pavement when he's walking outside. "It's basically flashes of light that you have to translate in your brain, but it's amazing I can see anything at all," said Selby, a retired engineer in Coventry, central England. More than a year ago, the 68-year-old had an artificial implant called the Argus II, made by US-based company Second Sight, surgically inserted into his right eye.

Hair loss

Scientists accidentally discover possible cure for hair loss (New Kerala: 17.2.2011)

UCLA scientists may have found a possible solution to an age-old problem – hair loss. The researchers, along with the Veterans Administration that was investigating how stress affects gastrointestinal function may have found a chemical compound that induces hair growth by blocking a stress-related hormone associated with hair loss.

"Our findings show that a short-duration treatment with this compound causes an astounding long-term hair regrowth in chronically stressed mutant mice," said Million Mulugeta, an adjunct professor of medicine in the division of digestive diseases.

"This could open new venues to treat hair loss in humans through the modulation of the stress hormone receptors, particularly hair loss related to chronic stress and aging," he added. With age, mice produced a stress hormone called corticotrophin-releasing factor, or CRF that is associated with hair loss. The Salk Institute researchers had developed the chemical compound, a peptide called astressin-B, and described its ability to block the action of CRF.

About three months later, the investigators found that they had regrown hair on their previously bald backs.

"When we analyzed the identification number of the mice that had grown hair we found that, indeed, the astressin-B peptide was responsible for the remarkable hair growth in the bald mice," Mulugeta said.

Just one shot per day for five consecutive days maintained the effects for up to four months. The team added that only further studies would tell if the effect would be seen in humans too.

Genetic

Scientists provide genetic evidence that antioxidants can help treat cancer(New Kerala: 17.2.2011)

Scientists have provided genetic evidence suggesting the antioxidant drugs currently used to treat lung disease, malaria and even the common cold can also help prevent and treat cancers because they fight against mitochondrial oxidative stress—a culprit in driving tumor growth.

For the first time, researchers from Jefferson's Kimmel Cancer Center show that loss of the tumor suppressor protein Caveolin-1 (Cav-1) induces mitochondrial oxidative stress in the stromal micro-environment, a process that fuels cancer cells in most common types of breast cancer.

"Now we have genetic proof that mitochondrial oxidative stress is important for driving tumor growth," said lead researcher Michael P. Lisanti.

"This means we need to make anti-cancer drugs that specially target this type of oxidative stress. And there are already antioxidant drugs out there on the market as dietary supplements, like N-acetyl cysteine," he said.

In the study, Jefferson researchers applied a genetically tractable model for human cancer associated fibroblasts using a targeted sh-RNA knock-down approach. Without the Cav-1 protein, researchers found that oxidative stress in cancer associated fibroblasts leads to mitochondrial dysfunction in stromal fibroblasts.

In this context, oxidative stress and the resulting autophagy (production of recycled nutrients) in the tumor-microenvironment function as metabolic energy or "food" to "fuel" tumor growth. The researchers report that the loss of Cav-1 increases mitochondrial oxidative stress in the tumor stroma, increasing both tumor mass and tumor volume by four-fold, without any increase in tumor angiogenesis.

"This study provides the necessary genetic evidence that reducing oxidative stress in the body will decrease tumor growth," Lisanti said

Enzyme Deficiency

Enzyme Deficiency Behind Age-Related Vision Loss(Med India: 17.2.2011)

Deficiency of an enzyme called DICER-1 could lead to age-related macular degeneration (AMD), a most common form of vision loss and blindness. The discovery has been effected thanks to research conducted with help from Australian eye donors.

AMD affects one in every seven Australians over 70 and is a leading cause of blindness among the elderly. Patients suffering the disease experience difficulties reading or recognising faces. The research findings could lead to new treatments for this previously untreatable disease.

Professor Jan Provis from the The Australian National University's Vision Centre said the research found that the enzyme, DICER-1, is reduced in the eyes of those suffering the 'dry' form of AMD, causing changes in cells that lead to the premature death of the vision cells.

"We've known for some time that cell death is the cause of 'dry' AMD. What was not clear until now was which mechanism caused the cells to die," said Professor Provis.

"This discovery relied on the help of Australians who donated their eyes through the Lions NSW Eye Bank.

"Thanks to these donations, we were able to collect critical evidence to confirm that a deficit of DICER-1 was causing the cells to die," she said.

Professor Provis said that understanding what causes the cell death takes scientists a step closer to finding a possible treatment for this form of AMD. The discovery identifies a new role for DICER-1 which is also implicated in some forms of cancer.

Oestrogen

Oestrogen Can Reduce Breast Cancer Risk(Med India: 17.2.2011)

In a research work carried out by researchers at CIC bioGUNE it was found that oestrogen can cut the risk of breast cancer.

Their work shows that oestrogen is capable of reducing the number of breast cancer stem cells, which may explain the lower aggression of the tumor and, as a consequence, the possibility of a better prognosis.

The research combined the use of human samples and laboratory cell lines.

Oestrogen is a hormone which is not without its complexity; on the one hand it is essential for the normal development and functioning of the breast and, on the other, this same hormone induces the proliferation of cancer cells once the breast tumour has appeared, i.e. oestrogen is also a risk factor in breast cancer.

However, nothing or little has been known until now about the effect of oestrogen on the tumour-initiating cells.

It had also been proposed that the number of cancerous stem cells is correlated with the aggressiveness of the tumour: The greater the percentage of breast cancer stem cells, the greater the aggressiveness and the worse, thereby, its prognosis.

"To our surprise, what we have seen is that oestrogen reduces the proportion of breast stem cells which means a mechanism for explaining this better prognosis observed with tumours that express the oestrogen receptor. That is, those tumours expressing the oestrogen receptor are less aggressive, better differentiated and thus have a better prognosis", explained Mar a Vivanco, leader of the research team.

The project was published in Breast Cancer Research and Treatment.

Medical 'Smart bomb

Cancer-killing medical 'smart bomb' comes closer to reality(New Kerala: 18.2.2011)

Scientists have moved a step closer to creating a medical "smart bomb" that would seek out and eradicate the root of cancer cells - by developing the world's first cancer stem cell-targeting chemical missile.

Deakin University medical scientists have worked with scientists in India and Australia to create the world's first RNA aptamer, a chemical antibody that acts like a guided missile to seek out and bind only to cancer stem cells.

The aptamer has the potential to deliver drugs directly to the stem cells (the root of cancer cells) and also to be used to develop a more effective cancer imaging system for early detection of the disease.

The Director of Deakin Medical School's Nanomedicine Program, Wei Duan, said the development of the aptamer had huge implications for the way cancer is detected and treated. The aptamer is the first part of the "medical smart bomb" the researchers have been developing.

"What we have created is the "guided missile" part of the "smart bomb". The aptamer acts like a guided missile, targeting the tumour and binding to the root of the cancer," said Duan.

"The aim now is to combine the aptamer with the "bomb" (a microscopic fat particle) that can carry anti-cancer drugs or diagnostic imaging agents directly to the cancer stem cells, creating the ultimate medical smart bomb," he said.

Duan said the medical smart bomb has opened up exciting possibilities for detection and treatment of cancer.

"The minute size of the aptamer means it could locate cancer cells in their very early stages. Attaching radioactive compounds to the aptamer could lead to the development of sensitive diagnostic scans for earlier detection, more accurate pinpointing of the location of cancer, better prediction of the chance of cure and improved monitoring of the response to treatment.

"More accurate identification of the type of cancer present would lead to more personalised treatment that is more successful and cost-effective," he added.

Magnetic Nanoparticles

Magnetic Nanoparticles Could Track Transplanted Neural Stem Cells Following Spinal Injury(Medical News Today: 18.2.2011)

Tracking magnetic nanoparticles attached to stem cells transplanted into spinal cords to heal injuries could be an effective way to monitor the healing process non-invasively say UK scientists.

Dr Nguyen TK Thanh at the Davy Faraday Research Laboratory, University College London and the Royal Institution, and colleagues, have developed hollow biocompatible cobalt-platinum (CoPt) nanoparticles that stay stable for months and have a strong tendency to align with a magnetic field, allowing low concentrations to be detected with magnetic resonance imaging (MRI).

Although research shows that neural stem cells, because they can regenerate tissue, are a promising treatment to repair spinal cord injuries, there is currently no effective way of monitoring their progress in the longer term once they are transplanted.

Thanh and colleagues attached their newly-developed CoPt nanoparticles to rat neural stem cells, injected them into cultured spinal cord slices that closely mimic the real tissue, and then took MRI scans of their progress from time to time.

They found they could still pick out low numbers of the nanoparticle-tagged stem cells two weeks after transplant.

Thanh, who holds a Royal Society University Research Fellowship and is Associate Professor in Nanotechnology, told the press that:

"The new method demonstrates the feasibility of reliable, noninvasive MRI imaging of nanoparticle-labelled cells."

Dr Samir Pal, an expert in biological-nanoparticle interactions at the California Institute of Technology in the US, said:

"Magnetic nanoparticles are emerging as novel contrast and tracking agents in medical imaging."

"When used as a contrast agent for MRI, the nanoparticles allow researchers and clinicians to enhance the tissue contrast of an area of interest by increasing the relaxation rate of water," said Pal.

(The relaxation rate reflects how fast the spins of the hydrogen protons in the water molecules in the tissue revert to their natural state after having been "flipped over" when the MRI machine magnetized them).

Thanh said she hopes their new way of tracking stem cells will also be used in stem cell replacement therapy for many diseases of the central nervous system.

She and her colleagues are already working on ways to make nanoparticles to diagnose and treat such diseases.

"Magnetic CoPt nanoparticles as MRI contrast agent for transplanted neural stem cells detection.

Brain

In Groundbreaking New Study, Brain Function Linked to Birth Size (Med India: 21.2.2011)

The first evidence linking brain function variations between the left and right sides of the brain to size at birth and the weight of the placenta has been discovered by scientists.

The finding could shed new light on the causes of mental health problems in later life.

The research, conducted at the University of Southampton and the Medical Research Council (MRC) Lifecourse Epidemiology Unit at Southampton General Hospital, reveals that children who were born small, with relatively large placentas, showed more activity on the right side of their brains than the left. It is this pattern of brain activity that has been linked with mood disorders such as depression.

The study adds to a growing body of evidence showing that adverse environments experienced by fetuses during pregnancy (indicated by smaller birth size and larger placental size) can cause long-term changes in the function of the brain.

"The way we grow before birth is influenced by many things including what our mothers eat during pregnancy and how much stress they are experiencing. This can have long-lasting implications for our mental and physical health in later life," explains Dr Alexander Jones, an epidemiologist, who led the study at the University of Southampton.

"This is the first time we've been able to link growth before birth to brain activity many years later. We hope this research can begin to shed new light on why certain people are more prone to diseases such as depression."

Therapy

Therapy May Be Possible Up To 2 Days after a Stroke (Medical News Today; 21.2.2011)

The opportunities to treat a stroke have long been limited to the hours after an attack. The loss of brain function caused by the stroke has previously been regarded as permanent. Brain researchers at Lund University have now discovered a substance that opens up the possibility of treatment up to two days after a stroke.

The only acute treatment for a stroke currently available is thrombolysis. This uses drugs that dissolve the blood clot responsible for the stroke, but it only reaches around 10 per cent of stroke patients in time to prevent lasting damage. For other patients, there are no other effective drugs that reduce the loss of brain function following a stroke.

Researchers at the Laboratory for Experimental Brain Research in Lund, together with American researchers, have discovered a substance that reinforces the brain's self-healing functions after a stroke. It has long been known that people affected by a stroke can regain some lost function during the first six months. Professor Tadeusz Wieloch and his colleagues have found a way to activate a protein in the brain, the sigma-1 receptor, which plays an important role in the brain's recovery during the critical period after the injury.

The study, which is published in the scientific journal *Brain*, began with experiments on rats. The animals were subjected to a stroke and then placed in different environments - an enriched cage with extra stimulation in the form of several levels of tubes, beams and ladders, and a normal cage.

"After performing a genetic analysis of the rats that stayed in the normal cage and those that were in an enriched cage, we found that many genes were activated by the enriched environment. One of these genes coded for the protein sigma-1 receptor. We then injected the rats with a specific substance that activated the sigma-1 receptor and found that the rats regained their function more quickly than the untreated animals", explains Professor Wieloch.

The idea is to recreate and reinforce the brain's natural response to an enriched environment. By injecting the activating substance, brain repair is stimulated. This result of Swedish basic research, which started over 15 years ago, has led to a clinical trial on stroke patients by a Japanese pharmaceutical company.

"We are very pleased that our research on stroke here in Lund has made it all the way from our experiments in the lab to an international clinical trial", says Professor Wieloch.

"This is an excellent example of how basic research can be translated into a healthcare setting and possibly lead to new and better therapies. It also exemplifies the fact that, within medical research, it is a long journey from experimental studies to results that benefit the patient", says Professor Wieloch.

Cell Phone

Cell Phone Use May Have Effect on Brain Activity, but Health Consequences Unknown (Science Daily; 23.2.2011)

In a preliminary study, researchers found that 50-minute cell phone use was associated with increased brain glucose metabolism (a marker of brain activity) in the region closest to the phone antenna, but the finding is of unknown clinical significance, according to a study in the February 23 issue of JAMA.

The dramatic worldwide increase in use of cellular telephones has prompted concerns regarding potential harmful effects of exposure to radiofrequency-modulated electromagnetic fields (RF-EMFs). Of particular concern has been the potential carcinogenic effects from the RF-EMF emissions of cell phones. However, epidemiologic studies of the association between cell phone use and prevalence of brain tumors have been inconsistent (some, but not all, studies showed increased risk), and the issue remains unresolved," according to background information in the article. The authors add that studies performed in humans to investigate the effects of RF-EMF exposures from cell phones have yielded variable results, highlighting the need for studies to document whether RF-EMFs from cell phone use affects brain function in humans.

Nora D. Volkow, M.D., of the National Institutes of Health, Bethesda, Md., and colleagues conducted a study to assess if cell phone exposure affected regional activity in the human brain. The randomized study, conducted between January 1 and December 31, 2009, included 47 participants. Cell phones were placed on the left and right ears and brain imaging was performed with positron emission tomography (PET) with (18F)fluorodeoxyglucose injection, used to measure brain glucose metabolism twice, once with the right cell phone activated (sound muted) for 50 minutes ("on" condition) and once with both cell phones deactivated ("off" condition). Analysis was conducted to verify the association of metabolism and estimated amplitude of radiofrequency-modulated electromagnetic waves emitted by the cell phone. The PET scans were compared to assess the effect of cell phone use on brain glucose metabolism.

The researchers found that whole-brain metabolism did not differ between the on and off conditions. However, there were significant regional effects. Metabolism in the brain region closest to the antenna (orbitofrontal cortex and temporal pole) was significantly higher (approximately 7 percent) for cell phone on than for cell phone off conditions. "The increases were significantly correlated with the estimated electromagnetic field amplitudes both for absolute metabolism and normalized metabolism," the authors write. "This indicates that the regions expected to have the greater absorption of RF-EMFs from the cell phone exposure were the ones that showed the larger increases in glucose metabolism."

"These results provide evidence that the human brain is sensitive to the effects of RF-EMFs from acute cell phone exposures," the researchers write. They add that the mechanisms by which RF-EMFs could affect brain glucose metabolism are unclear.

"Concern has been raised by the possibility that RF-EMFs emitted by cell phones may induce brain cancer. ... Results of this study provide evidence that acute cell phone exposure affects

brain metabolic activity. However, these results provide no information as to their relevance regarding potential carcinogenic effects (or lack of such effects) from chronic cell phone use."

"Further studies are needed to assess if these effects could have potential long-term harmful consequences," the authors conclude.

Editorial: Cell Phone Radiofrequency Radiation Exposure and Brain Glucose Metabolism

The results of this study add information about the possible effects of radiofrequency emissions from wireless phones on brain activity, write Henry Lai, Ph.D., of the University of Washington, Seattle, and Lennart Hardell, M.D., Ph.D., of University Hospital, Orebro, Sweden, in an accompanying editorial.

"Although the biological significance, if any, of increased glucose metabolism from acute cell phone exposure is unknown, the results warrant further investigation. An important question is whether glucose metabolism in the brain would be chronically increased from regular use of a wireless phone with higher radiofrequency energy than those used in the current study. Potential acute and chronic health effects need to be clarified. Much has to be done to further investigate and understand these effects."

The editorial authors also question whether the findings of Volkow et al may be a marker of other alterations in brain function from radiofrequency emissions, such as neurotransmitter and neurochemical activities? "If so, this might have effects on other organs, leading to unwanted physiological responses. Further studies on biomarkers of functional brain changes from exposure to radiofrequency radiation are definitely warranted."

Enzyme

Blocking Enzyme Could Halt Breast Cancer Spread (Medical News Today: 23.2.2011)

Developing a new drug that blocks a key enzyme could stop breast cancer spreading to other parts of the body, according to a new UK study.

Dr Janine Erler at the Institute of Cancer Research (ICR) in London, and colleagues, used lab models to show that blocking the enzyme lysyl oxidase-like 2 (LOXL2) reduced the spread of the cancer from the breast to the lungs, liver and bone.

You can read about their findings in the journal Cancer Research, where an early edition of their paper first appeared online on 13 January.

Metastasis, is where cancer spreads from the primary tumor to other parts of the body. In breast cancer this process is complex and involves several stages.

Once metastases, or tumors in other parts of the body that came from the primary breast cancer tumor, are detected, the median survival is less than two years, which is why it is so important to develop effective new treatments for patients with aggressive breast cancer.

Analysis of data already available shows that LOXL2 expression is linked with spread and decreased survival in patients with aggressive breast cancer, wrote Erler and colleagues in their background information.

LOXL2 has also been linked to the spread of other cancers including colon, esophageal and squamous cell cancers, so any findings from this study have knock on effects in these other cancer types too.

For this pre-clinical study, Erler and colleagues looked at how LOXL2 behaves in breast cancer spread, in both patient samples and models based on lab animals.

They found that in breast cancer occurring both normally and genetically induced in lab animals with both compromised and competent immune systems, it was possible to inhibit LOXL2 genetically, chemically and using antibodies and demonstrated that this led to reduced metastasis.

When they investigated the underlying mechanism, they found LOXL2 helped cancer cells invade surrounding tissue by regulating the expression and activity of two proteins that operate from cell to cell: TIMP1 and MMP9. Other studies have suggested these two proteins play important roles in allowing cancer to spread.

They also found that LOXL2, TIMP1 and MMP9 are expressed together during the period when mammary glands revert from being producers of milk during lactation, to their pre-pregnant non-lactation state ("mammary gland involution"), suggesting they collaborate in the remodeling of the glands after weaning.

The researchers concluded that their findings highlight the important role that LOXL2 plays in the progression of breast cancer, and suggest drugs that block its action could be used to treat women with advanced breast cancer.

Erler told the press that:

"Around 12,000 women die from breast cancer in the UK each year, most because their cancer has spread to other parts of their body."

"Our study shows that inhibiting the action of LOXL2 can significantly reduce the spread of breast cancer, suggesting that drugs which block this enzyme may be effective in preventing patients' cancer from spreading," she added.

Erler and colleagues also found, using samples from patients with breast cancer, that high levels of LOXL2 are linked to cancer spread and poor prognosis.

First author Dr Holly Barker, a postdoctoral fellow in Erler's lab, said:

"This raises the possibility that we could develop a test to measure LOXL2 levels and predict patients who will develop aggressive disease."

"This knowledge could help us tailor treatment type and intensity to individual patients," she added.

Cell phone

Just 50 min on cell phone can alter brain activity (The Times of India)

But Experts Unclear If The Changes Signal Harmful Effect On User's Health

Chicago: Spending 50 minutes with a cellphone plastered to your ear is enough to change brain cell activity in the part of the brain closest to the antenna. But whether that causes any harm is not clear, scientists at the National Institutes of Health said on Tuesday, adding that the study will likely not settle recurring concerns of a link between cellphones and brain cancer.

“What we showed is glucose metabolism (a sign of brain activity) increases in the brain in people who were exposed to a cellphone in the area closest to the antenna,” said Dr Nora Volkow of the NIH, whose study was published in the Journal of the American Medical Association. The study was meant to examine how the brain reacts to electromagnetic fields caused by wireless phone signals. Volkow said she was surprised that the weak electromagnetic radiation from cellphones could affect brain activity, but she said the findings do not shed any light on whether cellphones cause cancer. “This study does not in any way indicate that. What the study does is to show the human brain is sensitive to electromagnetic radiation from cellphone exposures.” Use of the devices has increased dramatically since they were introduced in the early-to-mid 1980s, with about 5 billion mobile phones now in use worldwide.

Some studies have linked cellphone exposure to an increased risk of brain cancers, but a large study by the World Health Organization was inconclusive. Volkow's team studied 47 people who had brain scans while a cellphone was turned on for 50 minutes and another while the phone was turned off. While there was no overall change in brain metabolism, they found a 7% increase in brain metabolism in the region closest to the cellphone antenna when the phone was on.

Experts said the results were intriguing, but urged that they be interpreted with caution. “Although the biological significance, if any, of increased glucose metabolism from acute cellphone exposure is unknown, the results warrant further investigation,” Henry Lai of the University of Washington, Seattle, and Dr Lennart Hardell of University Hospital in Orebro, Sweden, wrote in a commentary. REUTERS

WHAT LIES BENEATH: Although the study shows that weak electromagnetic radiation from cellphones affects brain activity, whether it can cause cancer is yet to be conclusively proved

Microbes

Microbes Help Children Breathe Easily? Bacteria and Fungi May Offer Protection Against Asthma, Study Suggests (Science Daily: 24.2.2011)

Children who grow up on farms are less likely to suffer from asthma than other rural children. An international team of researchers including Dr. Markus Ege and Professor Erika von Mutius at Ludwig-Maximilians-Universität (LMU) has published a large-scale study that now indicates that this may be due to differences in the spectrum of microbes the two groups are likely to encounter. This findings suggest that certain microorganisms may protect against the disease.

The incidence of asthma among children in Europe continues to rise. But not all children are equally at risk. Several studies published over the past few years have shown that children living on farms are significantly less likely to develop asthma than others. An international team of researchers including Dr. Markus Ege and Professor Erika von Mutius of Children's Surgical Clinic in the Dr. von Hauner Children's Hospital (Medical Center of the University of Munich) has just published an epidemiological study that confirms this finding. It shows that the lower susceptibility of farm children to asthma can largely be accounted for by the fact that they are exposed to a greater variety of microorganisms than other children living in the same regions. The physiological mechanisms underlying the effect remain to be elucidated, but the investigators have identified several species that might be responsible for the reduction in asthma risk. The results have broad implications for the prevention of asthma in other sectors of the population. "We have a long way to go before we can present new preventive measures, but at least we now have candidates for the development of a vaccine," says Ege. (New England Journal of Medicine online, 24 February 2011) Asthma is among the most prevalent chronic illnesses among children in Europe, and in many cases the condition will remain with them all their lives.

This is why asthma presents such a challenge for health-care systems. The disease results from a combination of genetic and environmental factors, and various studies have shown that farm children have a significantly lower risk of developing the condition than other children. In order to identify the reasons for this difference, LMU researchers selected a group of Bavarian schoolchildren for detailed study. In the context of two large-scale, pan-European, epidemiological projects, named GABRIEL and PARSIFAL, Ege and his colleagues compared children living on farms with others from the same rural districts who had little direct contact with farms.

In the new work, the investigators focused on the microbes present in domestic interiors. They collected household dust from children's bedrooms, and analyzed the bacterial and fungal DNAs in the samples. The results showed that farm children must cope with a much greater range of microorganisms than are children who live in other types of environment. The bacteria and fungi seem to act as guardians of health, for it turned out that the more diverse the microbial population, the lower the risk of asthma.

Exactly how the cells and spores perform this trick is still unclear, but the researchers suggest a couple of possible explanations. "One possibility is that a particular combination of microbial species stimulates the innate immune system and so prevents it from entering a state that promotes the development of asthma," says Ege. Another model proposes that continuous exposure to many different microorganisms makes it more difficult for the species that potentially induce asthma to become the dominant forms in the lower respiratory tract -- similarly to the gastrointestinal tract, where a balanced population of microbes is necessary for optimal organ function.

Microbial diversity alone, however, is not enough to prevent asthma. More probably, it takes a particular consortium of species to exert a protective effect. "Within the large spectrum of organisms that we examined, there are some that may be of special interest," reports Ege. "Among these are certain species of bacilli and staphylococci -- *Staphylococcus sciuri*, for instance -- as well as fungi of the genus *Eurotium*."

The next challenge facing the team is to elucidate, at the level of single species, the nature of the link between the microorganisms in household dust and the protective effect, with the long-term goal of identifying candidates that might serve as the basis of a live vaccine against asthma. In addition to the LMU researchers, investigators from the Technical University of Munich, the Universities of Besançon (France), Marseille (France), Ulm, Basel (Switzerland), Utrecht (The Netherlands) and Imperial College London (UK) participated in the study. The work was supported by the European Commission (GABRIEL and PARSIFAL) and by the DFG (Deutsche Forschungsgemeinschaft) as part of its Priority Program Transregio 22.

Surgery

Born without ear, boy gets one made from his ribs (The Times of India: 25.2.2011) Cartilage Taken From Rib Cage Used In 6-Hour Surgery

London: In what's being hailed as a surgical feat, British doctors claim to have created an ear for a nine-year-old boy, using cartilage from his ribcage.

A team of doctors at Royal Free Hospital in London has performed the six-hour-long operation on Ethan Giles-Bowman — born without a right ear due to his rare congenital condition called Hemi-facial Goldenhar Syndrome, the Daily Mail reported.

It was a painful process, but the schoolboy is more than delighted with the result and is very proud of his realistic-looking new ear, say his parents. Mother Kathryn Giles-Bowman, 33, from Sheffield, said: "It resulted in Ethan having to put up with a lot of pain and discomfort but he was determined he wanted to do it. Now he is fantastic, the first thing he wanted was to have his hair cut shorter, instead of hiding away underneath it and we're getting used to his new look.

"The change in him since then has been enormous. He is now much more outgoing. It is wonderful for me and his father to see him looking so happy and confident."

The family knew surgery was an option but they had to wait until he was physically big enough for surgeons to take enough cartilage.

The operation was carried out last September. Kathryn Giles-Bowman said when the bandages were removed after two days Ethan's face "lit up". "All his friends think it's really cool," she said.

At the moment the ear looks “pinned back” and a further operation will be carried out in April to take more cartilage and build up the ear further.

His father Richard Bowman, 41, said: “Ethan has had to live with the problem all his life, but he has just got on with things. He has been so brave and I am sure that he will be able to cope with further surgery. The whole family is proud of him.” Ethan added: “It’s just nice to feel normal now like my friends.”

PTSD Risk

Hormone May Explain PTSD Risk In Women (Medical News Today: 25.2.2011)

High blood levels of a stress hormone called PACAP may explain why women but not men have a much higher risk of developing post-traumatic stress disorder (PTSD), according to a new US study published online in Nature this week.

The researchers, from Emory University and the University of Vermont, also found that women with a certain "protective" variation of the gene that codes for the PACAP hormone's receptor had a lower rate of PTSD than men, even though they had experienced similar levels of trauma.

The identification of PACAP (short for pituitary adenylate cyclase-activating polypeptide), as an indicator of PTSD could lead to new ways of diagnosing, and one day treating, anxiety disorders. First author Dr Kerry Ressler, associate professor of psychiatry and behavioral sciences at Emory University School of Medicine in Atlanta, told the press their findings reveal a "new window" into the biology of PTSD.

"Few biological markers have been available for PTSD or for psychiatric diseases in general," said Ressler, who is also a researcher at the Yerkes National Primate Research Center. We already know that PACAP broadly regulates the stress response at the cellular level: it acts throughout the body and the brain, influencing the central nervous system, immune function, blood pressure, metabolism, and sensitivity to pain.

But, as the authors wrote in their background information, it is not clear if the biological pathway that PACAP operates with its receptor, PAC1, has a role in human psychological stress responses, such as PTSD.

For their study, Ressler and colleagues, used data from the Grady Trauma Project, which included more than 1,200 low-income residents of Atlanta who experienced high levels of violence, physical and sexual abuse, resulting in high rates of PTSD for a civilian population. Ressler, who is also a Howard Hughes Medical Institute Investigator, co-directs the Project with co-author Dr Bekh Bradley, an assistant professor of psychiatry and behavioral sciences at Emory and director of the Trauma Recovery Program at the Atlanta Veterans Affairs Medical Center.

The participants were patients who were attending the Grady Memorial Hospital in Atlanta. Starting in 2005, the researchers interviewed them in waiting rooms in the hospital's various primary care, ob-gyn and other clinics, and asked them to complete questionnaires about their life history, and give samples of blood and saliva.

The data showed that women, but not men, with high blood levels of PACAP showed more PTSD symptoms, such as finding it difficult to tell the difference between fear and safety signals, and being easily startled.

"Heart Attack Warning" - Clean Arteries Before Surgery. Painless, Fast, Safe & Easy - www.YourTicker.com/Angioprim

98% Thyroid Disease Cured - 100% Natural Herbs, with TGA, GMP, SGS. Thousands of recovery cases! - www.greenlife-herbal.com

Medical tour Korea - Info on Medical Services in Korea. Search Hospitals, Treatments & More - Medicalkorea.or.kr

In a group of 64 people, where most of them had been through significant traumatic events, women who had above average blood levels of PACAP had PTSD symptom scores five times those of women whose PACAP levels were below average.

The researchers also found that a variation in the gene for PACAP's receptor PAC1, which may affect how the gene responds to estrogen, was also linked to PTSD diagnosis and symptoms in women only.

But, Ressler pointed out, among men and women who had experienced similar levels of trauma, they found that women with a more protective variation of the PAC1 gene had lower PTSD rates than men, while those with the variation that conferred higher risk, had higher rates of PTSD than men.

"What this says is that men and women who have been traumatized may arrive at PTSD by different biological pathways," said Ressler.

"In this case, we have a clue how that works, in that the genetic data point to changes in the ability to respond to estrogen," he added.

One of his co-authors, Dr Sayamwong "Jom" Hammack, was previously a postdoctoral fellow at Yerkes National Primate Research Center, and is now Assistant Professor of Psychology at the University of Vermont, where in previous experiments with rats, they found that under stress, PACAP increases ten-fold in a part of the brain called the BNST (bed nucleus of the stria terminalis), which is thought to be important for anxiety behavior.

Hammack said that:

"In the brain, PACAP can activate brain cells, and it is also neurotrophic, helping brain cells survive, grow and form connections."

"In many brain areas, this is great, but in others, such as those involved in sustained anxiety behavior, this might not be so good," he added.

The researchers hope that more studies like this will help diagnose PTSD and similar anxiety disorders separately from other behavioral disorders, and perhaps even help identify which people in high stressed jobs and work environments might be more prone to developing PTSD. Note that this study relied on samples collected after PTSD developed, and some experts might want to know how many of the physiological effects were already there before the trauma, and if so, how this might influence the results. Ressler said it was important to see if the same findings occur in other groups, including veterans with PTSD.

Also, it would be useful to find out if PACAP increases in the brain and blood as PTSD develops, as this would help establish if drugs that act against it might help. "Post-traumatic stress disorder is associated with PACAP and the PAC1 receptor."

Anti-Inflammatory Statins

Anti-Inflammatory Statins And HIV, A New Treatment? (Medical News Today: 25.2.2011)

There may be a potential breakthrough in HIV treatment as new research shows that statins may hinder the progression of the worldwide epidemic. Evidence from both clinical trials and basic science studies suggest that statins have anti-inflammatory properties, which may additionally lead to clinical efficacy. Measurement of markers of inflammation such as high sensitivity C-reactive protein in addition to lipid parameters may help identify those patients who will benefit most from statin therapy.

Researchers recruited 24 participants to randomly take either a high dose of Lipitor (atorvastatin) or a placebo. Lipitor, manufactured by Pfizer, by 2003 it had become the best-selling pharmaceutical in history, with Pfizer reporting sales of \$12.4 billion in 2008.

Participating patients, in two groups who took no AIDS medications and their cholesterol levels weren't high enough to require taking statins. Neither group knew which pills they were taking. The drugs didn't affect levels of HIV in the 22 patients who remained in the study, but the medications did appear to curb their immune systems, reducing the inflammatory response.

Andrew Carr, a professor of medicine at the University of New South Wales in Sydney, Australia stated:

"Persistent inflammation in patients with HIV, especially those on HIV treatment, has been associated with a worse clinical outcome. The cause of this inflammation remains unknown."

It's not unusual for HIV patients to take these cholesterol-lowering drugs, because the medications commonly used to combat HIV can cause cholesterol levels to skyrocket. Inflammation caused by the immune system is associated with HIV progression and death, and scientists have long wondered if statins' anti-inflammatory properties might have benefits for HIV patients besides reducing the risk of cardiovascular disease .

Carr continues:

"For doctors, we should be studying the effects of statins over longer periods in patients with treated HIV disease whose virus is well-controlled but who still have excess inflammation to see

if the anti-inflammatory effect of statins is still observed. If so, we would then need to determine if this anti-inflammatory effect improved health outcomes, which would require a long and very large study."

Statins act by competitively inhibiting HMG-CoA reductase, the first committed enzyme of the HMG-CoA reductase pathway. Because statins are similar to HMG-CoA on a molecular level, they take the place of HMG-CoA in the enzyme and reduce the rate by which it is able to produce mevalonate, the next molecule in the cascade that eventually produces cholesterol, as well as a number of other compounds. This ultimately reduces cholesterol via several mechanisms.

Phase III study - Clinical study accepts patients with anaplastic astrocytoma. - www.anticancer.de/astrocytoma-study

Parkinson Disease Therapy - Role of MAO-B enzymes in Parkinsons pathogenesis and use in treatment - www.touchneurology.com

Hypertension - High BP - A natural treatment by Ayurveda Improves quality of life - Cowurine.com/ConsultUs

As of 2010, a number of statins are on the market: atorvastatin (Lipitor and Torvast), fluvastatin (Lescol), lovastatin (Mevacor, Altocor, Altoprev), pitavastatin (Livalo, Pitava), pravastatin (Pravachol, Selektine, Lipostat), rosuvastatin (Crestor) and simvastatin (Zocor, Lipex). Several combination preparations of a statin and another agent, such as ezetimibe/simvastatin, sold as Vytorin, are also available.

Most individuals are placed on statins because of high levels of cholesterol. Though reduction of cholesterol is important, heart disease is complex and, as discussed previously, other factors such as inflammation may play a role. Thirty five percent of individuals who develop heart attacks do not have high blood cholesterol levels, yet most of them have atherosclerosis. This means that high levels of cholesterol are not always necessary for atherosclerotic plaques to form.

Cell phone

A cell phone app that spots cancer more accurately (The Times of India; 28.2.2011)

Scientists have developed a mobile phone-based system which they say can detect cancer more accurately than the techniques routinely used in hospitals.

Developed by a team at the Massachusetts General Hospital in Boston, the device is claimed to be up to 100% accurate at telling the difference between benign tumours and their malignant counterparts.

It also takes just an hour to make the diagnosis, meaning patients don't have to spend days or weeks anxiously waiting for test results, the researchers said. The gadget, they believe, could

“transform cancer care” by also making it easier for doctors to track how well drugs are fighting the disease in a patient’s body, the Daily Mail reported. The researchers found that in initial tests, the device was 88 per cent accurate in distinguishing cancerous stomach tumours from benign growths.

Refining the technique boosted accuracy to 100%. The device, which is likely to cost about £60 or so, consists of a smartphone connected to a miniature MRI machine. In tests, patients with suspected stomach cancer had tiny samples of their growths removed using a fine needle. The researchers then added in antibodies designed to bind to proteins found in stomach tumours and tiny magnetic particles designed to latch onto the antibodies. They then used the magnet in the MRI machine to excite the molecules in the sample, making them vibrate. The more the molecules vibrate, the more likely the sample is cancerous, the researchers found.

Mobile - phone based system

Mobile that Spot Cancer (The Asian Age: 28.2.2011)

Scientists have developed a mobile phonebased system which they say can detect cancer more accurately than the techniques routinely used in hospitals.

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The gadget, they believe, could “transform cancer care” by also making it easier for doctors to track how well drugs are fighting the disease in a patient’s body, the Daily Mail reported.

Vitamin D Intake

Markedly Higher Vitamin D Intake Needed to Reduce Cancer Risk, Researchers Say(Science Daily: 28.2.2011)

Researchers at the University of California, San Diego School of Medicine and Creighton University School of Medicine in Omaha have reported that markedly higher intake of vitamin D is needed to reach blood levels that can prevent or markedly cut the incidence of breast cancer and several other major diseases than had been originally thought.

The findings are published February 21 in the journal Anticancer Research.

While these levels are higher than traditional intakes, they are largely in a range deemed safe for daily use in a December 2010 report from the National Academy of Sciences Institute of Medicine.

"We found that daily intakes of vitamin D by adults in the range of 4000-8000 IU are needed to maintain blood levels of vitamin D metabolites in the range needed to reduce by about half the risk of several diseases -- breast cancer, colon cancer, multiple sclerosis, and type 1 diabetes," said Cedric Garland, DrPH, professor of family and preventive medicine at UC San Diego Moores Cancer Center. "I was surprised to find that the intakes required to maintain vitamin D status for disease prevention were so high -- much higher than the minimal intake of vitamin D of 400 IU/day that was needed to defeat rickets in the 20th century."

"I was not surprised by this" said Robert P. Heaney, MD, of Creighton University, a distinguished biomedical scientist who has studied vitamin D need for several decades. "This result was what our dose-response studies predicted, but it took a study such as this, of people leading their everyday lives, to confirm it."

The study reports on a survey of several thousand volunteers who were taking vitamin D supplements in the dosage range from 1000 to 10,000 IU/day. Blood studies were conducted to determine the level of 25-vitamin D -- the form in which almost all vitamin D circulates in the blood.

"Most scientists who are actively working with vitamin D now believe that 40 to 60 ng/ml is the appropriate target concentration of 25-vitamin D in the blood for preventing the major vitamin D-deficiency related diseases, and have joined in a letter on this topic," said Garland. "Unfortunately, according a recent National Health and Nutrition Examination Survey, only 10 percent of the US population has levels in this range, mainly people who work outdoors."

Interest in larger doses was spurred in December of last year, when a National Academy of Sciences Institute of Medicine committee identified 4000 IU/day of vitamin D as safe for every day use by adults and children nine years and older, with intakes in the range of 1000-3000 IU/day for infants and children through age eight years old.

While the IOM committee states that 4000 IU/day is a safe dosage, the recommended minimum daily intake is only 600 IU/day.

"Now that the results of this study are in, it will become common for almost every adult to take 4000 IU/day," Garland said. "This is comfortably under the 10,000 IU/day that the IOM Committee Report considers as the lower limit of risk, and the benefits are substantial." He added that people who may have contraindications should discuss their vitamin D needs with their family doctor.

"Now is the time for virtually everyone to take more vitamin D to help prevent some major types of cancer, several other serious illnesses, and fractures," said Heaney.

Immune Molecule Regulates

Immune Molecule Regulates Brain Connections (Science Daily: 28.2.2011)

The number of connections between nerve cells in the brain can be regulated by an immune system molecule, according to a new study from UC Davis. The research, published Feb. 27 in the journal *Nature Neuroscience*, reveals a potential link between immunity, infectious disease and conditions such as schizophrenia or autism.

Schizophrenia, autism and other disorders are associated with changes in connectivity in the brain, said Kimberley McAllister, associate professor in the Center for Neuroscience and Departments of Neurology and Neurobiology, Physiology and Behavior at UC Davis. Those changes affect the ability of the brain to process information correctly.

"Certain immune genes and immune dysregulation have also been associated with autism and schizophrenia, and the immune molecules that we study in brain development could be a pathway that contributes to that altered connectivity," McAllister said.

The study does not show a direct link between immune responses and autism, but rather reveals a molecular pathway through which a peripheral immune response or particular genetic profile could alter early brain development, McAllister said.

The researchers looked at a protein called Major Histocompatibility Complex type 1 (MHC type I). In both rodents and humans, these proteins vary between individuals, and allow the immune system to distinguish between 'self' and 'non-self.' They play a role, for example, in rejecting transplanted organs and in defending against cancer and virus infections.

In this and another recently published study, McAllister's group found that MHC type I molecules are present on young brain cells during early postnatal development. To test their function, they studied mice lacking MHC type I on the surface of neurons, as well as isolated neurons from mice and rats with altered levels of MHC type I. They found that when the density of these molecules on the surface of a brain cell goes up, the number of connections, or synapses, it has with neighboring brain cells goes down. The reverse was also true: decreased MHC expression increased synaptic connections.

"The effect on synapse density was mediated through MHC type I proteins," McAllister said.

"But these immune proteins don't just regulate synapse density, they also determine the balance of excitation and inhibition on young neurons -- a property critical for information processing and plasticity in young brains."

Expression of MHCI on neurons was itself regulated by neural activity, the team found, and MHCI mediated the ability of neural activity to alter synaptic connections.

About 10 years ago, other researchers discovered that MHC type I is involved in elimination of connections during a critical period of late postnatal brain development.

"We have now found that there is another role for MHC type I in establishing connections during early postnatal development of the brain," McAllister said.

Insolate gene

Scientists isolate gene in self-healing skin cancer (New Kerala: 1.3.2011)

Scientists have isolated a gene involved in a rare, self-healing skin cancer, which could open the way to newer treatments for other types of cancers.

The multiple self-healing squamous epithelioma (MSSE) skin cancer grows rapidly but then a few weeks later, heals on its own.

Faults in the gene TGFBR1 is believed to cause the cancer and then subsequently heal it, the journal Nature Genetics reports.

The gene helps make a protein through which cells receive messages from neighbours, instructing them to carry out jobs essential to growth and development, according to the Telegraph.

But malignant cells interpret the "instructions" transmitted by TGFBR1 in two different ways, depending on the maturity of the tumour.

TGFBR1 initially prevents the growth of early tumours of various types but when cancers spread, their cells undergo a 'signalling switch'.

In more advanced cancers, TGFBR1 promotes tumour growth and spread instead. The reverse happens with MSSE, which is caused by an inherited fault in the TGFBR1 gene.

Scientists, based at the University of Dundee, made the discovery after examining the DNA of more than 60 people with MSSE and 110 of their unaffected relatives.

David Goudie, Cancer Research UK scientist at the university, said: "We hope that by shedding light on how one rare cancer manages to heal itself we'll understand more about what goes wrong in other types of tumours."

Genetic fault

Genetic fault that causes rare self-healing skin cancer identified (New Kerala: 1.3.2011)

Researchers have identified a key genetic fault that causes a rare skin cancer to spread and then spontaneously heal itself.

The identification of this rare cancer, known as multiple self-healing squamous epithelioma (MSSE) or Ferguson-Smith disease, could pave the way for new drugs to treat other types of the disease, scientists have claimed.

According to the study, the disease is caused by faults in a gene called TGFBR1, reports the Telegraph.

Researchers from the University of Dundee made the discovery after examining the DNA of more than 60 people with MSSE and 110 of their unaffected relatives.

They found that the TGFBR1 gene makes a protein through which cells receive messages from their neighbours, instructing them to carry out jobs essential to growth and development.

TGFBR1 acts as a 'brake' preventing the growth of early tumours of various types but when cancers become more advanced and aggressive, the gene can switch and promote the growth and spread of the tumour instead.

However, the reverse happens with MSSE, which is caused by an inherited fault in the TGFBR1 gene.

Patients with faulty TGFBR1 develop lots of small tumours. But at some point there is a 'switch' in behaviour and the tumours lacking TGFBR1 heal themselves. Scientists do not yet understand how this happens.

"We hope that by shedding light on how one rare cancer manages to heal itself we'll understand more about what goes wrong in other types of tumours," said David Goudie, Cancer Research UK scientist at the university.

Fish pedicure

Fish pedicure could spread infection and disease, warn experts (New Kerala: 1.3.2011)

The latest beauty craze-fish pedicures-offered in salons and spas across the world have raised serious health concerns.

British experts are worried that the trend that is sweeping the country could spread infection and disease, reports the Daily Mail.

The Health Protection Agency is investigating after the treatment was banned by 14 American states.

The treatment, which costs between 10 and 50 pounds, involves customers dunking their feet in tanks to have their dead skin nibbled away by scores of Turkish miniature toothless carp.

But it has been revealed the pedicures using the garra rufa fish could spread infection from person to person through open wounds.

Salons said they use UV-lit tanks, which are constantly filtered to keep them clear of disease.

But the therapy's opponents said that unlike usual salon rules, which compel staff to throw away or sanitise tools after each use, the epidermis-eating fish are too expensive to discard.

The agency began investigating after being contacted by environmental health officers.

"The HPA will examine the most up-to-date evidence of any possible risks associated with garra rufa fish pedicures," said an agency spokesman.

New Personalized Therapy

New Personalized Therapy Causes Cancer Cells to Kill Themselves(Science daily: 1.3.2011)

A Wayne State University School of Medicine physician-researcher has developed a personalized therapy to treat a wide range of cancers. The treatment is based on a naturally occurring human enzyme that has been genetically modified to fool cancer cells into killing themselves.

The unique concept, patented by Wayne State University, was successfully demonstrated on melanoma cells that are resistant to routine treatments such as chemotherapy or radiotherapy. Melanoma is a perfect model for testing this new therapy because it is considered the most aggressive form of human cancer due to its many defense mechanisms against available treatments. The success of the therapy in killing melanoma suggests a similar outcome in treating other cancers.

Developed by Karli Rosner, M.D., Ph.D., assistant professor and director of Research in the Department of Dermatology, the method uses genetic constructs that contain a genetically modified enzyme -- DNase1 protein -- to seek out and destroy cancer cells. The novel technology was published in the article "Engineering a waste management enzyme to overcome cancer resistance to apoptosis: adding DNase1 to the anti-cancer toolbox" in the Jan. 14 online edition of Cancer Gene Therapy, a Nature Publishing Group journal.

Dr. Rosner modified the genetic code for DNase1, a highly potent DNA-degrading enzyme, and altered its genetic composition by deleting a part of the code, mutating another part and adding an artificial piece of code. Through these changes, the altered DNA program is translated into a modified protein. In contrast to the natural protein, the modified protein will not be eliminated from the cancer cell, will resist deactivation by cell inhibitors and will gain access to the cell's nucleus. "If you imagine the cell's nucleus as a computer and DNA in the nucleus as computer software," Dr. Rosner explained, "then the altered, hacked DNA program corresponds to a computer virus."

"To further understand this anti-cancer technology," he continued, "recollect the plot from the movie, Independence Day. In this movie, a computer virus is introduced into an alien ship to

neutralize its defenses and make it vulnerable to external weapons. We do something similar but much better by introducing the altered genetic code of DNase1 into the DNA of cancer cells alien to the healthy body." The cancer cell, unaware of the destructive potential of the modified code, translates it into a protein that evades the cell's defense mechanisms and enters the nucleus. In the nucleus, the protein damages DNA by chopping it into fragments without the need for external weaponry, i.e., other medications. Following damage to DNA, the cell's organelles disintegrate and the cancer cell dies. In this way, Dr. Rosner's technology leads cancer cells into committing suicide because he fools them into generating the protein that will cause their own death.

The beauty of this therapy is that specifically-targeted cancer cells destroy themselves through the physiological mechanism of apoptosis, leaving surrounding healthy cells intact. This mode of cancer cell elimination leaves no residual debris to alert the immune system to kick in, essentially committing "the perfect crime," Dr. Rosner said. This is important because the many side effects of current anti-cancer treatments are attributed to activation of the immune system. The fact that this therapy does not require participation of the patient's immune system to kill cancer cells is a big advantage over other newly developed technologies, such as the cancer vaccine. Those technologies depend on the patient's immune system to destroy cancer. Unfortunately, they are not effective in the presence of a compromised immune system, which is true for many cancer patients. In contrast, Dr. Rosner's therapy will be able to treat even the most severely immuno-compromised patients with the same degree of success as in treating patients with a fully functional immune system.

Patients with the same cancer type vary in their response to identical treatment because the biological characteristics of the same cancer type usually differ between patients. As a result, the medical field strives to develop treatments that can be adjusted to each patient. The structure of Dr. Rosner's technology is flexible in that it contains Lego-like pieces that together form a genetic construct. Each piece can be replaced by one of several other genetic pieces that perform the same task, but differ slightly in their genetics. The multiple options available for each genetic piece will allow the physician to tailor the finalized treatment to each patient based on the unique characteristics of his or her cancer. In this way, the new technology is a "true personalized therapy" he said. The physician will expose a patient's cancer cells obtained by biopsy, to various genetic constructs to identify the version of therapy that kills the patient's cancer with the utmost efficiency.

Of particular importance is the potential for this technology to treat a large variety of tumors, such as prostate, lung and breast cancers. Dr. Rosner likened the therapy to the military's Tomahawk missile platform. The Tomahawk is directed to its target by programming the missile's homing device. Likewise, the destructive genetic construct can be targeted to a particular cancer type by incorporating a genetic piece that specifically identifies the cancer. Multiple genetic homing devices will be at the physician's disposal. The ability to target the therapy specifically to cancer cells will reduce side effects common with today's anti-cancer therapies. Moreover, the ability to target multiple cancers will immensely increase the number of cancer patients who will benefit from the new technology.

The one side effect that Dr. Rosner foresees is the potential for lightening of skin hue at a level that he cannot predict, but that's a tradeoff someone suffering from metastatic cancer and given a limited prognosis may accept in exchange for becoming cancer-free. To date, Dr. Rosner has demonstrated cancer cell kill rates of 70 to 100 percent with his first generation of "gene suicide therapy." To further increase the killing efficiency, he has recently designed a second generation of constructs. In the near future he intends to test the therapy in an animal model, an intermediate step required before moving the treatment into clinical trial.

Acupressure

Acupressure Effective in Helping to Treat Traumatic Brain Injury, Study Suggests(Science Daily: 1.3.2011)

A new University of Colorado Boulder study indicates an ancient form of complementary medicine may be effective in helping to treat people with mild traumatic brain injury, a finding that may have implications for some U.S. war veterans returning home.

The study involved a treatment known as acupressure in which one's fingertips are used to stimulate particular points on a person's body -- points similar to those stimulated with needles in standard acupuncture treatments, said CU-Boulder Professor Theresa Hernandez, lead study author. The results indicate a link between the acupressure treatments and enhanced cognitive function in study subjects with mild traumatic brain injury, or TBI.

"We found that the study subjects with mild traumatic brain injury who were treated with acupressure showed improved cognitive function, scoring significantly better on tests of working memory when compared to the TBI subjects in the placebo control group," said Hernandez, a professor in CU-Boulder's psychology and neuroscience department. "This suggests to us that acupressure could be an effective adjunct therapy for those suffering from TBI."

The acupressure treatment type used in the study is called Jin Shin. For the study, Hernandez and her colleagues targeted the 26 points on the human body used in standard Jin Shin treatments ranging from the head to the feet. The study subjects all received treatments by trained Jin Shin practitioners.

According to practitioners, Jin Shin acupressure points are found along "meridians" running through the body that are associated with specific energy pathways. It is believed that each point is tied to the health of specific body organs, as well as the entire body and brain, Hernandez said.

"Think of the meridians as freeways and the pressure points as towns along the way," she said. "When there is a traffic jam in Denver that causes adverse effects as far away as Boulder, clearing the energy blocks, or in this case traffic jams, helps improve flow and overall health."

The study involved 38 study subjects, each of whom was randomly assigned to one of two groups -- an experimental group that received active acupressure treatments from trained experts and a control group that received treatments from the same experts on places on the body that are not considered to be acupressure points, acting as a placebo. The study was "blinded," meaning the researchers collecting data and the study participants themselves did not know who was in the experimental group or the placebo group until the end of the study.

The team used a standard battery of neuropsychological tests to assess the results. In one test known as the Digit Span Test, subjects were asked to repeat strings of numbers after hearing them, in both forward and backward order, to see how many digits they could recall. Those subjects receiving active acupressure treatments showed increased memory function, said Hernandez.

A second standard psychology test used for the study, called the Stroop Task, measured working memory and attention. The test subjects were shown the names of colors like blue, green or red on a computer screen. When the names of the particular colors are viewed on the screen in a different color of ink -- like the word "green" spelled out in blue ink -- test subjects take longer to name the ink color and the results are more error-prone, according to Hernandez. The Stroop Test subjects in the CU-Boulder study wore special caps wired with electrodes to measure the brain activity tied to specific stimuli. The results showed those who received the active acupressure treatments responded to stimuli more rapidly than those who received the placebo treatments, Hernandez said.

"We were looking at synchronized neural activity in response to a stimulus, and our data suggest the brains of those in the active acupressure group responded differently when compared to those in the placebo acupressure group," she said.

A paper on the subject was published in the January issue of the Journal of Neurotrauma, a peer-reviewed publication on the latest advances in both clinical and laboratory investigations of traumatic brain and spinal cord injury. Co-authors on the study included CU-Boulder's Kristina McFadden, Kyle Healy, Miranda Dettman, Jesse Kaye and Associate Professor Tiffany Ito of psychology and neuroscience.

Funded by the Colorado Traumatic Brain Injury Trust Fund, the study is believed to be one of the first placebo-controlled studies ever published in a peer-reviewed medical journal showing the benefit of acupressure to treat patients with TBI, Hernandez said.

"We would like to see if the Jin Shin treatment is useful to military veterans returning home with traumatic brain injury, a signature wound prevalent in the wars in Iraq and Afghanistan," said Hernandez. The Jin Shin acupressure treatment can be taught to family and friends of those with TBI and can even be used as a self-treatment, which could allow for more independence, she said.

In a 2010 stroke study led by Hernandez, the researchers concluded that Jin Shin acupressure triggered a larger and faster relaxation response during active treatments and a decreased stress response following active treatments compared with what was seen in placebo treatments.

Hernandez and her colleagues are embarking on a new study on the use of Jin Shin acupressure in athletes to see if the enhanced relaxation response and decreased stress seen in the stroke study can reduce the likelihood of athletic injury.

In 2002, Hernandez partnered with former Colorado Rep. Todd Saliman to initiate the Colorado Traumatic Brain Injury Trust Fund, a statute that has generated nearly \$2 million to the state annually since 2004 from surcharges to traffic offenses like driving while impaired and speeding. Roughly 65 percent of the money goes toward rehabilitation and care services for individuals with TBI, about 30 percent goes for TBI research and 5 percent for TBI education. Because of the statute, nearly 4,000 Colorado citizens with TBI have received care and rehabilitation services for brain injuries.

Cannabis

Lethal high: Using cannabis doubles risk of psychosis (The Times of India: 3.3.2011)

People who use cannabis in their youth dramatically increase their risk of psychotic symptoms, and continued use of the drug can raise the risk of developing a psychotic disorder in later life, scientists said on Wednesday.

In a 10-year study of links between cannabis use and psychosis, Dutch researchers found cannabis use doubled the risk of later psychotic symptoms. Experts said the major challenge for health authorities was to deter enough young people from using cannabis so that rates of psychosis could be reduced.

“This study adds a further brick to the wall of evidence showing that use of traditional cannabis is a contributory cause of psychoses like schizophrenia,” said Robin Murray of the Institute of Psychiatry at Kings College London.

Cannabis is the most commonly used illicit drug, particularly among adolescents, and is increasingly linked to mental illness. But experts say it is not yet clear whether the link between cannabis and psychosis is causal, or whether it is because people with psychosis use cannabis to self-medicate to calm their symptoms.

New cell therapy

New cell therapy shows promise against atherosclerosis (New Kerala: 3.3.2011)

Washington, March 2 : A new study on mice has found that cell therapy can be used to reverse the effect of "bad" LDL cholesterol and reduce the inflammation that leads to atherosclerosis

And if the results obtained by researchers at Karolinska Institute prove translatable to humans, they study can open the way for new therapies for stroke and myocardial infarction.

Atherosclerosis is a chronic inflammation of the blood vessels. Cholesterol is transported in the blood in particles called LDL ("bad" cholesterol) that can accumulate in the vessel walls. This triggers the body's immune system to react against LDL, which then cause inflammation in the vessels, and eventually thrombus formation. If such a thrombus forms in the coronary artery, the patient suffers a myocardial infarction; if it forms in the brain, a stroke can result.

The research group, led by Professor Goran K Hansson at the Centre for Molecular Medicine, have developed a cell therapy that selectively dampens vascular inflammation induced by LDL. The therapy makes use of dendritic cells, which are characterized by a high degree of plasticity that renders them amenable to manipulation.

"With the appropriate treatment, dendritic cells can be made to inhibit rather than aggravate the inflammation around the LDL particles in the blood vessels", said Andreas Hermansson, one of the researchers conducting the study.

The mouse studies have demonstrated substantial protective effects of the treatment, with a reduction of the atherosclerosis process of up around 70 percent. The research is presented in the prestigious scientific journal *Circulation*.

13 new genes - Heart Diseases

Scientists find 13 new genes linked to heart diseases (New Kerala: 7.3.2011)

An international team of scientists has identified 13 new gene sites associated with the risk of coronary artery disease and validated 10 sites found in previous studies.

"We now have identified 23 specific genetic "letters" that appear to confer risk for myocardial infarction and other aspects of coronary artery disease," said Sekar Kathiresan at Massachusetts General Hospital.

"Knowing these sites lays the groundwork for isolating the genes responsible and developing new treatments based on those genes."

The team of 167 investigators at research centers around the world formed the Coronary ARtery DIsease Genomewide Replication and Meta-analysis (CARDIoGRAM) Consortium.

The researchers first assembled data from 14 previous GWAS (genome-wide association studies) for meta-analysis. They reviewed data from more than 22,000 individual with heart disease and almost 65,000 controls.

The most promising sites identified in the meta-analysis were then genotyped in another group of more than 56,600 individuals, about half with cardiac disease. The investigators also analyzed potential mechanisms and metabolic pathways by which newly identified variants might affect risk.

Results showed that 10 of 12 previously reported gene variants associated with coronary artery disease and identified 13 sites not previously reported.

Of the 23 variants validated in this study, seven are associated with LDL cholesterol levels and one with hypertension, but the others have no relation to known cardiovascular risk factors.

"The lack of apparent association with the risk factors we know so well is the source of a lot of excitement concerning these results," Kathiresan explained.

"If these variants do not act through known mechanisms, how do they confer risk for heart disease? It suggests there are new mechanisms we don't yet understand. Another good thing about these findings is that they are in human patients, not in cells or mice, which gives us a good starting point for figuring out new disease pathways."

The study appears in Nature Genetics.

Surgery

Surgery can help obese teens lose weight, shows study (New Kerala: 7.3.2011)

Bariatric surgery' refers to several different surgical procedures designed to assist weight loss by limiting the amount of A new study has shown that bariatric surgery can result in significant weight loss in severely obese food someone eats or the amount they absorb during digestion.

Ange Aikenhead of the International Association for the Study of Obesity in London, England, and his team searched various databases for articles examining subjects less than 19 years of age reporting at least one postoperative weight loss measure and at least one year of postoperative follow-up.

Thirty-seven relevant papers on bariatric surgery effectiveness in 831 children or adolescents were included, spanning 36 years. Thirteen studies examined gastric banding, with mean BMI reductions ranging from 8.5 to 43 kg/m². Weight gain was reported in three studies.

Three surgery-related mortalities were reported, and a range of postoperative complications was identified across surgery types.

"The obesity epidemic now affects children as well as adults, with obesity and its associated morbidities and costs increasing in scale," said Aikenhead.

"Establishing effective methods for treating severe obesity in children will not only reduce the prevalence of childhood obesity and related ill health, but inhibit the progression of obese children to obese adults, a crucial step in combating the epidemic."

The study is published in the journal *Clinical Obesity*.

Pluripotent Stem Cells

New Test for 'Pluripotent' Stem Cells (Science Daily: 7.3.2011)

"Pluripotent" stem cells -- which have the potential to mature into almost any cell in the body -- are being widely studied for their role in treating a vast array of human diseases and for generating cells and tissues for transplantation. Now, a team of Scripps Research Institute scientists has created a quality control diagnostic test that will make it much easier for researchers to determine whether their cell lines are normal pluripotent cells.

The study was published in an online version of *Nature Methods* on March 6, 2011.

"Many scientists are unhappy with the current gold standard for testing for pluripotency, called the teratoma assay," said Scripps Research molecular biologist Jeanne Loring, principal investigator of the study. "The teratoma assay requires animal testing and a time span of six to eight weeks before scientists can prove that they have a pluripotent stem cell line. In addition, this method is technically challenging and difficult to standardize."

The new test, called "PluriTest," meets the need for a cost-effective, accurate, animal-free alternative to the teratoma assay for assessing pluripotency. Using microarray technology, which enables the simultaneous analysis of thousands of different DNA sequences, the Scripps Research team created a large database of information about all the genes that are active in hundreds of normal human embryonic and induced pluripotent stem cells and a variety of non-pluripotent cell lines. For PluriTest, this database was used to create a detailed molecular model of a normal pluripotent stem cell line.

"Unlike diagnostic tests that use small sets of biomarkers to examine cells, the molecular model approach uses all of the thousands of pieces of information in a microarray," Loring said. "This results in a diagnostic test with remarkable sensitivity and specificity." Scientists upload raw data

straight from a single microarray analysis to the PluriTest website and learn within 10 minutes whether their cell line is pluripotent.

An additional feature of the PluriTest diagnostic test is that it can show whether a cell that is pluripotent is different in some way from the normal model pluripotent cell line. For example, a "novelty score" generated by the software may indicate that the pluripotent cells have genomic aberrations such as extra copies of genes or chromosomes. This feature would alert the researcher to do additional analysis on the cells to determine what is causing the abnormality.

A first author of the study, Franz-Josef Mueller, said, "Scientists are making new induced pluripotent stem cell lines at a rapid pace to understand human disease, test new drugs, and develop regenerative therapies. Thousands of induced pluripotent stem cell lines have already been generated and soon there will be many more thousands. PluriTest is designed to enable the growth of this technology."

The study was supported by the California Institute for Regenerative Medicine, the National Institutes of Health, the Bill and Melinda Gates Foundation, the Esther O'Keeffe Foundation, New York State Stem Cell Science, Bayer Technology Services GmbH, the Deutsche Forschungsgemeinschaft, an Else-Kröner Fresenius Stiftung fellowship.

Kidney Transplantation

Kidney Transplantation Not Equally Available to All (Med India: 7.3.2011)

Not all racial and ethnic groups have equal access to kidney transplantation, according to a study appearing in an upcoming issue of the Journal of the American Society Nephrology (JASN). The results indicate that the reasons for these disparities are varied and that more focused efforts are needed to address them.

For most individuals who develop kidney failure or end-stage renal disease, kidney transplantation is the best treatment option. Unfortunately, certain racial and ethnic groups are less likely to receive kidney transplants than others. Despite the increasing diversity of patients on dialysis who need kidney transplants, no prior studies had comprehensively compared the barriers to transplantation among different racial and ethnic groups.

Yoshio Hall, MD (University of Washington, Seattle) and his colleagues investigated the rates and determinants of waitlisting and deceased-donor kidney transplantation among 503,090 non-elderly adults of different racial and ethnic groups who initiated dialysis between 1995 and 2006. They followed the patients through 2008.

The researchers found that the annual crude rates of deceased-donor transplantation from the time of dialysis initiation were lowest in American Indians/Alaska Natives (2.4%) and blacks

(2.8%), intermediate in Pacific Islanders (3.1%) and Hispanics (3.2%), and highest in non-Hispanic whites (5.9%) and Asians (6.4%).

The reasons for these differences in rates varied among racial and ethnic groups: blacks, American Indians, and Alaska Natives face continued difficulty in accessing transplant waitlists, primarily due to socioeconomic factors, while Hispanics and Pacific Islanders encounter delays from waitlists, which may be negatively influenced by regional organ availability, linguistic isolation, and perhaps cultural isolation. "Looking forward, our study suggests that interventions to address local population-specific barriers to transplantation may help to reduce overall racial, ethnic, and socioeconomic disparities in accessing kidney transplantation," said Dr. Hall.

Diamonds

Diamonds may help fight hard-to-treat cancers (New Kerala: 11.3.2011)

Diamonds are considered women's best friend, but it could soon become a cancer patient's best friend too- thanks to a new study.

Researchers from the Northwestern University in Evanston, Illinois, have discovered that attaching chemotherapy drugs to tiny carbon particles called nanodiamonds could offer an effective drug delivery solution for hard-to-treat cancers.

The research shows promise because anticancer drug resistance often causes 90 percent of treatment failure in malignant cancer, reports Nature.

Nanodiamonds are carbon-based particles between 2 and 8 nanometers in diameter, with a truncated octahedral structure. They are non-toxic and do not cause inflammation. They are also cheap to produce in large quantities.

Lead researcher Dean Ho and his colleagues tested the technique in mouse models with liver and breast cancers by attaching anti-cancer drug doxorubicin to nanodiamonds.

They treated one group with the doxorubicin-nanodiamond complexes and another group with the drug alone.

They found that doxorubicin levels were 10 times higher in mice treated with the nanodiamond compound compared with mice given doxorubicin alone, and remained high for seven days.

They found that nanodiamond-doxirubicin significantly reduced the size of tumors in mice and increased the survival rates.

They also found that it reduced the toxicity of the drug by releasing it more slowly.

Ho said that the surface chemistry of nanodiamonds is what makes them special.

The diamonds' facet surfaces possess differing properties, such as electrical charge. So a drug could be attached to one neutral surface.

The results are published this week in Science Translational Medicine¹.

Sunlight

Sunlight Can Influence the Breakdown of Medicines in the Body (Science Daily: 11.3.2011)

A study from the Swedish medical university Karolinska Institutet has shown that the body's ability to break down medicines may be closely related to exposure to sunlight, and thus may vary with the seasons. The findings offer a completely new model to explain individual differences in the effects of drugs, and how the surroundings can influence the body's ability to deal with toxins.

The study will be published in the scientific journal *Drug Metabolism & Disposition* and is based on nearly 70,000 analyses from patients who have undergone regular monitoring of the levels of drugs in their blood. The drugs taken by these patients are used to suppress the immune system in association with organ transplants. Samples taken during the winter months were compared with those taken late in the summer.

A more detailed analysis showed that the concentrations of drugs such as tacrolimus and sirolimus, which are used to prevent rejection following transplantation, vary throughout the year in a manner that closely reflects changes in the level of vitamin D in the body. The ability of the body to form vitamin D depends on sunlight, and the highest levels in the patients taking part in the study were reached during that part of the year when the levels of the drugs were lowest.

The connection between sunlight, vitamin D and variations in drug concentration is believed to arise from the activation by vitamin D of the detoxification system of the liver by increasing the amount of an enzyme known as CYP3A4. This enzyme, in turn, is responsible for the breakdown of tacrolimus and sirolimus.

"If the breakdown capacity increases, then higher doses of a drug are normally required in order to achieve the same effect. More research will be needed to confirm the results, but CYP3A4 is considered to be the most important enzyme in drug turnover in the body, and the results may have significance for many drugs," says Jonatan Lindh at the Department of Laboratory Medicine and one of the scientists who carried out the study.

The effects of vitamin D on CYP3A4 have previously been demonstrated in experiments in cell cultures. But the study now to be published shows for the first time that the mechanism can play an important role in the pharmacological treatment of patients, and it shows for the first time that variation in exposure to sunlight may affect the sensitivity of individuals to drugs.

'GPS System'

'GPS System' for Protein Synthesis in Nerve Cells Gives Clues for Understanding Brain Disorders (Science Daily: 11.3.2011)

Scientists at the University of Pennsylvania explain how a class of RNA molecules is able to target the genetic building blocks that guide the functioning of a specific part of the nerve cell. Abnormalities at this site are involved in epilepsy, neurodegenerative disease, and cognitive disorders. Their results are published this week in the journal *Neuron*.

A team of researchers, led by James Eberwine, PhD, the Elmer Bobst Professor of Pharmacology in the School of Medicine, and Junhyong Kim, PhD, the Edmund J. and Louise W. Kahn Professor of Biology in the School of Arts and Sciences, looked at how RNA gets targeted to nerve cell dendrites, which branch from the cell body of the neuron and detect the electrical and chemical signals transmitted by the axons of other neurons. These studies were enabled through the use of sensitive single cell analysis techniques developed in the Eberwine lab.

They discovered a class of RNAs (called CIRTs) that have small regions of retained strings of genetic building blocks (introns). These special RNAs have the ability to home to the dendrite to guide protein synthesis there. Specifically, they found that the targeting ability of some CIRTs originates from retrotransposons, which are thought to come from viruses.

The team concentrated on one retained intron, a localized regulatory sequence called the ID element. "Targeting elements in general are used by cells to make sure RNAs get to where they ultimately need to go, the dendrite in the case of a neuron. "It's like a GPS system for an RNA within the cell," says co-first author Peter T. Buckley, PhD, a postdoctoral fellow in the Eberwine lab. "But it gets removed in the cytoplasm before protein synthesis occurs. That's why the ID sequence isn't seen in the final protein."

The intron is a guide for local control of gene expression. The team used a reporter gene in the ID element to track its movement from the nucleus to the dendrite.

"There are species to species differences in the proportion and type of retrotransposons that make up introns," explains co-first author Miler T. Lee, PhD, a postdoctoral fellow in Junhyong Kim's lab. For example, rats have 100,000 of these ID elements versus the 1,000 to 2,000 found in mice. "Our studies suggest that rats use this ID element to target mRNA to the dendrite while mice may use other localization mechanisms." These data suggest that researchers must be careful in selecting animal models for the study of neurological and psychiatry illnesses.

One of the ID elements the researchers identified and analyzed is in an intron present in the FMR1 gene. Fragile X syndrome -- one of the most common causes of inherited mental retardation -- is caused by mutations in this gene. The gene encodes the FMRP protein, which controls the availability of select proteins involved in neuron-to-neuron communication. The ID

element in the FMR1 mRNA, in part, targets the RNA to where the FMRP protein is synthesized, which in turn controls how and where other proteins are made.

Because some retrotransposons are derived from viruses these data provide a mechanism by which normal cell functioning could be altered by viral infection. Upon infection of cells by viruses cellular proteins are often hijacked to permit the virus to function and divide. Since some RNAs that are involved in learning and memory contain ID sequences very similar to viruses, perhaps the proteins that move the RNAs to the dendrite are hijacked by an invading virus, surmise the researchers. The result being that the normal cell RNA does not move to its proper cellular position. If this happens during a critical period of development proper neuronal connectivity may be compromised and could result in long-term dysfunction of the central nervous system. This research area is currently under active investigation in the Eberwine and Kim labs.

These intron sequences have previously been thought to be junk RNA with no function, yet as shown in this study -- in some cases -- introns are functional outside of the nucleus. Extensive bioinformatic analysis performed by the team also suggests other functions including the possibility that outside of the nucleus retained introns may produce small RNAs that could regulate other RNAs.

The teams are now looking into perturbing this intricate system to see if they can change RNA targeting, as well as translation and protein function.

Other members of the teams are Jai-Yoon Sul, Kevin Miyashiro, Thomas Bell, and Stephen Fisher. This work was funded by HRF funds from the Commonwealth of Pennsylvania and the National Institutes of Mental Health and National Institute, and the Director's Fund of the National Institutes of Health.

Kidneys

Save your kidneys (The Times of India: 11.3.2011)

Renal failure occurs when the kidneys lose their ability to filter water and waste from the blood. Common diseases affecting the kidneys are diabetes and hypertension, says Dr Sanjiv Jasuja

Kidneys are an important organ of the human body. They help to filter by-products and toxins from the blood and preserve the balance of bodily fluids and electrolytes. Kidneys excrete these toxic compounds with water to make urine. Blood circulates through the kidneys for filtration.

Kidney failure occurs when:

Kidneys partly or completely lose their ability to filter water and waste from blood

Destruction occurs over many years, usually with no symptoms until the late stage

Common diseases affecting kidneys are diabetes, hypertension, infections and obstruction of urine flow

Prevention

After the age of 40, yearly physical examination, blood tests and urinalysis are a must. Keep diabetes and blood pressure under check. If there is difficulty in urinating or blood in the urine, visit a physician.

Dietary tips for patients:

Regular meals are a must. Moderate protein intake to avoid malnutrition. High-fibre foods such as whole-grain bread and cereals should be part of diet but avoid fruit juice and leafy vegetables. Fats to be avoided. Take skimmed milk instead of fullcream milk. High BP patients should take less salt, avoid canned food. Minimize sugar intake. Alcohol consumption to be reduced. When the time for dialysis draws near, some people may suffer from a loss of appetite and weight loss. One must visit a dietitian.

Key protein

Are you an apple or a pear? Key protein decides body shape (The Times of India: 11.3.2011)

CLUE TO FAT FIGHT

Ever wondered why some people are appleshaped while others look like pears? It's because of a protein which determines your body shape, say scientists. Researchers at the Edinburgh University identified the protein, known as 11BetaHSD1, which plays a part in how and where fat is stored in the body — around the hips or on the tummy.

The findings, the researchers said, shed light on how the protein works, which could help development of medicines to treat obesity. Levels of 11BetaHSD1 are higher when an unhealthy type of body fat is stored around the torso. This is typical of overweight people whose “appleshaped” bodies put them at greater risk of heart disease, the researchers said.

But lower levels of the protein are found when

healthier fat is stored around the hips — typical of “pearshaped” people — and used more safely as a source of energy, they said.

According to scientists, fat packed around the organs in the abdomen is more dangerous than fat on the hips because it's “metabolically active”, releasing more of the acids that raise heart disease risks.

Multiple Taste Cell

Multiple Taste Cell Sensors Contribute to Detecting Sugars (Science daily: 14.3 2011)

A new research study dramatically increases knowledge of how taste cells detect sugars, a key step in developing strategies to limit overconsumption. Scientists from the Monell Center and collaborators have discovered that taste cells have several additional sugar detectors other than the previously known sweet receptor.

Detecting the sweetness of nutritive sugars is one of the most important tasks of our taste cells," said senior author Robert F. Margolskee, M.D., Ph.D., a molecular neurobiologist at Monell. "Many of us eat too much sugar and to help limit overconsumption, we need to better understand how a sweet taste cell 'knows' something is sweet."

Scientists have known for some time that the T1r2+T1r3 receptor is the primary mechanism that allows taste cells to detect many sweet compounds, including sugars such as glucose and sucrose and also artificial sweeteners, including saccharin and aspartame.

However, some aspects of sweet taste could not be explained by the T1r2+T1r3 receptor. For example, although the receptor contains two subunits that must join together for it to work properly, Margolskee's team had previously found that mice engineered to be missing the T1r3 subunit were still able to taste glucose and other sugars normally.

Knowing that sugar sensors in the intestine are important to how dietary sugars are detected and absorbed, and that metabolic sensors in the pancreas are key to regulating blood levels of glucose, the Monell scientists used advanced molecular and cellular techniques to see if these same sensors are also found in taste cells.

The results, published in the Proceedings of the National Academy of Sciences, indicate that several sugar sensors from intestine and pancreas also are present in exactly those same sweet-sensing taste cells that have the T1r2+T1r3 sweet receptor.

"The taste system continues to amaze me at how smart it is and how it serves to integrate taste sensation with digestive processes," said Margolskee.

The different sugar taste sensors may have varied roles. An intestinal glucose sensor also found to be located in the sweet-sensitive taste cells may provide an explanation for another mystery of sweet taste: why just a pinch of table salt tastes sweet or salt added to baked goods enhances sweet taste. Known as SGLT1, this sensor is a transporter that moves glucose into the sweet taste cell when sodium is present, thus triggering the cell to register sweetness.

In pancreas, the sugar sensor known as the KATP channel, monitors glucose levels and triggers insulin release when they rise. The authors speculate that KATP may function in sweet taste cells to modulate taste cell sensitivity to sugars according to metabolic needs. For example, this sensor may respond to hormonal signals from the gut or pancreas to make taste cells less responsive to sweets after we have just eaten a sugary piece of pecan pie and do not need additional energy.

"Sweet taste cells have turned out to be quite complex. The presence of the KATP channel suggests that taste cells may play a role in regulating our sensitivity to sweet taste under different nutritional conditions," said first author Karen K. Yee, Ph.D., a cellular physiologist at Monell. "This knowledge may someday help us understand how to limit overconsumption of sweet foods."

Future studies will focus on understanding the complex connections between taste cells and the digestive and endocrine systems.

Also contributing to the study were Sunil Sukumaran, Ph.D. and Ramana Kotha of Monell and Timothy Gilbertson, Ph.D. of Utah State University.

Better Brain

Better Brain Wiring Linked to Family Genes (Science daily: 14.3.2011)

How well our brain functions is largely based on our family's genetic makeup, according to a University of Melbourne led study. The study published in The Journal of Neuroscience provides the first evidence of a genetic effect on how 'cost-efficient' our brain network wiring is, shedding light on some of the brain's make up.

Lead author Dr Alex Fornito from the Melbourne Neuropsychiatry Centre at the University of Melbourne said the findings have important implications for understanding why some people are better able to perform certain tasks than others and the genetic basis of mental illnesses and some neurological diseases.

He said how the brain's network is organized has been a mystery to scientists for years. "The brain is an extraordinarily complex network of billions of nerve cells interconnected by trillions of fibers," he said.

"The brain tries to maximize its bang-for-buck by striking a balance between making more connections to promote efficient communication and minimizing the "cost" or amount of wiring required to make these connections. Our findings indicate that this balance, called 'cost-efficiency', has a strong genetic basis."

"Ultimately, this research may help us uncover which specific genes are important in explaining differences in cognitive abilities, risk for mental illness and neurological diseases such as schizophrenia and Alzheimer's disease, leading to new gene-based therapies for these disorders."

"Although genes play a major role in brain function, the environment and other factors contribute to when things go wrong in cases of mental illness and other brain disorders," he said.

The research team, which included scientists at the Universities of Queensland and Cambridge, UK compared the brain scans of 38 identical and 26 non-identical twins from the Australian Twin Registry.

Using new techniques, the researchers were able to construct detailed maps of each person's brain network and measured the cost-efficiency of network connections for the entire brain, as well as for specific brain regions.

"We found that people differed greatly in terms of how cost-efficient the functioning of their brain networks were, and that over half of these differences could be explained by genes," said Dr Fornito.

Across the entire brain, more than half (60%) of the differences between people could be explained by genes. Some of the strongest effects were observed for regions of the prefrontal cortex which play a vital role in planning, strategic thinking, decision-making and memory.

Previous work has shown that people with more efficient brain connections score higher on tests of intelligence, and that brain network cost-efficiency is reduced in people with schizophrenia, particularly in the prefrontal cortex.

"This exciting discovery opens up a whole new area of research focus for scientists around the world," he said.

Micro particles

Monitoring Blood for 'Micro particles' Useful in Identifying Earliest Signs of Emphysema(Science Daily: 14.3.2011)

Monitoring blood for tiny particles released by cells lining the lungs may help clinicians diagnose emphysema in its earliest stages, according to researchers from Weill Cornell Medical College. The particles, called endothelial microparticles (EMPs), are shed during the disease process as tiny blood vessels in the lungs, called pulmonary capillaries, are injured and die. The findings were published online ahead of the print edition of the American Thoracic Society's American Journal of Respiratory and Critical Care Medicine.

"This study confirmed that levels of EMPs are elevated in the blood samples of smokers, consistent with the concept that emphysema is associated, in part, with the death of cells lining the pulmonary capillaries, and suggesting that the early development of emphysema might be

monitored with blood tests to measure EMP levels," said Ronald Crystal, MD, chairman and professor of genetic medicine at Weill Cornell Medical College.

Previous studies have linked vascular disease with elevated blood levels of EMPs. In light of growing evidence that early emphysema is associated with the loss of pulmonary capillaries, Dr. Crystal and his colleagues hypothesized that EMP levels might also be elevated in patients in the early stages of emphysema.

To conduct their study, the researchers used two lung function tests: spirometry, which measures the amount and speed at which a patient exhales; and a lung diffusion test which measures the lung's ability to diffuse, or transfer, carbon monoxide (DLCO). Patients with early emphysema typically have normal levels of inhalation and exhalation, but exhibit low DLCO.

"One of the key differences between spirometry, which is commonly used in physicians' offices, and DLCO, which is a more sophisticated test usually used only by pulmonologists, is that spirometry is less sensitive to the changes that occur in the lungs in the early stages of lung disease," Dr. Crystal said. "The DLCO test is much more sensitive and is able to pick up the earliest signs of emphysema."

In their study, the researchers assessed the levels of circulating EMPs in an initial patient population of 92 subjects, including healthy nonsmokers, healthy and symptomatic smokers with normal lung function and healthy smokers with normal spirometry but low DLCO. Because smoking is known to affect blood vessels in many areas of the body, EMPs were assessed for a specific enzyme that occurs primarily in pulmonary vessels. To confirm their findings, the assessment was repeated in two prospective cohorts, including a group of 92 patients similar to the initial patient population and a group of 15 patients with HIV.

Assessing their results, the researchers found both symptomatic smokers and healthy smokers with normal spirometry and normal DLCO had mild increases in EMP levels compared to healthy nonsmokers, and there was no difference in EMP levels between healthy and symptomatic smokers. In striking contrast, healthy smokers with normal spirometry but low DLCO had a significant increase in EMP levels.

"The data in these patient populations demonstrate that smokers with normal spirometry and normal DLCO have levels of circulating EMPs that are mildly elevated compared to healthy nonsmokers, but smokers who have normal spirometry and reduced DLCO have marked increases in the levels of circulating EMPs," Dr. Crystal said.

"Interestingly, the smokers with the highest EMP levels are healthy smokers with normal spirometry and low DLCO," he added. "This suggests that the vascular-based contributions to the development of emphysema may contribute to the early development of the disease, and may identify a point in time where intervention with smoking cessation therapy may prevent the irreversible lung destruction associated with the development of COPD."

A blood test to monitor for levels of EMPs may offer an alternative to high-resolution computed tomography (HRCT), which is currently used to identify early-onset emphysema, with varying degrees of success.

"Assessment of EMP levels may provide an early and inexpensive approach to identifying early evidence of emphysema, without the radiation exposure associated with chest computed tomography (CT) scans," Dr. Crystal noted. "Elevated EMP levels may be a useful biomarker to identify smokers with early emphysema at a stage where intervention may prevent further permanent lung destruction."

Vitamin D Insufficiency

Vitamin D Insufficiency High Among Patients With Early Parkinson Disease (Science daily; 15.3.20110

Patients with a recent onset of Parkinson disease have a high prevalence of vitamin D insufficiency, but vitamin D concentrations do not appear to decline during the progression of the disease, according to a report in the March issue of Archives of Neurology, one of the JAMA/Archives journals.

Vitamin D is now considered a hormone that regulates a number of physiological processes. "Vitamin D insufficiency has been associated with a variety of clinical disorders and chronic diseases, including impaired balance, decreased muscle strength, mood and cognitive dysfunction, autoimmune disorders such as multiple sclerosis and diabetes (types 1 and 2), and certain forms of cancer," the authors write as background information in the article. "Vitamin D insufficiency has been reported to be more common in patients with Parkinson disease (PD) than in healthy control subjects, but it is not clear whether having a chronic disease causing reduced mobility contributes to this relatively high prevalence."

Marian L. Evatt, M.D., M.S., of Emory University School of Medicine and the Atlanta Veterans Affairs Medical Center, and colleagues examined the prevalence of vitamin D insufficiency in untreated patients with early PD, diagnosed within five years of entry into the study. They conducted a survey study of vitamin D status in stored blood samples from patients with PD who were enrolled in the placebo group of the Deprenyl and Tocopherol Antioxidative Therapy of Parkinsonism (DATATOP) trial.

The authors found a high prevalence of vitamin D insufficiency and deficiency in 157 study participants with early, untreated PD. At the baseline visit, most study participants (69.4 percent) had vitamin D insufficiency and more than a quarter (26.1 percent) had vitamin D deficiency. "At the end point/final visit, these percentages fell to 51.6 percent and 7 percent, respectively."

"Contrary to our expectation that vitamin D levels might decrease over time because of disease-related inactivity and reduced sun exposure, vitamin D levels increased over the study period," the authors write. "These findings are consistent with the possibility that long-term insufficiency is present before the clinical manifestations of PD and may play a role in the pathogenesis of PD."

Vitamin D insufficiency in patients with early PD was similar or higher than the prevalence reported in previous studies.

"We confirm a high prevalence of vitamin D insufficiency in patients with recent onset of PD, during the early clinical stages in which patients do not require symptomatic therapy," the authors conclude. "Furthermore, vitamin D concentrations did not decrease but instead increased slightly over the course of follow-up. This provides evidence that during early PD, vitamin D concentrations do not decrease with disease progression."

Protein

Protein That Keeps Brain Signals Intact Yields Clue to Disorders (Medical al News Today: 15.3.2011)

By discovering a brain protein that ensures signals sent along nerve fibres don't break down, researchers at the University of Edinburgh in the UK have found a new clue for understanding conditions like epilepsy, dementia, multiple sclerosis, stroke and other neurological disorders that occur when the brain can't send signals to other parts of the body.

The study appears in the 10 March online issue of Neuron.

Co-author Dr Matthew Nolan, from Edinburgh University's Centre for Integrative Physiology, told the press that the brain is constantly transmitting tens of thousands of messages along nerve fibres between cells in the brain and also to and from parts of the body.

"Identifying proteins that are critical for the precise initiation of these impulses will help unravel the complexities of how brains work and may lead to new insights into how brains evolved," he explained.

Brain cells or neurons communicate with each other using electrical impulses. For these impulses to "make sense" and deliver precisely the correct message, given the wide diversity of functions that cells in the nervous system perform, they have to switch on and off at the right time, and have the correct voltage, amplitude and frequency, and maintain their signal strength from initiation to point of delivery.

Scientists already know that a section of the neuron called the axon initial segment (AIS), plays a crucial role in the generation and propagation of electrical nerve impulses or "action potentials" as they are termed.

They also know something about the structure of the AIS and how it is assembled, but not what keeps it stable, as Nolan and colleagues noted in their background information:

"Assembly of the AIS requires interactions between scaffolding molecules and voltage-gated sodium channels, but the molecular mechanisms that stabilize the AIS are poorly understood." Once generated in the AIS, the signal or electrical "spike" travels along the axon, which in the case of motor nerves can be as much as a metre long (for example to control a leg muscle).

To keep the integrity of the signal, a number of things have to happen, one of which is made possible by the presence of "nodes of Ranvier", small uninsulated gaps between sections of myelin-encased axon.

Because they are uninsulated, the gaps, about 1 micrometer across, allow electricity to be generated: the structure of alternating uninsulated nodes and insulated sections is what maintains the speed and correct strength and pattern of the electrical impulse.

What Nolan and colleagues found was that the AIS and the nodes of Ranvier are assembled by distinct mechanisms, and that a neural form of a protein called Neurofascin, namely Nfasc186, stops the breakdown of the AIS and keeps it stable.

Amyloid β -Protein (12-28) - Alzheimer's Disease β -Protein 12-28 and other amyloid peptides.

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By knocking out the Neurofascin gene in the appropriate part of the brain in adult mice, the researchers caused rapid loss of Nfasc186 in the AIS but not in the nodes of Ranvier, leading to "AIS disintegration, impairment of motor learning and the abolition of the spontaneous tonic discharge typical of Purkinje cells".

This last effect, the "abolition of the spontaneous tonic discharge typical of Purkinje cells", describes a breakdown in the function of a type of cell that is essential for motor function, disorders of which usually affect movement.

Nolan and colleagues also showed that although loss of the Nfasc186 protein in the AIS did not stop action potentials from arising, it resulted in modified waveforms, so basic motor abilities remained intact.

They proposed that their findings show that "Nfasc186 optimizes communication between mature neurons by anchoring the key elements of the adult AIS complex".

Senior author Professor Peter Brophy, Director of the University's Centre for Neuroregeneration, said:

"Knowing more about how signals in the brain work will help us better understand neurodegenerative disorders and why, when these illnesses strike, the brain can no longer send signals to parts of the body."

The Wellcome Trust and the Medical Research Council funded the research.

"A Critical Role for Neurofascin in Regulating Action Potential Initiation through Maintenance of the Axon Initial Segment."

Combo Therapy

Combo therapy may overcome Herceptin-resistant breast cancer (New Kerala: 15.3.2011)

Breast cancer tumours may take numerous paths to resist the targeted drug Herceptin, but a combination therapy could restore a tumour's vulnerability to treatment, according to a new study.

Scientists at the University of Texas MD Anderson Cancer Center found that adding the drug saracatinib to Herceptin treatment shrinks previously resistant tumours by cutting off at least five different molecular pathways, each of which can resist,

"Scientists have identified so many ways by which a tumour resists Herceptin that it raises an important issue for treatment," said senior author Dihua Yu.

"Will we have to give patients six drugs or 10 drugs to block them all? The side effects would be awful. Two pills are better. This combination is a promising therapy for those with Herceptin-resistant breast cancer," she added.

Working in cell lines, mouse models of breast cancer and checking their work in human tumour samples, Yu and colleagues identified SRC, a known cancer-promoting protein, as the crucial common downstream component of multiple resistance pathways.

Saracatinib is an SRC inhibitor, thwarting that protein and allowing Herceptin to work again in tumours that have a high amount of the HER2 protein.

Only about 26 of women with HER2-positive breast cancer respond to Herceptin as single therapy, while 40 to 60 percent women respond to the drug when combined with other chemotherapy.

Yu said saracatinib has been tested in phase I and phase II clinical trials as a single treatment against late-stage cancers. It has a favourable side effects profile.

In 2004, Yu's lab discovered that loss of the tumour-suppressing gene known as PTEN led to Herceptin-resistant tumours.

Combining Herceptin and saracatinib to treat resistant tumours in mice reduced tumour volume by 90 percent in 25 days.

While Herceptin alone kept tumour volume about the same during the same period, control and saracatinib alone permitted growth of more than 200 percent.

The difference was more striking in tumours deficient in SRC's enemy, the PTEN tumor-suppressor.

The combination reduced tumour volume by more than 90 percent while the two drugs alone allowed growth of between 200 and 400 percent.

Bariatric Surgery

Bariatric Surgery Probably Worth It For Severely Obese Individuals (medical News Today: 15.3.2011)

Bariatric surgery for severely obese individuals can significantly reduce the risk of cardiac and other diseases, outweighing the disadvantages of the procedure, researchers wrote in the journal *Circulation*. According to lead author, Paul Poirier, M.D., Ph.D., from the Quebec Heart and Lung Institute, Laval University Hospital, Canada, this is the first statement by the American Heart Association which concentrates solely on bariatric surgery and cardiac risk factors.

Dr. Poirier said:

"The statement is not an across-the-board endorsement of bariatric surgery for the severely obese. It is a consensus document that provides expert perspective based on the results of recent scientific studies."

According to the American Heart Association, bariatric surgery is an option which should be considered on a patient-to-patient basis. It encompasses several procedures to reduce appetite while limiting food consumption and/or causing food to be absorbed or digested less fully by the body.

Somebody who is severely obese has a BMI (body mass index) of over 40.

Dr. Poirier said:

"Obesity has reached epidemic proportions in the United States, as well as in much of the industrialized world. The most rapidly growing segment of the obese population is the severely obese. The health consequences of severe obesity are profound. In comparison with normal-weight individuals, a 25-year-old severely obese man has a 22 percent reduction in his expected lifespan."

Physicians as well as their severely obese patients have found the challenges of treating obesity frustrating.

Dr. Poirier said:

"Substantial long-term successes from lifestyle modifications and drug therapy have been disappointing, making it important to look at surgical options."

The authors had reviewed scientific literature and concluded that bariatric surgery results in considerable weight loss and a reduced risk of developing diabetes, liver disease, hypertension, obstructive sleep apnea, and cardiovascular dysfunction, if the patient is suitably indicated for the procedure.

Some studies have suggested that severely obese patients who undergo bariatric surgery live longer.

Some surgical risks are associated with bariatric surgery - some of them may even be fatal, the authors add. There are also long-term post-surgical lifestyle implications. Some long-term behavior changes have to occur, and the patient needs to be carefully followed up.

Poirier said:

"Bariatric procedures are generally safe; however, this is not a benign surgery. At the moment, bariatric surgery should be reserved for patients who can undergo surgery safely, have severe obesity and have failed attempts at medical therapy."

Poirier said that further research is required regarding this type of procedure in adults and young individuals. No effective sustainable treatment appears to be available today for the ever-growing number of adolescents who are obese.

The value of psychological evaluation in bariatric cases is uncertain, the authors write. There is no current data supporting compulsory psychological evaluation. Psychological evaluations, however, are often carried out and the environmental and behavioral factors that may contribute to a person's obesity should be assessed. The individual's ability to adapt to specified diets should also be assessed.

"Bariatric Surgery and Cardiovascular Risk Factors: A Scientific Statement From the American Heart Association".

Wheat allergy

Wheat allergy an 'impending epidemic' in India (The Times of India: 16.3.2011)

Wheat allergy, once considered a disease of the West, has been termed an 'impending epidemic in India' in an article published in a recent issue of Indian Journal of Medical Research (IJMR). The disease is not just affecting paediatric patients but adults too.

According to the report, celiac disease, commonly known as wheat allergy, is seen more in north India as compared to south India due to high consumption of wheat products that contain gluten — a protein which causes this allergy — in this part of the country.

A change in the variety of wheat grown — from ancient or diploid wheat to the modern hexaploid wheat — has also been cited as a reason for an increase in the number of cases. Hexaploid wheat is more antigenic — a substance which stimulates the production of an antibody when introduced in the body. The modern hexaploid wheat has highly antigenic glutens, which are more capable of inducing celiac disease.

The article states that for centuries, diploid, and later tetraploid, wheat was grown in India. These varieties were less antigenic in comparison to hexaploid wheat, which has recently been introduced. Thus switching over to older varieties of wheat may be better for public health. The IJMR article — which has been written by B S Ramakrishna, a professor of gastroenterology at Christian Medical College, Vellore — adds that public authorities should examine infant feeding recommendations and wheat varieties cultivated in the country for finding ways to avert the epidemic of celiac disease. In addition to breast feeding, infants are often fed rye, barley and other wheat products after a certain age, mostly when they are six months to one year old.

The prevalence of celiac disease is much lower in countries like Finland, Estonia and Denmark, which are characterized by low gluten consumption in infancy, than in Sweden, where gluten consumption is high in infancy, the article states.

According to experts, the classical symptoms of celiac disease are related to the gastrointestinal tract — diarrhoea, weight loss, failure to thrive, abdominal pain, anorexia, vomiting and constipation. These may account for only a portion of the cases. “Celiac disease is actually a multi-system disorder, which is highly variable in its clinical expression. It may occur at any age, and may have a variety of manifestations, including iron deficiency, anaemia, osteoporosis, vitamin deficiencies and fatigue. It may manifest in the form of delayed puberty, infertility or recurrent foetal loss or as dental enamel hypoplasia,” said the expert. He added that celiac disease is also associated with neuropsychiatric conditions like depression, anxiety and epilepsy.

Said Dr Pankaj Vohra, paediatric gastroenterologist at Max Healthcare, “I have seen more than 350 cases of celiac disease in the past few years. A three-yearold child came to us recently with a bloated stomach, sticklike limbs and passed several heavy stools daily. Her parents could not understand why she refused to grow.” He said that a change in the diet chart of the patient and certain medicines can help.

Dr Ishi Khosla, who heads the Celiac Society for Delhi, added, “One should consume foods that require minimum processing to prevent allergy caused by gluten. It’s a good idea to have fresh fruits, fruit juices, nuts and south Indian food items.”

GO FOR GLUTEN-FREE

Allergy to wheat and related products was once considered a disease of the West, but it has now been termed an

‘IMPENDING EPIDEMIC’ in the country. Doctors say there is an urgent need to address the problem by means of timely diagnosis and by making necessary changes in the diet to improve the condition of the patient

What is celiac disease?

An autoimmune disorder that can occur in genetically predisposed people of all ages

Causes

Protein gluten found in wheat acts as a trigger for the immune system

to develop antibodies that cross-react with bowel tissues. The small intestine is then not able to absorb important nutrients, vitamins and micro-nutrients

Symptoms |

Diarrhoea, weight loss, constipation, iron deficiency, anaemia, osteoporosis, along with vitamin deficiencies or fatigue

If left undiagnosed it can lead to |

Type I diabetes, thyroid, liver disease and neuro-psychiatric conditions

PRECAUTIONS |

Avoid wheat, barley, rye and oats Use all gluten-free products

Stem cell therapy

Blind in one eye NRI student sees light again: stem cell therapy (New Kerala: 16.3.2011)

In an effort to make way for stem cell therapy, a group of doctors have performed a special procedure on a NRI student who was said to have almost lost his vision after accidentally consuming methanol.

Mr Shailesh (name changed on request), a 22 year old, US based NRI experienced sudden loss of vision a couple of months back.

He had perception to light only in one eye.

He was diagnosed with loss of vision due to accidentally consuming methanol. Further diagnosis and treatment revealed that the blindness was irreversible and despite intensive treatment with a high dosage of steroids, his condition continued to deteriorate possibly due to ganglionic cell death (apoptosis) reports said.

Methanol has high toxic affect on humans. If one consumes even as little as 10 ml, it can cause permanent blindness by destroying of the optic nerve. 30 ml was potentially fatal.

Investigations and reports of his treatment confirmed that there were no possibilities to restore the deteriorating vision.

Having heard about the potential of stem cell therapy and its ability to restore functions of cells and organs, Shailesh wanted to explore its possibility as the only and final possibility to salvage his vision.

He visited India and approached Dr Himanshu Bansal, stem cell therapist through Care Medical Tourism. Dr Himanshu examined the patient and was optimistic about the possibility of Autologous Bone marrow derived from adult stem cell therapy.

Protein Folding

Unprecedented View of Protein Folding May Help Develop Brain Disease Therapies (New Kerala: 16.3.2011)

When vital proteins in our bodies are misfolded, debilitating diseases can result. If researchers could see the folding happen, they might be able to design treatments for some of these diseases or even keep them from occurring. But many of our most critical proteins are folded, hidden from sight, inside tiny molecular chambers. Now researchers at Stanford have gotten the first-ever peek inside one of these protein-folding chambers as the folding happened, and the folding mechanism they saw surprised them.

Misfold an origami swan and the worst that happens is you wind up with an ugly paper duckling. Misfold one of the vital proteins in your body -- each of which must be folded in a particular way to perform its function -- and the result can be a debilitating neurodegenerative disease such as Alzheimer's or Huntington's.

There are no cures for such brain-wasting diseases, but now Stanford researchers have taken an important step that may one day aid in developing therapies for them. They have literally popped the lid off one of the microscopic chambers in which many of life's most crucial proteins are folded, witnessing a surprising mechanism as the heretofore hidden folding process happened before their eyes.

Virtually all proteins need to be folded, whether in primitive organisms such as bacteria or multicellular creatures such as humans. Many are guided through the process by molecules called chaperones, of which a specialized subset -- chaperonins -- folds many of the most complex proteins.

Folding in bacteria has been studied in detail, but Judith Frydman, a professor of biology who led the Stanford research, said this is the first time anyone has seen the folding process performed in higher organisms.

"The mechanism of folding we saw in the chaperonin is very different from what we expected and from what has been seen in bacteria," Frydman said. "It was really surprising, and we are still amazed that it worked. This chaperonin appears to provide a unique chemical environment." Chaperonins are shaped like a barrel, with two ring-shaped chambers arranged one atop the other. At the open end of each ring is a lid that opens and closes in a spiraling fashion, like the aperture of a camera, something Frydman's team discovered in 2008 while studying the chaperonin called TRiC. Since then, they've been working to solve the puzzle of how a protein gets folded once the chaperonin has grabbed it, pulled it into the chamber and the aperture has closed. A paper describing their findings was published earlier this year in *Cell*.

Frydman said there were two likely ways in which a protein, initially a linear chain of molecules (amino acids), could theoretically be folded inside the chamber.

One is by mechanical means, with the chamber holding onto the protein and physically pushing it into the right shape.

"The other one is that when the lid closes, the chaperonin lets go of the protein, but some special chemical properties in this chamber somehow make it fold," she said. "Our evidence is that this mechanism is the correct one."

The only way to know which mechanism was doing the work was to see inside the chamber while the folding was happening, but simply opening up the lid wouldn't work, because the shape of the entire chamber changes in accordance with the motion of the lid. When the lid spirals open, the walls of the chamber spiral open, too, and the protein floats away.

To see what was happening, Frydman's team devised a chemical "trick" by which they could remove the lid on the chamber, but still get the walls of the chamber to close in, as if the lid were spiraling.

When they "closed" the lidless chamber, the chaperonin simply released the protein that had been destined to be folded. Like a long balloon that slipped from a child's grip before it could be folded into a giraffe, the protein simply drifted off.

The challenge then became figuring out how the protein was getting released.

"One of the reasons why the mechanical model of pushing the protein into shape without letting go had been proposed was because there was no obvious way for this chaperonin to let go of the protein," Frydman said.

When a protein gets grabbed for folding by TRiC, it is held by eight binding sites along the walls of the chamber. Between each binding site is a tiny loop. Frydman's team suspected that during the closing process, the loops might move to somehow "shave off" the protein and release it into the folding chamber. One of her students made mutations in the loop. When the researchers did experiments in which TRiC chaperonins equipped with mutated loops were closed, the protein stayed put. It also failed to fold.

"That suggests that the way this chaperonin folds its proteins is by releasing them in a closed chamber that has very special chemical properties," Frydman said.

"This mechanism of release is completely different from what has been seen in any other chaperone. That was very, very surprising."

The experimental work described in the Cell paper was done using a simpler version of TRiC, from a single-celled organism, than would be found in multi-cellular organisms, Frydman said, because the simpler version is much easier to manipulate.

"Now we are interested in going back to the eukaryotic [multi-cellular] complex, where every binding site in the folding chamber is different and every release loop is different," Frydman said. "I think this really opens up a lot of interesting avenues to explore how this works in higher organisms. Since TRiC helps fold many disease-linked proteins, and is central to protect cells from misfolding diseases such as Huntington's disease, this work could have many therapeutic applications."

Male Puberty

Male Puberty Uncovered: Protein Reveals New Insights (Medical News Today: 16.3.2011)

Discovery of how a protein called SMAD3 behaves has given new insights into puberty development in boys and fertility in adult men; the researchers also hope it will lead to a better understanding of how chemicals in the environment affect these processes.

You can read about the findings in a paper published in the 8 March online issue of Endocrinology.

Around 1 in 10,000 boys go through early or "precocious" puberty at around eight years of age. Altered timing of puberty affects adulthood, with early puberty linked to reduced adult height and delayed puberty linked to reduced bone density.

Late puberty occurs when the testes or testicles, the part of the male organ that produces sperm, cannot respond normally to testosterone.

First author Dr Catherine Itman, from the Faculty of Medicine, Nursing and Health Sciences at Monash University in Melbourne, Australia, told the press they have been looking at the effect of SMAD3 on the growth of testis or testicle cells and how they respond to testosterone:

"SMAD3 is a protein that translates signals from the environment outside the cell to the nucleus, where it switches genes on or off," she added.

The crucial part of the discovery appears to lie in the rate at which SMAD3 is produced: half the normal amount leads to faster maturation than usual, and none at all leads to abnormal responses to testosterone.

For their study, the researchers focused on Sertoli cells, the "nurse" cells that help the testes or testicles to mature.

Male puberty begins when the body starts to produce large amounts of the hormone testosterone, and this acts through the Sertoli cells.

The researchers already knew that before puberty, Sertoli cells multiply and this helps the testes to grow, and at puberty, Sertoli cells have to stop growing in order to then help the testes produce sperm by supporting the growth of sperm precursor cells.

Thus, the establishment and maturation of the Sertoli cell population in the testicles underpins male fertility.

Itman and colleagues investigated how Sertoli cells switch from the multiplying state, that results in making the testes big enough to make sperm, to the mature state, that helps to produce the sperm.

Using laboratory mice, they identified that Sertoli cell activity before and after puberty depended on the amount of SMAD3 that was present, such that when it is reduced, sperm develops earlier, and when it is absent altogether, the Sertoli cells take longer to respond to testosterone.

So, contrary to previous understanding, it was not a case of an "on-off" switch, but rather a dependence on the amount of SMAD3 protein, which was different in the immature, multiplying Sertoli cell compared to the mature, adult cell.

Other research on puberty has also proposed that development is delayed in boys exposed to chemicals that disrupt how cells respond to hormones.

These so-called "endocrine disrupting compounds" are widely used in industries that make everyday items like plastics, cosmetics, paints and detergents.

Itman's work is funded by a grant from the National Health and Medical Research Council (NHMRC) Early Career Project to look into how these compounds in the environment affect the growth and maturation of Sertoli cells around puberty, including the role of SMAD3.

"We hope that through our research, we will inform decisions about the influence of chemicals in our environment on the timing of puberty in boys and on the fertility of adult men," said Itman.

"Smad3 Dosage Determines Androgen Responsiveness and Sets the Pace of Postnatal Testis Development."

Fukushima

Like Bhopal, Fukushima may haunt future (The Times of India: 16.3.2011)

Effects Of Poison Cloud Pose Threat To Generations

The spectre of lethal radioactive fallout from the damaged nuclear reactors at Fukushima in Japan continued to haunt the country as ripples of panic spread to distant shores.

Fifty workers and technicians quarantined inside the power station complex were fighting a deadly battle to cool the three functional reactors even as cooling pools where used fuel is stored started heating up in the other three reactors.

An explosion in No.2 reactor and a fire in No.4 on Tuesday morning led to 822 millirem levels of radiation detected at the gates of the complex. This is nearly equal to the permissible dose for one year. There was panic in Tokyo, 240km away, as radiation levels rose and then fell again.

According to experts, if the cooling pools overheat, the water will evaporate and there could be a very high risk of radioactive radiation leaking as the roofs have already blown away. The

reactors are on the brink of meltdown, which may cause a radioactive explosion with disastrous consequences.

The only other time humanity has experienced full blown radiation effects was in the bombing of Hiroshima and Nagasaki in 1945.

Over 200,000 people died, mainly by the thermal blast, but thousands continue to suffer and die from the radioactive fallout with deformities, cancers, burns, organ failures and susceptibility to infections.

Even more horrifying has been the effect on children born to survivors – the mutilated genes were passed on to them, causing high incidence of cancer and deformities. Third generation children too have suffered such effects.

The Chernobyl disaster of 1986 was a parallel to the present crisis, though on a much larger scale.

Reactors in this plant in Ukraine suffered almost complete meltdowns leading to two massive explosions of radioactive gases. Such was the force that the 2,000-tonne roof of the enclosure was blown away. This cloud of death drifted thousands of kilometers across the western Soviet Union up to what is now Belarus. Sweden and Finland detected high radiation levels in the north, while Bavaria, a province in Germany, also detected high radiation. Only the Iberian peninsula in Europe escaped completely. Wind factors largely determined which region felt how much of a radiation effect. The effect lessens with distance.

The gas tragedy at Bhopal too had seen a toxic cloud of gases explode out of the Carbide chemical factory in 1984 and drift across the sleeping city, killing 5000 people and injuring 5 lakh others ultimately. Twenty eight people, mostly firefighters, died of acute radiation syndrome in the Chernobyl incident, while another 221 succumbed in subsequent years due to radiation exposure.

Nearly 3.7 lakh people were resettled and the neighboring town of Pripyat still remains uninhabited. Four square kilometers of pine forest around the plant turned red and died. The Pripjat river, which feeds into the Dnieper system, was heavily contaminated leading to widespread water poisoning.

Till today, the Chernobyl complex remains sealed off after a cement layer was poured over the blown reactors. However, the lessons learnt from Chernobyl, in terms of design engineering of the containment structures and processes, have changed the way nuclear reactors are built since then.

Fukushima too will have a similar effect. But that is for the future. For the present, the battle to control the Frankenstein of nuclear power continues in a tiny coastal town of northern Japan. And millions of Japanese hope that the breeze remains oceanwards rather than turning south or east.

Two Important Things That You should Know

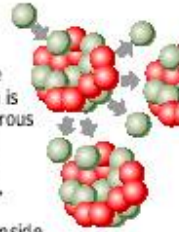
1 MELTDOWN

Build up of heat in core of fuel rods occurs if sufficient coolant, like water, is not available. The uranium and/or plutonium fuel rods melt and settle down at the bottom. This is meltdown. Since there are no controlling moderators, a runaway fission reaction may occur. Even if it doesn't, temperatures can rise up to 3200° C.



2 RADIATION

Everything from sunshine and radiowaves to x-rays and what is leaking from the Fukushima reactors in Japan is radiation. But what is dangerous is ionizing radiation, which strips electrons as it passes through. In nuclear reactors, controlled reactions are allowed. But all of it is kept inside several layers of protection. If radioactive material leaks out, or, in a nuclear bomb explosion when it is purposely allowed to spread, a fatal cocktail of alpha, beta and gamma radiation and high energy neutrons escapes and continues till emitting material finishes. This may take months to years.



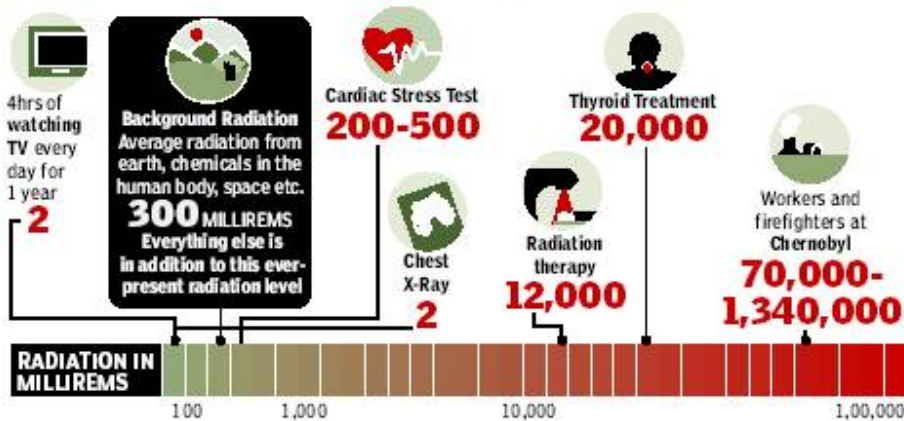
Three known meltdowns are

- | | | |
|---|-----------------------------------|--------------------------------|
| 1 Lucens Reactor
Switzerland
(1969) | 2 Three Mile Island, US
(1979) | 3 Chernobyl, Ukraine
(1986) |
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CAN RADIATION BE TOLERATED?

Radiation of this type can be tolerated in very small doses but over long periods of time it changes body's genetic structure, leading to deformities, cancer down many generations, as in survivors of Hiroshima, Nagasaki.

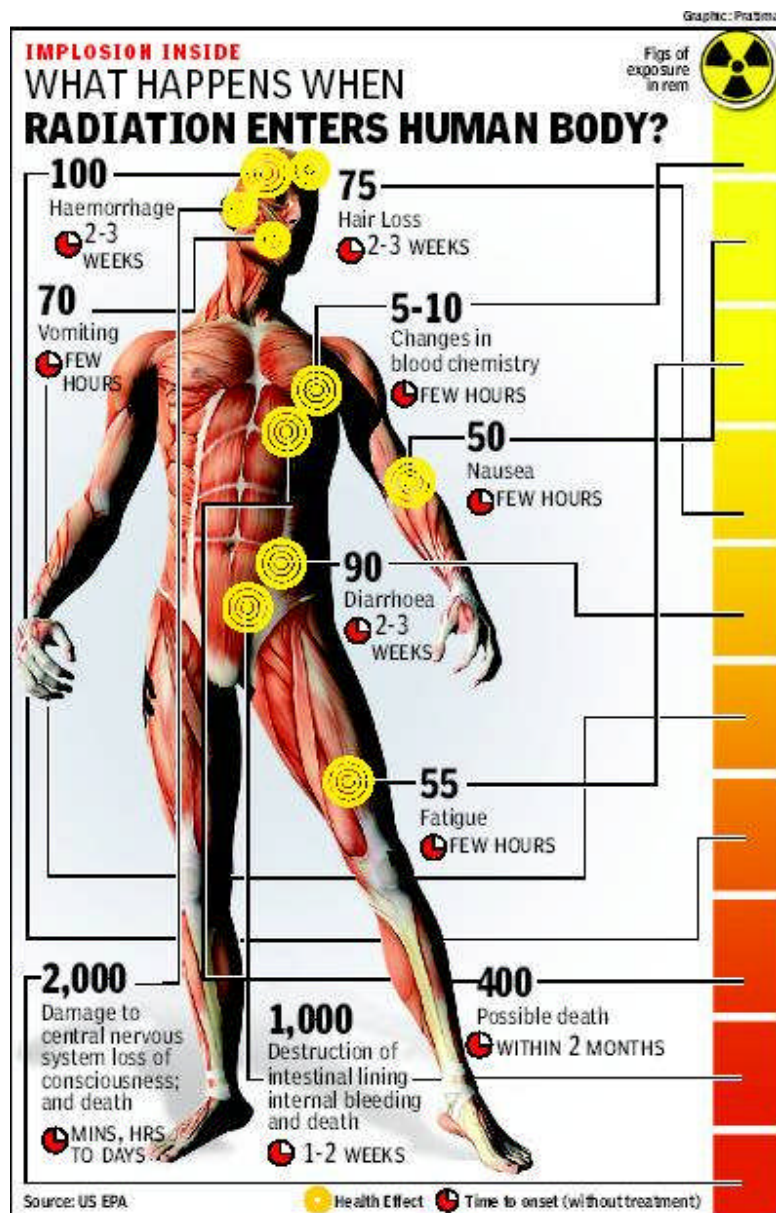
THRESHOLD FOR ANNUAL EXPOSURE **1,000-5,000*** millirems



*Apart from background radiation

Radiation

Radiation (The Times of India: 16.3.2011)



Brain Disorders

Neuro Signals Study Gives New Insight into Brain Disorders (Science Daily: 17.3.2011)

Research into how the brain transmits messages to other parts of the body could improve understanding of disorders such as epilepsy, dementia, multiple sclerosis and stroke.

Scientists at the University of Edinburgh have identified a protein crucial for maintaining the health and function of the segment of nerve fibres that controls transmission of messages within the brain.

The study, published in the journal *Neuron*, could help direct research into neurodegenerative disorders, in which electrical impulses from the brain are disrupted. This can lead to inability to control movement, causing muscles to waste away.

Professor Peter Brophy, Director of the University of Edinburgh's Centre for Neuroregeneration, said: "Knowing more about how signals in the brain work will help us better understand neurodegenerative disorders and why, when these illnesses strike, the brain can no longer send signals to parts of the body."

The brain works like an electrical circuit, sending impulses along nerve fibres in the same way that current is sent through wires.

These fibres can measure up to a metre, but the area covered by the segment of nerve that controls transmission of messages is no bigger than the width of a human hair.

Dr Matthew Nolan, of the University's Centre for Integrative Physiology, said: "At any moment tens of thousands of electrical impulses are transmitting messages between nerve cells in our brains. Identifying proteins that are critical for the precise initiation of these impulses will help unravel the complexities of how brains work and may lead to new insights into how brains evolved."

The research is funded by the Wellcome Trust and the Medical Research Council.

Common Immune Booster Works

How Common Immune Booster Works: Research May Lead to New and Improved Vaccines (Science Daily: 17.3.2011)

Alum is an adjuvant (immune booster) used in many common vaccines, and Canadian researchers have now discovered how it works. The research by scientists from the University of Calgary's Faculty of Medicine is published in the March 13 online edition of *Nature Medicine*. The new findings will help the medical community produce more effective vaccines and may open the doors for creating new vaccines for diseases such as HIV or tuberculosis.

Understanding alum properties will help other vaccines because we are one step deeper into the mechanistic insight of adjuvants, which are essential for human vaccines to work," says Yan Shi, PhD, from the Faculty of Medicine and a member of the Snyder Institute of Infection, Immunity and Inflammation.

Alum is a common grocery store staple used in pickling. It is very effective in inducing antibody responses and is the only human vaccine adjuvant approved for large-scale immunization. It has been in use for 90 years and appears in almost all vaccines we receive as without an adjuvant vaccines in general do not work.

"Knowledge provided in this study may help us manipulate alum with additional adjuvant components to direct an attack against major diseases which require a killer T cell response such as HIV, Tuberculosis, and malaria," says Tracy Flach from the Faculty of Medicine and the study's first author.

The research reveals that alum interacts with a group of immune cells called dendritic cells via their cell membrane lipids. Dendritic cells, the sentinel of our immune system, heed the call of alum and move on to activate a group of T cells that control antibody production.

The breakthrough came as the team made use of a cutting edge technology developed in the Faculty of Medicine called single cell force spectroscopy. This technique allowed the UCalgary team to study individual cells and measure their responses to alum.

The research was supported by the National Institutes of Health, Canada Research Chair program and Alberta Innovates-Health Solutions

Stem Cells

Stem Cells Offer Clues To Bowel Cancer Origin And Relapse (Medical News today: 18.3.2011)

The biology of intestinal stem cells and the genes that control it may be the key to understanding the origin and relapse of bowel or colorectal cancer, and may open the door to new diagnostic tools and treatment ideas, concluded researchers of a Spanish-led study published online in Cell Stem Cell this week.

Led by Eduard Batlle from the Catalan Institution for Research and Advanced Studies (ICREA), the researchers found that colorectal cancer cells trigger a set of genes that are similar to those found in intestinal stem cells.

They suggest colorectal cancer patients undergo genetic tests of the lining of their intestines to predict their chances of relapse.

Colorectal cancer causes hundreds of thousands of death worldwide every year.

Current treatment normally comprises surgery and chemotherapy, and most patients don't relapse, but for nearly 40%, relapse occurs within months or years, with the cancer often spreading to other parts of the body.

Batlle said this suggests there are cells in the tumors that regenerate the disease, "but we still know very little about the biological reasons why".

Intestinal stem cells are a type of non-specialized cell that give rise to all the cells in the intestines. They can produce up to 5 grams of intestinal epithelial cells, the type that form the lining of the intestines, every day.

For the study, Batlle and colleagues compared activated genes in cells in healthy intestines (both specialized cells and stem cells), with activated genes in tumor cells taken from patients with colorectal cancer.

They found that the activated genes in the tumor cells were similar to the activated genes in the stem cells, and the more activated genes they had in common, the higher the chance that the patient's cancer would spread and relapse.

They also found that the activated genes in the tumor that were similar to the ones in the stem cells were in a subset of tumor cells that they called "tumor stem cells".

When they transplanted these tumor stem cells into lab mice, tumors grew.

The findings support a growing idea that a hierarchical organization controls the growth of cancer, such that only "tumor stem cells" have the ability to start and propagate it.

Also, the ability of stem cells to renew indefinitely confers advantage to tumors. And because stem cells can survive for years, unlike specialized cells such as those found in the lining of the intestines that only live for a few days, or at the most, a few months, there is greater opportunity for their DNA to accumulate damage and become cancerous.

Discovering a link between intestinal stem cells and propagation of cancer is a breakthrough because it offers new avenues for predicting risk of relapse, for which there are very few clinical tools.

The idea that cancers require specific types of cell in order to develop and thrive, has already been shown in other cancers like breast cancer, gliomas (tumors that start in the brain or spine), and some types of lymphoma.

This study now adds another type of cell, the tumor stem cell, to that list.

"The Intestinal Stem Cell Signature Identifies Colorectal Cancer Stem Cells and Predicts Disease Relapse."

Key protein

Key protein found, can help prevent thrombosis (The Times of India: 18.3.2011)

British scientists have discovered a cholesterol regulating protein which plays a key role in the formation of thrombosis, a type of blood clot that can lead to heart attacks and strokes.

The breakthrough in understanding the role of the protein, called LXR, in causing thrombosis could pave the way for new and better treatments for the condition and may help save thousands of lives every year, the researchers said. "This ground-breaking study paves the way for new and more effective medicines to prevent thrombosis," said Jon Gibbins, Director of Reading University's Institute for Cardiovascular and Metabolic Research, who led the research.

"While blood clotting is essential to prevent bleeding, inappropriate clotting within the circulation, known as thrombosis, is the trigger for heart attacks and strokes," he was quoted as saying by the Telegraph newspaper.

According to the researchers, by developing drugs that can control LXR, scientists will be able to prevent thrombosis and also control cholesterol levels. It could help fight against heart and circulatory diseases, which kill 191,000 people a year in UK alone, said the researchers who detailed their findings in the journal Blood.

Knee surgery

4th annual workshop on knee surgery (New Kerala: 28.3.2011)

A live knee joint reconstructive surgeries were performed here today by a team of orthopaedic surgeons comprising internationally reputed orthopaedic surgeon Dr Karl P Benedetto from Austria and Dr Raghuveer Reddy, K Shoulder from Mumbai and knee surgeon at the 4th Annual Sai Institute of Sports Injury and Arthroscopy (SISA) workshop on 'Knee Surgery'. Conventional osteotomy method was done by a modern osteotomy technique (medial opening wedge) in this workshop.

The workshop was aimed at exchanging information on the most recent advances and technologies in the field of knee joint surgeries. Orthopaedic surgeons from across the country were attended the workshop, a release from SISA here said.

Womb transplants

Womb transplants possible next year: Expert (New Kerala: 28.3.2011)

Womb transplants that would allow childless women to have babies could be possible early next year, according to a medical expert.

The forecast will bring hope to thousands of women of childbearing age who are born without a womb or have had it removed because of disease.

Critics, however, warned that the breakthrough erodes the sanctity of life and questioned its safety, the Journal of Obstetrics and Gynaecology Research reported.

The prediction comes from one of the world's leading pioneers in female organ transplants, Mats Brannstrom of the University of Gothenburg in Sweden, who has spent more than a decade perfecting the complex surgical techniques needed for a womb transplant.

His team has succeeded in implanting donated wombs in mice, rats, sheep and pigs and are now hoping to achieve the same success in humans, the Daily Mail said quoting the report. The only human womb transplant so far took place in Saudi Arabia in 2000, but the donated organ failed after four months.

The wombs used in transplants could come from either living or dead donors.

Doctors say a living close relative such as a sister, after she has completed her own family, or a mother, would be a good tissue match.

But others believe that the only way to obtain a womb with the blood vessels needed to take the strain of pregnancy would be to take it from a dead donor.

After the transplant, a woman would be likely to need in-vitro fertilisation (IVF, where egg cells are fertilised by sperm outside the body) to become pregnant and a surgical delivery because the new tissue would not stand up to a natural birth.

Brannstrom said that during the last decade, there has been considerable progress in surgical techniques.

He expects womb transplants to be carried out as early as next year, according to the report.

Open-Heart Surgery

Now, a one-hour keyhole op to replace heart valves (Times of India: 28.3.2011)

Method Brings Hope To Those Too Sick For Open-Heart Surgery

London: A team in Britain, led by an Indian-origin surgeon, has come up with a one-hour keyhole operation to replace heart valves, a breakthrough which offers hope to cardiac patients too sick to undergo an open-heart surgery.

Vinayak Bapat of Guy's and St Thomas' Hospital and his team have developed the procedure, called transcatheter aortic valve implantation (TAVI), which treats heart valve failure under local anaesthetic without the need for a bypass surgery. "For seriously ill patients who do not have the option of heart surgery, TAVI is their one chance of life. It has the potential to save thousands of lives and is ultimately cheaper than prescribing years of medication," Dr Bapat said.

Aortic stenosis is the most common type of valve disease which can be caused by birth defects though in older patients it is usually the result of calcium building up in the heart's main valve, the aortic valve, hindering blood flow. The best solution is valve-replacement surgery via open-heart surgery, which involves opening up the patient's chest, putting their heart on a bypass machine and replacing the aortic valve.

But the TAVI requires only a small incision made in the thigh or chest to insert a stainless steel mesh tube with heart tissue from a cow lining the inside of it, say surgeons.

The tissue is derived from the tough sac surrounding a cow's heart or pericardium. It is recovered during commercial meat processing after which the membrane is slightly stiffened with a tanning solution. During the operation a hollow tube, or catheter, is inserted into the body. On the end of the catheter is a deflated balloon as well as the collapsible artificial valve.

When the catheter reaches the faulty valve, the balloon is inflated which, in turn, expands the mesh valve, crushing the broken human valve against the wall of the aorta, say the British surgeons.

TAVI requires just six days in hospital compared with ten for open-heart surgery, and some patients have been discharged after four days. PTI

Identified: Gene mutations that lead to leukaemia

For the first time, scientists have identified genetic mutations that lead to the development of acute leukaemia, a discovery they say could pave the way for new treatments to halt the growth of cancer in its tracks. Researchers at the Wellcome Trust Sanger Institute in the UK have discovered how some common gene mutation in acute myeloid leukaemia starts the process of cancer development by working together with some other well-defined mutations.

An app to translate teenagers' slang:

Can't understand the kids? A new mobile phone application may help. Over-50s group Saga is set to launch a mobile phone application to translate teenagers' slang. It has been developed to help parents and grandparents stay in touch with youngsters and will be free to download. The 'Woteva' app will translate 100 words or phrases. Among the translations are peeps, or people; fam, or family; endz, or neighbourhood; and sick, or good.

2,500-year-old human brain found:

Scientists have uncovered what they say is the oldest ever human brain preserved in a decapitated skull that dates back more than 2,500 years. The discovery of the yellowish, crinkly, shrunk brain by British researchers now prompted questions about how such a fragile organ could have survived so long and how frequently this strange type of preservation occurs.

A suit that turns you into a 74-yr-old:

Researchers at MIT's Age Lab have designed a suit to transform someone into a 74-year-old to understand the effects ageing has on the body. While many companies focus their attention on staving off the ageing process, this one has decided it was time to focus on making things easier when the eventuality of old age finally comes. The researchers have developed the age suit, called AGNES, to help businesses reinvent their products and services in order to help older people live better lives.

Stem cell

First trials of stem cell cures with govt nod set to begin (The Indian Express)

TECH DOC: A surgeon with the Da Vinci surgical robot, in Reims, France. The robot, equipped with three arms, miniaturized wristed instruments and a 3D camera, can be used for remote surgery.

Trials to be held on patients with diabetes, liver cirrhosis, osteoarthritis and lung disease

INDIA'S s very first govern ment-authorised trials for stem cell-based therapies will commence next month in hospitals countrywide.

In a bid to bring affordable, off-the-shelf stem cell products to the Indian market, Bangalore-based biotechnology firm Stempeutics Re search will start multi-centre, stem cell-based clinical trials on patients with diabetes, liver cirrhosis, osteoarthritis and chronic obstructive lung disease — widely prevalent maladies which affect millions of Indians.

The trials will commence in several hospitals, including AIIMS in New Delhi and M S Ramaiah and Mahaveer Jain in Bangalore, with patient-vol

unteers (60 patients for liver cirrhosis, 30 for diabetes mellitus and so on).

While unregulated stem cell treatments proliferate dangerously in private clinics and hospitals, these are the first government-authorised trials approved by Drug Controller General.

In an optimistic scenario, the first commercial stem cell drug could hit medical stores as early as 2014, says Stempeutics president B N Manohar. The company has even tied up with Cipla to market its products.

Stem cells are special selfrenewing cells found in certain body parts — such as bone marrow, human embryo and umbilical cord — that are envisaged as treatments for injured (such as heart muscle or burned skin) and diseased tis

sue (such as a failing kidney or a malfunctioning liver) because they can regenerate and differentiate into a variety of healthy cells.

While stem cells can thus be derived from both adults and embryos, the use of latter is controversial and banned in India.

In the Stempeutics trial, volunteers will be injected with a dose of mesenchymal stem cells that have been derived from the bone marrow of healthy donors. When injected directly into the affected body part — liver, pancreas, bone or lung — these are expected to stimulate the growth of healthy tissue.

Stempeutics says its ultimate aim is to market its therapies not just in India but also in Europe and North American markets.

New surgery technique

New surgery technique for Arthritis unveiled in Hyderabad (World Newspaper: 29.3.2011)

A new technique called the high tibial osteotomy (HTO) knee surgery, which doctors claim will provide relief to patients suffering from severe arthritis, is aimed at delaying joint replacements at an early stage.

With arthritis being highly prevalent even among the young people today, this procedure-HTO knee surgery (a stop gap operation) helps such patients avoid knee transplants early in their life.

Demonstrating the technique in Hyderabad orthopaedic surgeon Prof Dr Karl P Benedetto from Austria and Dr K Raghuvendra Reddy, shoulder and knee surgeon, Sai Institute of Sports Injury and Arthroscopy (SIASA) said that arthritis of the knee joint is caused due to damage of the cartilage.

Unlike the fracture of a bone, the damage of the cartilage does not heal on its own. Continued usage of the knee by ignoring the pain leads to gross denigration of the cartilage and severe arthritis. As a result the normal alignment of the knee changes leading to a bow legged appearance. This bow leg deformity can lead to progressive worsening of the arthritis and pain felt on the inner aspect of the knee, they said.

The ultimate solution for such condition is total knee joint replacement. However, knee joint replacement is not suggested at the active age of 40-50 years, as the replaced knee joint prosthesis can wear out in 10-15 years, requiring another knee joint replacement by the age of 50-60 years, which can have its own complications, the doctors said.

Therefore HTO knee surgery is indicated for such young people particularly those in the age group of 40-55 years with arthritis of the knee and is often used as a stop gap operation to delay joint replacement, they said.

Various studies have shown that the majority of the pain can be relieved for up to 10-15 years but after that period a knee replacement may be required.

High tibial osteotomy involves a surgical break in the shin bone just below the knee joint to change the alignment of the leg. HTO is used to relieve the pressure on the inner arthritic bearing of the knee and to redistribute the forces around the knee. Studies have shown that cartilage will regenerate to good extent after realignment of joint axis by this surgery.

Soon after operation, patients are allowed to move the knee but they may need to restrict the amount of weight through the leg by using the crutch for six weeks.

The restriction on the activity following a HTO are also often less than that following a knee joint replacement. One can lead a very active lifestyle (jogging, squatting on ground play etc) by effective rehabilitation post HTO.

The SISA Institute which organised the fourth annual workshop today demonstrated this technique live to orthopaedic surgeons from across the country by performing this knee constructive surgeries by Prof Dr Karl P Benedetto, Dr Raghuveer Reddy and Dr Anant Joshi from Mumbai.

Conventional osteotomy method was performed by a modern osteotomy technique (medical opening wedge) in this workshop.

The workshop was aimed at exchanging information on the most recent advances and technologies in the field of knee joint surgeries.

Weight loss surgery

Weight loss surgery can help alleviate migraines (New Kerala: 29.3.2011)

A new study from The Miriam Hospital has revealed that bariatric surgery may provide an added benefit to severely obese patients besides weight loss: it can also help alleviate the excruciating pain of migraine headaches.

Researchers say obese patients who had suffered painful and debilitating migraines before bariatric surgery reported improvements in headache frequency, severity and disability just six months after surgery. At that point, most patients had lost an average of 66.4 pounds.

"Obesity is thought to contribute to worsening of migraine, particularly for severely obese individuals, yet no study has examined whether weight loss can actually improve migraine headaches in these patients," said lead author Dale Bond, a researcher with The Miriam Hospital's Weight Control and Diabetes Research Center.

"Our study provides evidence that weight loss may be an important part of a migraine treatment plan for obese patients."

It is estimated that approximately 28 million Americans – mostly women – suffer from migraines. They are thought to be caused by abnormal brain activity, which is triggered by stress, certain foods, environmental factors, or other factors, although the exact chain of events remains unclear. Migraine pain is usually moderate to severe, often described as pounding, throbbing pain often felt on only one side of the head.

Headaches can last from four hours to three days and usually occur one to four times per month. Migraine symptoms include nausea, vomiting and light sensitivity. There is no specific cure for migraine headaches although certain medications can help reduce the number of attacks.

The Miriam study included 24 severely obese patients who suffered from migraines. The majority of participants (88 percent) were female, middle-aged and severely obese, with an average BMI of 46.6 prior to surgery. More than half of all patients underwent laparoscopic gastric banding surgery; the other participants chose Roux-en-Y gastric bypass. At six months, the average BMI was 34.6.

Using standard migraine questionnaires, researchers assessed patients both before and six months after bariatric surgery. They found headache frequency was significantly reduced from before surgery (11.1 headache days) to six months postoperatively (6.7 days), with nearly half of patients showing at least a 50 percent reduction in frequency.

The odds of experiencing this level of improvement were higher in participants who experienced greater weight losses, regardless of the type of bariatric surgery.

The study also revealed substantial reductions in headache pain severity and related disability. Before surgery, half of all participants reported moderate to severe disability related to their migraines, often requiring medical treatment and intervention. However, six months after surgery, only 12.5 percent of participants reported this degree of disability.

"It's interesting to note that headache improvements occurred postoperatively even though 70 percent of participants were still considered obese six months after surgery," said Bond. "These findings suggest weight loss can help alleviate migraines even though an individual's obesity has not been fully resolved.

Bond says future studies are needed to determine whether smaller, behavioral weight loss interventions also produce similar improvements in migraines.

The study has been published in the March 29, 2011 issue of *Neurology*, the medical journal of the American Academy of Neurology.

Invisible infrared light

Invisible infrared light could soon activate heart, ear cells (New Kerala: 29.3.2011)

A discovery by University of Utah scientists might someday improve cochlear implants for the deaf and lead to devices to restore vision, maintain balance and treat movement disorders like Parkinson's.

The scientists used invisible infrared light to make rat heart cells contract and toadfish inner-ear cells send signals to the brain.

Infrared light can be felt as heat, raising the possibility the heart and ear cells were activated by heat rather than the infrared radiation itself.

Richard Rabbitt, a professor of bioengineering and senior author of the heart-cell and inner-ear-cell studies and colleagues exposed the cells to infrared light in the laboratory.

The low-power infrared light pulses in the study were generated by a diode - 'the same thing that's in a laser pointer, just a different wavelength', said Rabbitt.

The heart cells in the study were newborn rat heart muscle cells called cardiomyocytes, which make the heart pump. The inner-ear cells are hair cells, and came from the inner-ear organ that

senses motion of the head. The hair cells came from oyster toadfish, which are well-established models for comparison with human inner ears and the sense of balance.

Inner-ear hair cells 'convert the mechanical vibration from sound, gravity or motion into the signal that goes to the brain' via adjacent nerve cells, said Rabbitt.

Using infrared radiation, "we were stimulating the hair cells, and they dumped neurotransmitter onto the neurons that sent signals to the brain," he added.

He believes the inner-ear hair cells are activated by infrared radiation because "they are full of mitochondria, which are a primary target of this wavelength."

The infrared radiation affects the flow of calcium ions in and out of mitochondria - something shown by the companion study in neonatal rat heart cells.

That is important because for "excitable" nerve and muscle cells, "calcium is like the trigger for making these cells contract or release neurotransmitter," said Rabbitt.

The heart cell study found that an infrared pulse lasting a mere one-5,000th of a second made mitochondria rapidly suck up calcium ions within a cell, then slowly release them back into the cell - a cycle that makes the cell contract.

"Calcium does that normally," said Rabbitt.

"But it's normally controlled by the cell, not by us. So the infrared radiation gives us a tool to control the cell. In the case of the [inner-ear] neurons, you are controlling signals going to the brain. In the case of the heart, you are pacing contraction."

Rabbitt believes the research - including a related study of the cochlea last year - could lead to better cochlear implants that would use optical rather than electrical signals.

Nerve cells that send sound signals from the ears to the brain can fire more than 300 times per second, so ideally, a cochlear implant using infrared light would be able to perform as well. In the Utah experiments, the researchers were able to apply laser pulses to hair cells to make adjacent nerve cells fire up to 100 times per second. For a cochlear implant, the nerve cells would be activated within infrared light instead of the hair cells.

Rabbitt also sees potential for optical implants to treat balance disorders.

"When we get old, we shuffle and walk carefully, not because our muscles don't work but because we have trouble with balance," he said.

"This technology has potential for restoring balance by restoring the signals that the healthy ear sends to the brain about how your body is moving in space."

Optical stimulation also might provide artificial vision in people with retinitis pigmentosa or other loss of retinal cells - the eye cells that detect light and color - but who still have the next level of cells, known as ganglia, Rabbitt says.

Cancer Therapy

Viral Replicase Points to Potential Cancer Therapy (Science Daily: 29.3.2011)

Alpha viruses, such as Sindbis virus, carry their genetic information on a single strand of RNA. On infection they use a protein, replicase, to produce double stranded RNA (dsRNA) which is used as genetic material to make more viruses. However the body recognizes dsRNA as foreign, and infected cells initiate an immune response. New research published in BioMed Central's open access journal BMC Cancer demonstrates .

that an artificial plasmid coding for the replicase genes of Sindbis virus causes regression and destruction of lung cancer, or melanoma, cells in mice.

Previous attempts to use synthetic dsRNA to destroy tumor cells have met with problems, including side effects at an effective dose, but there are also concerns about using attenuated viruses, to deliver dsRNA inside cells. Researchers from the University of Texas at Austin have instead used a plasmid containing Sindbis replicase genes (nsP1-4) to force cells to produce dsRNA themselves.

For ten days mice were given daily injections of plasmid into the site of a tumor. After another 15 days most of the tumors had begun to regress, and by day 37 all of the tumors had either regressed or been destroyed. Professor Cui said, "The anti-cancer action of the plasmid seemed to be two-fold. Firstly accumulation of dsRNA resulted in cell death and secondly the presence of dsRNA, and the foreign, unmethylated, plasmid DNA, inside a cell activated both innate and adaptive immune responses."

Professor Cui continued, "In our study both highly immunogenic and poorly immunogenic tumors were receptive to treatment with an RNA replicase based plasmid. Our results suggested a novel approach to cancer molecular therapy."

Genetic link

Scientists identify genetic link to suicide attempts (New Kerala: 30.3.2011)

A new study suggests that genetic risk factors may influence the decision to attempt suicide. Johns Hopkins scientists have identified a small region on chromosome 2 that is associated with increased risk for attempted suicide.

This small region contains four genes, including the ACP1 gene, and the researchers found more than normal levels of the ACP1 protein in the brains of people who had committed suicide. This

protein is thought to influence the same biological pathway as lithium, a medication known to reduce the rate of suicidal behavior.

Study leader Virginia L. Willour, an assistant professor of psychiatry and behavioral sciences, and her colleagues, studied DNA samples from nearly 2,700 adults with bipolar disorder, 1,201 of them with a history of suicide attempts and 1,497 without. They found that those with one copy of a genetic variant in the region of chromosome 2 where ACP1 is located were 1.4 times more likely to have attempted suicide, and those with two copies were almost three times as likely.

Willour and her colleagues were able to replicate their findings in another group of samples: This one comprised DNA from more than 3,000 people with bipolar disorder. By using only DNA from people with bipolar disorder, the researchers say they were able to control for mental illness and narrow in on what may cause one group to attempt suicide and another to control those urges.

The study is reported in the journal *Molecular Psychiatry*.

Devise Targeted Therapy

Scientists Devise Targeted Therapy Strategy for Rare Form of Childhood Cancer (Science Daily: 30.3.2011)

By "distracting" cancer proteins from their usual activity, scientists at Dana-Farber Cancer Institute and Brigham and Women's Hospital have caused cells in a rare, lethal form of cancer to begin behaving like normal cells -- one of the longest-standing, and most rarely achieved, goals of cancer research. The study's findings are published online by the journal *Cancer Research* and will appear later in a print issue.

When the approach was tested in a child with an advanced case of the malignancy, known as NUT midline carcinoma (NMC), it slowed the course of the disease for several months. That result, in a cancer for which there are no other effective treatments, is a powerful impetus for making the new therapy available to patients in clinical trials, the authors assert.

"NUT midline carcinoma arises people of all ages, but predominantly in children and young adults," explained the study's senior co-author, James Bradner, MD, of Dana-Farber. "It usually originates in the chest, sometimes in the head or neck, and is often mistaken for other types of cancer. Traditional therapy involves surgery, radiation, and chemotherapy, but even in combination these approaches don't work well: most patients live only about nine and a half months after diagnosis. As we've learned more about the molecular basis of the disease, we've begun to be able to devise therapies against it."

The cause of the disease was discovered by Christopher French, MD, a senior author of the study from Brigham and Women's Hospital. It results from a "translocation" in which two genes from different chromosomes stick together and give rise to an abnormal, fused protein called BRD4-NUT. While Bradner and his colleagues have subsequently developed and studied compounds that target BRD4-NUT directly, the newly published study involves a more oblique approach.

Researchers discovered that BRD4-NUT causes cells to become cancerous by attaching to DNA's packing material within the nucleus -- a band of proteins known as histones, part of the machinery for switching genes on and off. BRD4-NUT essentially locks down the machinery's control panel, preventing changes that allow cells to develop into mature, stable, slow-growing adults, leaving them in a state of perpetual, hyperactive youth.

To interfere with BRD4-NUT's affinity for histones, French and Bradner tried a diversionary tactic. They treated NMC cells with a substance called an HDAC (histone deacetylase) inhibitor, which creates competing binding sites for BRD4-NUT throughout the nucleus. The hope was that, like a burglar who bypasses one house for the promise of a bigger prize in another, the HDAC inhibitor would lure BRD4-NUT away from certain locations in the genome.

In laboratory experiments, they found that NMC cells treated with an HDAC inhibitor turned into ordinary, non-dividing skin cells -- a process known as "differentiation," which has been a central goal of cancer research for well over half a century. In studies with animals engrafted with NMC tissue, animals treated with HDAC inhibitors had slower-growing tumors and lived longer than those who were not treated.

"These findings provided convincing evidence that we've uncovered a key mechanism by which BRD4-NUT prevents cell differentiation," said Bradner. The results established the rationale for the first, prospective clinical trial of the HDAC inhibitor in a single patient with NMC. A Food and Drug Administration-approved inhibitor was prescribed to a child suffering from extensive NMC, leading to positive results after five weeks of therapy: PET scans showed the tumor was markedly less active than at the start of therapy. Although the patient eventually succumbed to the disease, the response to the drug heartened investigators on the potential of this approach. Dana-Farber's Chief of Staff, Stephen Sallan, MD, co-led the clinical study.

The inspiration for this approach came from earlier research by French. About five years ago, he was investigating the effect of HDAC inhibitors on cell memory -- the ability of cells to "remember" the type of cell they are as they divide. "HDAC inhibitors can alter cell memory," French explained. "We hypothesized that treating NMC cells with these inhibitors would change the cells' memory and modify their identity. What happened was that the cells remembered what type of cell they initially were and switched back to being normal skin-like cells. BRD4-NUT, it turns out, interferes with cell memory. Blocking the protein with HDAC inhibitors restores that memory."

The discovery remained an interesting scientific "epiphany," French said, until he met Bradner, sparking the idea of using it as the basis for a potential treatment for NMC. According to French, the new study marks the first time scientists have therapeutically caused a carcinoma -- a cancer of cells lining an organ or tissue -- to differentiate.

"The inhibitor used in the patient described in this study was a first-generation agent, and we're optimistic that future versions will be both more effective and easier for patients to tolerate," Bradner said. "To our knowledge, this study represents the first time a targeted drug has demonstrated anti-cancer activity against this devastating tumor. The same approach may prove beneficial against other cancers as well."

The paper's first author is Brian Schwartz, PhD, formerly a postdoctoral fellow at Brigham and Women's. In addition to Bradner, French and Sallan, the other authors are Matthias Hofer, MD, Michael Cameron, Tan Ince, MD, PhD, Jon Aster, MD, PhD, and Elin Agoston, PhD, Brigham and Women's; Amanda Christie, Katherine Janeway, MD, Madeleine Lemieux, PhD, and Andrew Kung, MD, PhD, Dana-Farber; Daniel Bauer, MD, PhD, Sara Vargas, MD, and Antonio Perez-Atayde, MD, Children's Hospital Boston; Nathan West, Harvard Medical School; and Nicolas Reynoird, PhD, and Saadi Khochbin, PhD, Institut National de la Sante et de la Recherche Medicale, Grenoble, France.

Physical pain

Pang of rejection as bad as physical pain (Times of India: 30.3.2011)

The pain of rejection is more than just a figure of speech.

The regions of the brain that respond to physical pain overlap with those that react to social rejection, according to a new study that used brain imaging on people involved in romantic breakups. "These results give new meaning to the idea that rejection hurts," wrote psychology professor Ethan Kross of the University of Michigan and his colleagues.

Co-author Edward Smith of Columbia University explained that the research shows that psychological or social events can affect regions of the brain that scientists thought were dedicated to physical pain. The study involved 40 volunteers who went through an unwanted romantic break-up in the previous six months and who said thinking about the break-up caused them to feel intensely rejected.

Functional MRI's were used to study their brains in four situations: When viewing a photo of the ex-partner and thinking about the break-up; when viewing a photo of a friend and thinking of a positive experience with that person; when a device placed on their arm produced a gentle, comforting warmth, and when that device became hot enough to cause pain, though not physical damage.

The two negative situations — thinking about the loss of a partner and the burn — caused response in the overlapping parts of the brain, the study found.

Automated Colonoscopy

Automated Colonoscopy Reminder System is Effective, Especially in Minority Populations (Med India: 31.3.2011)

The simple practice of letters and a telephone call to patients who are due for a colonoscopy significantly improves adherence to endoscopic follow-up recommendations, according to a new study in Gastroenterology, the official journal of the American Gastroenterological Association (AGA) Institute. This work provides justification for the creation of reminder systems to improve colorectal cancer screening rates.

"Our automated, patient-dependent colonoscopy follow-up reminder system significantly improved adherence with recommended surveillance colonoscopy and patient satisfaction," said Daniel A. Leffler, MD, MS, of Harvard Medical School. "Although this study focused only on colonoscopy, it is expected that this approach would be widely applicable across different procedures and medical specialties." To view Dr. Leffler further discuss his research findings, go to <http://www.youtube.com/watch?v=kYJANXEc-Jw>.

In this study, patients were assigned to groups that received the standard of care or a newly developed follow-up system that included a letter to the primary care provider, two letters to the patient and a telephone call to patients who had not yet scheduled an examination by the procedure due date. Doctors created and tested an electronic medical record-based system that reminds patients and providers when follow-up examinations — in this case, colonoscopies — are due and provides documentation in the medical record of this communication.

The low-cost intervention almost doubled the rate of recommended exams during the time period of the study. Also, the intervention was well received by patients and even more effective in minority populations who typically receive lower quality care. This could lead to improvements in disparities in care for those needing repeat colonoscopies.

Ecstasy

Greater brain risk from 'real world' ecstasy use (The Times of India: 31.3.2011)

For a glimpse into real-world drug use, Australian researchers went to parties where people were using a drug known as ecstasy — and discovered users' brains were at far more risk from the drug than anyone had suspected.

The researchers also found that ecstasy pills often contain a variety of other drugs. "What's concerning is that most studies looking at toxicity in people or animals look at a single drug,"

said Thomas Newton, of Baylor College of Medicine, who was not involved in this study. “We have no idea what happens when you start mixing like this.”

For this study, 56 people who had taken ecstasy at least five times in the past agreed to invite the researchers to parties where they took ecstasy once again. The researchers collected a sample of the pills and measured users' blood levels of MDMA — the chemical that's in ecstasy — every hour for 5 hours after people took the drug. In some people, the amount of MDMA reached levels that cause injury or death in primates.

The researchers found only half of the pills consisted entirely of MDMA

Fish pedicure

Fish pedicure could spread infection and disease, warn experts (New Kerala: 1.3.2011)

The latest beauty craze-fish pedicures-offered in salons and spas across the world have raised serious health concerns.

British experts are worried that the trend that is sweeping the country could spread infection and disease, reports the Daily Mail.

The Health Protection Agency is investigating after the treatment was banned by 14 American states.

The treatment, which costs between 10 and 50 pounds, involves customers dunking their feet in tanks to have their dead skin nibbled away by scores of Turkish miniature toothless carp.

But it has been revealed the pedicures using the garra rufa fish could spread infection from person to person through open wounds.

Salons said they use UV-lit tanks, which are constantly filtered to keep them clear of disease.

But the therapy's opponents said that unlike usual salon rules, which compel staff to throw away or sanitise tools after each use, the epidermis-eating fish are too expensive to discard.

The agency began investigating after being contacted by environmental health officers.

"The HPA will examine the most up-to-date evidence of any possible risks associated with garra rufa fish pedicures," said an agency spokesman.

New Personalized Therapy

New Personalized Therapy Causes Cancer Cells to Kill Themselves(Science daily: 1.3.2011)

A Wayne State University School of Medicine physician-researcher has developed a personalized therapy to treat a wide range of cancers. The treatment is based on a naturally occurring human enzyme that has been genetically modified to fool cancer cells into killing themselves.

The unique concept, patented by Wayne State University, was successfully demonstrated on melanoma cells that are resistant to routine treatments such as chemotherapy or radiotherapy. Melanoma is a perfect model for testing this new therapy because it is considered the most aggressive form of human cancer due to its many defense mechanisms against available treatments. The success of the therapy in killing melanoma suggests a similar outcome in treating other cancers.

Developed by Karli Rosner, M.D., Ph.D., assistant professor and director of Research in the Department of Dermatology, the method uses genetic constructs that contain a genetically modified enzyme -- DNase1 protein -- to seek out and destroy cancer cells. The novel technology was published in the article "Engineering a waste management enzyme to overcome cancer resistance to apoptosis: adding DNase1 to the anti-cancer toolbox" in the Jan. 14 online edition of Cancer Gene Therapy, a Nature Publishing Group journal.

Dr. Rosner modified the genetic code for DNase1, a highly potent DNA-degrading enzyme, and altered its genetic composition by deleting a part of the code, mutating another part and adding an artificial piece of code. Through these changes, the altered DNA program is translated into a modified protein. In contrast to the natural protein, the modified protein will not be eliminated from the cancer cell, will resist deactivation by cell inhibitors and will gain access to the cell's nucleus. "If you imagine the cell's nucleus as a computer and DNA in the nucleus as computer software," Dr. Rosner explained, "then the altered, hacked DNA program corresponds to a computer virus."

"To further understand this anti-cancer technology," he continued, "recollect the plot from the movie, Independence Day. In this movie, a computer virus is introduced into an alien ship to neutralize its defenses and make it vulnerable to external weapons. We do something similar but much better by introducing the altered genetic code of DNase1 into the DNA of cancer cells alien to the healthy body." The cancer cell, unaware of the destructive potential of the modified code, translates it into a protein that evades the cell's defense mechanisms and enters the nucleus. In the nucleus, the protein damages DNA by chopping it into fragments without the need for external weaponry, i.e., other medications. Following damage to DNA, the cell's organelles disintegrate and the cancer cell dies. In this way, Dr. Rosner's technology leads cancer cells into committing suicide because he fools them into generating the protein that will cause their own death.

The beauty of this therapy is that specifically-targeted cancer cells destroy themselves through the physiological mechanism of apoptosis, leaving surrounding healthy cells intact. This mode of cancer cell elimination leaves no residual debris to alert the immune system to kick in, essentially committing "the perfect crime," Dr. Rosner said. This is important because the many side effects of current anti-cancer treatments are attributed to activation of the immune system. The fact that this therapy does not require participation of the patient's immune system to kill cancer cells is a big advantage over other newly developed technologies, such as the cancer vaccine. Those technologies depend on the patient's immune system to destroy cancer. Unfortunately, they are not effective in the presence of a compromised immune system, which is true for many cancer patients. In contrast, Dr. Rosner's therapy will be able to treat even the most severely immuno-compromised patients with the same degree of success as in treating patients with a fully functional immune system.

Patients with the same cancer type vary in their response to identical treatment because the biological characteristics of the same cancer type usually differ between patients. As a result, the medical field strives to develop treatments that can be adjusted to each patient. The structure of Dr. Rosner's technology is flexible in that it contains Lego-like pieces that together form a genetic construct. Each piece can be replaced by one of several other genetic pieces that perform the same task, but differ slightly in their genetics. The multiple options available for each genetic piece will allow the physician to tailor the finalized treatment to each patient based on the unique characteristics of his or her cancer. In this way, the new technology is a "true personalized therapy" he said. The physician will expose a patient's cancer cells obtained by biopsy, to various genetic constructs to identify the version of therapy that kills the patient's cancer with the utmost efficiency.

Of particular importance is the potential for this technology to treat a large variety of tumors, such as prostate, lung and breast cancers. Dr. Rosner likened the therapy to the military's Tomahawk missile platform. The Tomahawk is directed to its target by programming the missile's homing device. Likewise, the destructive genetic construct can be targeted to a particular cancer type by incorporating a genetic piece that specifically identifies the cancer. Multiple genetic homing devices will be at the physician's disposal. The ability to target the therapy specifically to cancer cells will reduce side effects common with today's anti-cancer therapies. Moreover, the ability to target multiple cancers will immensely increase the number of cancer patients who will benefit from the new technology.

The one side effect that Dr. Rosner foresees is the potential for lightening of skin hue at a level that he cannot predict, but that's a tradeoff someone suffering from metastatic cancer and given a limited prognosis may accept in exchange for becoming cancer-free. To date, Dr. Rosner has demonstrated cancer cell kill rates of 70 to 100 percent with his first generation of "gene suicide therapy." To further increase the killing efficiency, he has recently designed a second generation of constructs. In the near future he intends to test the therapy in an animal model, an intermediate step required before moving the treatment into clinical trial.

Acupressure

Acupressure Effective in Helping to Treat Traumatic Brain Injury, Study Suggests (Science Daily: 1.3.2011)

A new University of Colorado Boulder study indicates an ancient form of complementary medicine may be effective in helping to treat people with mild traumatic brain injury, a finding that may have implications for some U.S. war veterans returning home.

The study involved a treatment known as acupressure in which one's fingertips are used to stimulate particular points on a person's body -- points similar to those stimulated with needles in standard acupuncture treatments, said CU-Boulder Professor Theresa Hernandez, lead study author. The results indicate a link between the acupressure treatments and enhanced cognitive function in study subjects with mild traumatic brain injury, or TBI.

"We found that the study subjects with mild traumatic brain injury who were treated with acupressure showed improved cognitive function, scoring significantly better on tests of working memory when compared to the TBI subjects in the placebo control group," said Hernandez, a professor in CU-Boulder's psychology and neuroscience department. "This suggests to us that acupressure could be an effective adjunct therapy for those suffering from TBI."

The acupressure treatment type used in the study is called Jin Shin. For the study, Hernandez and her colleagues targeted the 26 points on the human body used in standard Jin Shin treatments ranging from the head to the feet. The study subjects all received treatments by trained Jin Shin practitioners.

According to practitioners, Jin Shin acupressure points are found along "meridians" running through the body that are associated with specific energy pathways. It is believed that each point is tied to the health of specific body organs, as well as the entire body and brain, Hernandez said.

"Think of the meridians as freeways and the pressure points as towns along the way," she said. "When there is a traffic jam in Denver that causes adverse effects as far away as Boulder, clearing the energy blocks, or in this case traffic jams, helps improve flow and overall health."

The study involved 38 study subjects, each of whom was randomly assigned to one of two groups -- an experimental group that received active acupressure treatments from trained experts and a control group that received treatments from the same experts on places on the body that are not considered to be acupressure points, acting as a placebo. The study was "blinded," meaning the researchers collecting data and the study participants themselves did not know who was in the experimental group or the placebo group until the end of the study.

The team used a standard battery of neuropsychological tests to assess the results. In one test known as the Digit Span Test, subjects were asked to repeat strings of numbers after hearing

them, in both forward and backward order, to see how many digits they could recall. Those subjects receiving active acupressure treatments showed increased memory function, said Hernandez.

A second standard psychology test used for the study, called the Stroop Task, measured working memory and attention. The test subjects were shown the names of colors like blue, green or red on a computer screen. When the names of the particular colors are viewed on the screen in a different color of ink -- like the word "green" spelled out in blue ink -- test subjects take longer to name the ink color and the results are more error-prone, according to Hernandez. The Stroop Test subjects in the CU-Boulder study wore special caps wired with electrodes to measure the brain activity tied to specific stimuli. The results showed those who received the active acupressure treatments responded to stimuli more rapidly than those who received the placebo treatments, Hernandez said.

"We were looking at synchronized neural activity in response to a stimulus, and our data suggest the brains of those in the active acupressure group responded differently when compared to those in the placebo acupressure group," she said.

A paper on the subject was published in the January issue of the Journal of Neurotrauma, a peer-reviewed publication on the latest advances in both clinical and laboratory investigations of traumatic brain and spinal cord injury. Co-authors on the study included CU-Boulder's Kristina McFadden, Kyle Healy, Miranda Dettman, Jesse Kaye and Associate Professor Tiffany Ito of psychology and neuroscience.

Funded by the Colorado Traumatic Brain Injury Trust Fund, the study is believed to be one of the first placebo-controlled studies ever published in a peer-reviewed medical journal showing the benefit of acupressure to treat patients with TBI, Hernandez said.

"We would like to see if the Jin Shin treatment is useful to military veterans returning home with traumatic brain injury, a signature wound prevalent in the wars in Iraq and Afghanistan," said Hernandez. The Jin Shin acupressure treatment can be taught to family and friends of those with TBI and can even be used as a self-treatment, which could allow for more independence, she said.

In a 2010 stroke study led by Hernandez, the researchers concluded that Jin Shin acupressure triggered a larger and faster relaxation response during active treatments and a decreased stress response following active treatments compared with what was seen in placebo treatments. Hernandez and her colleagues are embarking on a new study on the use of Jin Shin acupressure in athletes to see if the enhanced relaxation response and decreased stress seen in the stroke study can reduce the likelihood of athletic injury.

In 2002, Hernandez partnered with former Colorado Rep. Todd Saliman to initiate the Colorado Traumatic Brain Injury Trust Fund, a statute that has generated nearly \$2 million to the state annually since 2004 from surcharges to traffic offenses like driving while impaired and speeding. Roughly 65 percent of the money goes toward rehabilitation and care services for individuals with TBI, about 30 percent goes for TBI research and 5 percent for TBI education. Because of

the statute, nearly 4,000 Colorado citizens with TBI have received care and rehabilitation services for brain injuries.

Cancer

Cancer

Cancer: Early detection is the key (The Times of India: 4.2.2011)

Some types of cancer do not present any symptoms until they are in advanced stages. This is why cancer screening is vital for cancer prevention, says Dr Harsh Dua on World Cancer Day

Cancer is a leading cause of death around the world. Cancer is a disease which can affect almost any part of the body. There are numerous types of cancer which are characterized by the type of the cell which is initially affected.

What causes cancer?

Cancer is caused by the damaged cells that grow uncontrollably and unlike normal cells, these cells do not have a programmed death. Instead they continue to grow and divide leading to a mass of abnormal cells causing the formation of tumors.

Symptoms of cancer

The symptoms of cancer are varied and depend on the type of cell affected, where it has spread and how big the tumor is. Although each type has its own set of characteristics, there are some cancer symptoms that occur in many types of cancer. Some types of cancer do not present any symptoms until they are in advanced stages. This is why cancer screening and risk assessment are vital for cancer prevention and early detection. A broad spectrum of non-specific cancer symptoms may include:

Persistent fatigue:

Fatigue is a symptom of both malignant and non-malignant conditions and should be evaluated by a physician.

Unintentional weight Loss:

Losing 10 pounds or more unintentionally definitely warrants a visit to the doctor. This type of weight loss can occur with or without loss of appetite.

Pain:

Lower back pain is associated with ovarian cancer and colon cancer. Shoulder pain can be a symptom of lung cancer. Pain in the form of headaches can be associated with brain tumors. Stomach pains can be related to stomach cancer, pancreatic cancer.

Fever:

Fevers are commonly associated with leukemia and lymphoma, but are also common in people whose cancer has spread.

Chronic cough:

In relation to cancer, a chronic cough with blood or mucus can be symptom of lung cancer. Many cancers can be prevented by avoiding exposure to common risk factors, such as tobacco smoke. In addition, a significant proportion of cancers can be cured, by surgery, radiotherapy or chemotherapy, especially if they are detected early.

Cancer Epidemic

India Faces Cancer Epidemic Risk(The Asian age: 4.1.2011)

India faces the risk of growing cancer epidemic as its population experiences rising incomes and changing food habits amid increasing physical inactivity, the WHO warned on Thursday.

"Physical inactivity is very high in India," Dr Timorthy Armstrong, a WHO official on chronic diseases, told PTI. "There is real opportu

nity for community interventions in spreading the importance of physical activities in India."

"The public is willing to engage in physical activity and governments must develop policies that can protect people's health and prevent diseases like cardiovascular disease, diabetes and cancer," he said.

Having become the socalled global IT services hub, India's rising middle class has become physically more inactive due to sedentary working habits despite increasing consumption of high-calorie fast foods.

India is now on the cusp of becoming the country with highest cardio-vascular diseases, including cancers.

Though India currently suffers more from cancers caused by tobacco-chewing as well as cervical cancer in women, it would soon face

the threat of other stomach and other related cancers due to increasing physical inactivity among its people.

Regular physical activity reduces the risk of coronary heart disease and stroke, diabetes, hypertension, colon cancer, breast cancer, osteoporosis, and depression. Indian women face growing incidence of cervical cancer which is caused by human pailloma virus that is sexually transmitted.

World Cancer Day -World Cancer Day

Let us join hands to fight cancer (The Hindu: 4.2.2011)

World Cancer Day is an occasion to dispel myths and spread awareness of cancer.

Each year 127 lakh people discover that they have cancer and of them, 76 lakh die. Two-thirds of these distressing deaths occur in low and middle income countries.

The World Health Organization projects that unless immediate action is taken, deaths from cancer will increase by nearly 80 per cent by 2030; most of them occurring in low and middle income countries. That translates to nearly 260 lakh newly diagnosed cases and about 170 lakh deaths every year! In fact, cancer kills more people than do AIDS, malaria and tuberculosis combined.

Research suggests that “one-third of cancer deaths can be avoided through prevention” and “one-third through early detection and treatment”. The Union for International Cancer Control (UICC) states that the world's cancer burden is rising and, without action, the poorest countries — those currently least equipped to cope — will witness the largest increases in mortality by 2015. As per the UICC, whose headquarters is in Geneva, Switzerland, the number of deaths due to cancer every year is more than the population of the whole of Switzerland.

There are so many known causes acting directly or indirectly on the systems to produce cancer. Many of them are related to “lifestyle” and avoiding these can prevent or protect against cancer.

Measures to prevent cancer include eschewing tobacco, having good dietary habits, physical activity, maintaining a healthy diet, environmental health, prevention of cancer causing infections and limiting alcohol intake.

Tobacco

Many people relate tobacco to cardiac and respiratory diseases. But beyond that, smoking is the single biggest cause of cancer in the world. It is responsible for more than 25 per cent of all cancer deaths; it kills one person every six seconds.

It also accounts for one in 10 adult deaths and kills more than 50 lakh people every year.

Smoking not only affects the person who smokes but also people around him through second-hand smoke. Children born to mothers who smoke are also affected.

The risk of oral cancer increases 27 fold in men and six fold in women who smoke. Laryngeal cancer is 10 times more common in men and eight times more common in women. There is an eight to 10 fold increase in oesophageal cancer and 50 per cent increase in gastric cancer in tobacco users compared to non-smokers.

It has been noticed that there is a two-fold increase in pancreatic cancer among smokers. If they smoke more than 40 cigarettes a day, there is a five-fold increase.

The risk increases significantly if the individual has the habit of drinking also.

In many situations we find that many cancer patients have been smoking and drinking for years.

Diet

This is a factor that concerns everyone. Diet plays a significant role in the prevention of certain cancers, not necessarily in the Gastro-Intestinal system.

A “Healthy Diet” can prevent many cancers, more so if it is combined with physical activity. Many medical societies fighting cancer recommend the following:

- Be as lean as possible without becoming underweight
- Be physically active for at least 30 minutes every day
- Avoid sugary drinks
- Eat plenty of vegetables, fruits, whole grains and pulses
- Limit consumption of red meat and avoid processed meat
- Limit consumption of alcohol
- Limit salty food

It is also better to avoid reheated oil for cooking.

Cancer-causing infections

An estimated 22 per cent of cancer deaths in the developing world and six per cent of deaths in industrialised countries are related to cancer-causing infections.

Significant among these are Human Papilloma Virus causing cancer of the cervix and Hepatitis B and C causing liver cancer.

Environmental carcinogens

Environmental factors do play a role in certain cancers; poor air quality indoors and chemical pollutants can cause lung cancer. Similarly, food chemicals can be responsible for gastro-intestinal cancers.

Research done by the Department of Surgical Gastroenterology, Rajiv Gandhi Government General Hospital, along with the Department of Clinical Nutrition, Ethiraj College for Women, on gastric cancer produced revealing insights.

Of 100 patients analysed, 98 had the habit of consuming preserved food in the form of leftover rice, dried fish, pickle, or — for a majority — a combination of leftover rice and pickle. Moreover, 97 patients had the habit of reusing oil — 77 people reused oil more than three times; 88 were non-vegetarians; 78 consumed 25-30 grams of salt per day; and 74 consumed about 20 grams of chilli in their meal every day. In addition, 73 were smokers, 37 had the habit of tobacco chewing, 33 consumed alcohol every day, only 21 had the habit of exercising, and only two out of 100 consumed fresh fruits and vegetables regularly.

Indian scenario

As per results published by the Tumour Registry, in men, lung cancer tops the list followed by cancers of the stomach, oral cavity, oesophagus and oro-pharynx.

In women, breast cancer leads, followed by cancer of the cervix, ovary, oral cavity and stomach. Also, if reproductive organs are excluded, stomach cancer is the second most common cancer affecting people living in Tamil Nadu.

Similarly, oesophageal cancer is the fourth most common in men and in women [third if reproductive organs are excluded]. As per a publication by the Registry in 2010, cancers from the oral cavity to the stomach constitute 25.4 per cent of all cancers in men and 14.4 per cent in women.

Of these “Tobacco Related Cancers” — namely cancers of the oral cavity, oro-pharynx, larynx, lung, oesophagus, pancreas and urinary bladder — constitute 44 per cent of all cancers in men and 16 per cent in women.

What is being done ?

The Union for International Cancer Control is aiming for a “World Cancer Declaration”. The declaration outlines 11 targets to be achieved by 2020, which include:

- Significant drop in global tobacco consumption, obesity and alcohol intake
- Universal vaccination programmes for Hepatitis B and Human Papilloma Virus to prevent liver and cervical cancer
- Universal availability of effective pain medication and
- Dispelling myths and misconceptions about cancer

Every year February 4 is observed with a focus and for 2011 it is “teach children and teenagers to avoid UV exposure by being “Sun Smart.”

What do we have to do?

It is a common observation that many people in our society present cancer at an advanced stage. Various studies done across India shows that 60-70 per cent of the patients present at an advanced stage where cure may be impossible.

The main factors which contribute to this include: Myths and misconception about cancer, lack of awareness, negligence and dietary and lifestyle modifications including tobacco use and regular consumption of preserved foods.

The major task before the health authorities is to create awareness, dispel myths and misconceptions and provide the best advice to people on healthy lifestyle, eating habits and the need for exercise. More importantly, people should not “ignore the symptoms” and must consult a doctor to get the appropriate treatment without delay. All of us can play a role to create a cancer-free world. You need not to be a doctor to spread this message. Let us all join hands to fight against cancer

Cancer

Cancer shot may combat genital warts (Times of India: 07/02/2011)

A vaccine that was known to protect women against cervical cancer has now been found to be highly effective in combating genital warts in men, caused by the same human papillomavirus (HPV).

A multi-centre study conducted across 18 countries and over 4,000 subjects has for the first time comprehensively shown that the vaccine can prevent 90% of genital warts in men when offered before exposure to the four HPV strains covered by the vaccine. Interestingly, two of the strains covered by the vaccine HPV 16 and 18 are the ones that mainly affect Indians.

The four-year international clinical trial, which also found nearly 66% effectiveness in the general population of young men regardless of prior exposure to these strains, provides the first reported results of using the HPV vaccine as a prophylactic in men.

The results have been published in the February 3 issue of the ‘New England Journal of Medicine’.

While the HPV vaccine was approved in 2006 for girls to prevent cervical cancer, the vaccine’s benefit for young men was not initially addressed. Yet, infection and diseases caused by HPV are common in men, including genital warts, which are one of the leading sexually transmitted diseases (STD) for which treatment is sought. “This is an exciting development in the STD world,” said Joel Palefsky from the H Lee Moffitt Cancer Center. “It shows that if we vaccinate males early enough, we should be able to prevent most cases of external genital warts in this population.” Vaccinating boys should also help prevent HPV transmission to women, scientists said.

While warts are often considered an annoyance, rather than a life-threatening disease such as cervical cancer, Palefsky said warts were a common problem in young people and were often associated with depression, social stigma and loss of self-esteem.

Cancer awareness

Cancer awareness walks stress better care for patients (The Tribune: 07/02/2011)

To express solidarity to the cause of patients battling against cancer, hundreds of people almost from all walks of life, including survivors of the dreaded disease, children and dignitaries joined in for “Walk for Life- Stride against Cancer”, this morning in the national Capital.

Flagged off by the CWG gold medallist discus thrower Krishna Poonia from the Central Civil Services Sports Ground in Chanakyaपुरi, the march nearly of four km was anchored by the NGO CanSupport, with an aim to sensitise people about debilitating condition of cancer.

Besides, the purpose is also to make people more receptive towards the pain and suffering of those afflicted by various types of cancer as the focus on palliative care has been very dismal in the country, pointed out CanSupport founder and director Harmala Gupta.

“Such initiatives in the field of palliative care is commendable. It’s really encouraging to find people turning in large numbers,” said Poonia, who seemed to be thrilled seeing so many people even on a weekend.

“It is important that the government pay more attention to serious diseases like cancer and in this regard come up with stringent measures to contain tobacco consumption. Government has to allocate more funds,” said Ria Singh, a student of Lady Sriram College, who reached late for the walk, but caught an auto to join the group.

Among others who participated in the walk were former US ambassador David Mulford and his wife Jeannie, a cancer survivor; Terhi Hakala, Finland’s ambassador and another cancer survivor, the US ambassador Timothy J. Roemer and his wife; then the Mexican ambassador Jaime Nualart and member of the Planning Commission Syeda Hameed.

Further, the other highlights that caught the attention of Delhiites were a special vintage car, which carried the cancer survivors and a motorbike rally.

Another walk, “Walk for Cancer Awareness” was also organised by the Indian Cancer Society along with the Rajiv Gandhi Cancer Institute from Navy Children’s School and around parts of South Delhi.

The event of ISC, which followed the international conference on paediatric cancer organised by the Rajiv Gandhi Cancer Institute at India Habitat Centre, saw participation from many—Army Chief General V K Singh, athletics legend Milkha Singh, wrestler Sushil Kumar and mountaineer Santosh Yadav, said Renu Chopra of ISC

Cancer institute

Sheila dedicates cancer institute second phase (The Hindu: 14.2.2011)

Delhi Chief Minister Sheila Dikshit dedicated the second phase of the Delhi State Cancer Institute (DSCI), an autonomous institution under the State government, to the citizens of the Capital on Sunday. The institute, approved in April 2006, was inaugurated in August that year by the Chief Minister.

Ms. Dikshit said the DSCI was set up to provide dedicated facilities for comprehensive management of cancer patients in the region, with concepts and technologies matching international standards. Earlier, such facilities were not available for cancer patients in any other hospital under the State government.

Under the second phase, the latest generation city scanner with RT simulation has been commissioned. The institute also boasts of fully digital x-ray unit with digital fluoroscopy, ultra-modern digital mammography, high-end ultrasonography unit, complete picture archiving and communication system, ultra-modern lab, state-of-the-art linear accelerators and a patient queue management system.

Ms. Dikshit said that most advanced surgical facilities, intra-operative radiotherapy, nuclear medicine set-up, alternative medicine facilities and a deemed- University status were the cards in the next phase.

Cancer

Indian Doctors Say Cancer to be Number One Killer Disease worldwide by 2025 (Med India: 14.2.2011)

Doctors at the Indian Cancer Congress have predicted that cancer is set to take over as the number one killer disease globally by 2025.

Jitendra Kumar Singh, Secretary of the Indian Cancer Society, told the gathering in Bhubaneswar, Orissa, that cancer would knock heart disease from the top spot soon.

"By 2025, cancer will be the number one killer worldwide. It will take over heart (disease). So, that is the challenge we are facing. But fortunately, more and more centres are coming up," Singh said.

"In Delhi, we have now 15 centres and in Indore we have six centers in the last five years. People are also getting aware and getting armed with the information," he added.

Most cancers are curable, but their detection at a later stage makes the treatment tough and costly.

Cancer has the possibility of rising in developing countries at a faster pace.

The problem is compounded by the fact that most developing nations do not possess required infrastructure for proper treatment, which is the most pressing challenge for countries like India, the doctors said.

"There will be an enormous increase in the cancer level in developing countries. It will be higher than the developed countries. So the kind of prevention measures are of challenges and also how to treat these patients with cancer with up-to-date treatments will be a challenge," said Derek Schrivvers, a Belgian oncologist.

Concerns were also raised over the consumption of tobacco, which is also a huge factor in the rise in cancer deaths, as it contributes to 40 percent of the overall deaths.

The Cancer Congress, which began on February 11, will conclude on Sunday.

Cancer, diabetes

Study suggests being short may protect your from cancer, diabetes (New Kerala: 17.2.2011)

You might curse your genes for being really short but not anymore, thanks to a study, which suggests that lack of growth hormone activity may protect abnormally short people from cancer and diabetes.

Valter Longo of the University of Southern California and Ecuadorian endocrinologist Jaime Guevara-Aguirre followed a remote community on the slopes of the Andes mountains.

The community includes many members with Laron syndrome, a deficiency in a gene that prevents the body from using growth hormone.

In a study that extended over 22 years, the team documented no cases of diabetes and one non-lethal case of cancer in Laron's subjects.

And relatives living in the same towns during the same time period, 5 percent were diagnosed with diabetes and 17 percent with cancer.

"The growth hormone receptor-deficient people don't get two of the major diseases of aging. They also have a very low incidence of stroke, but the number of deaths from stroke is too small to determine whether it's significant," Longo said.

If high growth factor levels "become a risk factor for cancer as cholesterol is a risk factor for cardiovascular diseases," drugs that reduce the growth factor could become the new statins, Longo said.

Later, the researchers linked growth factor deficiency to reduced tumour risk.

Although the team has not understood exactly how growth hormone deficiency might protect a person, they found that serum from Laron's subjects had a double protective effect: it protected DNA against oxidative damage and mutations but it promoted the suicide of cells that became highly damaged.

Laron's subjects tend to have very low insulin levels and low insulin resistance, which may explain the absence of diabetes.

Another way to block these hormones is restriction of calories or of specific components of the diet such as proteins.

Chemical Guided Missile - To Wiping Out Cancer

The Answer To Wiping Out Cancer Could Be World's First Chemical Guided Missile (Medical News Today; 21.2.2011)

Deakin University medical scientists have created the world's first cancer stem cell-targeting chemical missile, placing them a step closer to creating a medical 'smart bomb' that would seek out and eradicate the root of cancer cells.

The Deakin researchers have worked with scientists in India and Australia to create the world's first RNA aptamer, a chemical antibody that acts like a guided missile to seek out and bind only to cancer stem cells. The aptamer has the potential to deliver drugs directly to the stem cells (the root of cancer cells) and also to be used to develop a more effective cancer imaging system for

early detection of the disease. Their discoveries have been published recently in an international cancer research journal, Cancer Science.

The Director of Deakin Medical School's Nanomedicine Program, Professor Wei Duan, said the development of the aptamer had huge implications for the way cancer is detected and treated.

"Despite technological and medical advances, the survival rates for many cancers remain poor, due partly to the inability to detect cancer early and then provide targeted treatment," Professor Duan said.

"Current cancer treatments destroy the cells that form the bulk of the tumour, but are largely ineffective against the root of the cancer, the cancer stem cells. This suggests that in order to provide a cure for cancer we must accurately detect and eliminate the cancer stem cells."

The aptamer is the first part of the 'medical smart bomb' the researchers have been developing.

"What we have created is the 'guided missile' part of the 'smart bomb'," Professor Duan explained.

"The aptamer acts like a guided missile, targeting the tumour and binding to the root of the cancer.

"The aim now is to combine the aptamer with the 'bomb' (a microscopic fat particle) that can carry anti-cancer drugs or diagnostic imaging agents directly to the cancer stem cells, creating the ultimate medical smart bomb."

Professor Duan said the medical smart bomb opened up exciting possibilities for detection and treatment of cancer.

"The cancer stem cell-targeting missile and the smart bomb could revolutionise the way cancer is diagnosed," he explained.

"The minute size of the aptamer means it could locate cancer cells in their very early stages. Attaching radioactive compounds to the aptamer could lead to the development of sensitive diagnostic scans for earlier detection, more accurate pinpointing of the location of cancer, better prediction of the chance of cure and improved monitoring of the response to treatment.

"More accurate identification of the type of cancer present would lead to more personalised treatment that is more successful and cost-effective.

"This could ultimately lead to better cancer survival rates and greatly improved quality of life for patients."

Cancer

New modalities in radiation treatment of cancer (The Tribune: 23.23.2.2011)

Radiation alone or in combination with surgery and chemotherapy plays a major role in the treatment of cancer. However, radiation is associated with both acute and late side-effects. These side-effects are due to the incorporation of normal tissues and organs in the radiation field. Although acute side-effects resolve with time and are reversible, late side-effects are bothersome, especially in patients who have achieved cancer cure.

Therefore, in order to minimise the complications associated with radiation, major advancement has taken place in the technology and delivery of radiation treatment. These include the development of newer radiation machines, computerised planning and precise execution of treatment. IMRT (Intensity Modulated Radiation Therapy) is one such example of this high-quality radiation.

IMRT is an advanced mode of high precision radiation therapy that utilises computer-controlled linear accelerator (LINAC) to deliver a precise radiation dose to the malignant tumour or specific areas within the tumour. Treatment is carefully planned using 3-dimensional CT images of the patient in addition to computerised dose calculations to determine the dose intensity pattern that will best conform to the tumour shape.

Advantages of IMRT

- (1) IMRT has the potential to increase the tumour dose, thus increasing local tumour control rates
- (2) IMRT reduces treatment toxicities significantly by reducing the dose to normal structures.
- (3) Another significant advantage of IMRT is that the patients who have previously received radiation can also be given further radiation, if required.
- (4) IMRT is extensively used to treat the cancer of the prostate, head and neck, brain, esophagus and gynaecological malignancies
- (5) It is equivalent to surgery and preserves the organ in the treatment of some cases like the cancer of the prostate and the larynx.

The writer is Senior Radiation Oncologist at the Pinnacle Cancer Centre, IVY Hospital, Mohali.

Cannabis Ingredients

Cannabis to Fight cancer (The Asian Age ; 23.2.2011)

Use of cannabis ingredients, has shown positive results for increase in appetite, better sensory perceptions and improved protein intake in patients with advanced cancer

THE RESULTS of yet another study by North American scientists propose the use of cannabis ingredient -THC to improve quality of life of frail cancer patients. The pilot study, designed like a phase 1 trial has shown positive results for increase in appetite, better sensory perceptions and improved protein intake in patients with advanced cancer.

"Our findings are important, as there is no accepted treatment for chemosensory alterations experienced by cancer patients. We are excited about the possibilities that delta-9-tetrahydrocannabinol (THC) could be used to improve patients' enjoyment of food," said Dr Wendy Wismer who led the research at University of Alberta, Canada.

It is well known that majority of the cancer patients suffer from loss of weight and appetite. These effects can be a result of chemotherapy or the cancer itself and lead to weight loss, anorexia, a worse quality of life and decreased survival.

"It's very important to address these problems as both appetite loss and alterations to taste and smell lead to involuntary weight loss and reduce an individual's ability to tolerate treatment and to stay healthy in general," added Dr Wismer In the study, advanced cancer patients suffering from loss of appetite received oral capsules containing THC (the main psychoactive ingredient in cannabis), with increasing dosage for a period of 18 days.

A clear majority of the sample reported increased appetite and appreciation of food in general, better quality of sleep and relaxation and improved protein intake. However, no significant increase in calorie intake was observed.

Increased appetite and heightened sensory perceptions is typical of a cannabis high. Under this context, this study simply provides journal-evidence (published in the Annals of Oncology) and in a sense validates the idea that frail cancer patients can benefit from hunger inducing properties of cannabis.

However, intrinsic links between cancer and cannabis are unclear. The cancer research community has been not only divided on this front but also very confused. Research of different sizes and forms has continuously been published with contrasting results. For example, a larger study by German and Swiss scientists published in 2006 in the Journal of Clinical Oncology demonstrated that there was no link between THC and cancer patients' appetite or quality of life.

Standing by their results the team of scientists also cautioned that the constraint of dosages used might be causing false negative results. Similarly, other large studies have also been

inconclusive, crumbling under the weight of their practical limitations such as small sample size, less number of heavy marijuana users, illegality of the drug, dosage sensitivities etc.

Numerous studies in the past have suggested that marijuana can be responsible for causing cancer. Most prominent of these are the ones that suggest high risk of bladder and testicular cancer. But these have consistently faced the "hard to verify" reaction from experts.

It is certain however, that smoking cannabis (which is often mixed with tobacco in a joint) poses the same threats that cigarettes do, and in effect increases the risk to lung cancer.

In contrast, some studies in the recent years have tried to prove that there is no link between cancer and cannabis. A recent lab-based experimentation went further and demonstrated that

pure cannabidiol active chemicals in the plant, have properties to destroy some tumours and cancers selectively. Indifferent to all this ambiguity, the culture of marijuana dispensaries is taking the United States and Canada by storm.

Fourteen states in the United States have legalised marijuana for health purposes while the federal government still debates the issue. Encouraged by her small study, Dr Wismer is of the view that while research community takes hold of this conundrum, doctors could consider THC treatment for cancer patients.

Millions of people around the world, some illegally and some legally are using cannabis as a medical herb to alleviate conditions such as epilepsy, bipolar disorder, Alzheimer's, multiple sclerosis, neuropathic pain and even cancer.

Swimming

Swimming for long hours in pool can lead to cancer (The Times of India: 18.3.2011)

Absorbing Chlorinated Water Is A Major Health Risk

London: Excessive swimming or taking long baths in chlorinated water may increase the risk of developing bladder cancer, a new study has claimed.

A team of Spanish scientists found that cancer-causing chemicals called trihalomethanes (THM), which are created as a byproduct of chlorinating water, can be absorbed through the skin. And people who regularly swim in chlorinated pools or take lots of showers or long baths are actually absorbing too much THM, putting themselves at risk of developing cancer, the Daily Mail reported.

For their study, the researchers examined 1,270 people and found those, who drank more bottled water to avoid the health risks posed by drinking tap water, actually lose the beneficial effects by swimming more and taking more showers. "People with more money and more education may think that they're reducing their risk of exposure to water contaminants by

drinking bottled water,” said Gemma Castaño-Vinyals from the Centre for Research in Environmental Epidemiology (CREAL) in Castilla La Mancha, Spain.

“However, despite being apparently cleaner and taking more exercise, a result of taking more frequent and longer baths, and using swimming pools more often — they are actually increasing their risk of THM exposure.”

However Castaño-Vinyals added that the additional risk of developing bladder cancer through the water contaminants was “small”. The new findings were reported in the online journal BioMed Central.

While it is true that chlorine water can be used to make water safe because it kills bacteria, it can also be dangerous. Water treatment plants use chlorine to kill bacteria, as well as algae that can clog up the pipes. However, it is used not because it is the most effective solution, but because it is the cheapest. It is also widely used by industry as a bleaching agent, which means that there is bleach in the water that comes out of the tap to be drunk or used in swimming pools. And chlorinated water does not have to be drunk in order to enter the body. It can be readily absorbed by the skin while swimming. Although chlorine is great for killing bacteria, it cannot differentiate between good bacteria and bad ones. PTI

Bowel Cancer

Bowel Cancer

Dogs can tell if you have bowel cancer (The Times of India: 2.1.2011)

Believe it or not, dogs can sniff out bowel cancer in breath and stool samples, with a very high degree of accuracy, even in the early stages of the disease, a new research has revealed.

According to researchers, the man's best friend's sense of smell is 1,000 times more sensitive than a human's, and as a result it can apparently pick up chemical compounds specific to certain cancers.

In the research, a labrador detected traces of cancer with more than 90% accuracy from samples provided by volunteers.

In fact, over several months, researchers in Japan used the labrador to carry out 74 sniff tests. Each test group comprised one sample from a patient with bowel cancer and four control samples from those who were clear. The samples were placed into five boxes.

The labrador, trained to scent chemicals associated with bowel cancer, first sniffed a breath sample from a patient known to have the disease. It then walked along the boxes sitting in front of the sample it believed matched the cancer scent.

Breast cancer

Breast cancer

How breast cancer cells dodge immune system and survive (New Kerala: 3.2.2011)

Scientists are one step closer to understanding how breast cancer progresses in real patients.

They have discovered a new way breast cancer cells dodge the immune system and promote tumor growth, providing a fresh treatment target in the fight against the disease.

Researchers found high levels of the protein Hsp27 (heat shock protein 27) are released from human breast cancer cells and may not only render immune cells unresponsive to the tumor, but increase blood flow to the tumor as well, both of which fuel tumor growth.

Past research reports Hsp27 is present in high levels inside breast tumor cells and is associated with resistance to chemo and radiation therapy.

De and his team discovered Hsp27 is also released, or pushed out of breast tumor cells, into the area surrounding the tumor, known as the breast tumor microenvironment.

Once outside the cells, Hsp27 may transform circulating white blood cells called monocytes that enter the tumor into cells known as macrophages, which do the opposite of what they are meant to do.

Usually, macrophages work to wipe out tumor cells, but in this case they help, rather than hurt, tumor cells.

In addition to suppressing the immune response to the tumor, these macrophages encourage rapid formation of extra blood vessels that can help in supplying blood to the tumor-a process known as angiogenesis-essentially feeding the tumor so it can continue to grow.

Elevated levels of Hsp27 have been found in the blood of cancer patients with other solid tumors, such as liver and pancreatic cancer tumors, leading study authors to believe the protein may play a role in tumor progression beyond breast cancer.

Breast cancer

Breast cancer: Lymph node op not a must (The Times of India: 10.2.2011)

Women with early breast cancer may not need to have surgery to remove cancerous lymph nodes under the armpit, US researchers said on Tuesday.

The finding may spare many women the pain and years of side effects related to this long-standing procedure. Certain women with breast cancer who had only their sentinel lymph node removed the lymph node closest to the cancer survived just as long as women who had more extensive surgery to remove lymph nodes in the armpit, known as axillary lymph node dissection or ALND, the researchers found.

For the study, published on Tuesday in the Journal of the American Medical Association, Armando Giuliano of Saint John's Health Center in Santa Monica, California, and colleagues analyzed the two procedures in women with invasive breast cancer who had their tumors removed and underwent radiation and chemotherapy.

Overall survival rates after five years were about the same in both groups. Removing cancerous lymph nodes in these women may not be necessary because the radiation and chemotherapy attacks cancers in the lymph nodes before they have time to spread, the team said.

They noted that removing lymph nodes from the armpit carries an indisputable and often unacceptable risk of complications, including infection and chronic and painful swelling of the arm. The findings, when combined with other research, are strong enough to change the way certain women with breast cancer are treated. Implementation of this practice change would improve clinical outcomes in thousands of women each year by reducing the complications associated with ALND and improving quality of life with no diminution in survival, the team wrote.

Breast cancer is the second-leading cause of cancer death among US women, after lung cancer. It kills 500,000 people globally each year and is diagnosed in close to 1.3 million people around the world.

Breast Cancer

No Lymph node removal for early Breast Cancer (The Indian Express: 10.2.2011)

NEW STUDY TURNS CONVENTIONAL TREATMENT ON HEAD, SAYS REMOVAL OF LYMPH NODES HAS NO ADVANTAGE IN SOME CASES 'No lymph node removal for early breast cancer'

NEW study finds that many women with early breast cancer do not need a painful procedure that has been routine: removal of cancerous lymph nodes from armpit.

The discovery turns standard medical practice on its head. Surgeons have been removing lymph nodes from under the arms of breast cancer patients for 100 years, believing it would prolong women's lives by keeping the cancer from spreading or coming back.

Now, researchers report that for women who meet certain criteria —

about 20 per cent of patients, or 40,000 women a year in the US — taking out cancerous nodes has no advantage. It does not change the treatment plan, improve survival or make the cancer less likely to recur. And it can cause complications like infection and lymphoedema, a chronic swelling in the arm that ranges from mild to disabling.

Removing the cancerous lymph nodes proved unnecessary because the women in the study had chemotherapy and radiation, which probably wiped out any disease in nodes, researchers said.

Those treatments are now standard for women with breast cancer in the lymph nodes, based on the realisation that once the disease reaches the nodes, it has the potential to spread to vital organs and cannot be eliminated by surgery alone.

It is not known whether the findings also apply to women who do not have radiation and chemotherapy, or to those who have only part of the breast irradiated.

Nor is it known whether the findings could be applied to other types of cancer.

The study, at 115 medical centres, included 891 patients. Their median age was mid-50s, and they were followed for a median of 6.3 years. The study, which is being published Wednesday in The Journal of the American Medical Association, was paid for by National Cancer Institute.

The new findings are part of a trend to move away from radical surgery for breast cancer. Rates of mastectomy, removal of whole breast, began declining in 1980s after studies found for many patients, survival rates after lumpectomy and radiation were just as good as after mastectomy. The modern approach is to cut out obvious tumours — because lumps big enough to detect may be too dense for radiation to destroy — and to use radiation and chemotherapy to wipe out microscopic disease in other places. But doctors continued to think that even microscopic disease in lymph nodes should be cut. And till recently, they counted cancerous lymph nodes to gauge severity of disease and choose chemotherapy.

Breast cancer

Study shakes Pillar of Breast cancer Care (The Asian Age: 10.2.2011)

A NEW STUDY finds that many women with early breast cancer do not need a painful procedure that has long been routine: removal of cancerous lymph nodes from the armpit.

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women with breast cancer in the lymph nodes, based on the realisation that once the disease reaches the nodes, it has the potential to spread to vital organs and cannot be eliminated by surgery alone.

Experts say that the new findings, combined with similar ones from earlier studies, should change med

ical practice for many patients. Some centres have already acted on the new information. Memorial SloanKettering Cancer Centre in Manhattan changed its practice in September, because doctors knew the study results before they were published. But more widespread change may take time, experts say, because the belief in removing nodes is so deeply ingrained.

“This is such a radical change in thought that it’s been hard for many people to get their heads around it,” said Dr Monica Morrow, chief of the breast service at Sloan-Kettering and an author of the study.

Breast Cancer

Avesthagen establishes global leadership in Breast Cancer (New Kerala: 15.2.2011)

Avesthagen Limited, a leading knowledge based life sciences company, has re-established its position as a leader in the successful application of next-gen technologies by completing the first Whole Genome Sequence of a Breast Cancer patient.

The patient is a 74-year-old Parsi woman with a heritable form of Breast Cancer, according to a release [here](#).

By employing whole-genome sequencing of affected individuals, all genetic variants linked to the disease can be identified. This will lead to a broader understanding of breast cancer disease mechanisms, the development of new diagnostic tests, and the discovery of new drug targets and design of drugs the company said in a statement [here](#).

The study was part of 'The Avestagenome Project', a systems biology based study on the Parsi population to determine the genetic basis of longevity and age-related disorders. The whole genome sequencing is being carried out in partnership with The Genome Analysis Centre (TGAC), UK. The TGAC team is employing the SOLiD-4 next-generation sequencing platform (Applied Biosystems) to generate a draft sequence. Avesthagen's bioinformatics experts will analyse and interpret the DNA sequence data and work with international partners to integrate the data set with other studies, so that it has the greatest possible impact.

Breast Cancer

Key Culprit Identified in Breast Cancer Metastasis (Science Daily: 17.2.2011)

When doctors discover high concentrations of regulatory T cells in the tumors of breast cancer patients, the prognosis is often grim, though why exactly has long been unclear.

Now new research at the University of California, San Diego School of Medicine suggests these regulatory T cells, whose job is to help mediate the body's immune response, produce a protein that appears to hasten and intensify the spread of breast cancer to distant organs and, in doing so, dramatically increase the risk of death.

The findings are reported in the Feb. 16 advance online edition of the journal Nature.

The researchers found that mice with breast cancer were more likely to develop metastatic lung cancer due to elevated levels of RANKL, an inflammatory protein normally involved in bone remodeling. Regulatory T cells were found to be the primary source of RANKL in these tumors. However, the same increase in metastasis was seen when synthetic RANKL was injected directly into tumors, suggesting that RANKL was the key to the ability of regulatory T cells to promote the spread of breast cancer. The scientists also determined that interfering with the ability of RANKL to interact with cancer cells seemed to block tumor progression, and may represent a potential target for drug therapy.

"What is exciting about this study is that now that we understand an increase in RANKL translates to an increase in metastasis, we can get to work on figuring out ways to stop or slow the production of RANKL in breast cancer patients," said Michael Karin, PhD, Distinguished Professor of Pharmacology and Pathology at UCSD's Laboratory of Gene Regulation and Signal Transduction and Moores Cancer Center.

RANKL is a well-known factor in a variety of degenerative bone diseases, including rheumatoid arthritis and bone metastasis. In June 2010, the Food and Drug Administration approved the first RANKL-inhibiting drug for use in postmenopausal women at risk for osteoporosis.

"When we were able to control the RANKL production in the mice, we were able to slow or stop the spread of the cancer," Karin said. "The next logical step is to turn to drugs that block RANKL production to see how they might affect the spread of breast cancer."

Other breast cancer studies have linked RANKL to early stages in the development of synthetic progestin-driven breast tumors. According to the Women's Health Initiative and the Million Women Study, hormone replacement therapy and contraceptives with progestin significantly increase the risk of developing breast cancer. The findings from these studies and the new UCSD research suggest that drugs that block RANKL may be effective in preventing both the early stages of breast cancer and the advanced progression of the disease.

Collaborators on the study are first authors Wei Tan and Weizhou Zhang, Amy Strasner and Sergei Grivennikov, UCSD Laboratory of Gene Regulation and Signal Transduction; Jin Q. Cheng, Department of Molecular Oncology, H. Lee Moffitt Cancer Center, Tampa, Fla.; and Robert M. Hoffman, AntiCancer Inc, San Diego.

The research was supported by the National Institutes of Health, Susan G. Komen Breast Cancer Foundation and Crohn's and Colitis Foundation of America.

Pain-free screening technology for breast cancer

Cipla introduces pain-free screening technology for breast cancer (New Kerala: 3.3.2011)

Mumbai, Mar 2: Pharma major Cipla today introduced a painless non-invasive and radiation-free breast scanning technique, 'No-touch Breast Scan', for detecting breast cancer at an early stage.

Talking to reporters here, the company medical director Jaideep Gogte said according to World Health Organisation estimates, there will be 2,50,000 new cases of breast cancer by 2015 in India.

He said with this machine, it could be far more easier and cheaper than mammography. This will also reduce the trouble of undergoing mammography, he informed.

This system is currently available in cities like Mumbai, Pune and Indore. Soon, 20 more machines will be made available in India, he added.

Breast cancer

Breast cancer treatment lowers sex drive (New Kerala: 14.3.2011)

Treatment of breast cancer in women can have many side effects like lowered sex drive and hair loss.

Myra Hunter, clinical psychologist at the Maudsley National Health Service Foundation Trust in Britain, sees many women struggling with physical, emotional and sexual changes brought on or exacerbated by breast cancer.

"Therapy like chemotherapy and tamoxifen can produce menopausal symptoms and women who have oestrogen-dependent cancers are advised not to have hormone treatment for these symptoms," Hunter explains.

"Vaginal dryness is commonly brought on by reduced oestrogen levels following adjuvant treatments (added to a treatment to help improve its effectiveness), and hot flushes and night sweats can add to the discomfort."

Breast cancer is more common among older women. This means many women with the cancer can have symptoms of menopause exacerbated by cancer and its treatments.

Breast cancer treatments can also trigger early-onset menopause in younger women, according to a Maudsley Trust statement.

"Sexual desire is closely linked to stress and women experiencing breast cancer can be under considerable stress, juggling their health concerns with ordinary life stresses. When stressed, sexual interest is affected in men and women," says Hunter.

Nandiamonds - Safe Chemo Boosters for Breast and Liver Cancer

Nandiamonds Show Promise as Safe Chemo Boosters for Breast and Liver Cancer (Medical News Today: 17.3.2011)

Using nanodiamonds, tiny particles of carbon, as a drug delivery system, researchers have developed a promising approach to treating breast and liver cancer tumors that are resistant to chemotherapy.

Led by Dr Dean Ho, an associate professor of biomedical engineering at Northwestern University in Evanston, Illinois, US, the researchers used lab mice to test how effectively and safely the nanodiamonds released the cancer drugs over time.

You can read how they did this online in the 9 March issue of Science Translational Medicine.

Finding ways to make chemotherapy drugs more efficient is a continual challenge, particularly for the treatment of cancers that are resistant to chemotherapy, such as recurring breast and liver tumors.

One way to do this, is through the use of nanoparticles to deliver the drugs. One example that researchers have been looking at recently is the nanodiamond, a particle of carbon that is between 2 and 8 microns thick; about 10,000 times thinner than a human hair.

The advantage of using such tiny particles is that you can get the drug to stick to their surfaces, use them to enter cancerous cells and release the drug slowly over time, exit the cell when they are finished, then leave the body altogether.

Ho told the press that in this study, they were able to boost the efficiency of the cancer drug they tested 70 times while still maintaining safety.

"It's the best of both worlds," he said.

If you could see a nanodiamond you would understand why it has that name, it looks like a diamond, and it is not just its size that makes it useful, but also its shape.

"They're called truncated octahedrons," explained Ho.

"They're shaped like a soccer ball but the faces are more angled."

It's the faces of the nanodiamonds that allow the drugs to bind tightly to their surface and release slowly.

Ho said sustained release was an important feature because by their very nature, chemotherapy drugs are toxic.

Sustained release over time also reduces side effects of very toxic chemotherapies.

"The surface chemistry, coupled with the architecture of the surface, allows for a very sustained interaction with drugs," said Ho.

The drugs can be bound tightly to the surface with a chemical bond, or temporarily with an electrostatic bond. It is useful to have these options because some drugs can do their job without letting go of the surface, while others have to come away to be effective.

Another advantage of nanoparticles as drug delivery systems is that you can make them seek out particular molecules or tumor sites by attaching a unique chemical compound or antibody to one end.

For this study, Ho and colleagues tested the nanodiamonds as a delivery system for doxorubicin, a common chemotherapy drug that is very efficient at killing cancer cells but as Ho explained, "it is also very effective at killing everything else".

Know Your Heart's Age - Find Out How Fit You Are. Free Tests, Diet Plan & Doc Advice - SaffolaLife.com

Alopecia Treatment - Get Homeopathy Treatment for alopecia, Effective and safe - www.drBatras.com/Alopecia+treatment

Lymphedema Treatments - Treatment Options, Latest Advances. Trustworthy, Current Report. - www.lymphedema-guidebook.com

"We found that if you bind the drugs to the diamond, the efficiency is even enhanced compared to using the drug alone," he added.

The advantage of targeting liver cancer with nanodiamonds is that the liver is where the body metabolizes drugs and detoxifies blood.

"A lot of this stuff ends up at the liver anyways and it takes some time to get there, but it also takes even a little bit longer to come off the diamond," said Ho.

This is what he meant by "the best of both worlds". The nanoparticle travels through the bloodstream, gradually shedding the drug, but most of that comes off in the tumor.

An important worry with nanoparticles is the potential side effects, coming from the material the nanoparticles are made of, especially in the liver, where toxins are removed and filtered out of the body.

Ho and colleagues found that even at high dosage, the nanodiamond system does not appear to affect liver toxicity.

"We also find that it doesn't seem to cause blood toxicity, systemically. It appears to be a relatively biocompatible system," he added.

In fact, the nanodiamond delivery system appears to reduce the side effects from chemotherapy.

One of the main side effects of chemotherapy is reduction in white blood cells, the main tools of the immune system, and this is often the main reason for limiting the dose patients can have at one time, to stop them getting infections.

"One of the things we find is that when you bind the diamond to the drug, from our studies, it doesn't drop the white blood cell count, yet it still has efficacy to reduce tumor size," said Ho.

"Nanodiamond Therapeutic Delivery Agents Mediate Enhanced Chemoresistant Tumor Treatment."

Breast Implants

Do women with silicone breast implants require follow-Up MRI scans? (New Kerala: 30.3.2011)

A new review has shown significant flaws in the evidence supporting the U.S. Food and Drug Administration recommendation of regular follow-up magnetic resonance imaging (MRI) scans for women with silicone breast implants.

The researchers reviewed 21 studies evaluating MRI and/or ultrasound to detect rupture of silicone breast implants. Although the FDA recommends MRI, some physicians prefer ultrasound for screening purposes.

The combined data suggested that MRI was fairly accurate in detecting implant-related problems. However, it was much more likely to detect problems in women with implant-related symptoms: 14 times more likely than in women without symptoms. Even in a mixed "screening sample"—consisting of some women with and some without symptoms—the detection rate was twice as high as in asymptomatic women.

Because most of the women in the studies had symptoms, the true accuracy of MRI for detecting implant-related problems in asymptomatic women was likely much lower. For ultrasound, reported accuracy rates varied widely.

Silicone breasts implants have been extensively studied due to concerns about possible adverse health effects. Based on reports linking ruptured implants to autoimmune diseases, the FDA banned silicone implants in 1992. The ban was lifted in 2006, when repeated studies failed to confirm the association with autoimmune diseases.

However, the FDA recommended that women undergo regular MRI scans in the years after surgery to screen for implant rupture.

The study raises important questions about the accuracy of MRI scanning, especially in women without symptoms. Beyond the issue of accuracy, the authors note that screening tests are generally performed to detect diseases with serious consequences—whereas the health risks associated with ruptured silicone implants, if any, are still unknown.

The researchers also note that in reported cases of implant rupture, the average age of the implants is over 10 years. Song and coauthors said, "[T]he benefits of screening within the first 10 years are unclear, and the effectiveness of such a screening program warrants further investigation."

Further studies are also needed to evaluate the long-term health effects of ruptured silicone breast implants, the effectiveness of MRI or other screening tests, and the costs of and patient preferences for screening.

The report has been published in the Plastic and Reconstructive Surgery.

Breast cancer

New treatment shows promise in the fight against breast cancer (New Kerala; 31.3.2011)

Scientists have come up with a promising treatment to delay the growth and spread of breast cancer tumors.

According to researchers, the treatment combines two innovative strategies: blocking the enzyme needed to "energize" cancer cells and infusing a potent drug directly into the tumor, with minimum exposure to healthy tissues.

"Once breast cancer metastases have been detected, current treatments (such as surgical resection or tumor removal) may be ineffective. We've found a way to keep a breast cancer tumor dormant-thus potentially increasing the likelihood that a tumor can be treated successfully," noted Jeff H. Geschwind, professor of radiology, surgery and oncology and director of vascular and interventional radiology at Johns Hopkins University School of Medicine in Baltimore, Md.

"Our study shows that an ultrasound-guided intra-tumoral treatment with a drug called 3-bromopyruvate (3-BrPA) may be a very promising new therapy for patients with breast cancer that delays tumor growth and spread," added Geschwind, who is also the director of the Interventional Radiology Center at Johns Hopkins University School of Medicine.

In animal studies, the research team has shown how interventional radiologists are uniquely positioned to combine their basic science knowledge-in this case resulting in the exploitation of tumor metabolism as a target for breast cancer therapy-with their vast experience in minimally invasive treatment strategies.

"Breast tumor cells depend on a metabolic pathway called glycolysis to generate the energy required for their malignant growth. By inhibiting a specific enzyme with the anti-glycolytic agent 3-BrPA, the energy production required for tumor cell growth and spread is blocked," said Geschwind.

"Disrupt glycolysis and cancer cells are unable to produce enough energy to survive," he said.

The researchers were then able to maximize the amount of drug delivered to a tumor by infusing the potent drug directly into the tumor-using imaging to guide them-and minimizing exposure of healthy tissue to the therapy, explained Geschwind.

"The biological targeting abilities of anti-glycolytic treatment combined with an image-guided minimally invasive delivery strategy is a promising approach to reducing the growth and spread of breast cancer in patients," he emphasized.

"In our study, a statistically significant difference in tumor volume was observed. Our results support the continuing development of this highly innovative interventional radiology approach for the safe and effective treatment of breast cancer," he added.

"Before we can test our novel treatment strategy in individuals with breast cancer, it is important to perform additional animal studies of a larger size to confirm the efficacy of the treatment and to verify that there are no toxic effects on the normal tissues," added Geschwind.

The report was presented at the Society of Interventional Radiology's 36th Annual Scientific Meeting in Chicago, Ill.

Kidney Cancer

Kidney Cancer

Kidney Cancer Advance: Genetic Pathways Could Be Used to Starve Cancer Cells Selectively (Science Daily: 31.3.2011)

Two separate studies indicate that both rare and common cases of kidney cancer may be susceptible to a new class of drugs that inhibits cancer cells from generating the energy needed to survive. In one study, available online and scheduled for the May 5 issue of the journal *Oncogene*, researchers found that inactivating the gene von Hippel-Lindau (VHL) in mice blocked cells from using oxygen to provide energy to the cell, forcing them to use another method of energy generation, such as glycolysis -- the conversion of glucose to lactic acid.

Because the VHL gene is inactive in about 90 percent of clear-cell renal cell carcinomas, the most common type of kidney cancer in humans, the study provides a rationale for the evaluation of glycolytic inhibitors in fighting kidney cancer, said Dr. James Brugarolas, assistant professor of internal medicine and developmental biology and the study's senior author.

"It would be expected to kill cancer cells preferentially and spare most normal cells that would still have mitochondrial respiration to rely on," said Dr. Brugarolas.

An estimated 58,000 new cases of kidney cancer were reported in the U.S. in 2010, and 13,040 died of the disease. Based on incidence of this cancer from 2005 to 2007, 1 in 67 people will be diagnosed with cancer of the kidney or renal pelvis during his or her lifetime.

The study also revealed that the effect of VHL loss was mediated by hypoxia-inducible factors (HIF), a family of proteins that binds to specific DNA sequences and responds to decreases in oxygen, known as hypoxia.

"We discovered that simultaneous inactivation of HIF rescued the mice from the effects of VHL inactivation," Dr. Brugarolas said. "To our knowledge, this is the first demonstration in a living organism that simply activating HIF is sufficient to block cells from using oxygen. It also indicates that there are no other pathways that can allow the use of available oxygen when HIF is active."

In a related study, Dr. Brugarolas examined the effectiveness of a specific glycolytic inhibitor, 2-deoxy-D-glucose (2DG), in treating a rare form of kidney cancer. The case study, available in the March 1 issue of *Nature Reviews Urology*, details efforts to develop a personalized treatment plan for a patient who presented with an uncommon kidney cancer type when she was 24. Without any familial predisposition for kidney or other cancers, the patient was found to have a mutation in a gene called fumarate hydratase, which has been found to be mutated in

approximately 100 families worldwide and which confers a strong predisposition to kidney cancer. The mutation was a novel mutation, and the patient is likely to have been the founder, Dr. Brugarolas said.

The gene encodes an enzyme which is important for cells to be able to use oxygen and generate energy, and studies showed that the enzyme was completely inactive in the tumor. The patient, who had an advanced case of cancer, underwent surgery and then standard treatment with mTORC1 inhibitors. After five months, however, her tumor progressed and there were no other proven treatments available. Given this situation, Dr. Brugarolas looked for options to exploit what was known about the tumor. After a discussion with the UT Southwestern Institutional Review Board, the Food and Drug Administration and the drug manufacturer, Dr. Brugarolas managed to secure for his patient a drug in development, 2DG, which previously had been used only in clinical trials.

Because the tumor was deficient in fumarate hydratase, researchers speculated that 2DG would block glycolysis and kill tumor cells, as it had in the laboratory. The drug, however, failed to produce the same results for the patient, who later died. The patient had given permission to have her tumor studied and research continues; the tumor DNA has been sequenced and tumor samples have been implanted in mice.

"We have the tumor growing so that we can test new drugs that may emerge and hopefully help other patients with this rare cancer type," Dr. Brugarolas said. In addition, through analysis of all the mutated genes in the patient's tumor, "we may identify other mutations, which may give us clues about other approaches against this aggressive cancer type."

Efforts of the care team in the National Cancer Institute-designated Harold C. Simmons Cancer Center, "illustrate the type of discovery-based personalized cancer care we strive to provide at UT Southwestern," Dr. Brugarolas said.

Other UT Southwestern researchers involved in the Oncogene study included lead author Dr. Blanka Kucejova, a postdoctoral fellow in Dr. Brugarolas' lab who is now a research associate in the Advanced Imaging Research Center (AIRC); Dr. Nishanth Sunny, assistant instructor in the AIRC; Dr. A.D. Nguyen, graduate student in molecular genetics; R. Hallac, graduate student in radiology; Xiaorong Fu, senior research associate in the AIRC; Samuel Peña-Llopis, assistant instructor of developmental biology; Dr. Ralph Mason, professor of radiology; Dr. Ralph DeBerardinis, assistant professor of pediatrics and in the Eugene McDermott Center for Human Growth and Development; Dr. Xian-Jin Xie, associate professor of clinical sciences; Dr. Russell Debose-Boyd, associate professor of molecular genetics; Dr. Vikram Kodibagkar, assistant professor of radiology; and Dr. Shawn Burgess, assistant professor in the AIRC.

UT Southwestern researchers involved in the Nature Reviews Urology case study were lead author Dr. Toshinari Yamasaki and Dr. Tram Anh T. Tran, both postdoctoral fellows in developmental biology; Dr. Orhan Oz, associate professor of radiology; Dr. Ganesh V. Raj, assistant professor of urology; Dr. Roderich Schwarz, professor of surgery; Dr. DeBerardinis; and Dr. Xuewu Zhang, assistant professor of pharmacology.

Lung Cancers

Lung Cancers

Treatment Strategy for Certain Lung Cancers Proves Effective (Med India: 14.3.2011)

Two chemotherapy drugs now indicated for second and third-line therapy in patients with advanced non-small-cell lung cancer are remarkably effective in treating a certain subset of these patients, according to a new study.

Louisiana State University oncologist Vince D. Cataldo and his colleagues say these drugs should be considered as a first-line treatment in people who are known to carry an Epidermal Growth Factor Receptor (EGFR) mutation.

The drugs, Erlotinib and Gefitinib, which are in a class of highly-specific small molecule tyrosine kinase inhibitors, work by blocking the activation of EGFR which is involved in cell survival and growth, as well as the development of a nourishing blood supply and metastasis.

"Targeting the genetic mutation contributing to the development of the cancer, this class of drugs produced a response rate that exceeded 70pc in these patients," said Cataldo.

The drugs, taken by mouth, also had fewer side effects. Unlike traditional cytotoxic agents, Erlotinib and Gefitinib do not typically cause myelosuppression, neuropathy, alopecia, or severe nausea.

Pancreatic Cancer

Pancreatic Cancer

Scientists Find Possible New Treatment Strategies for Pancreatic Cancer (Med India: 7.3.2011)

A protein that can be modified to improve the effectiveness of one of the most common drugs used to treat pancreatic cancer has been identified by scientists.

The University of Georgia research found that a cell-surface protein called CNT1, which transports cancer-killing drugs into tumor cells, was reduced in function in two thirds of pancreatic tumors.

By improving the function of CNT1, the researchers increased the effectiveness of the cancer-killing drugs in pancreatic tumor cells derived from human patients, said lead-author Raj Govindarajan.

The drug most commonly used to treat pancreatic cancer is called gemcitabine and works by entering into the DNA of cancer cells and stopping replication.

Many pancreatic tumor cells are resistant to gemcitabine, which makes the disease very difficult to treat, explained Govindarajan.

The researchers identified different methods to enhance CNT1 function and slow growth of the tumor cells.

They found that by using additional drugs that inhibit pathways that degrade CNT1, they could partially restore its normal function and transport more gemcitabine into the tumor cells to prevent proliferation of the tumor.

Govindarajan and his colleagues also found that CNT1 was likely regulated by tiny RNA molecules called micro-RNAs.

"We could potentially use micro-RNAs to increase CNT1 expression and increase tumor-cell targeting of gemcitabine," said Govindarajan.

The finding has been published in the March edition of the journal Cancer Research.

Prostate cancer

Prostate cancer

Simple test could save prostate cancer patients from surgery (New Kerala: 10.2.2011)

Scientists say that a simple test could save thousands of prostate cancer patients from operation.

Research has shown men with certain genes are three times more likely to have the most dangerous form. While these patients need surgery, those without these genes are less likely to see their tumours grow quickly and may be able to avoid surgery altogether.

Early results from a trial suggest that the tests could be available in a few years and could transform the outlook for thousands of men with the disease.

"This could one day help solve one of the biggest problems in prostate cancer treatment. For some men, detecting prostate cancer early could be lifesaving. For others, it could mean unnecessary treatment and serious side effects," the Daily Express quoted Lesley Walker of Cancer Research UK, as saying.

Early tests have shown that men with higher levels of a gene called cell cycle progression or CPP are three times more likely to have an aggressive tumour than those with low levels.

The test can be done on small samples of the tumour removed in a biopsy.

Along with another routine test that monitors prostate inflammation, called a PSA test, it could help to give cancer doctors a clearer picture of when they need to operate and when patients can be given radiotherapy to kill the cancer or have it left completely.

Jack Cuzick, of the Queen Mary University of London, who led the research, said, "Our findings have great potential. CCP genes are expressed at higher levels in actively growing cells, so we could be indirectly measuring the growth rate and inherent aggressiveness of the tumour through our test."

Prostate surgery

Test to spell end to prostate surgery (The Times of India: 10.2.2011)

Coming soon: A simple test which could save thousands of prostate cancer patients from surgery, say scientists. A new research has shown that men with certain genes are three times more likely to have the most dangerous form. While these patients need surgery, those without these genes are less likely to see their tumours grow quickly and may be able to avoid surgery altogether. Early results from a trial by a British team suggest that the tests could be available in a few years and transform the outlook for thousands of men with prostate cancer, the most common form of male cancer, the Daily Express reported.

Prostate cancer

Going bald at 20 doubles risk of prostate cancer (The Times of India: 17.2.2011)

A study showing that men who start to go bald at 20 may be more likely to develop prostate cancer in later life suggests they might benefit from early screening or preventative therapy, scientists said on Tuesday.

French researchers compared 388 men being treated for prostate cancer with 281 healthy men and found that those with the disease were twice as likely as the healthy men to have started losing their hair when they were 20.

If the men only started going bald when they were 30 or 40, there was no difference in their risk of developing prostate cancer compared to the healthy group. "At present there is no hard evidence to show any benefit from screening the general population for prostate cancer. We need a way of identifying those men who are at high risk," said Philippe Giraud of Paris Descartes University, who led the study.

"Balding at the age of 20 may be one of these easily identifiable risk factors and more work needs to be done now to confirm this," he said in a statement. Giraud, whose findings were published in the cancer journal *Annals of Oncology*, said men identified as at higher risk of prostate cancer could be selected for earlier screening, or for chemoprevention therapy using so-called anti-androgenic drugs like Merck's Proscar, or finasteride. Finasteride is used to treat both prostate enlargement symptoms and baldness. It blocks the conversion of testosterone to an androgen hormone called dihydrotestosterone, which is thought to cause hair loss.

GlaxoSmithKline has a drug in the same class called Avodart, or dutasteride, and is currently seeking approval from US Food and Drug Administration.

Prostate Cancer

Most Men Unaware Of Blood Test for Prostate Cancer (Med India: 3.3.2011)

A charity has found that majority of men are unaware of a blood test described as the "first line of defence" against the disease.

The Prostate Cancer Charity is worried that men are effectively being denied access to the prostate specific antigen (PSA) test.

Under current NHS guidelines, men over the age of 50 have the right to ask for a PSA test if they have had a balanced discussion with their doctor about its benefits and drawbacks.

But according to the Telegraph, the charity found that a tenth of GPs "do not support this right", while a fifth "never talk about the PSA test with at-risk groups," said a spokesman.

He said that most GPs considered access to the test as a "major hurdle".

Experts are divided about the test, which gives many false positive and false negative results.

One of the reasons is that levels naturally vary widely between men. A raised level can also indicate an enlarged prostate, rather than cancer, or cancer that is growing so slowly that it is unlikely to cause any problems.

Despite the shortcomings, the charity says it is currently the "first line of defence" for picking up potential problems.

John Neate, chief executive of The Prostate Cancer Charity, said: "The lack of knowledge by so many men about the PSA test, reinforced by our latest research, is a completely unacceptable inequality in our society and can no longer be tolerated.

"GPs must begin to engage men much more pro-actively in discussions about prostate cancer, their risk of the disease and the role of the PSA test. They must never stand in the way of a man's right to make a personal, informed choice about having the test."

Prostate Cancer

Significant Weight Gain Observed in 70 Percent of Prostate Cancer Patients on ADT (Med India: 14.3.2011)

Seventy per cent of men who received androgen-deprivation therapy (ADT) after surgery to remove their prostate gland gained significant weight in the first year, putting on an average of 4.2kg, according to a paper in the March issue of the urology journal BJUI.

Researchers studied the recorded weights of 132 men who underwent radical prostatectomy between 1988 and 2009 at four US Veterans Affairs Medical Centers in California, Georgia and North Carolina, before and after they received ADT.

This showed that the majority of the men gained significant weight during the first year of therapy, but did not put on any more weight after that.

"ADT is a hormone therapy that deprives the patient's body of androgens, such as testosterone, which have been shown to stimulate the growth of prostate cancer cells" explains Dr Stephen J Freedland, from the Duke Prostate Center at Duke University School of Medicine and the Veteran Affairs Medical Center, Durham, North Carolina.

"Having been established as the mainstay treatment for recurrent or secondary prostate cancer, ADT is now being increasingly used to treat localised disease.

"This rising use of ADT makes it even more important that we pay close attention to the side-effects of the therapy, including weight gain, as obesity is linked with a number of chronic and potentially life-threatening health problems."

Dr Freedland teamed up with colleagues from four other US states to carry out the study, using data from the Shared Equal Access Regional Cancer Hospital database. Patients were included if there was sufficient information to track their weight before and after the use of ADT.

Skin Cancer

New laser-based tool – Skin Cancer

New laser-based tool that detects skin cancer (The Asian age: 25.2.2011)

Scientists have developed a new laserbased tool which they claim could help doctors better diagnose melanoma, the deadliest form of skin cancer that kills thousands of people every year. Developed by a team at the Duke University in the US, the tool produces high-resolution images by pumping small amounts of energy into skin cells and help pinpoint rogue cells.

Thomas Matthews, who helped develop the new twolaser microscopy technique at Duke, said the new tool enabled scientists for the first time to identify sub stantial chemical differences between cancerous and healthy skin tissues.

For the study, appeared in journal Science Translational Medicine, the Duke team imaged 42 skin slices with the new tool and the images showed that melanomas tend to have more eumelanin, a kind of skin pig

ment, than healthy tissue.

Using the amount of eumelanin as a diagnostic criterion, the team used the tool to correctly identify all 11 melanoma samples in the study. The technique will be further tested using thousands of archived skin slices. Studying old samples will verify whether the new technique can identify changes in moles that eventually did become cancerous. Even if the technique proves, on a large scale, to be 50 per cent more accurate than a biopsy, it would prevent about 100,000 false melanoma diagnoses.

Testicular Cancer

Testicular Cancer

Testicular Cancer - Top 10 facts Font Size (Med India: 3.2.2011)

A man's lifetime risk of developing testicular cancer is approximately 1 in 250

It accounts for 1% of all the cancers in men

It usually affects young men (age -20-39) in their prime of youth

Testicular cancer has the highest cure rates among all cancers (>90%)

But, like all cancers, it can recur

Testicular cancer is most common in Caucasians and rare in men of African or Asian descent

Most commonly there are Two types of testicular cancers--seminomas, or slow growing cancer and non-seminomas, or fast growing cancer

Prominent symptoms include pain/swelling/lumps in testicles/groin areas

Prominent risk factors include undescended testis (cryptorchidism), family history, mumps and inguinal hernia

Surgical removal of a testicle will not affect fertility. Chemotherapy, on the other hand, can harm sperm count/quality. Sperm banking may then be considered.

Throat cancer

Throat cancer'

Oral sex, not tobacco is 'main cause of throat cancer'(New Kerala: 21.2.2011)

Scientists have warned that a virus that spreads during oral sex is now the main cause of throat cancer in people under 50.

They say the human papilloma virus spread during unprotected sex is to blame for a disturbing rise in potentially deadly oral cancers in the last few decades.

Cancers of the mouth and oropharynx - the top of the throat - used to be mainly diagnosed in older men who drink or smoke. But increasingly, it is being seen in younger men.

Prof Maura Gillison of Ohio State University in Columbus said the sexually transmitted HPV was a bigger cause of some oral cancers than tobacco.

“What is most strongly linked to oral HPV infection is the number of sexual partners someone has had in their lifetimes, in particular the number of individuals on whom they have performed oral sex,” the Daily Mail quoted

Gillison as saying.

“The higher the number of partners that you’ve had, the greater the odds that you’d have an oral infection,” Gillison added.

The finding was presented at the American Association for the Advancement of Science conference in Washington CD.

Tumour

Tumour

Tumour test for key protein can predict cancer spread (The Times of India; 3.2.2011)

Researchers have found a way to detect if cancer has spread or if it will recur by testing the tumour for a certain protein, said a study on Tuesday in the journal Clinical Investigation.

The discovery could provide a more accurate indication of likely survival than the current method of grading cancer stages from one to four, researchers said. If the test can be developed for wider use, which could still be years away, it may help doctors decide when to aggressively treat tumours to try to prevent them from metastasizing, often fatally, to other parts of the body.

“This biomarker may be useful for many types of cancers,” said lead study author Y Peng Loh of the US National Institute of Child Health and Human Development’s (NICHD) Section on Cellular Neurobiology. “It is very important to know when a cancer is likely to spread,” she said.

“Currently there are no accurate biomarkers that can achieve such predictions and prognosis is determined by staging of the cancer.”

The new variant of a protein, carboxypeptidase E (CPE), usually involved with processing of hormones, such as insulin, was discovered by scientists at the US National Institutes of Health and the University of Hong Kong. The protein, CPE-delta N, was found to be present at high levels in metastatic tumour cells in numerous types of cancer, including liver, breast, colon, adrenal and head and neck cancers.

The eight-year study focused on 99 patients with liver cancer, and tested tumour cells and surrounding tissue for levels of CPE delta-N. Researchers were correct 76% of the time when they predicted tumours would not come back.

Brain Tumors

Top Ten Facts About Brain Tumors (Med India: 10.2.2011)

1. The most **common brain tumors** are cancers from other parts of the body (e.g. lung, breast, colon or prostate) that spreads to the brain.

2. Primary brain tumors originate in the brain and there are over 126 such tumors listed by WHO.
3. **Glioma** is the commonest primary brain tumour and originates from supporting brain cells that are called glial cells and 50% of all brain tumors begin as benign tumors.
4. Another brain tumour called '**Astrocytomas**' are so named because their cells look like stars ; the word 'astro' in Latin means "star".
5. A primary brain tumour usually is restricted to brain and does not spread to other organs. If brain death occurs in these patients, **it is possible to donate their organs**.
6. In most instances the cause of brain tumor is not known and they do not discriminate among gender, class or ethnicity.
7. Each year approximately **200,000 people in the United States** are diagnosed with metastatic or primary brain tumor.
8. Common **symptoms** of a brain tumor include headaches, seizures, personality changes, eye weakness, nausea or vomiting, speech disturbances, memory loss.
9. The survival from brain tumor at five years is approximately 30%.
10. Brain tumors can be treated by surgery, radiation therapy, stereotactic radiotherapy, chemotherapy or by using these in combination. The most important issue when treating these patients, besides trying to cure them, is to ensure that the quality of life is not compromised.

Allergies

Allergies Tied To Lower Brain Tumor Risk (Medical News Today: 10.2.2011)

The more allergies people have, the lower their risk of developing low and high grade glioma or brain tumor, said US researchers in a study published this week.

You can read how researchers from the University of Illinois at Chicago came to these findings in the February issue of Cancer Epidemiology, Biomarkers & Prevention, a journal of the American Association for Cancer Research.

First author Dr Bridget McCarthy, a research associate professor of epidemiology at the University of Illinois at Chicago School of Public Health, told the press that previous studies have found a link between allergies and glioma risk, but in this study:

"... we confirmed that allergies are protective and found that the more allergies one has, the more protected he or she is."

Glioma is a general name for a common type of primary brain tumor that starts in the supportive glial or neuroglial tissue of the brain.

For their research, McCarthy and colleagues used data from 419 patients with glioma and 612 cancer-free patients (the controls) from Duke University and North Shore University Health System.

The data came from responses to survey questions about medically diagnosed allergies and antihistamine use and the controls had no history of brain tumors, any other cancers, or neurodegenerative diseases.

McCarthy and colleagues were interested in analyzing links between the duration and timing of allergies, and antihistamine use and glioma risk, and how this might be affected by factors such as type and number of allergies, years since diagnosis, age at diagnosis of allergies, as well as type, duration and frequency of antihistamine use.

The participants completed the survey via web or telephone. The survey asked them questions about whether they were medically diagnosed with allergies or asthma at least two years ago, and if so, how old they were at diagnosis.

They also answered questions about the number of individual allergies within the following groups: "seasonal", "pet", "medication", "food" and "other", and any regular medication usage, including what brands, how often they took them and for how long.

When they analyzed the results the researchers found that:

Participants with high and low grade gliomas were statistically less likely to report any allergy than the controls (Odds Ratio OR 0.66; 95% Confidence Interval CI 0.49 - 0.87, and OR 0.44; 95% CI 0.25 - 0.76, respectively).

The number of types of allergy (seasonal, medication, pet, food, and other) was inversely linked with risk of developing glioma in a dose-response fashion, ie the more allergy types, the lower the risk (P value for trend less than 0.05, so not insignificant).

Age at diagnosis and years since diagnosis were not linked to glioma risk.

Oral antihistamine use, including diphenhydramine hydrochloride (a possible neurocarcinogen), did not appear to affect glioma risk separately from the effects of allergies.

The authors concluded that:

"All types of allergies appear to be protective with reduced risk for those with more types of allergies. Antihistamine use, other than in relationship with allergy status, may not influence glioma risk."

McCarthy said these findings confirm there is a relationship between the immune system of allergy sufferers and risk of developing glioma.

She and her colleagues recommend that a comprehensive study now be done using standardized questions and biological markers, to assess effect of allergies and antihistamine use and discover what biological mechanisms might underpin any influence they have on brain tumor development.

"Assessment of Type of Allergy and Antihistamine Use in the Development of Glioma."

Brain cancer

Mobile-phone use not linked to increased brain cancer risk (New Kerala: 18.2.2011)

A study by University of Manchester scientists suggests that radio frequency exposure from cell phone use does not increase the risk of developing brain cancers by any significant amount.

The researchers used publically available data from the UK Office of National Statistics to look at trends in rates of newly diagnosed brain cancers in England between 1998 and 2007.

The study reported no statistically significant change in the incidence of brain cancers in men or women during the nine-year time period under observation.

"Cell phone use in the United Kingdom and other countries has risen steeply since the early 1990s when the first digital cell phones were introduced," said lead author Dr Frank de Vocht, an expert in occupational and environmental health in the University of Manchester's School of Community-Based Medicine.

"There is an on-going controversy about whether radio frequency exposure from cell phones increases the risk of brain cancer. Our findings indicate that a causal link between cell phone use and cancer is unlikely because there is no evidence of any significant increase in the disease since their introduction and rapid proliferation."

The authors say that because there is no plausible biological mechanism for radio waves to damage our genes directly, thereby causing cells to become cancerous, radio frequency exposure, they argue, if related to cancer is more likely to promote growth in an existing brain tumour.

As such, the researchers say they would expect an increase in the number of diagnosed cases within five to 10 years of the introduction of cell phones and for this increase to continue as cell phone use became more widespread.

The 1998 to 2007 study period would therefore relate to the period 1990 to 2002 when cell phone use in the UK increased from zero to 65 percent of households.

The team, which included researchers from the Institute of Occupational Medicine in Edinburgh and Drexel University, Philadelphia, found a small increase in the incidence of cancers in the temporal lobe of 0.6 cases per 100,000 people or 31 extra cases per year in a population of 52 million. Brain cancers of the parietal lobe, cerebrum and cerebellum in men actually fell slightly between 1998 and 2007.

"Our research suggests that the increased and widespread use of cell phones, which in some studies was associated to increased brain cancer risk, has not led to a noticeable increase in the incidence of brain cancer in England between 1998 and 2007," said Dr de Vocht.

"It is very unlikely that we are at the forefront of a brain cancer epidemic related to cell phones, as some have suggested, although we did observe a small increased rate of brain cancers in the temporal lobe corresponding to the time period when cell phone use rose from zero to 65 percent of households. However, to put this into perspective, if this specific rise in tumour incidence was caused by cell phone use, it would contribute to less than one additional case per 100,000 population in a decade.

"We cannot exclude the possibility that there are people who are susceptible to radio-frequency exposure or that some rare brain cancers are associated with it but we interpret our data as not indicating a pressing need to implement public health measures to reduce radio-frequency exposure from cell phones."

Cancerous Tumors

New method reveals how cancerous tumors evolve and spread (New Kerala: 15.3.2011)

A new method of analyzing cancerous tumors suggests that tumors may not evolve gradually, but rather in punctuated or staccato-like bursts.

The finding has shed new light on the process of tumor growth and metastasis, and may help in the development of new methods to clinically evaluate tumors.

The new analytic method, devised by Cold Spring Harbor Laboratory (CSHL) Professor Michael Wigler and colleagues, features a process called single cell sequencing (SNS), which enables accurate quantification of genomic copy number within a single cell nucleus.

Genomic copy number refers to the amount of DNA in the nucleus. In cancer, portions of the genome are amplified or deleted, giving rise to extra or missing copies of key genes and interfering with mechanisms that normally control cell growth.

"We demonstrated that we can obtain accurate and high-resolution copy number profiles by sequencing a single cell from a cancerous tumor and that by examining multiple cells from the same cancer, we can make inferences about how the cancer evolved and spread," said Wigler.

The CSHL team used two sampled tumors. Both were primary invasive breast cancer tumors of the so-called "triple-negative" type, generally regarded as the most aggressive form of breast cancer.

One tumor sample was known from prior testing to be polygenomic: composed of distinct populations of tumor cells, whose number, genomic type and evolutionary history were not readily measurable using conventional techniques.

The other sampled tumor was monogenomic: composed of cells of a single genetic type. Unlike the first sample, this one had metastasized, to the liver, and samples of that tumor were also subjected to analysis.

Using SNS, in concert with whole-genome amplification and next-generation sequencing, the CSHL team was able to show that in fact three distinct subpopulations of tumor cells were present.

It has been theorized that genetically heterogeneous tumor cell populations become mixed via gradual evolution. The CSHL team, in contrast, suggests the evolution is likely punctuated.

The second breast cancer sample analyzed by the team was of a single genomic type, but the team was able to determine that the liver metastasis to which it had given rise was very closely related, in genomic terms.

Peptide Inhibitors

Combining Two Peptide Inhibitors Might Block Tumor Growth (Science daily: 15.3.2011)

A new study suggests that combining two experimental anticancer peptide agents might simultaneously block formation of new tumor blood vessels while also inhibiting the growth of tumor cells.

This early test of the two agents in a breast cancer model suggests that the double hit can stifle tumor progression, avoid drug resistance and cause few side effects, say researchers at the Ohio State University Comprehensive Cancer Center -- Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC -- James) who developed the agents and evaluated their effectiveness in laboratory and animal tests.

The scientists designed one of the agents to prevent human epithelial growth factor from interacting with HER-2, a molecule that marks a particularly aggressive form of breast cancer.

The other inhibitor blocks the action of vascular endothelial growth factor (VEGF), which stimulates the growth of new blood vessels that tumors need to grow beyond a certain size.

The findings are described in two papers published online in the Journal of Biological Chemistry. One presents the development of a novel VEGF inhibitor; the other describes the HER-2 inhibitor and the preclinical testing of the two agents together.

"When we combined our peptide HER-2 inhibitor with the VEGF peptide that inhibits angiogenesis, we observed significant additive benefits in reducing tumor burdens in preclinical studies," says principal investigator Pravin Kaumaya, professor of obstetrics and gynecology, of molecular and cellular biochemistry, and of microbiology, and director of the division of vaccine development at the OSUCCC -- James.

The strategy of targeting both HER-2 and VEGF pathways should also discourage the development of drug resistance, Kaumaya says, because it simultaneously inhibits two pathways that are essential for tumor survival. "Combined peptide inhibitors might be appropriate in several types of cancer to overcome acquired resistance and provide clinical benefit," he adds.

Peptide inhibitors consist of short chains of amino acids (the VEGF inhibitor is 22 amino acids long) that conform in shape to the active site of the target receptor. In addition, Kaumaya engineered the VEGF peptide to be resistant to protease, an enzyme, thereby increasing its efficacy. The shape of the peptide HER-2 inhibitor engineered by Kaumaya and his colleagues, for example, is highly specific for the HER-2 receptor. It physically binds to the receptor, which prevents another substance, called epithelial growth factor, from contacting the receptor and stimulating the cancer cells to grow.

Other categories of targeted drugs in clinical use are humanized monoclonal antibodies and small-molecule TKI inhibitors. Both groups are associated with severe side effects and are very expensive, Kaumaya says. "We believe peptide inhibitors offer non-toxic, less-expensive alternatives to humanized monoclonal antibodies and small-molecule inhibitors for the treatment of solid tumors, with the potential for improved efficacy and better clinical outcomes," he says.

Brain Tumor

Brain Tumor Caused by Single Gene Defect (Med India: 18.3.2011)

Defect in the BRAF gene causes pilocytic astrocytoma, the most common brain tumor in children, says study. Pilocytic astrocytoma is usually slow-growing and benign. Chemotherapy or radiation therapy can lead to severe side-effects and have only little effect on these slowly growing tumors. Affected children therefore urgently need new, targeted therapies.

Professor Dr. Peter Lichter of the German Cancer Research Center says that this defect causes a cellular signaling pathway, which in healthy cells is active only in case of acute need, to be permanently activated.

Jan Gronych from Lichter's department has now studied, jointly with colleagues of Heidelberg University Hospitals, the actual relevance of the BRAF defect for carcinogenesis. To this end, the investigators packed a defective BRAF gene into a virus and thus introduced it into neuronal precursor cells of mice. In 91 percent of animals thus treated, tumors developed around the injection site. These tumors corresponded to pilocytic astrocytoma in terms of their biology, growth characteristics and tissue structure.

Cells of these tumors all showed the typical symptom of a defective BRAF gene: a permanently activated MAP kinase enzyme. "This proves that a single gene defect is really sufficient to cause pilocytic astrocytoma," said Lichter, summarizing the results.

A permanently active MAP kinase constantly transmits growth signals in cancer cells, while it is also their Achilles' heel: In recent years, a number of drugs have been developed which inhibit the enzyme activity of kinases very specifically and, thus, can impede cancer growth. The Heidelberg researchers have shown that brain cells which are driven to permanent abnormal cell division by a defective BRAF gene slowed down growth after treatment with kinase inhibitor sorafenib.

Depression

Manic-Depressive Illness

Treatment for Manic-Depressive Illness Restores Brain Volume Deficits (Science Daily: 17.2.2011)

Lithium, introduced in the late 1940's, was the first "wonder drug" in psychiatry. It was the first medication treatment for the manic and depressive episodes of bipolar disorder and it remains among one of the most effective treatments for this disorder.

In the past 15 years, as molecular mechanisms underlying the treatment of bipolar disorder began to emerge, basic research studies conducted in animals began to identify neuroprotective and perhaps neurotrophic effects of this important medication.

The identification of these molecular actions of lithium coincided with the discovery of regional brain volume deficits in imaging studies of people with bipolar disorder. In particular, a generation of research studies identified alterations, predominately reductions, in the size of brain regions involved in mood regulation. These studies also began to provide hints that some of the treatments for bipolar disorder would increase the volumes of these brain regions.

In a massive research effort published in Biological Psychiatry, eleven international research groups collaborated to pool brain imaging data from adults with bipolar disorder. This allowed them to perform a mega-analysis to evaluate the differences in brain structure between individuals with bipolar disorder and healthy comparison subjects.

They found that individuals with bipolar disorder had increased right lateral ventricular, left temporal lobe, and right putamen volumes. Individuals with bipolar disorder who were not taking lithium had a reduction in cerebral and hippocampal volumes compared with healthy comparison subjects. Importantly, however, bipolar patients taking lithium displayed significantly increased hippocampal and amygdala volume compared with patients not treated with lithium and healthy comparison subjects. Cerebral volume reduction was also significantly associated with illness duration in bipolar individuals.

"This important mega-analysis provides strong support for regional brain structural alterations associated with bipolar disorder, but also sends a signal of hope that treatments for this disorder

may reduce some of these deficits," commented Dr. John Krystal, Editor of Biological Psychiatry.

Depression

The Negative Impact of Depression Following Endoscopic Sinus Surgery (Medical News today: 3.3.2011)

Depression is a common problem in patients with chronic rhinosinusitis (CRS) and negatively impacts patients' symptom burden, ability to function, and quality of life (QOL), according to new research published in the March 2011 issue of Otolaryngology - Head and Neck Surgery.

Nearly 14 percent of Americans suffer from chronic sinusitis and may have the following symptoms for 12 weeks or more; facial pain/pressure, facial congestion/fullness, nasal obstruction/blockage, thick nasal discharge/discolored post-nasal drainage, and periodic high fever. If antibiotics are not effective, these symptoms can lead to endoscopic sinus surgery to clear clogged sinuses.

Depression negatively impacts outcomes of care in chronic disease and has been associated with increased risk of morbidity and mortality. The prevalence of depression in patients with CRS is estimated to be in the range of 20-25%. High levels of depression in patients with CRS have been associated with increased utilization of healthcare resources, including more antibiotic use, physician visits, and missed workdays.

The study included face-to-face interviews with 76 patients who were enrolled prior to having endoscopic sinus surgery and followed postoperatively for at least 6 months post-operatively, including 8 patients with depression and 45 patients without depression.

Patients completed standard medical history intake documentation and underwent a physical examination. Demographic data and presence or absence of other clinical characteristics including nasal polyposis, asthma, allergies, aspirin intolerance, and smoking were documented and confirmed through physical examination when appropriate. Computed tomography and endoscopy findings were recorded and patients were asked to report a history of depression on the intake form and any anti-depressant medication they were using.

"Depression is common and underreported in patients with CRS. Depression significantly impacts patients' quality of life," said study author Jamie Litvack, MD, MS. "Depressed patients with CRS report worse disease-specific and general health-related QOL than other CRS patients, but experience comparable post-operative improvement in quality of life after endoscopic sinus surgery. Perhaps with better diagnosis and treatment of depression in this subset of patients, their outcomes of care can be further improved."

The Institutional Review Board at Oregon Health & Science University provided approval of study protocol and the informed consent process.

Otolaryngology - Head and Neck Surgery is the official scientific journal of the American Academy of Otolaryngology - Head and Neck Surgery Foundation (AAO-HNSF). The study's authors are Jamie R. Litvack, MD, MS; Jess C. Mace, MPH; Timothy L. Smith, MD, MPH.

The National Institutes of Health, the Pennsylvania Department of Health, the Seaver Foundation and Autism Speaks provided financial or material support to this study. Co-authors are from The Children's Hospital of Philadelphia and the University of Pennsylvania School of Medicine, Columbia University, Mt. Sinai School of Medicine, and the University of Colorado School of Medicine.

Depression

Depression May Increase the Risk of Kidney Failure (Science Daily: 11.3.2011)

Depression is associated with an increased risk of developing kidney failure in the future, according to a study appearing in an upcoming issue of the Clinical Journal of the American Society Nephrology (CJASN). Approximately 10% of the US population will suffer from depression at some point during their lifetime.

Lead investigator, Dr. Willem Kop (Department of Medical Psychology and Neuropsychology at the University of Tilburg, the Netherlands) and colleagues studied 5,785 people from four counties across the United States for 10 years. The participants were 65 years and older and not yet on dialysis. They completed a questionnaire measuring depressive symptoms and a broad range of medical measurements, including estimated glomerular filtration rate (eGFR) and risk factors for kidney and heart diseases. The investigators examined whether depression predicted the onset of kidney disease or other medical problems in which the kidneys play a critical role.

According to the results, depression coincided with the presence of chronic kidney disease (CKD) and was 20% more common in individuals with kidney disease than those without kidney disease. The study shows that depression predicted subsequent rapid decline in kidney function, new onset clinically severe kidney disease (or end-stage renal disease), and hospitalizations that were complicated by acute kidney injury. When the investigators corrected for the long-term effects of other medical measures, the predictive value of depression for hospitalizations with acute kidney injury remained high.

Take home message: "People with elevated depressive symptoms have a higher risk of subsequent adverse kidney disease outcomes. This is partially explained by other medical factors related to depression and kidney disease. But, the association with depression was stronger in

patients who were otherwise healthy compared to those who had co-existing medical disorders such as diabetes or heart disease," explains Kop.

The investigators are currently analyzing which factors may explain the association with depression, which could include delayed seeking of medical care and miscommunications between patient and physicians and important biological processes associated with depression, such as the immune and nervous systems.

Study co-authors include Stephen Seliger (University of Maryland, Nephrology); Jeffrey Fink (University of Maryland Medical System, Department of Medicine, Division of Nephrology); Ronit Katz (University of Washington, Biostatistics); Michelle Odden (University of California, Berkeley, Department of Epidemiology); Linda Fried (Veterans Affairs Pittsburgh Health System); Dena Rifkin (UCSD and VASDHS, Medicine); Mark Sarnak (Tufts-New England Medical Center, Medicine); and John Gottdiener (University of Maryland, School of Medicine, Medicine).

Depression,

Depression, age, medical problems linked to dependence post stroke(New Kerala: 16.3.2011)

A study has indicated that people who have stroke are more likely to be dependent if they are depressed, older or have other medical problems.

Post-stroke depression is a common problem. About 795,000 people in the United States have a stroke each year and one third of survivors develop depression as a result," said study author Arlene Schmid, with the Richard L. Roudebush Veterans Affairs Medical Center and Indiana University in Indianapolis.

"We wanted to see whether depression and other factors affected function and dependence after a stroke."

For the study, researchers gathered information about 367 ischemic stroke survivors with an average age of 62 with no severe language or thinking skill impairments. Of those, 174 were diagnosed with post-stroke depression one month after the stroke.

The participant's level of independence was rated using a zero to five scale, with five being the most severely disabled and dependent. Three months later, 20 percent of participants were considered dependent, scoring a level three or higher.

The study found that stroke survivors with depression were more likely to be dependent if they were older, had other coinciding health problems or were severely depressed compared to those

who were younger (64 vs. 59), free of other health problems (18 vs. 15 points on a test for co-morbidities) or not depressed (16 vs. 14 points on a patient health questionnaire).

The study has been published in *Neurology*, the medical journal of the American Academy of Neurology.

Disaster Management

Urban challenge – Disaster Management

Looming urban challenge (The Tribune: 28.3.2011)

Need for policy interventions

THE global percentage of urban population grew from 13 in 1900 to 29 in 1950, and 49 in 2005. If the present trends continue, by 2030 nearly 60 per cent of the global population will be living in cities. In 2015, the world will have 58 cities with 5 million people each; and by 2025, 27 mega cities with more than 10 million people each.

A Harvard economist, Edward Glaeser, in his recent book, “Triumph of the City: How our Greatest Invention Makes us Richer, Smarter, Greener, Healthier and Happier”, argues that cities are “our species’ greatest invention”, as they make people more inventive, productive and kinder to the planet. But are the cities indeed such an unmixed blessing, particularly in the global south?

Cities do offer advantages of agglomeration, better infrastructure and economic and social opportunities. They serve as cultural melting pots, centres of knowledge and innovation; fora of political engagement; and sites of investment. Cities thus become magnets that attract people from less developed regions. But particularly in the global south, cities are also home to acute congestion, slums, deprivation and poverty. Their large ungoverned spaces are conducive to organised crime, drug and human-trafficking and urban warfare.

Cities expand due to natural growth, migration, greater employment and economic opportunities, declining labour-intensity of agriculture and globalisation. Instability and civil strife in parts of the global south, coupled with weak governance, also contribute to rural-urban migration.

For the first time in history, most of the world’s population will be concentrated in cities located in the world’s poorest countries, where policing, sanitation and medical facilities are scanty. The World Bank estimates that between now and 2050 over 70 per cent of population growth will take place in 24 low and lower-middle income countries that have an average per capita earning of less than \$3855 (2008). Asia’s urban population is currently 37 per cent. Over the next two decades, it is projected at 55 per cent. By 2030, India’s urban population will be 500 million. The mega cities of South Asia are expanding even more because of rural poverty and high fertility rates rather than economic dynamism. Mumbai, where at least half the population lacks adequate shelter, is projected to have a population of 22.6 million in 2015. Karachi, already

trapped in chronic political turbulence, will have 16.2 million people by 2015. Dhaka, one of the world's poorest cities, is likely to have 17.9 million inhabitants by 2015.

Cities in the developed world grew at a more leisurely pace than those in Asia's developing countries. For example, between 1950 and 2015, New York's population will have grown by just 30 per cent, whereas Karachi's will have grown by 2000 per cent and Dhaka's by 5400 per cent. In the developed West, moreover, growth took place after nation-states and governments were firmly established. The developed world's urbanisation also predated the information revolution, which has led to rising expectations and a heightened sense of deprivation among the less affluent.

The cities of the global south are unlikely to be what Edward Glaeser calls the mankind's "greatest invention". Their pattern of growth will pose a serious challenge to human security in diverse ways. Firstly, deprivation, poverty and social exclusion will have a predominantly urban face. Between 1993 and 2002, the number of poor living on US \$1 a day declined by 150 million in villages, but increased by 50 million in cities. Deprivation and disparities are particularly acute in slums and shanty towns, which lack basic amenities like water. Slum-dwellers sometimes pay 50 times more for clean water than those living in serviced colonies.

Secondly, in many urban spaces, and particularly in poorer neighbourhoods, effective governance is non-existent or is overwhelmed by the magnitude of the challenges. In such pockets, violence becomes the basis for alternative "parallel" forms of order, control, identity, legitimacy and resource distribution. The poor in such areas survive in chronic insecurity and face the risk of urban warfare.

Thirdly, haphazard and rapid urbanisation leads to severe environmental degradation. Crowded cities become centres of disease and epidemics. Inhabitants of congested cities are highly vulnerable to devastation in the wake of extreme weather events. Cities close to low-lying coastal zones will be prone to flooding and consequent economic loss.

Fourth, cities marked by religious, ethnic and linguistic diversity can accentuate tensions arising from other factors like competition for the limited number of jobs and resources. Rapidly urbanising centres affected by a youth bulge can foster violence in an environment of deprivation and denial.

Cities are also becoming both the sources and targets of urban terror. They offer tempting opportunities for shock and publicity, which are greatly valued by terrorists. It is hardly surprising that recent terror attacks have targeted iconic symbols in cities like New York and Mumbai.

The urban challenge looms large in India. A UN-HABITAT report notes that 63 per cent of South Asia's slum-dwellers are Indian. The largest number of slum-dwellers in the country live in four mega cities: Mumbai (6.5 million, which is more than the entire population of Norway); Delhi (1.9 million), Kolkata (1.5 million) and Chennai (0.8 million).

If governments continue to adopt a business-as-usual attitude towards the urban challenge, chronic chaos in most mega cities of Asia is the most likely scenario. While cities like Karachi already present a picture of unending disorder, other mega cities like Dhaka, Lahore, Mumbai, Kolkata and Jakarta could well face a similar fate.

Densely populated urban centres will be particularly vulnerable to natural disasters and these in turn will challenge governments' capacities to address them. Climate change scientists forecast extreme weather events and disasters like the Asian tsunami of December 2004. The recent earthquake and the tsunami in its wake have been termed by the Japanese Prime Minister as the country's greatest crisis since World War II. Massive damage caused by natural events, epidemics or other disasters may overwhelm city and national governments.

Chronic neglect and exclusion make people particularly prone to embracing radical ideologies. Left-wing extremism, which presently afflicts 196 districts in 20 states of India, is making systematic inroads in several cities. This is likely to grow unless the urbanisation process can be managed more imaginatively and efficiently.

The urbanisation phenomenon, therefore, needs to be viewed from a strategic perspective. Policy interventions to tackle the challenge may include sound planning for urban growth and effective implementation of such plans; giving due emphasis to environmental protection; vigorous efforts to provide basic amenities; slum improvement, pro-poor policies and inclusive growth. Appropriate measures are also needed to prevent disasters if possible, and mitigate and manage them when they cannot be prevented.

Diseases

Alzheimer's Diseases

Alzheimer's Diseases

Alzheimer's Disease May Be Easily Misdiagnosed (Science Daily: 25.2.2011)

New research shows that Alzheimer's disease and other dementing illnesses may be easily misdiagnosed in the elderly, according to early results of a study of people in Hawaii who had their brains autopsied after death.

Diagnosing specific dementias in people who are very old is complex, but with the large increase in dementia cases expected within the next 10 years in the United States, it will be increasingly important to correctly recognize, diagnose, prevent and treat age-related cognitive decline," said study author Lon White, MD, MPH, with the Kuakini Medical System in Honolulu.

For the study, researchers autopsied the brains of 426 Japanese-American men who were residents of Hawaii, and who died at an average age of 87 years. Of those, 211 had been diagnosed with a dementia when they were alive, most commonly attributed to Alzheimer's disease.

The study found that about half of those diagnosed with Alzheimer's disease did not have sufficient numbers of the brain lesions characterizing that condition to support the diagnosis. Most of those in whom the diagnosis of Alzheimer's disease was not confirmed had one or a combination of other brain lesions sufficient to explain the dementia. These included microinfarcts, Lewy bodies, hippocampal sclerosis or generalized brain atrophy.

However, diagnoses of Lewy body dementia and vascular dementia were more accurate. Misdiagnoses increased with older age. They also reflected non-specific manifestations of dementia, a very high prevalence of mixed brain lesions, and the ambiguity of most neuroimaging measures.

"Larger studies are needed to confirm these findings and provide insight as to how we may more accurately diagnose and prevent Alzheimer's disease and other principal dementing disease processes in the elderly," said White.

The research is being released February 24 and will be presented as part of a plenary session at the American Academy of Neurology's 63rd Annual Meeting in Honolulu April 9 to April 16, 2011.

The study was supported by the National Institute on Aging and the Department of Veterans Affairs.

Alzheimer's

Human Stem Cells Transformed Into Key Neurons Lost in Alzheimer's (Science Daily: 7.3.2011)

Northwestern Medicine researchers for the first time have transformed a human embryonic stem cell into a critical type of neuron that dies early in Alzheimer's disease and is a major cause of memory loss.

This new ability to reprogram stem cells and grow a limitless supply of the human neurons will enable a rapid wave of drug testing for Alzheimer's disease, allow researchers to study why the neurons die and could potentially lead to transplanting the new neurons into people with Alzheimer's.

The paper will be published March 4 in the journal Stem Cells.

These critical neurons, called basal forebrain cholinergic neurons, help the hippocampus retrieve memories in the brain. In early Alzheimer's, the ability to retrieve memories is lost, not the memories themselves. There is a relatively small population of these neurons in the brain, and their loss has a swift and devastating effect on the ability to remember.

"Now that we have learned how to make these cells, we can study them in a tissue culture dish and figure out what we can do to prevent them from dying," said senior study author Jack Kessler, M.D., chair of neurology and the Davee Professor of Stem Cell Biology at Northwestern University Feinberg School of Medicine and a physician at Northwestern Memorial Hospital.

The lead author of the paper is Christopher Bissonnette, a former doctoral student in neurology who labored for six years in Kessler's lab to crack the genetic code of the stem cells to produce the neurons. His research was motivated by his grandfather's death from Alzheimer's.

"This technique to produce the neurons allows for an almost infinite number of these cells to be grown in labs, allowing other scientists the ability to study why this one population of cells selectively dies in Alzheimer's disease," Bissonnette said.

The ability to make the cells also means researchers can quickly test thousands of different drugs to see which ones may keep the cells alive when they are in a challenging environment. This rapid testing technique is called high-throughput screening.

Kessler and Bissonnette demonstrated the newly produced neurons work just like the originals. They transplanted the new neurons into the hippocampus of mice and showed the neurons functioned normally. The neurons produced axons, or connecting fibers, to the hippocampus and pumped out acetylcholine, a chemical needed by the hippocampus to retrieve memories from other parts of the brain.

Human skin cells transformed into stem cells and then neurons

In new, unpublished research, Northwestern Medicine scientists also have discovered a second novel way to make the neurons. They made human embryonic stem cells (called induced pluripotent stem cells) from human skin cells and then transformed these into the neurons.

Scientists made these stem cells and neurons from skin cells of three groups of people: Alzheimer's patients, healthy patients with no family history of Alzheimer's, and healthy patients with an increased likelihood of developing the disease due to a family history of Alzheimer's because of genetic mutations or unknown reasons.

"This gives us a new way to study diseased human Alzheimer's cells," Kessler said. "These are real people with real disease. That's why it's exciting."

Researcher motivated by his grandfather's Alzheimer's disease

Bissonnette's persistence in the face of often frustrating research was fueled by the childhood memory of watching his grandfather die from Alzheimer's.

"I watched the disease slowly and relentlessly destroy his memory and individuality, and I was powerless to help him," Bissonnette recalled. "That drove me to become a scientist. I wanted to discover new treatments to reverse the damage caused by Alzheimer's disease."

"My goal was to make human stem cells become new healthy replacement cells so that they could one day be transplanted into a patient's brain, helping their memory function again," he said.

Bissonnette had to grow and test millions of cells to figure out how to turn on the exact sequence of genes to transform the stem cell into the cholinergic neuron.

"A stem cell has the potential to become virtually any cell in the body, from a heart cell to a layer of skin," he explained. "Its development is caused by a cascade of things that slowly bump it into a final cell type."

But it wasn't enough just to develop the neurons. Bissonnette then had to learn how to stabilize them so they lived for at least 20 days in order to prove they were the correct cells.

"Since this was brand new research, people didn't know what kind of tissue culture mature human neurons would like to live in," he said. "Once we figured it out, they could live indefinitely."

The research was supported by the National Institutes of Health.

Potential Alzheimer's Treatment

Potential Alzheimer's Treatment? Newly Discovered Role for Enzyme in Neurodegenerative Diseases (Science daily: 11.3.2011)

Neurodegenerative diseases like Alzheimer's and Parkinson's are partly attributable to brain inflammation. Researchers at Karolinska Institutet now demonstrate in a paper published in Nature that a well-known family of enzymes can prevent the inflammation and thus constitute a potential target for drugs.

Research suggests that microglial cells -- the nerve system's primary immune cells -- play a critical part in neurodegenerative diseases, such as Alzheimer's and Parkinson's. The over-activation of these cells in the brain can cause inflammation, resulting in neuronal death.

Scientists at Karolinska Institutet and Seville University, working in collaboration with colleagues at Lund University, have now found a way to prevent the activation of the microglia and consequently the inflammation they cause. The key is the blocking of enzymes called caspases, which the team has shown control microglial activation.

"The caspases are a group of enzymes known for causing cell death," says Associate Professor Bertrand Joseph, who headed the study. "That they also serve as signal molecules that govern that activity of other cells was an unexpected discovery that gives them an entirely new physiological role."

By studying cell cultures and mice, the researchers show that certain caspases (3, 7 and 8) activate rather than kill microglial cells, which triggers an inflammatory reaction. Mice given caspase inhibitors displayed fewer activated microglia and less inflammation and cell death in the surrounding neurons.

They also examined samples from deceased Alzheimer's and Parkinson's patients and discovered a higher incidence of activated caspases in their microglial cells.

"We'll now be examining whether the substances that inhibit the caspases can be candidates for useful drugs in the treatment of certain neurological diseases," says Dr Joseph.

Asthma

Omalizumab

Omalizumab 'cuts seasonal asthma attacks in youth' (New Kerala: 18.3.2011)

A clinical trial has found that the drug omalizumab, sold under the brand name Xolair, nearly eliminated seasonal increases in asthma attacks and decreased asthma symptoms among inner-city children and youth.

The study enrolled 419 children and youths, aged 6 to 20 years, diagnosed with moderate to severe allergic asthma lasting more than one year.

The children came from Boston, Chicago, Cleveland, Dallas, Denver, New York City, Tucson, Ariz. and Washington, D.C.

In addition to standard therapy, half of the participants were assigned at random to receive omalizumab, and the other half a placebo.

Drug or placebo was delivered via an injection under the skin every two to four weeks over the 60-week period of study.

As the trial proceeded, participants returned to the clinic every three months for evaluation of their symptoms.

At the end of the study, the investigators found that, overall, children and adolescents who received omalizumab had a 25 percent reduction in days with symptoms and a 30 percent reduction in asthma attacks compared with those who received placebo.

Those who received omalizumab also had a 75 percent reduction in hospitalizations.

Importantly, the spring and fall increases in asthma attacks that were seen in the participants receiving placebo were almost eliminated in those participants receiving omalizumab.

“The spike in asthma attacks in the fall, which is associated with colds and other viral airway infections, disappeared in the kids in the omalizumab group,” said William Busse, the principal investigator of ICAC and professor of medicine at the University of Wisconsin-Madison.

“Because the drug specifically targets IgE, which is the antibody responsible for allergies, our observations show the possible interplay between allergies, respiratory viruses and IgE in provoking asthma attacks,” he said.

Children and adolescents who responded the best to omalizumab had positive skin tests for cockroach allergy and high levels of cockroach allergen in their homes.

The findings appeared in the New England Journal of Medicine.

Allergies

First-born kids 'more likely to suffer from allergies' (New Kerala: 30.3.2011)

First-born children are more likely to suffer from allergies than their younger brothers and sisters, Japanese scientists have found.

The researchers discovered that multiple births build up the immune system in the womb which is transferred to babies.

It means second and third children are less likely to suffer from hay fever or develop food allergies.

Scientists surveyed the parents of 13,000 school children aged seven to 15, and asked them the order of their children and what allergies they had.

The findings showed four per cent of first-born children had rhinitis, conjunctivitis and food allergies compared with 3.5 per cent of second-born children.

Meanwhile, just 2.6 per cent of third-born children suffered from allergies.

“It has been established that individuals with increased birth order have a smaller risk of allergy,” the Daily Mail quoted Dr Takashi Kusunoki, who led the study for the Shiga Medical Center for Children and Kyoto University in Japan, as saying.

“However, the significance of the effect may differ by allergic diseases.

“Further evaluation should shed light on the role of pre and post-natal circumstances on the development of childhood allergy,” Kusunoki added.

Asthma, Smoking and Nicotine Dependence

Links between Asthma, Smoking and Nicotine Dependence Explored in New Study (Science Daily: 31.3.2011)

New research out of the University of Cincinnati suggests that being diagnosed with asthma is significantly associated with a greater risk for a lifetime history of daily smoking and nicotine dependence.

The findings are reported in the online preview issue of the Journal of Health Psychology.

The article is authored by Alison McLeish, a UC assistant professor of psychology, along with Jesse Cougle, assistant professor of psychology at Florida State University, and Michael Zvolensky, a psychology professor at the University of Vermont.

The study analyzed data from the National Comorbidity Survey-Replication (NCS-R) -- a large epidemiological survey of American adults.

The study found that individuals who were diagnosed with asthma were 1.26 times more likely to have been a smoker, and twice as likely to have been nicotine dependent at some point in their lifetimes -- compared to individuals without asthma. The researchers also found that the asthma-smoking association was stronger when focusing on nicotine dependence in the past 12 months.

"Individuals with asthma were nearly three times as likely as those without asthma to have reported nicotine dependence in the past 12 months after controlling for demographic and drug abuse/dependence variables," the authors state in the article.

The study also found that roughly half of the smokers with asthma in the survey indicated that they began smoking prior to the age that they were diagnosed with asthma. That group reported being diagnosed with asthma at a much later age than those who began smoking after they were diagnosed with asthma. The article states that a lifetime history of nicotine dependence was not significantly different between those who started smoking prior to (29.3 percent) or following (25.7 percent) an asthma diagnosis.

Based on the findings, the researchers suggest paying greater clinical attention to addressing tobacco use and dependence in relation to asthma.

Bacteria

Bacteria

Certain types of gut bacteria linked to fatty liver (New Kerala: 2.2.2011)

A new study has suggested that the abundance or scarcity of certain types of bacteria in the gut may also help predict susceptibility to non-alcoholic fatty liver.

In a metagenomic analysis of the microbial communities living in the intestinal tracts of 15 female patients participating in a study of the effects on liver condition from a choline-depleted diet, researchers at the University of North Carolina at Charlotte found a strong correlation between the relative abundances of two specific classes of bacteria and the development of fatty liver.

"Certain bacterial populations correlated very strongly with increased fat in the liver during a restricted choline diet," said Melanie Spencer, lead author of the study.

The researchers analyzed the genomes of the patients' gut bacteria before, during and after the patients were put on a choline deficient diet

Because all patients consumed identical diets during the study, the researchers predicted that the initially distinct and complex communities of microbes in the patients' intestinal tracts would react by becoming less distinct from each other.

The researchers found instead that, though each of the patients' bacterial communities did change a bit, each individual's community still remained distinctive throughout the study.

They noticed that among the numerous classes of bacteria present in each patient, variations in the populations of two particular groups seemed to correspond with variations between patients in the degree to which they developed a fatty liver during the period of dietary choline depletion.

"Those patients with the highest abundance of Gammaproteobacteria at the beginning of the study seemed to have the lowest fatty liver development. The ones with the least developed the most fatty liver. Erysipelotrichi showed exactly the opposite association, though this relationship was not quite as strong. So there seemed to be change going on in opposite directions," said Spencer.

The finding appeared in the journal Gastroenterology

Bacteria

Bacteria in the Gut May Influence Brain Development (Science daily; 2.1.2011)

A team of scientists from around the globe have found that gut bacteria may influence mammalian brain development and adult behavior. The study is published in the scientific journal PNAS, and is the result of an ongoing collaboration between scientists at Karolinska Institutet in Sweden and the Genome Institute of Singapore.

The research team compared behavior and gene expression in two groups of mice -- those raised with normal microorganisms, and those raised in the absence of microorganisms (or germ-free mice). The scientists observed that adult germ-free mice displayed different behavior from mice with normal microbiota, suggesting that gut bacteria may have a significant effect on the development of the brain in mammals.

The adult germ-free mice were observed to be more active and engaged in more 'risky' behavior than mice raised with normal microorganisms. When germ-free mice were exposed to normal microorganisms very early in life, as adults they developed the behavioral characteristics of those exposed to microorganisms from birth. In contrast, colonizing adult germ-free mice with bacteria did not influence their behavior.

Subsequent gene profiling in the brain identified genes and signaling pathways involved in learning, memory and motor control that were affected by the absence of gut bacteria, highlighting the profound changes in the mice that developed in the absence of microorganisms. This suggests that, over the course of evolution, colonization of the gut by microorganisms (in total 1.5 kilograms) in early infancy became integrated into early brain development.

"The data suggests that there is a critical period early in life when gut microorganisms affect the brain and change the behavior in later life," says Dr. Rochellys Diaz Heijtz, first author of the study.

"Not only are signal substances like serotonin and dopamine subject to regulation by bacteria, synapse function also appears to be regulated by colonizing bacteria," continues Prof. Sven Pettersson, coordinator of the study. "However, it is important to note that this new knowledge can be applied only to mice, and that it is too early to say anything about the effect of gut bacteria on the human brain."

In addition to Sven Pettersson and Rochellys Diaz Heijtz, Prof. Hans Forssberg at Stockholm Brain Institute (SBI) and Karolinska Institutet, and Dr. Martin Hibberd from the Genome Institute of Singapore (GIS) were involved in the research project. The findings presented are a result of a long-standing and ongoing collaboration between Karolinska Institutet and the GIS in Singapore aimed at exploring host-microbe interactions in a systematic manner.

Microsponges

Microsponges from seaweed may help diagnose diseases quickly (New Kerala: 11.2.2011)

A new study has found that microsponges derived from seaweed may help diagnose heart disease, cancers, HIV and other diseases quickly and at far lower cost than current clinical methods.

The microsponges are an essential component of Rice University's Programmable Bio-Nano-Chip (PBNC).

The study by John McDevitt, the Brown-Wiess Professor in Bioengineering and Chemistry, and his colleagues at Rice's BioScience Research Collaborative views the inner workings of PBNCs, which McDevitt envisions as a mainstream medical diagnostic tool.

PBNCs to diagnose a variety of diseases are currently the focus of six human clinical trials.

PBNCs capture biomarkers - molecules that offer information about a person's health - found in blood, saliva and other bodily fluids. The biomarkers are sequestered in tiny sponges set into an array of inverted pyramid-shaped funnels in the microprocessor heart of the credit card-sized PBNC.

When a fluid sample is put into the disposable device, microfluidic channels direct it to the sponges, which are infused with antibodies that detect and capture specific biomarkers.

Once captured, they can be analyzed within minutes with a sophisticated microscope and computer built into a portable, toaster-sized reader.

The microsponges are 280-micrometer beads of agarose, a cheap, common, lab-friendly material derived from seaweed and often used as a matrix for growing live cells or capturing proteins.

Celiac disease

New study focuses on cause of celiac disease (New Kerala: 11.2.2011)

A University of Chicago study has found that blocking a factor that can activate the human immune response against intestinal bacteria or certain foods could prevent the development of celiac disease in those most at risk.

Scientists point to two chemical signals-interleukin 15 and retinoic acid, a derivative of vitamin A-as triggers for the inflammatory response to gluten, a protein found in many grains that causes celiac disease.

Celiac disease is a digestive disorder triggered by the protein gluten.

"We found that having elevated levels of IL-15 in the gut could initiate all the early stages of celiac disease in those who were genetically susceptible, and that blocking IL-15 could prevent the disease in our mouse model," said Bana Jabri, associate professor of medicine and pathology of the University.

"It also demonstrated that in the treatment of inflammatory intestinal diseases, vitamin A and its retinoic acid metabolites are likely to do more harm than good," she said.

"In a stressed intestinal environment retinoic acid, which was thought to lessen inflammation in the intestine, acted as an adjuvant that promoted rather than prevented inflammatory cellular and humoral responses to fed antigen," the authors note.

Gluten can trigger an autoimmune reaction in the intestines of genetically susceptible people. This prevents the proper absorption of food and nutrients, and causes a variety of gastrointestinal and extra-intestinal symptoms.

For this study, Jabri and colleagues combined insights and data from celiac disease patients, who had been cared for at the University of Chicago's Celiac Disease Center, with experiments using a mouse model of the disease, developed in her lab.

They knew that many patients with this disease had high levels of Interleukin 15 in their intestines.

When the researchers increased the levels of this signaling molecule in mouse intestine, the mice developed all the early symptoms of celiac disease. Adding retinoic acid to the mix only made the symptoms worse.

When they blocked IL-15, however, the diseased mice reverted to normal, and were once again able to tolerate gluten.

Bacteria

Bacteria Acquire Human Genes (Medical News Today: 15.2.2011)

First evidence that bacteria can acquire human genes has come to light in a new study by US researchers who found a fragment of human DNA in *Neisseria gonorrhoeae*, the bacterium that causes gonorrhea, one of the oldest recorded human diseases.

In a paper about to be published this month in the journal *mBio*, researchers from Northwestern University in Chicago, also suggest that the gene transfer is a recent evolutionary event.

This is the first time that a direct transfer of genetic material from bacteria to human has ever been recorded.

Lead author Dr Mark Anderson, a postdoctoral fellow in microbiology at Northwestern explained that we have already seen evidence that genes transfer horizontally among different bacteria and even between bacteria and yeast cells, but from human to bacterium is "a very large jump":

"This bacterium had to overcome several obstacles in order to acquire this DNA sequence," said Anderson.

The discovery reveals some clues about gonorrhea's adaptability and capacity to survive in humans. The disease transmits through sexual contact and is exclusive to humans.

Every year about 50 million people around the world become infected with gonorrhea, some 700,000 of them in the US.

Although curable with antibiotics, there is only one drug recommended for treatment because the bacterium has developed resistance to the various antibiotics used to treat it over the last 40 years.

Gonorrhea hits women hard. Untreated, it can lead to pelvic inflammatory disease, a painful condition that can leave a woman sterile or more likely to have an ectopic pregnancy if she conceives.

Also, in both men and women, there is a form of gonorrhea that enters the bloodstream and causes arthritis and endocarditis, where the heart's inner lining becomes infected.

Senior author Dr Hank Seifert, professor of microbiology and immunology at Northwestern University Feinberg School of Medicine, told the press that their discovery has evolutionary significance because it shows "you can take broad evolutionary steps when you're able to acquire these pieces of DNA".

Seifert has been studying gonorrhea for 28 years, focusing mostly on how it evades the human immune system by changing its appearance and altering the way that human white blood cells behave. He said the Bible describes an ancient disease that sounds like gonorrhea.

The fact gonorrhea can acquire genetic material directly from the host it is infecting "could have far reaching implications as far as how the bacteria can adapt to the host", said Seifert.

An ability to snatch fragments of host DNA probably helps the bacteria develop new strains, but whether this actually confers a survival advantage is not yet evident, he added.

The researchers discovered the gene transfer from human to bacteria when the Broad Institute in Cambridge, Massachusetts, sequenced the genomes of 14 gonorrhea clinical isolates and found three of them had a fragment of DNA that had an identical sequence to an L1 DNA element found in humans.

Further sequencing back at Seifert's lab confirmed this and also showed that the human sequence was present in about 11% of the screened gonorrhea isolates.

The researchers also examined a close genetic relative of gonorrhea, the bacterium *Neisseria meningitidis* that causes meningitis. They found no trace of the human DNA fragment, which they believe suggests the gene transfer from human to *Neisseria gonorrhoeae* is a recent evolutionary event.

Reoviruses

How Absent Reoviruses Kill Cancer (Science Daily: 21.2.2011)

Reoviruses are successfully being used in clinical trials to treat patients with cancer. Not only does the virus cause cancer cells to die, it also forces them to release pro-inflammatory chemokines and cytokines, which in turn causes the patient's immune system to attack the disease. New research published by BioMed Central's open access journal *Molecular Cancer* shows that reovirus infected cancer cells secrete proteins which, even when isolated, result in the death of cancer cells.

Normal human cells are protected from reovirus infection by a protein called PKR. However a cellular signalling protein (Ras), which can block PKR activity, is abnormally activated in many types of cancer and provides a window of opportunity for reovirus infection. A multi-centre study, involving labs in the UK and America, collected growth media from reovirus infected melanoma cells. The researchers showed that this media contained a range of small pro-inflammatory proteins, including an interleukin (IL-8) and Type 1 Interferon (INF- β), which recruited and activated white blood cells, specifically Natural Killer (NK) cells, dendritic cells (DC) and anti melanoma cytotoxic T cells (CTL).

Whilst the exact details behind this mode of action of cell signalling in response to viral infection are unclear, the release of cytokines was dependent on both 'inactive' PKR and a specific nuclear factor (NF- $\kappa\beta$). According to Prof Alan Melcher, from Leeds Institute of Molecular Medicine, "Bystander immune-mediated therapy may well be an important component in the treatment of cancer by reoviruses, and may have potential in treating cancer even in the absence of live virus."

Disease

A rare disease, always a killer but easily preventable (The Indian express: 7.3.2011)

Complication follows some years after measles, can be blocked with double dose of vaccine

MEASLES can be followed by a complication that, though rare, nearly always kills. Vaccination can prevent measles and therefore the fatal complication, called subacute sclerosing pan encephalitis (SSPE) and affecting the nervous system, but it is necessary to give children two doses.

Emmalee Madeline Snehal Parker, adopted from a Pune orphanage in 2005, died in the US this year after several months of suffering from SSPE. She had been vaccinated against measles in Pune but that had been before India introduced a second dose.

In fact, even now, Maharashtra has not introduced a free second dose at government-run hospitals and centres.

Brian and Erica Parker, who had adopted Emmalee at age two, noticed in July that she was struggling to walk. "She was diagnosed a month later with SSPE. There was no chance of recovery," Erica Parker said from the US.

In the last few months, Emmalee developed a kind of seizure that caused her limbs to jerk and her body to lurch, sometimes to the point of falling to the ground.

Despite treatment, she slipped into coma within months.

Dr Sudha Kessler, a neurologist who treated Emmalee at a children's hospital, said SSPE affects only 1 in 100,000 people who have had measles.

Dr Michel Phillipart, a California neurologist who has treated SSPE cases including Emmalee's, said at highest risk are those not vaccinated as infants. There is typically a latent period of many years before a child infected with measles develops SSPE. This is almost always fatal; very few people survive more than five years longer and even then neurological disability is universal.

Though Emmalee had been vaccinated, it is possible that she had been infected with measles before a year of age, or that she had an incomplete response to the vaccine and was exposed to measles infection after that, says Dr Jayant Navrange, a paediatrician who is in charge of the Pune unit of the Indian Medical Association's medico legal cell.

Vaccine coverage in India is only 66 per cent and even below 50 per cent in many states. Till 2009, India was the only country that had not introduced the second dose.

Now, some states have begun giving the second dose free at government centres. In Maharashtra, "we want to start giving the second booster dose but are still waiting for a written order" from the Centre, said Dr V M Kulkarni, in charge of the state's immunisation section.

The first dose against measles is to be given at the age of 9 months, the second at 12-15 months.

Disease

Disease stalks villages around cement plants (The Tribune:7.3.2011)

With the detection of particles of several heavy metals far exceeding the safe limits in an air sample taken from the villages around two cement plants — JP Cements and Ambuja Cements Limited — in Nalagarh area, questions have been raised on the role played by the State Pollution Control Board (SPCB) as the people have been exposed to grave health risks.

The findings were released by the Nalagarh-based NGO Himparivesh and the Community Environmental Monitoring Campaign (CEMC) in Nalagarh today.

The air samples were analysed by Chester Labnet, an American laboratory, and these were collected by the NGO in November 2010, using the low volume air sampling technique. One of the samples was collected near JP Cements unit for cement grinding and blending, which is situated near Bagheri village. The other sample was collected near Ambuja Cement's unit situated near Nayagram village.

With the presence of nickel being three times the safe limits as per the Indian and US environment protection agency standards, the risk of acquiring cancer by the residents had become high.

Shweta Narayan from the CEMC said had the SPCB performed its duty, the air pollution of such magnitude would have been checked.

President of the NGO Jagjit Singh said children, pregnant women, persons already suffering from any disease and old persons were especially susceptible to the ill-effects of pollution. Other members of the NGO, including its organising secretaries Khaminder Kumar, Surinder Kumar, Lakshmi Singh, general secretary Balkrishen Sharma, emphasised that the studies had shown a significant association between exposure to fine particles and premature mortality.

Other significant effects included aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, asthma attacks and problems like cardiac arrhythmia.

Narayan said the levels of manganese, cadmium, nickel and mercury had exceeded two to 12 times the safe limit as per the Indian and US Environment Protection Agency standards. This could cause an excessive risk to the central nervous system, feelings of weakness and lethargy, tremors and psychological disturbance, lung dysfunction and possible respiratory failure.

Exposure to lower concentrations may affect organs like kidney and brain and result in motor defects, irritability, nervousness, poor concentration, short-term memory deficits, tremulous speech and several other ailments.

The presence of calcium, which is an ingredient of limestone, was detected one thousand times the normal limit. This clearly proved that the plant of JP Cements was not using air pollution mitigation equipment and hence violated the conditions laid by the Ministry of Environments and Forests and its own measures listed in its Environment Impact Assessment report. However, SPCB member secretary SK Singla was not available for comments.

Salmonella Bacteria

Salmonella Bacteria Used to Fight Cancer (Science daily: 14.3.2011)

University of Minnesota researchers are using salmonella -- the bacteria commonly transmitted through food that sickens thousands of U.S. residents each year -- to do what was once unthinkable: help people.

U of M Masonic Cancer Center researchers believe salmonella may be a valuable tool in the fight against cancer in organs surrounding the gut -- such as the liver, spleen, and colon -- since that's where salmonella naturally infects the body.

Researchers want to "weaponize" salmonella, allowing the bacteria to then attack cancer cells in its natural environment.

U of M trials in animals have already shown salmonella can successfully control tumors in the gut. Human clinical trials are already underway at the U of M and are showing promise.

"Many bacteria and viruses -- even harmful ones -- can be used to fight disease," said Edward Greeno, M.D., lead researcher on the clinical study and Medical Director of the Masonic Cancer Clinic. "We believe it may even be possible to use bacteria to fight cancer."

Scientists have known for centuries that cancer patients sometimes get better after they've been exposed to an infection. For example, Greeno said, there is a published Austria report from the 1860's on a patient with a large tumor. The patient was placed in the same room as another sick patient with a bad infection. Soon, the tumor became infected and began to shrink in the original patient and nearly disappeared.

Unfortunately, the infection also killed the patient with the tumor.

So the key for this research initiative, Greeno said, was to find a way to get the tumor fighting abilities of salmonella delivered to the patient -- without making the patient sick.

What they came up with:

Greeno's Medical School colleague, Dan Saltzman, M.D., Ph.D., genetically modified a batch of salmonella to weaken it and added Interleukin 2, or IL-2. "You could think of IL-2 as a guard dog that sniffs around looking for threats inside the body," he said. When it finds one, it calls in an attack by the immune system.

Researchers knew if they could make IL-2 near tumors, it would identify the cancerous cells as a threat and trigger an immune response near the tumor.

Salmonella naturally finds its way to a person's gut and associated tissues. Salmonella also naturally likes to grow inside of tumor cells. Hence, if you're looking for ways to treat cancer in the bowels, the nearby lymph nodes or the liver -- salmonella is a perfect method to deliver a package of IL-2.

In a nutshell, by using genetically modified salmonella packaged with IL-2, Medical School researchers have created a kind of two-prong attack on cancer -- the immune response called in by IL-2, and the salmonella itself. The therapy is administered simply -- mixed with a few ounces of water and imbibed orally.

"This probably won't replace other ways of treating cancer such as chemotherapy and radiation," Greeno said. "But it's a promising area of study and we hope it can be a potent tool in our battle against cancer. It also has potential to be a much cheaper and less toxic alternative to chemotherapy and radiation."

Friendly Bacteria

Friendly bacteria help fend off flu: Study (New Kerala: 16.3.2011)

Researchers have discovered that friendly bacteria not only help in digestion, but also fight against the flu.

Akiko Iwasaki, an immunologist at Yale University, and her colleagues treated mice with neomycin antibiotics and found that it were more prone to influenza viruses, reports Nature.

The antibiotic-sensitive bacteria naturally present in the mice's bodies provided a trigger, leading to the production of T cells and antibodies that could fight a flu infection in the lungs.

The researchers found that the bacteria activated 'inflammasome' protein complexes in the immune system, which then activated precursors of an immune protein — the cytokine interleukin 1-beta.

Mature interleukin 1-beta triggered dendritic immune cells to migrate to lymph nodes in the lungs, where they initiate a potent attack on influenza viruses.

They found that when antibiotics eliminated the bacteria, inflammasomes failed to launch and the virus multiplied.

Previous researches have found that helpful microbial interactions don't stop at the gut, but Iwasaki's study is the first to identify how bacteria fight infections in the lungs.

"This study contributes to a growing body of literature showing that signals from commensal bacteria can have an impact on immune cells in multiple tissues," said David Artis, an immunologist at the University of Pennsylvania in Philadelphia.

"If certain antibiotics have an effect on our ability to mount a response against a viral infection, it means that people should be careful to only take antibiotics when they are absolutely needed — particularly in the flu season," he said.

"In addition, the findings suggest that our diet might affect our ability to fight viruses by influencing the composition of our commensal bacteria," he added.

Iwasaki, however, has cautioned that her team had not identified the bacteria responsible for the immune response.

The study is published in the Proceedings of the National Academy of Sciences.

Retinal Vascular Disease

Patients with Certain Type of Retinal Vascular Disease Are At a Higher Risk of Stroke (New Kerala: 17.3.2011)

Patients with a disease known as retinal vein occlusion (RVO) have a significantly higher incidence of stroke when compared with persons who do not have RVO, according to a report in the March issue of Archives of Ophthalmology, one of the JAMA/Archives journals.

"Retinal vein occlusion (RVO) is a retinal vascular disease in which a retinal vein is compressed by an adjacent retinal artery, resulting in blood flow turbulence, thrombus formation, and retinal ischemia," the authors write as background information in the article. "Although RVO is a significant cause of severe visual impairment in adults, it can occur at any age." Older age, diabetes, hypertension and vascular disease are among the risk factors for RVO.

Winifred Werther, Ph.D., then of Genentech Inc., South San Francisco, Calif., now of Vertex Pharmaceuticals, Cambridge, Mass., and colleagues conducted a retrospective cohort study to compare the incidence rates of myocardial infarction (MI, heart attack) and cerebrovascular accident (CVA, stroke) in hospitalized patients with and without retinal vein occlusion. The researchers used a U.S. population-based health care claims database to identify patients with RVO and control patients, matched for age and sex.

Among 4,500 patients with RVO and 13,500 control patients, the researchers found that patients with RVO had an almost two-fold higher incidence of stroke than the age- and sex-matched controls.

"Event rates for CVA were 1.16 and 0.52 per 100 person-years for RVO and controls, respectively," the authors report.

Children – Infection

Children Can Pick Up Infections by Playing Used Musical Instruments (Med India: 17.3.2011)

Researchers have warned that playing a used music instrument can pose a potentially dangerous health risk.

According to the study, used woodwind and brass instruments were found to be heavily contaminated with a variety of bacteria and fungi, many of which are associated with minor to

serious infectious and allergic diseases. Many children participate in their school's band ensemble and often the instruments they play are on loan," said R. Thomas Glass, lead author of the study.

"Most of these instruments have been played by other students, and without the proper sanitation, bacteria and fungi can thrive for weeks and even months after the last use," said Glass.

A total of 117 different sites, including the mouthpieces, internal chambers, and cases, were tested on 13 previously played instruments of a high school band. Six of the instruments had been played within a week of testing, while seven hadn't been touched in about one month.

The instruments produced 442 different bacteria, many of which were species of *Staphylococcus*, which can cause staph infections. Additionally, 58 molds and 19 yeasts were identified.

"Parents may not realize that the mold in their child's instrument could contribute to the development of asthma," said Glass.

Additionally, the yeasts on the instruments commonly cause skin infections around the mouth and lips.

Researchers stated that many of the bacteria can cause illness in humans and are highly resistant to the antibiotics normally prescribed by general practitioners.

The study has been published in the issue of *General Dentistry*, the peer-reviewed clinical journal of the Academy of General Dentistry (AGD).

Cough

What Is A Cough? What Causes A Cough? (Med India : 28.3.2011)

A cough, also known as *tissus* is a sudden reflex humans and many animals have to clear the throat and breathing passage of foreign particles, microbes, irritants, fluids and mucus - it is a rapid expulsion of air from the lungs. Coughing can be done deliberately or involuntarily.

There are three phases to a cough reflex:

An inhalation (breathing in)

A forced exhalation with the glottis closed. The glottis is in the area where the vocal cords are located, it is the middle part of the larynx.

An explosive release of air when the glottis opens. A cough typically has a characteristic sound.

If somebody coughs a lot it can be a sign of a disease. Germs rely on coughs to spread to new hosts. In the majority of cases, a cough is caused by an infection in the respiratory tract, but it can also be due to pollution, GERD (gastroesophageal reflux disease), choking, chronic bronchitis, a tumor in the lung, heart failure, some drugs (e.g. ACE inhibitors), post-nasal drip, and smoking.

A doctor will focus on treating the cause of the cough, for example, if it is due to an ACE inhibitor it may be discontinued. Codeine, dextromethorphan and other cough suppressants are often used by people with coughs, however, studies have shown that they are not really effective.

As a cough is a natural reflex, suppressing it might have a negative effect.

Classification of coughs

Acute cough - this is a cough of sudden onset that lasts up to three weeks.

Subacute cough - this type of cough persists for between three and eight weeks.

Chronic cough - this type persists for over eight weeks.

Productive cough - a cough that brings stuff up, such as sputum.

Dry cough - a cough that brings nothing up

Nocturnal cough - only occurs at night.

What are the causes of a cough?

The majority of coughs are caused by viruses and clear up without treatment.

Causes of acute cough - in most cases the infection is in the upper respiratory tract and affects the throat, known as an URTI (upper respiratory tract infection). Examples include flu, the common cold and laryngitis.

If it is an LRTI (lower respiratory tract infection), the lungs are infected and/or the airways lower down from the throat (windpipe). Examples include bronchitis and pneumonia (rare).

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An acute cough can also be caused by hay fever. According to the National Health Service, UK, an acute cough might be the initial sign of a chronic disease.

Causes of chronic cough - as mentioned at the beginning of this article, a chronic cough may be caused by smoking, mucus dripping down the throat from the back of the nose (nasal drip), GERD (gastro-esophageal reflux disease), asthma, and some medications (e.g. ACE-inhibitors).

Chronic coughs in children may be caused by whooping cough, respiratory tract infections, GERD and asthma.

Less common causes of chronic cough include TB (tuberculosis), a clot in the lung (pulmonary embolism), or tuberculosis.

Diagnosing a cough

If a good doctor decides your cough is caused by the common cold or flu, you most likely will be told to rest, drink plenty of fluids and let it run its course. In the majority of cases such coughs clear up after a week or two.

A cough caused by a viral infection that persists for more than a couple of weeks will probably require medical attention. The doctor may order some diagnostic tests, such as a chest X-ray, a sample of phlegm may be sent to a laboratory for analysis to determine what is causing the infection. The patient may be asked to breathe in and out of a tube attached to a machine, it helps the doctor determine whether the airways have narrowed (this test is called a spirometry).

If asthma is diagnosed, the patient may be prescribed an asthma medication.

Sometimes a general practitioner (primary care physician) may refer the patient to a respiratory specialist.

What are the treatment options for a cough?

The best way to treat a cough caused by a viral infection is to let your immune system deal with it - generally, such coughs clear up on their own. According to the National Health Service, UK, a homemade remedy with honey and lemon is as good, if not better than most OTC products sold in pharmacies.

Honey - it coats the throat, resulting in less irritation and possibly less coughing. Honey is a demulcent (something that soothes).

Cough medications - some may help associated symptoms, such as fever or a stuffy nose. However, there is no compelling evidence that cough medicines are effective.

Public health authorities in many countries today advise their people not to give OTC (over-the-counter) cough and cold medications to children less than six years of age ("Cough And Cold Medicines Not For Children Under 6, Says Health Canada").

Cough suppressants - these suppress the cough reflex and are generally only prescribed for dry cough. Examples include pholcodine, dextromethorphan and antihistamines.

Expectorants - these help bring up mucus and other material from the trachea, bronchi and lungs. An example is guaifenesin (guaiphenesin), which thins the mucus and also lubricates the irritated respiratory tract, thus promoting drainage from the lungs.

Childhood Eczema

Childhood Eczema

Water Softeners Not Found to Improve Childhood Eczema (Science Daily: 17.2.2011)

Water softeners provide no additional clinical benefit to usual care in children with eczema, so the use of ion-exchange water softeners for the treatment of moderate to severe eczema in children should not be recommended. However, it is up to each family to decide whether or not the wider benefits of installing a water softener in their home are sufficient to consider buying one.

These are the findings of a study by Kim Thomas from the University of Nottingham, Nottingham, UK, and colleagues and published in this week's PLoS Medicine.

The authors conducted their randomised controlled trial among 336 children -- who all lived in hard water areas in England -- aged 6 months to 16 years with a diagnosis of eczema; they were randomised to receive either installation of an ion-exchange water softener plus usual eczema care, or usual eczema care alone for 12 weeks. Research nurses measured each child's eczema severity score at baseline and at 6, 12, and 16 weeks to record changes in eczema severity. The authors also analysed any changes in eczema symptoms over the study period such as sleep loss, itchiness, and the amount of topical treatments used.

Although both treatment groups improved in disease severity during the course of the trial, there were no clinically important differences between the groups in any of the outcomes that were measured objectively (without knowledge of the treatment that the child received). However, parents in the trial did report small health benefits in some of the more subjective outcomes, such as sleep loss and itchiness, and just over 50% chose to buy the water softener at the end of the trial because of perceived improvements in the eczema and the wider benefits of water softeners.

The authors say: "The results of this study are clear, and as a result we cannot recommend the use of ion-exchange water softeners for the treatment of moderate to severe eczema in children."

They add, "Whether or not the wider benefits of installing a water softener in the home are sufficient to justify the purchase of a softener is something for individual householders to consider on a case by-case basis."

This trial was funded by the National Institute for Health Research, Health Technology Assessment (NIHR HTA) Programme, project number HTA 05/16/01.

Cholera

Cholera

Toward a fast, simple test for detecting cholera (New Kerala: 11.2.2011)

Scientists are reporting the development of a key advance that could provide a fast, simple test to detect the toxin that causes cholera.

Cholera affects more than 200,000 people annually, mainly in developing countries, and causes about 5,000 deaths. Many involve infants, children, and the elderly.

J. Manuel Perez and colleagues note that cholera is an intestinal infection from food or water contaminated with the bacterium *Vibrio cholerae*. It produces a toxin that can cause severe diarrhea, which can lead to rapid dehydration and death. Prompt treatment thus is essential, and yet existing tests to diagnose cholera are time-consuming, expensive, and require the use of complex equipment.

The scientists describe a key advance toward a better, faster test. The new method uses specially prepared nanoparticles of iron oxide, each barely 1/50,000th the width of a single human hair, coated with a type of sugar called dextran.

To achieve this, they looked for specific characteristics of the cholera toxin receptor (GM1) found on cells' surface in the victim's gut, and then they introduced these features to their nanoparticles.

When the magnetic nanoparticles are added to water, blood, or other fluids to be tested, the cholera toxin binds to the nanoparticles in a way that can be easily detected by instruments. The test hardware can be turned into portable gear that health care workers could use in the field, the scientists say. The approach also shows promise for treating cholera intoxication.

Cholera Epidemic

New Study Predicts Cholera Epidemic in Haiti Will Far Exceed UN Projections (Science Daily: 16.3.2011)

A new study conducted at the University of California, San Francisco (UCSF) and Harvard Medical School predicts that the cholera epidemic in Haiti this year will be far worse than United Nations' projections, which had estimated 400,000 cases of the diarrheal disease over the course of the epidemic.

The study, to be published March 16 in the journal *Lancet*, is predicting instead that there could be nearly twice that number -- perhaps 779,000 cases of cholera -- between March and November this year alone. U.N. projections are key because they determine how resources are allocated.

"The epidemic is not likely to be short-term," said UCSF medical resident Sanjay Basu, MD, who conducted the study with Jason Andrews, MD, a former UCSF resident who is now a fellow at the Massachusetts General Hospital and Harvard Medical School. "It is going to be larger than predicted in terms of sheer numbers and will last far longer than the initial projections."

In addition to revising the predicted scope of the epidemic, Andrews and Basu modeled the effect of three public health interventions that authorities might use to curtail the epidemic: providing clean water, vaccinating some of the population and prescribing antibiotics more widely.

Expanded access to antibiotics is the most controversial of the three, said Basu, because of the high cost. However, the results of the analysis suggest that antibiotic treatment of cholera could save thousands of lives this year in Haiti.

An Epidemic by the Numbers

Before last year's devastating earthquake in Haiti, no cases of cholera had been seen on the island for more than 100 years. But in the wake of the earthquake, the disease has reemerged as a major epidemic.

Caused by a few related strains of bacteria that spread from person-to-person through contaminated food and water, cholera causes acute diarrhea and can be deadly if untreated. Treatment is simple, for the most part, requiring health care workers to rehydrate patients with salty liquids.

Cholera is completely preventable where modern sanitation systems provide clean water for everyone. The disease thrives, however, where clean water is not available. Cholera is often found in poor and underdeveloped parts of the world, in war-torn countries, and in areas devastated by natural disasters -- places where there are displaced populations, large groups of people living in overcrowded camps, and nonexistent or overtaxed sanitation and sewer systems. These are exactly the conditions that have existed in Haiti following the earthquake last year.

In the three months between October and December of last year, about 150,000 people in Haiti contracted cholera, and about 3,500 died.

In October of last year, the U.N. first projected that some 200,000 people would eventually become infected, and then two weeks later, they doubled this projection to 400,000.

According to Basu, however, the U.N. numbers did not incorporate existing disease trends or take into account major factors like where water was contaminated, how the disease is transmitted or even human immunity to cholera. Instead, they were based on a simple assumption that the disease would infect a set portion (2 to 4 percent) of Haiti's population of 10 million, Basu said.

Using data from Haiti's Ministry of Health and other sources, Andrews and Basu made a more sophisticated model of the spread of disease in several Haitian provinces. The results surprised even them, according to Basu, leading to predictions of 779,000 cases and about 11,100 fatalities in the next eight months.

Their study also examines the effect of making clean water more available and interventions involving vaccines or antibiotics. They estimate that a mere 1 percent reduction in the number of people forced to drink contaminated water would avert more than 100,000 cases of cholera this year and prevent some 1,500 deaths. Vaccinating about 10 percent of the population would spare about 900 lives. The work also predicts that extending the use of antibiotics more widely would prevent 9,000 cases of cholera and 1,300 deaths.

Antibiotics, Basu said, do not just protect "the person who receives them but also reduces their infectiousness and helps reduce transmission."

Cholesterol

High Cholesterol, BP

High Cholesterol BP may Lead to memory loss(The Asian age : 23.2.2011)

Middle-age people facing cardiovascular problems such as high cholesterol and high blood pressure may not only be at the risk of heart disease but also an increased risk of developing early cognitive and memory problems.

A study has found that people who have higher cardiovascular risk are more likely to have lower cognitive function and a faster rate of overall cognitive decline compared to those with the lowest risk of heart disease. Higher cardiovascular risk is also associated with a 10-year faster rate of overall cognitive decline in both men and women compared to those with lower cardiovascular risk.

For the study, the French National Institute of Health and Medical Research in Paris, 3,486 men and 1,341 women with an average age of 55 underwent cognitive tests three times over 10 years.

Cholesterol

New Hope for Lowering Cholesterol (Science Daily: 3.3.2011)

A promising new way to inhibit cholesterol production in the body has been discovered, one that may yield treatments as effective as existing medications but with fewer side-effects.

In a new study published in the journal Cell Metabolism, a team of researchers from the UNSW School of Biotechnology and Biomolecular Sciences -- led by Associate Professor Andrew Brown -- report that an enzyme -- squalene mono-oxygenase (SM) -- plays a previously unrecognized role as a key checkpoint in cholesterol production. The team included doctoral students Saloni Gill and Julian Stevenson, along with research assistant Ika Kristiana.

SM is one of at least 20 enzymes involved in the assembly line when cholesterol is made throughout the body but only one -- HMG-CoA reductase (HMGR) -- is currently targeted by medications to lower cholesterol levels in the blood.

"The class of drugs most commonly used to lower cholesterol -- statins -- are the blockbusters of the pharmaceutical world and work by inhibiting HMGR," says Professor Brown.

"But HMGR is involved very early on in the assembly line, so inhibiting it affects all the other steps down the line -- and other useful products it provides -- and that can give rise in some people to unwanted side-effects, such as muscle pain.

"What's exciting about this previously overlooked SM enzyme is that it acts as a checkpoint much further down the assembly line, which should mean that it can be more specifically targeted at cholesterol production instead and leave the early part of the assembly line undisturbed.

"Cholesterol has developed something of a bad name, so many people don't realize that it is actually essential for a healthy body. It's needed, for example, to make sex hormones and to help build the walls of every single cell in our bodies."

Usually, cholesterol production is very finely controlled through a system of checks and balances. The problem comes when we have a lifestyle (often combined with a genetic predisposition) that results in too much cholesterol being produced and not enough being disposed of. This can overwhelm those controls and result in cardiovascular disease.

Professor Brown likens this process to the water supply to a home: water is essential but careful control is needed for how and where it is delivered and at what rate.

"In effect, statins work like turning down the water supply at the mains," he says. "If new drugs can be developed to inhibit the later control point that we've discovered, this would be like having the ability to slow the flow at a particular tap, leaving the rest of the home unaffected."

As it happens, medications already widely used for treating fungal infections have been shown to work by inhibiting the fungal enzyme equivalent of SM. Anti-cholesterol drugs that target SM for human use still need to be tested.

'Good Cholesterol'

How 'good cholesterol' protects against heart attack, stroke (New Kerala: 14.3.2011)

The structure of human HDL cholesterol has been identified and it may also shed light on how this 'fat packet' protects against cardiovascular diseases, including heart attack and stroke.

W. Sean Davidson led the University of Cincinnati study.

HDL (high-density lipoproteins, also known as 'good cholesterol,' are packets of protein and fat that deliver fat to specific locations within the body.

"Unfortunately, we've known very little about the molecular details that explain HDL's protective effects. A major reason for this is an almost complete lack of understanding of HDL's structure and how it interacts with other important plasma factors," said Davidson.

Rong Huang, a post-doctoral fellow in Davidson's laboratory, isolated human HDL and analyzed its 3-D structure as it circulates in human plasma.

"Previous studies have only focused on synthetic HDL made in the test tube. By isolating human HDL, we were able to focus on the broad range of HDL particles actually circulating in humans," said Davidson.

Team members used a series of sophisticated spectroscopic and mass spectrometric techniques to study HDL and have found that proteins of HDL form a cage-like structure that encapsulates its fatty cargo.

They determined that most of the HDL particles circulating in human plasma are remarkably similar in structure; however, they found evidence that the particles have a twisting or shock absorber-like motion that allows them to adapt to changes in particle fat content.

By determining the structure of HDL, the researchers were able to conclude that the majority of physiological interactions occurring with HDL—including its twisting movements—occur at the particle surface, which is dominated by the cardioprotective protein apolipoprotein A-I.

This monopolization of the particle surface suggested that other proteins have very little room to bind to HDL and probably have to interact with the protein itself, which could explain how apolipoprotein A-I plays such a dominant role in HDL function and its protective effects.

"This work presents the first detailed models of human plasma HDL and has important implications for understanding key interactions in plasma that modulate its protective functions in the context of cardiovascular disease," added Davidson.

The study has been published in the journal *Nature Structural and Molecular Biology*.

Good cholesterol'

How 'good cholesterol' protects against heart attack, stroke (The Tribune: 16.3.2011)

The structure of human HDL cholesterol has been identified and it may also shed light on how this 'fat packet' protects against cardiovascular diseases, including heart attack and stroke. W. Sean Davidson led the University of Cincinnati study. HDL (high-density lipoproteins), also known as 'good cholesterol,' are packets of protein and fat that deliver fat to specific locations within the body.

“Unfortunately, we’ve known very little about the molecular details that explain HDL’s protective effects. A major reason for this is an almost complete lack of understanding of HDL’s structure and how it interacts with other important plasma factors,” said Davidson.

The study has been published in the journal Nature Structural and Molecular Biology.

Medical complications of obesity

WASHINGTON: Scientists have discovered new gene sites that affect non-alcoholic fatty liver disease (NAFLD). NAFLD is a condition where fat accumulates in the liver (steatosis) and can lead to liver inflammation (non-alcoholic steatohepatitis or NASH) and permanent liver damage (fibrosis/cirrhosis).

NAFLD affects anywhere from 11percent to 45 percent of some populations and is associated with obesity, hypertension, and problems regulating serum lipids or glucose.

Losing a night’s rest burns 135 calories

LONDON: US scientists have discovered that going without sleep for a night uses the same amount of energy as a two-mile walk. A study at Colorado’s Sleep and Chronobiology Laboratory found that losing a night’s rest burns 135 calories - like eating two slices of bread or drinking a glass of milk.

However, sleep deprivation is not a way to lose weight. It actually means we store more energy while asleep than was thought, say researchers. The study found young adults used seven percent more energy when they were forced to go 40 hours without sleep. In contrast, they used up less energy in the recovery period, which included 16 hours of wakefulness, followed by eight hours’ sleep.

Cholesterol-Busters - Reduce Blood Clots

Cholesterol-Busters May Also Reduce Blood Clots (Medical News Today: 18.3.2011)

Drugs that target a protein that regulates cholesterol levels in the blood may also be able to reduce the risk of developing thrombosis, a type of blood clot that can lead to heart attack or stroke, researchers at the University of Reading in the UK were surprised but delighted to discover.

Professor Jon Gibbins, Director of the Institute for Cardiovascular and Metabolic Research (ICMR) at the University, and colleagues, showed that modifying the effect of the liver X receptor (LXR) protein, a transcription factor protein that regulates levels of cholesterol, fatty acid, and glucose, reduced the size and stability of blood clots in laboratory mice.

You can read about the study in a first edition paper prepublished online on 16 March in the journal *Blood*.

Gibbins told the BBC they were excited by this potentially important discovery:

"While blood clotting is essential to prevent bleeding, inappropriate clotting within the circulation, known as thrombosis, is the trigger for heart attacks and strokes."

Heart attacks and strokes kill more people in the UK every year than any other disease, he said.

Companies are already investigating the potential of using LXR as a target for new cholesterol-busting drugs.

Now this study opens the possibility for using LXR as an anti-thrombotic target.

The British Heart Foundation told the BBC this was an exciting discovery that could lead to more effective treatments to prevent heart attacks and strokes.

Gibbins and the rest of the team at the ICMR were looking into the molecular mechanisms of blood platelets and how they lead to clots when they decided to investigate the role of LXR in platelets.

They wrote in their background information that they already knew certain LXR agonists, that is molecules that activate particular responses in proteins that control cell functions, "have athero-protective properties independent of their effects on cholesterol metabolism".

So they speculated perhaps platelets play a role in mediating the clot-busting effects of certain LXR agonists and decided to look more closely at the mechanisms involved.

They pinpointed one agonist, called GW3965, and showed it caused "LXR to associate with signaling components proximal to the collagen receptor, GPVI, suggesting a potential mechanism of LXR action in platelets that leads to diminished platelet responses."

Then, using live lab mice, they found that GW3965 had anti-thrombotic effects: the result was smaller and less stable clots.

They concluded that:

"The athero-protective effects of GW3965, together with its novel anti-platelet/thrombotic effects indicate LXR as a potential target for prevention of athero-thrombotic disease."

About 30,000 people die in the UK every year after developing a blood clot.

Gibbins and his team receive grants from Medical Research Council, the Biotechnology and Biological Sciences Research Council, the British Heart Foundation and the Wellcome Trust to research ways to better understand the molecular mechanisms of blood platelets so as to help develop more effective ways to prevent and treat thrombosis.

Cholesterol

5 ways to lower your cholesterol (New Kerala: 10.2.2011)

Lowering cholesterol is one of the most imperative things to do to promote overall heart health. And now Metamucil and Dr. Michael Roizen, Chairman of the Wellness Institute at Cleveland Clinic and host of the upcoming PBS series, "Younger You," have suggested five things you need to do to lower your cholesterol.

- Take Psyllium**

The first, and one of the simplest tips, is to get more fiber in your diet - but not just any kind, because not all fibers work the same way. Viscous soluble fiber like psyllium fiber, the natural dietary fiber found in Metamucil, is proven to help lower total and "lousy" LDL cholesterol because it forms a thick gel that traps and helps remove some cholesterol, bile acids and waste in the gut. This is why I recommend my patients supplement low fat, low cholesterol diets with 7 grams of soluble fiber from psyllium daily, as in Metamucil.

- Wear a Pedometer and Increase Daily Activity**

You'd be amazed to see how many extra steps you can take in one day -- grab a pedometer and watch the numbers roll as you make simple changes for your health and take the stairs, walk to work, or stroll around the neighborhood to increase your physical activity for better heart health. Tracking your progress throughout the day can be great inspiration to keep going, and walking is a simple and easy type of exercise to help lower cholesterol!

- Get an Exercise Buddy**

A healthy lifestyle requires motivation, encouragement and a friend to lean on. Grab an exercise buddy and support each other in the challenge to lower your cholesterol. Take long walks together and encourage each other to try new types of physical activity to get the heart pumping and to keep cholesterol levels down! Enjoy each other's company and laugh - reduced levels of stress will help your heart too!

- Beware of Hidden Fats and Sugars**

Be an informed eater; get to know your ingredients and read the nutrition labels thoroughly. Hidden sugars and unhealthy ingredients can increase your weight, which can lead to high

cholesterol. Stay away from foods that contain high levels of saturated fat, cholesterol and hidden sources of sugar such as high fructose corn syrup, some dextrins, or evaporated cane juice.

- Add DHA

DHA is short for docosahexaenoic acid, a polyunsaturated fatty acid. Regular intake of DHA can aid in proper heart function and help lower levels of Low Density Lipoprotein (LDL), or the "lousy" cholesterol³, and raise levels of High Density Lipoprotein (HDL), or the "healthy" cholesterol. Popular sources of DHA are salmon, sardines, tuna - but if you aren't a seafood fan, try fish oil supplements, or if you don't like fishy taste, get them from vegetarian supplements made from algal DHA.

Dengue

Dengue Virus

Medivir Signs Research & Development Collaboration on Dengue Virus (Med India: 15.2.2011)

Medivir AB (OMX: MVIR), the emerging research-based specialty pharmaceutical company focused on infectious diseases, announces today that it has signed a collaboration agreement with Janssen Pharmaceutica N.V. (Janssen) for the discovery and development of drugs for the prophylaxis and treatment of dengue virus infection. Utilising both companies' core competences in the discovery and development of protease inhibitors, Medivir and Janssen will initiate an R&D program to co-develop drugs based on the inhibition of the dengue NS3 protease activity. Both parties will contribute equal resources to the research program and Medivir has an option to continue to contribute equal funding for the non-clinical and clinical development stages.

Terms

The terms of the agreement govern the discovery, clinical development and commercialisation of any drugs developed under the agreement. Depending on the level of funding through pre-specified decision points, each party has the option to take products discovered through the research program forward through development and on to commercialisation. If both parties remain in the collaboration until product approval, Janssen will be responsible for commercialization. Medivir will receive pre-agreed royalties on net sales of future products that reflect its contribution to the development of products.

Dengue Virus and Disease

Dengue fever is a mosquito-borne viral infection, causing a severe debilitating fever, rash, and muscle and joint pain. In an unpredictable subset of cases, Dengue haemorrhagic fever occurs, which may lead to vascular leakage and Dengue shock syndrome, a potentially lethal condition. Dengue virus infection is a major problem in subtropical regions where the incidence has increased 30-fold over the last 50 years. Up to 50 million infections are now estimated to occur annually in more than 100 endemic countries and as the disease continues to spread, approximately one third of the world's population is at risk. Dengue hemorrhagic fever and Dengue shock syndrome contribute significantly to hospitalization costs in endemic regions. This growing prevalence has not been met by any significant advances in treatment[1] and the annual death rate from dengue infection is approximately 30,000.

Development approach

Inhibition of the dengue NS3 protease is considered to be an attractive target in developing novel efficacious drugs against dengue infection, due to the critical role that the NS3 protease plays in viral replication. Drug candidates that inhibit the dengue NS3 protease thus offer the prospect of disease prevention and the control of outbreaks in endemic areas. In addition, an NS3 protease inhibitor with therapeutic benefit could be used to treat ongoing viral infections.

Medivir has extensive expertise and knowledge in the discovery of protease inhibitors and the Company's lead drug TMC435, for the treatment of hepatitis C, which is partnered with Tibotec (an affiliate of Janssen) has recently reported positive interim data in three Phase 2b studies. Medivir has further partnerships with Tibotec that utilise Medivir's unparalleled knowledge in the discovery and development of treatments for infectious diseases, including partnerships on hepatitis C polymerase and HIV protease inhibitor drugs.

Ron Long, CEO and President of Medivir commenting on the announcement said, "Medivir has strong experience in the discovery of protease inhibitors for the treatment of infectious diseases and we are delighted to be collaborating with Janssen in this important disease area. This strategic collaboration represents a significant step forward in our ambition to retain more value in products by taking them further into development and securing a much more active role in our collaborations with partners. We believe that dengue NS3 protease inhibitors offer the best prospect for effective treatment of dengue fever and we look forward to working closely with our partner to take this project forward."

Notes

[1] World Health Organisation, Fact sheet Number 117, March 2009.

About Medivir

Medivir is an emerging research-based specialty pharmaceutical company focused on the development of high-value treatments for infectious diseases. Medivir has world class expertise in polymerase and protease drug targets and drug development. Medivir has a strong R&D portfolio and has recently launched its first product Xerese(TM)/Xerclear(R). Medivir's key pipeline asset, TMC435, a protease inhibitor, is in phase 2b clinical development for Hepatitis C and is partnered with Tibotec Pharmaceuticals.

Xerese(TM)/Xerclear(R) is an innovative treatment for cold sores, which has been approved in both the US and Europe. It is partnered with GlaxoSmithKline to be sold OTC in Europe and Russia and with Meda AB in North America. Medivir has retained the Rx rights for Xerclear(R) in Sweden and Finland.

For more information about Medivir, please visit the Company's website: <http://www.medivir.se>.

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Diabetes

Diabetes

Study: Diabetes Affects Patients' Well-Being And Also Impacts Spouses(Medical News Today: 4.2.2011)

Older patients with diabetes who are not dealing well with the disease are likely to have symptoms of depression, and spouses of older patients also suffer distress related to diabetes and its management, according to research from Purdue University.

"Responsibilities and anxieties can differ for patients with diabetes and their spouses, but each may experience stress, frustration and sadness at times related to the demands of living with this disease," said Melissa M. Franks, an assistant professor of child development and family studies. "We know spouses often support their partners, but in our work we want to know what form their involvement takes and how the disease and its management affect both the patient and spouse."

Franks and her team found that the distress spouses feel is similar to what patients feel, and this could contribute to their own depressive symptoms such as irritability or sadness. These depressive symptoms come from their own anxieties about living with the disease or caring for someone with the disease and not necessarily because the other person is struggling.

Researchers also found that when male patients were concerned about the management of their diabetes, their depressive symptoms were elevated more than those for female patients with similar levels of concerns.

"This gender difference is consistent with prior work showing that male patients who are not managing their disease well tend to experience greater depressive symptoms," Franks said. "And while we saw this difference between male and female patients, we did not see the same pattern of distress between their respective spouses. This is surprising, because one might assume that the spouse would be as worried, or, according to family roles, that wives might worry more. However, more research, especially long-term observations, is needed."

The findings, based on statistical models with 185 couples older than 50, appeared in the December issue of the Family Relations journal. The patients and spouses completed individual surveys that measured distress related to diabetes, such as adherence to treatment recommendations, as well as depressive symptoms. The gender effects were measured by comparing the couples' responses. There were 67 female patients and 118 male patients, and each couple was screened to make sure only one person had diabetes.

"Because spouses' distress is not always directly linked to feelings of their partner, it tells us that we need to pay more attention to the spouse as well as the patient," she said. "Understanding the triggers for depressive symptoms can help practitioners and experts better care for patients and spouses as individuals and as a unit.

"We also found that many people reported some depressive symptoms, and some reported levels indicative of risk for clinical depression. It's important to consider depressive symptoms because they may signal concerns and problems that could be alleviated with treatment."

Diabetes affects about one in five Americans over the age of 60, and the majority of those people have Type 2 diabetes, which is a disease of the endocrine system. Type 2 diabetes, also referred to as adult-onset diabetes, is caused by insufficient secretion of insulin and resistance to insulin, which is problematic because it lessens the ability of cells to absorb glucose from the bloodstream. The incidence of the disease, which is considered a leading cause of death, is increasing as more people are overweight and sedentary.

The disease is managed daily through diet, exercise and medications. Complications, such as poor blood circulation, vision impairment, heart disease and stroke, are possible if the disease is not managed. In this study, spouses often reported that the disease's daily management as well as the fear of their loved one's living with diabetes were common concerns.

Franks co-authored the study with Todd Lucas from Wayne State University, Mary Ann Parris Stephens from Kent State University, Karen S. Rook from the University of California at Irvine and Richard Gonzalez at University of Michigan.

This work was funded by the National Institute on Aging and the Kent State University-Summa Health System Center for the Treatment and Study of Traumatic Stress. Franks' future studies will look at diet management in the context of distress and depression for patients and their spouses.

Diabetic

Promising new approach to treat diabetic wounds, chronic ulcers (New Kerala: 10.2.2011)

Scientists have found a promising new approach for the treatment of diabetic wounds, bed sores, chronic ulcers and other slow-to-heal wounds.

It may be possible to speed healing by suppressing certain immune cells, said Loyola University Health System researchers.

The cells are called neutrophils and natural killer T (NKT) cells. These white blood cells act to kill bacteria and other germs that can infect wounds.

NKT cells also recruit other white blood cells to the site of injury. But in some cases, these NKT cells can do more harm than good, said senior author Elizabeth Kovacs, director of research in Loyola's Burn and Shock Trauma Institute.

Neutrophils can be beneficial to wound healing by gobbling up harmful bacteria and debris such as dead cells.

But neutrophils also can do harm by producing enzymes that digest healthy surrounding tissue, leading to excessive scar tissue and slower healing.

"It's a balancing act. You need neutrophils but not too many of them," said Aleah Brubaker, first author of the article.

NKT cells respond to wound injuries by producing proteins called cytokines and chemokines that attract neutrophils and other white blood cells to the wound.

Kovacs and colleagues wrote that since neutrophils and NKT cells are among the earliest immune system responders to injury, "they serve as ideal targets for modulation of the wound-repair process."

Early treatment in high-risk patients using such therapeutic strategies may be able to "decrease the incidence and prevalence of chronic, non-healing wounds, reduce infectious complications and ameliorate associated health-care costs," wrote the authors.

Diabetes

Diabetes Influenced By Genetic Variations and Evolution (Med India: 10.2.2011)

Stanford University researchers have identified genetic variations in a hormone involved in the secretion of insulin-a molecule that regulates blood sugar levels-that occur more frequently in some human populations than others.

People with the 'new' variants, which are thought to have first occurred 2,000 to 12,000 years ago, have higher fasting levels of blood glucose than those with the more traditional, or ancestral, form of the gene.

High blood glucose levels are associated with the development of diabetes, which occurs when the body is unable to produce or respond properly to insulin.

The finding may help scientists better understand the subtle changes in human metabolism, or "energy balance regulation," that occurred as our species shifted from being primarily hunter-gatherers to a more agriculturally based society.

It may also help clinicians identify individuals likely to develop diabetes, and direct the development of new therapies for diabetes and obesity.

"These studies are fascinating because it shows how much the selection process has affected human energy-balance regulation in just a few thousand years and how complex it could be for the future practice of personalized medicine," said Sheau Yu 'Teddy' Hsu, senior author of the study.

“Diabetes

“Diabetes affects search for prospective partners in youth” (The Hindu: 21.2.2011)

“India has 35 million diabetics, but little has been done to tackle social fallout of the disease”

There is fear that diabetes-affected persons cannot have normal and healthy children

Diabetic youngsters often find it difficult to find non-diabetic partners. This, in many cases, leads to depression and frustration, which in turn might lead to suicidal tendencies. This was found in a survey conducted among the Capital's young diabetics by the Delhi Diabetes Research Centre (DDRC), a non-government organisation.

“India has 35 million diabetics and is referred to as the diabetes Capital of the world, but still little has been done to tackle the social fallout of the disease. The stigma associated with diabetes is affecting the youth in finding prospective life partners,” says DDRC chairperson A. K. Jhingan.

According to him, the increasing incidence of type-I diabetes is leading to a variety of social problems, including difficulty in finding partners and continuation of marriage. “Of such patients, less than 10 per cent are happily married, while an astounding 90 per cent plus face matrimonial problems,” notes the survey.

“These issues have surfaced repeatedly from testimonials posted on our website [diabeticmatrimony.com], which gave us the first insight into the problem,” says Dr. Jhingan.

According to the survey on marriage-related problems among diabetics — carried out among 2,000 people in age group of 19 to 31 years — it was revealed that finding a suitable life partner was among the most common concerns for a diabetic.

“Confrontation, separation and divorce were common among them.” “Of the type-I diabetic married women, nearly 50 per cent were sent back to their parental home within a year of marriage. Nearly 25 per cent lost interest in taking care of themselves due to lack of financial assistance from their husbands,” reports the study.

There is fear that diabetes-affected persons cannot have normal and healthy children. In fact, more often than not, diabetic men chose to remain silent about their disease before entering matrimony.

“The website helps people suffering from type-1 and type-2 diabetes find suitable matches. More than 500 people have registered themselves with the website. And of late, there have been many success stories,” says Dr. Jhingan.

HbA1c Diabetes Blood Test

HbA1c diabetes blood test not as effective for children (The Hindu: 24.2.2011)

The haemoglobin A1c (HbA1c) test has become the preferred way to diagnose diabetes among the millions of Americans who have diabetes but show no symptoms. The simple test measures longer-term blood sugar levels — without requiring patients to fast overnight.

Not best way

But a study by the University of Michigan's C.S. Mott Children's Hospital shows it's not the best way to diagnose diabetes in children.

But U-M researchers say more study is needed before doctors can safely rely on using haemoglobin A1c for children.

“We found that haemoglobin A1c is not as reliable a test for identifying children with diabetes and pre-diabetes compared with adults,” says study lead author Joyce M. Lee, a paediatric endocrinologist at Mott Children's Hospital. “Using this test in children may lead to missed cases.”

New insight

The study was published online ahead of print in Journal of Pediatrics and provides new insight on effectively diagnosing diabetes in children.

In 2010, the American Diabetes Association released guidelines recommending HbA1c be exclusively used for diagnosing diabetes in children and adults.

For the study, Mott researchers evaluated the testing results of 1,156 obese and overweight adolescents, ages 12-18. The ADA recommends screening only obese and overweight kids because their weight puts them at higher risk for developing diabetes.

The guidelines

According to the guidelines, individuals without symptoms would be classified as having diabetes if HbA1c values reach 6.5 percent and as having pre-diabetes if HbA1c values reached between 6 and 6.4 percent on two separate tests.

According to a University of Michigan press release, the cut-off point may need to be lower for kids.

Until more definitive studies are available, it's premature to use HbA1c for children, authors say.
— Our Bureau

Diabetes, hypertension

Govt to screen all above 30 for diabetes, hypertension (Business Standard: 17.3.2011)

Starting in 2011-12, the central government is planning to screen the entire population above 30 years of age for non-communicable illnesses such as diabetes and hypertension in five years. All pregnant women, irrespective of age, will also be part of this exercise.

The ambitious plan is part of a national disease prevention programme being worked out, said Union health minister Ghulam Nabi Azad. The project will be rolled out in 100 districts of the country during 201112, he said while inaugurating a three-day meeting titled 'Partners for Health in Southeast Asia', organized by the World Health Organisation here.

The government will also introduce cancer screening and treatment programmes at a national level, Azad said. He mentioned \$25 million (₹ 112 crore) earmarked for chemotherapy for 10,000 poor cancer patients in 100 districts annually.

On India's progress in handling HIV/AIDS, the minister said government intervention had brought down the number of patients afflicted from five million to 2.3 million. Against the Millennium Development Goal target of mortality reduction by 50 per cent by 2015, India has already achieved a 68 per cent reduction, the minister added.

The three-day conference, attended by delegates from 11 Southeast Asian countries, aims to build collaboration on healthcare partnerships. The conference is to come out with a 'Delhi Declaration', charting specific targets by partner countries on Friday.

Nicotine - Diabetes

First Identification of Nicotine as Main Culprit in Diabetes Complications Among Smokers (Science Daily: 29.3.2011)

Scientists report the first strong evidence implicating nicotine as the main culprit responsible for persistently elevated blood sugar levels -- and the resulting increased risk of serious health complications -- in people who have diabetes and smoke. In a presentation at the 241st National Meeting & Exposition of the American Chemical Society (ACS), they said the discovery also may have implications for people with diabetes who are using nicotine-replacement therapy for extended periods in an attempt to stop smoking.

This is an important study," said Xiao-Chuan Liu, Ph.D., who presented the results. "It is the first study to establish a strong link between nicotine and diabetes complications. If you're a smoker and have diabetes, you should be concerned and make every effort to quit smoking."

Nearly 26 million people in the United States and 260 million more worldwide have diabetes. Those complications -- which include heart attacks, stroke, kidney failure, and nerve damage -- are why diabetes is the sixth leading cause of death in the United States, and the third leading cause in some minority groups, according to the National Institutes of Health. Treating those complications takes \$1 out of every \$10 spent on health care each year.

Liu cited past research showing that good control of blood sugar levels is the key to preventing complications. The gold standard for monitoring long-term blood sugar levels in people with diabetes is the hemoglobin A1c (HbA1c) blood test. Used in conjunction with daily home blood sugar monitoring, the HbA1c test reveals the average amount of sugar in the blood during the last several weeks. High test results mean that diabetes is not well controlled and there is an increased risk of complications.

Doctors have known for years that smoking increases the risk of developing complications. Studies also show that smokers with diabetes have higher levels of HbA1c than nonsmokers with diabetes. However, nobody knew the exact substance in cigarette smoke responsible for the elevation in HbA1c. Liu and colleagues suspected it may be nicotine and set out to check nicotine's effects on HbA1c. Using human blood samples, they showed that concentrations of nicotine similar to those found in the blood of smokers did, indeed, raise levels of HbA1c.

"Nicotine caused levels of HbA1c to rise by as much as 34 percent," said Liu, who is with California State Polytechnic University in Pomona, Calif. "No one knew this before. The higher the nicotine levels, the more HbA1c is produced."

Doctors could use data from this study as a new basis for encouraging patients with diabetes to quit smoking, Liu said. What about nicotine patches, electronic cigarettes, and other stop-smoking products? Liu pointed out that people tend to use those products for only brief periods, and that the benefits of permanently stopping smoking may outweigh any risk from temporary elevations in HbA1c. However, the study may raise concern over the long term use of such products, he added.

Diabetes

International Diabetes Federation backs surgery in fight against diabetes (New Kerala: 30.3.2011)

Weight loss surgery can effectively treat diabetes in obese people, according to the medical fraternity.

A new position statement from the International Diabetes Federation (IDF) says that bariatric surgery should be considered earlier as a cost-effective treatment option for severely obese people with type 2 diabetes.

"Bariatric intervention is a health and cost-effective therapy for type 2 diabetes and obesity with an acceptable safety profile. Bariatric surgery for severely obese people with type 2 diabetes should be considered much earlier in management rather than held back as a last resort. It should be incorporated into type 2 diabetes treatment protocols," said IDF co-chairperson Prof Sir George Alberti, senior research investigator, Imperial College, London.

He also pointed out that the cut-points for action may be lower in Asian populations because of their increased risk of diabetes and heart disease.

The IDF is recommending surgery for patients with a body mass index of 35 or more.

"Bariatric surgery is a treatment that can be recommended for people with type 2 diabetes and obesity not achieving recommended treatment targets with existing medical therapies, especially when there are other major co-morbidities such as hypertension, high cholesterol or sleep apnoea, " said Prof Paul Zimmet AO, Director Emeritus, Baker IDI Heart and Diabetes Institute, Melbourne, and co-chairperson.

"Surgery should be an accepted option in people who have type 2 diabetes and a body mass index (BMI) of 35 or more. The procedures must be performed within accepted guidelines and require appropriate multidisciplinary assessment prior to surgery and on-going care as well, " he said.

"It is very important for health authorities and policy makers to understand that almost all severely obese patients cannot achieve and maintain significant weight loss. They should be treated where appropriate with bariatric surgery, which can lead to remission of diabetes in up to 80pc of patients," said Prof John Dixon, Head of Obesity Research Unit, Department of General Practice, Monash University, Melbourne.

The expert group cautioned the situation in low- and middle-income nations presents special problems because severe obesity is increasing at an alarming rate.

As health care resources are limited, bariatric surgery should only be performed where the health budget can afford it, and when the expertise is available for both the surgery and the long-term follow-up.

The statement was released at the 2nd World Congress on Interventional Therapies for Type 2 Diabetes in New York.

Pacemaker- fights diabetes

This 'pacemaker' fights diabetes (Times of India: 30.3.2011)

Stimulates Muscles, Resulting In Release Of More Insulin

Scientists have developed a new pacemaker-style device that delivers mild electric pulses to the stomach, an innovative medical gadget which they say could help tackle type-2 diabetes more effectively. When implanted under the skin, the matchbox-sized gadget, called the Diamond — or Diabetes Improvement And Metabolic Normalisation Device — stimulates the stomach muscles while the patient is eating.

This helps boost muscle movement resulting in the release of more insulin — the hormone responsible for removing excess sugar in the blood. Previous studies on this device have suggested that it results in the long-term lowering of blood glucose levels in overweight people with type-2 diabetes.

Developed by medical device company MetaCure, the device delivers electrical stimulation through two wires placed in the muscular layer of the stomach.

The wires are tunnelled under the skin to the generator. The device automatically senses when a patient is eating, by detecting when the stomach starts to naturally contract, and fires small painless electrical signals into the muscles of the stomach. This tricks brain into thinking more food has entered the stomach than the person has actually eaten. To deal with this supposedly large meal, the brain boosts insulin production as well as triggering the release of hormones that suppress appetite.

This means that the patient feels full much sooner than normal. A wireless charger system allows the patient to recharge the device at home by placing the charger over the abdomen for 45 minutes, once a week.

Trials at the Medical University of Vienna showed the device reduced blood glucose levels by a quarter over three months. PTI

Eye Diseases

Eye Care

Scientists find cause behind age related blindness (India Express: 08/02/2011)

An Indian-origin scientist-led team claims to have achieved a breakthrough by discovering what triggers age-related Macular Degeneration, the most common of blindness, Daily Express reported.

There are two types of AMD — wet and dry. Drugs have only been developed to stabilise wet AMD. But, currently there is no effective treatment for “dry” AMD.

Ophthalmologist Dr Jayakrishna Ambati of University of Kentucky and colleagues have found that an enzyme called Dicer protects against dry AMD. When Dicer levels drop, it leads to the build-up of a toxic type of an RNA molecule. The molecule causes retinal cells to die in patients with dry AMD. In a healthy eye, the Dicer enzyme would degrade the RNA particles, preventing them from launching the poisonous attack on the eye’s vital cells.

The discovery led them to develop what they describe as two “promising” therapies to. The findings have been published in the Nature journal.

Born cataract blind

Born cataract blind: how the brain rewires as sight is regained (The Hindu: 10.2.2011)

Be it 10 years or even 22 years after birth, when sight is restored, the individual is able to learn a variety of functions using vision

Responses hard-wired: Using FMRI on volunteers, it was found that not only do these subjects look and learn, but their responses are registered in specific regions of the brain.

Can a child, blind for several years since birth, benefit from optical correction of the eye? Is the brain “plastic” enough to make use of the information from the eyes later on in life?

These are the questions that had interested Professor Pawan Sinha of the Cognitive Sciences department of MIT in Cambridge, MA, U.S. Starting with these, he had gone ahead and discovered a variety of surprising (and happy) results on how the human brain adapts to experiences and challenges.

Why human?

I have specified the term ‘human’ above for a reason. All experiments to answer the above questions had so far been done on animals, with depressing results.

They had suggested that there exists a critical (presumably short) period for visual learning after sight is restored.

But these are a boon for animals, invariably on dark-reared cats. Sinha set to research on humans.

To this end, he has combined service with science. Through a scheme that he funds, called Project Prakash, he has helped many Indian children in Delhi, Rajasthan and UP, who were born cataract blind, regain sight through cataract surgery.

He then studies them in an effort to answer the above question.

Several novel things

His studies on these people have revealed several novel things hereto unknown. The first is that there may not be a critical time period at all.

Be it 10 years or even 22 years after birth, when sight is given, the individual is able to learn a variety of functions using vision.

Some of these are shape matching, colour matching, face recognition and so forth. Where and how do these functions occur in the brain? Sinha answers these by doing functional magnetic resonance imaging or fMRI on these individuals.

fMRI is an admirable, clever tool that monitors the flow and use of blood as it passes through cells and tissues, giving them oxygen for metabolism.

The iron in the haemoglobin in blood is magnetic and its property changes as it takes up and releases oxygen. You thus place the individual in the fMRI machine that looks like a bed with a tunnel-like cover (containing the magnetic field) in which you place his head.

You now ask the person to do a task, and monitor which part of his brain (one of the hemispheres, occipital lobe, cortex, etc) is active and “lights up” as he performs the function.

Using FMRI on several volunteers who benefited from Project Prakash, Sinha finds a novel result.

That not only do these subjects look and learn, but their responses are registered (hard -wired, if you will) in specific regions of the brain. The brain is indeed plastic, making new and location-specific neural connections within its parts, and this happens regardless of when sight was restored after birth.

How does such a person (or for that matter, we as growing infants) match the various sensations?

The question

In this connection, note the question which the scientist William Molyneux posed three centuries ago to the British philosopher John Locke.

He asked “Suppose a man born blind and targets by his touch to distinguish between a cube and a globe. Suppose the blind man be made to see; query, whether by his sight, before he touched them he could now distinguish and tell which is the globe, and which the cube?”

When Sinha posed this question to the audience, a majority of them said he would.

Wrong! He cannot, at first sight. The tactile sense is not necessarily transferred into the visual sense. A correlation between the two needs to be learnt which, of course, is easily done.

Integrating patterns

Sinha's work has further shown that as vision is acquired in the early stages, there appear to be some difficulties in integrating patterns.

Motion or movement of the object appears necessary for such integration. A subject shown two squares on the computer screen calls them (rightly) two.

When they partly overlap, he calls them three (two original ones, plus the overlap region counted as the third). But when the two squares are shown moving, and overlapping, the subject recognizes them as two moving objects.

Motion cues

Motion cues thus provide critical information for object integration and segregation. It is this dynamic information processing that allows us to integrate various cues such as face perception, perceiving causality, touch to vision mapping and so on. With time and learning, these become normal or second nature.

We thus see in these newly sighted people an image of what all we ourselves went through to integrate the various cues, and incorporate them in our brains, as we developed visual perception

and acuity in all its dimensions, as we grew from birth to childhood. It is never too late to learn and master.

Lastly, what was Locke's answer to Molyneux? "For though he has obtain'd the experience of, how, a globe, how a cube, affects his touch; yet he has not attained the experience, that what affects his touch so or so, must affect his sight so or so.; Or that a protuberant angle in the cube, that pressed his hand unequally, shall appear to his eye as it does in the cube".

This was the style of English prose of 1694. Simply said, he meant "no".

Eye care

Eye care tips (The Times of India: 21.2.2011)

If you work on the computer for more than two hours a day you may be suffering from computer vision syndrome. Proper eye care will keep your eyes healthy, says Dr Mahipal S Sachdev

It is believed by many that using computers and watching television damages the eyes. These are common misconceptions. Working on the computer or watching television does not mean you will need to wear glasses. Working on computers for long hours may, however, cause eye fatigue. If you work at the computer for more than two hours a day you may be suffering from computer vision syndrome.

Symptoms:

dryness of eyes eye strain double or blurred vision neck and shoulder pain There are a number of simple and effective measures to alleviate these symptoms. As we stare at the computer screen, we tend to blink less frequently. This hampers the tear distribution on the surface of the eye and may lead to dryness. While working on the computer, take regular breaks. Every 20 minutes or so, look away from the screen and focus on something in the distance for 20 seconds (20/20 rule). Take a five-minute break for every hour that you sit on the computer. You may relax and close your eyes during this time. This will help to spread the tear film properly and relax the eye muscles.

The illumination of your computer screen should be equal to the room illumination. Maximize comfort by adjusting text size and colour.

Clean your screen everyday. Dust, fingerprints and other smears may make reading more difficult. In addition, keep the centre of your computer screen 15 to 20 degrees below your eye-level and position your computer monitor 20 to 24 inches from your eye. This reduces eye and neck strain.

Eye exercises are advised for muscle weakness. They strengthen the eye muscles and maintain the alignment of the eye. One should focus on a distant object followed by a near object repeatedly 5-10 times. This relieves eyestrain after continuous reading or working on computers. Proper eye care while doing day-to-day activities will keep your eyes healthy in the long run.

Ultraviolet radiation rays –eye

Study to quantify effect of global warming and UV rays on eyes (The Times of India: 28.2.2011)

Are rising temperatures and increased ultraviolet radiation making more and more Indians suffer from serious eye diseases?

A large scale first-of-its-kind study being spearheaded by All India Institute of Medical Sciences will soon find out. Funded by the Indian Council of Medical Research, the study on the impact of global warming and ultraviolet radiation (UVR) exposure on ocular health is being carried out jointly with National Physical Laboratory (Delhi) and Regional Institute of Ophthalmology, Guwahati. The Public Health Foundation of India will also join in soon.

From March, trained staff will go from house to house in randomly chosen community clusters in Delhi, NCR region and Guwahati and fill up a questionnaire to find out how much time people spend in the sun, whether they wear any eye protection, whether they have any eye problem and for how long have they been suffering from it. These people will then be screened for eye diseases and the data recorded.

Experts say the study will quantify the effect of environmental factors and temperature changes like UV-B radiation, suspended particles, environmental pollutants and aerosols on the prevalence and/or exacerbation of eye diseases like cataract, dry eye pterygium and vernal keratoconjunctivitis.

Prof Radhika Tandon from AIIMS's Dr R P Centre for Ophthalmic Sciences says, "The study will look at the effect of environmental factors and global warming on the prevalence of eye diseases in India. The study will also estimate the difference in stratospheric ozone and corresponding change in UVR in Delhi and the northeast region."

The study will later also cover coastal cities like Chennai, Goa and Vishakapatnam. Tandon said that ultraviolet B radiation is known to play a major role in diseases of the conjunctiva and cornea, dry eye, pterygium, allergic diseases, corneal degenerative changes, cataract and retinal complications. "What we want to know is whether exposure to UV-B radiation and

environmental suspended particles have a deleterious effect on ocular health? We want to see if the hypothesis that change of global environment will have serious consequences on human health is true," Tandon added.

In total, 5,000 people from 50 clusters in both rural and urban Delhi, NCR and Guwahati will be surveyed for the study. There will be 36 rural and 14 urban clusters. Around 150 participants above the age of 40 will be surveyed from each cluster besides children aged 5-15 years.

"In the first year, we will correlate and compare the existing data on prevalence of eye diseases with available measurements of UVR, ozone column and suspended particles and subsequently plan a long-term monitoring mechanism. The data on the changes in temperature over the year will be supplied by the India Meteorological Department," Tandon added.

Ozone layer depletion decreases the atmosphere's natural protection from the sun's harmful UVR. According to World Health Organisation, worldwide approximately 18 million people are blind as a result of cataracts. Of these 5% of all cataract-related disease burden is directly attributable to UVR exposure.

UVR levels are influenced by a number of factors — the higher the sun in the sky, the higher the UV radiation level; the closer a person is to the equator, the higher the UV radiation levels. UV radiation levels are highest under cloudless skies but even with cloud cover, they can be high. UV levels increase by about 5% with every 1,000 metre altitude. Ozone absorbs some of the UVR from the sun. As the ozone layer is depleted, more UVR reaches the earth's surface.

WARMING RISK TO EYES

A large-scale study will be carried out to find out the impact of global warming on your eyes

From next month, trained staff in Delhi, NCR and Guwahati will look at whether rising temperatures are related to increasing number of the following eye diseases

The study will be jointly done by AIIMS, National Physical Laboratory (Delhi) & the Regional Institute of Ophthalmology, Guwahati

The study will also cover coastal cities like Chennai, Goa and Vishakapatnam Ultraviolet B radiation

is known to play a major role in diseases like

conjunctiva and cornea, dry eye, pterygium, allergic diseases, corneal degenerative changes, cataract and retinal complications In total, 5,000 people from 50 clusters in both rural & urban Delhi, NCR & Guwahati will be surveyed for the study. There will be 36 rural and 14 urban clusters. Around 150 participants above 40 years will be surveyed in each cluster besides children aged 5-15 Ozone depletion decreases atmosphere's natural protection from sun's harmful UVR

WHO says nearly 18mn people across the world are blind due to cataract. Of these, condition of 5% is directly attributable to UVR exposure

UVR levels are influenced by a number of factors — the higher the sun in the sky, the higher the UV radiation; the closer a person is to the equator, the higher is the UV radiation levels. UV radiation levels are highest under cloudless skies

UV levels increase by about 5% with every 1,000m altitude

Ozone absorbs some UVR. Due to depletion of ozone layer more UVR reaches earth's surface

EYE CATARACT

DRY EYE PTERYGIUM

VERNAL KERATO CONJUNCTIVITIS

Revolutionary bionic eye

Revolutionary bionic eye gets green signal (The Times of India: 15.3.2011)

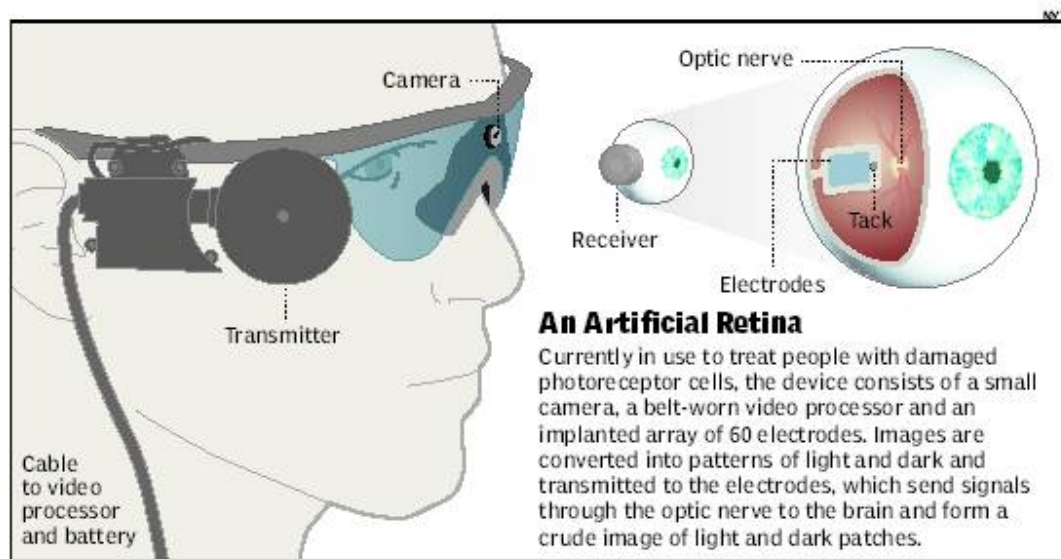
A bionic eye that allows the blind to see has been approved after thorough testing. Tests have demonstrated that the device is safe, which could mean that it

eventually becomes routinely available on the NHS. Specialists said that tests over almost three years had “impressed” beyond their “most optimistic expectations,” reports the Daily Express.

Revolutionary retina implants work in conjunction with a camera mounted on a pair of glasses. The camera sends signals to an implanted chip near the retina, which stimulates retinal cells and produces visual light patterns.

They have already transformed the lives of 30 people during initial tests. Doctors now hope the ‘bionic eye’ could be used to treat around 20,000 people in the UK who are blind because of failed retinas.

British eye surgeon Robert MacLaren, said it was a significant advance. “Until now this concept would have been considered only in the realms of science fiction,” MacLaren, from the Oxford Eye Hospital, said. “What surprised all of us was just how much resolution you can get from the implant.” AGENCIES



Eye health care

Global investor's eye health care start – ups (Financial Express: 29.3.2011)

PE FIRMS, SOVEREIGN WEALTH FUNDS QUEUE UP

A SLEW of investors led by private equity (PE) firms and sovereign wealth funds such as the Kuwait Investment Authority (KIA), an autonomous government body responsible for managing various funds for the oil-rich Arab nation, the UK-based PE firm Actis, TPG Capital and Banyan Tree Finance are scouring the Indian healthcare start-up space for possible investments. The emerging healthcare space is expected to post an exponential growth with the rising disposable income of the people, especially in the rural areas.

A Ficci-E&Y survey had forecast the wellness sector is alone to grow at a compounded annual growth rate of 14% to 15% till 2012, making it one of the fast growing sectors in the country .

"This space is also becoming attractive to investors since the ticket size of the deals are relatively small compared to other sectors," a fund manager with a local investment firm said.

Kuwaiti ambassador to India SMAI-Sulaiman had recently gone on record saying that the Arab nation was in the look out for investment opportunities in the healthcare space.

"Kuwait Investment Authority is scouting for opportunities in education and healthcare in India," he had reportedly said in an interactive session with the members of Bengal Chamber of Commerce and Industry in Kolkata recently.

The Mumbai-based fitness chain, Talwalkars has Prusik Asia Fund and Carlson Fund India as the main non-promoter shareholders. While Prusik Asia Fund holds close to 4% stake in the fitness firm, Carlson Fund India holds a tad lower than 2.5% in the company.

Similarly, a host of hedge funds and PE firms such as TPG Capital and Banyan Tree Finance were reportedly in talks with the Chennai-based cord blood banking and stem cell research firm LifeCell International. The company had earlier said it was looking to raise funds to the tune of ₹45 crore to ₹50 crore to finance its new business plans.

Global Healthcare Systems, which is planning to roll out a chain of low cost rural healthcare facilities, had reportedly received funding from a consortium of funds led by Sequoia Capital and Elevar Equity recently. Similarly, the UK-based fund Actis had committed an investment in the equity capital of Sterling Hospitals, though the investment made by the fund is not known. Other players like Milestone Religare, and Spring Healthcare are also in the look out for opportunities in this emerging space.

The home grown private equity fund TVS Capital along with the US PE major Mount Kellett Capital Management had recently announced that they would invest close to ₹400 crore in the Hyderabad-based MedPlus Health Services. The Hyderabad-based pharma retailer is expected to offload somewhere between 35% to 40% stake in the company in favour of the funds.

Two Leading Eye care Chains

Two Leading Eyecare Chains Eye PE Funding (The Economic Times : 31.3.2011)

KHOMBA SINGH NEW DELHI

Two of the country's leading private eyecare chains are in talks with separate venture capital and PE firms for fresh round of fund raising to scoop over ₹500 crore for expanding their network nationally. Bulk of this will be raised by Vasani Eyecare, the country's largest eyecare firm. Chennai-based company plans to raise about \$100 million from PE funds, Vasani Eyecare chairman C M Arun said. The fund will be used to add 55 eyecare centres and 20 dental clinics nationally this year.

The company, which earlier raised money from venture capital firm Sequoia Capital through three rounds of investments in the last two years, has 80 eyecare centres in four south Indian states besides 15 dental centres at present.

Another eyecare chain Eye Q has appointed investment advisory firm O3 Capital to find investors for raising up to \$15 million to fund its plans to build a pan India chain of 100 centres by 2015.

“Unlike investment in big projects like hospitals, eyecare chains need small capital, can be easily scaled up and become profitable quickly as early as six months,” said Eye Q MD Rajat Goel. At present the Gurgaon-based firm has 14 centres in small towns in North India partly funded through \$4-5 million raised from Song Investment, that in turn is funded and owned by the Soros Economic Development Fund, Omidyar Network and google.

H1N1 Flu

H1N1 Flu

WHO: Flu shot may be linked to narcolepsy (Times of India: 09/02/2011)

Geneva/London: The World Health Organisation urged more investigation into possible links between Glaxo-SmithKline's Pandemrix and other H1N1 flu vaccines and narcolepsy, a rare sleeping disorder. The WHO advisory panel statement on Tuesday came after a Finnish study last week suggested children given the GSK shot were nine times more likely to suffer from narcolepsy, which causes a person to fall asleep suddenly and unexpectedly.

WHO spokeswoman Alison Brunier said that Pandemrix remains on the WHO's list of prequalified vaccines, and there would be no changes to WHO recommendations on any flu vaccines as a result of the Finnish study. "Further investigation is warranted concerning narcolepsy and vaccination not only with Pandemrix, but also with other pandemic H1N1 vaccines," Brunier said.

A spokesman for the British drugmaker said it was itself looking into reports of links between narcolepsy and Pandemrix. Pandemrix was designed to tackle the H1N1 pandemic flu which spread around the world in 2009 and 2010.

Flu viruses

Gene swapping by flu viruses (The Hindu: 3.3.2011)

More virulent: If H1N1 virus swaps genes with a bird flu virus, the progeny can be more virulent than the two parental strains.

The H1N1 flu virus that set off the 2009 pandemic could create yet more trouble. Research from a Chinese group has indicated that if this virus were to swap genes with a bird flu virus

circulating in poultry, it can produce progeny that easily infect laboratory mice and are more virulent than the two parental strains.

When two strains of bird flu infect the same host, they can readily swap genes, a process known as reassortment. The 2009 H1N1 pandemic virus was itself a triple reassortant, with its genes drawn from bird, human and animal strains.

This mix of genes created a virus that readily infected humans, was easily transmitted from one person to another, and to which most people had no immunity.

The preceding three flu pandemics that occurred during the 20th century were also produced by viruses that had undergone reassortment.

In research being published this week in the journal Proceedings of the National Academy of Sciences (PNAS), a team of scientists led by Jinhua Liu of the China Agricultural University in Beijing used laboratory techniques to create viruses with various combinations of genes drawn from the avian H9N2 virus and the pandemic H1N1.

Some 73 different reassortant viruses that replicated well in cultured cells were then tested on mice. Eight of those viruses were found to be more virulent than either of the parental strains, producing severe pneumonia in the animals.

Pigs, a mixing vessel

The worry is that such reassortment could take place in pigs, which have long been considered a 'mixing vessel' as they can be infected by human as well as bird flu viruses.

The H1N1 virus that caused the 2009 pandemic seems to have undergone reassortment in pigs before making the leap to humans. The viruses that caused the previous three pandemics too appear to have been in some mammalian host, which may well have been the pig, before causing disease in humans.

There is already evidence that the 2009 H1N1 pandemic virus is infecting pigs and swapping genes with other flu viruses.

In a paper published in the journal Science last year, Vijaykrishna Dhanasekaran and others reported a novel reassortant virus that had been isolated from pigs in an abattoir in Hong Kong in January 2010. The reassortant virus combined genes from the H1N1 pandemic virus and a H1N2 virus. Swine infected with the new virus showed only mild illness.

It was not yet possible to predict what subtype of the flu virus would cause the next pandemic, said Dr. Vijaykrishna in an email.

Although more attention was paid to the H5N1 bird flu, the latest PNAS study clearly highlighted the fact that other flu subtypes that were circulating in poultry had the potential to start future pandemics.

The H9N2 virus, which had become the “underdog of avian influenza study,” had been detected virtually in every country in Asia. Studies showed that it had become endemic in poultry in East and South-East Asia (including China), India, Pakistan and some West Asian countries, he added.

Sustained transmission of avian viruses in pigs increased the possibility of mammalian adaptation, thereby increasing the risk of such a virus emerging in humans, observed Dr. Vijaykrishna. As such, it was very important to monitor the flu viruses that were circulating in pigs.

H1N1

Mutation that could allow H1N1 to spread much more easily identified (New Kerala: 11.3.2011)

In a new study from MIT, researchers have identified a single mutation in the H1N1 genetic makeup that would allow it to be much more easily transmitted between people.

The finding should give the World Health Organization, which tracks influenza evolution, something to watch out for, said Ram Sasisekharan, senior author of the paper.

“There is a constant need to monitor the evolution of these viruses,” said Sasisekharan, the Edward Hood Taplin Professor and director of the Harvard-MIT Division of Health Sciences and Technology. Some new H1N1 strains have already emerged, and the key question, Sasisekharan adds, is whether those strains will have greater ability to infect humans.

WHO labs around the world are collecting samples of human and avian flu strains, whose DNA is sequenced and analyzed for potential significant mutations. However, it’s difficult, with current technology, to predict how a particular DNA sequence change will alter the structure of influenza proteins, including hemagglutinin (HA), which binds to receptors displayed by cells in the human respiratory tract. Now that this specific HA mutation has been identified as a potentially dangerous one, the WHO should be able to immediately flag any viruses with that mutation, if they appear.

Identifying this mutation is an important step because it is usually very difficult to identify which of the many possible mutations of the HA protein will have any impact on human health, says Qinghua Wang, assistant professor of biochemistry at Baylor College of Medicine.

“These are exactly the types of mutations that we need to watch out for in order to safeguard humans from future disastrous flu pandemics,” he said.

In the new study, the MIT researchers focused on a segment of the HA protein that they have shown affects its ability to bind to respiratory cells. They created a virus with a single mutation in that region, which replaced the amino acid isoleucine with another amino acid, lysine. That switch greatly increased the HA protein’s binding strength. They also found that the new virus spread more rapidly in ferrets, which are commonly used to model human influenza infection.

If such a mutant virus evolved, it could generate a “second wave” like the ones seen in 1918 and in 1957 (known as the “Asian flu”).

“If you look at the history, it takes a very small change to these viruses to have a dramatic effect,” Sasisekharan said.

The amino acid in question is located in a part of the viral genome prone to mutate frequently, because it is near the so-called antigenic site — the part of the HA protein that interacts with human antibodies. Antigenic sites tend to evolve rapidly to escape such antibodies, which is why flu vaccine makers have to use new formulas every year. This year’s vaccine included a strain of H1N1, which is still circulating around the world.

The study has been published in the journal Public Library of Science (PLOS) One.

Vaccinated Against H2N2 Influenza Virus

Children and Young Adults should be vaccinated Against H2N2 Influenza Virus (Med India: 11.3.2011)

According to a vaccine researcher at the US National Institutes of Health in Bethesda, Maryland, Gary Nabel, the Government should begin vaccinating children and young adults against a strain of influenza virus- H2N2. This virus had killed about 1-4million people between the years 1957-1968. The H2N2 virus is now circulating among birds and pigs. They could easily pass on this virus to humans under 50years of age who have little or no immunity.

A pre-emptive vaccination campaign could help to avert a major pandemic.

Dr. Nabel said, "Governments, regulatory agencies and industry should develop a pre-emptive vaccination program for H2N2. Waiting until an outbreak occurs risks making the same kind of

mistakes made over the H1N1 pandemic." Scientists believe that this would be a comparatively cheaper option than stockpiling the vaccine or waiting for a pandemic to strike.

Heart Problems

Heart Condition

A little warmth for your heart (Times of India: 08/02/2011)

“If you live in a cold climate and have a heart condition, don’t let winter play spoil sport for you. Here are simple tips to enjoy the season, heartily.”

Winter is always the season to enjoy. A rejuvenating jog on cold foggy mornings, followed by a hot cuppa, and just-off-the-griddle parathas stuffed with fresh veggies make winter months a time to live it up and eat well.

However, for heart patients it can be a tricky time. “A drop in temperature sends your body into a save-heat mode which causes the blood vessels to constrict. This reduces blood supply to the heart, your blood pressure shoots up and cause spasms in your arteries. These changes can have serious implications for people with heart conditions,” says Dr S C Manchanda, senior cardiology consultant, Sir Gangaram Hospital, Delhi.

So, do you give up on all the fun? Not really, if you can incorporate minor changes in your lifestyle.

ACCLIMATISE YOUR BODY

Don’t jump out of the quilt, with no warm clothes on when you wake up in the morning. “A sudden exposure to cold air can create a temperature shock for your body,” says Manchanda. To avoid this, keep your sweater or shawl within easy reach of your bed. To be on the safer side, keep your feet covered too. If you have time, relax in the quilt for a few minutes before stepping out of the bed.

BRACE YOURSELF

It is the season for sniffles and coughs so take extra care. Flu is bad news for your heart. The inflammation can spread to the arteries and lead to complications. Amp up your immunity with vitamin C-rich foods. Or, take supplements after consulting your doctor.

DRESS WARMLY

Keep your head, neck and chest area warm. Bundling will keep the body heat in, and let enough oxygen and blood reach your heart. When it’s foggy, wear windproof and waterproof outer

garments, and cover your mouth and nose with a scarf to warm up the air before you breathe it in.

DELAY YOUR MORNING WALK

Sweating it out in cold weather conditions is a bad idea. While walking, your heart needs extra oxygen. But the arteries that are already narrow due to the cold weather are unable to supply much. This creates a gap between the quantity of oxygen required and supplied, and can lead to discomfort. Manchanda recommends walking before lunch. “And keep your pace slow,” he says. Better still use a treadmill, indoors.

ENJOY THE WINTER PRODUCE

Feast on leafy vegetables, bright-coloured fruits, crunchy nuts and dry fruits. Ritika Samaddar, a senior dietician with Max Superspecialty Hospital says: “Most of these foods are loaded with heart-healthy antioxidants.” Potassium in the produce will keep your sodium levels in check and manage your BP well. Just keep the dry fruit intake moderate.

FUEL UP WITH FLUIDS

Drink a lot of water. Lack of hydration can thicken the blood and aggravate a heart condition. Avoid excessive tea and coffee though, warns Samaddar, as they lead to loss of water through urination.

BRING ON THE HERBS

Warming herbs like saffron and ginger are ideal for consumption during winter months. A few strands of saffron in your glass of milk at bedtime, will keep the infections at bay. Just a pinch of ginger in your cup of tea or soup will warm up your body.

KEEP INDOORS

On dark, smoggy days the air outside is heavy with suspended particles and smoke. These can make breathing difficult. Therefore, avoid exercising outdoors in such an atmosphere.

CELEBRATE WISELY

Festivals and marriages make winter months a period of prolonged celebration and overeating. Restrict your intake of food and alcohol, suggests Samaddar. Added calories and salts can spike up the BP.

EXERCISE ALERT

It's best to go easy on the intensity and pace. Vinodini Gupta, Delhi-based fitness expert, suggests breaking-up your routine into 10-minute sessions, done thrice a day. While working out at the gym, ensure that the blower is on so that fresh air is being circulated. Otherwise, you will be inhaling too much of CO₂. A warm up and cool down before and after exercising are a must, too. “It will get your body in tune with the outside temperature,” explains Gupta. Keep yourself well-covered; however, you can take off the layers if you feel any discomfort.

These small changes can help you keep your ticker in great shape. After all, the spirit of winter is all about holiday cheer, hugs and cosying up, which is also good for the heart.

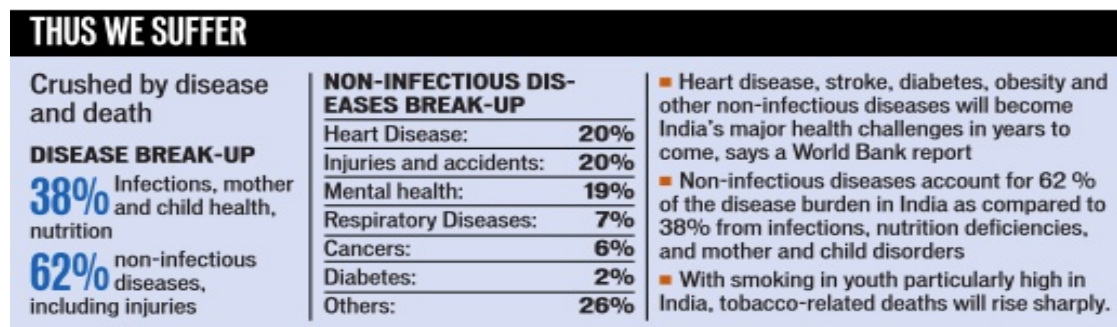
Heart Risk

India's heart is at risk (Hindustan Times: 09/02/2011)

“CONCERNS Health of the poor major concern, says World Bank report”

Indians get their first heart attack at 53 -six years earlier than the world average of 59 years. And with the number of people over 65 years jumping from 4.4% in 2000 to 7.6% in 2025, heart disease, stroke, diabetes, obesity and other non-infectious diseases will become the country's major health challenges, warns a new World Bank report.

Rest of South Asia will continue to face heart problems as the leading cause of death in adults between 15 and 69 years, with people in the region getting their first heart attack six years earlier than people in other countries, said the report.



Non-infectious diseases account for 62 % of the disease burden in India compared to 38% from infections, nutrition deficiencies, and mother and child disorders. Heart disease and injuries accounts for 12% of the country's disease burden.

“Low birth weight -less than 2.5 kg, which affects almost one in four newborns in India -is a major risk factor for multiple heart diseases, such as obesity, blood pressure, cholesterol and diabetes,” said Dr K Srinath Reddy, president, Public Health Foundation of India.

The report, called Capitalising on the Demographic Transition: Tackling Noncommunicable Diseases in South Asia, says growth in the region is not inclusive.

Despite an yearly average growth of 6% over the last 20 years, it has not improved the health of the poor. A sharp rise in non-infectious diseases that cause disability and early death will hit poor families the hardest, worsening their poverty.

The report recommends strategies like food labelling, tobacco control through advertising and health warnings, and stronger injury control policies to lower road traffic accidents.

Heart Risk

WAKE-UP CALL

Late to bed & rising early ups heart risk (The Times of India: 10.2.2011)

Those Who Get Less Than 6 Hrs Of Sleep A Day Face Serious Health Hazards

London: Are you among those who get up early but go to bed very late Beware,your sleeping habit may be a ticking time bomb for your health and it could lead to heart attack and stroke,scientists claim.

Going to bed late but waking up early because of hectic work schedule has become a trend for many,but scientist said having such a habit means inviting serious health hazards.Researchers at the University of Warwick Medical School in the UK found those who could not afford to sleep for at least six hours a day are more likely to die from a heart attack or stroke.

The trend for late nights and early mornings is actually a ticking time bomb for our health so you need to act now to reduce your risk of developing these life-threatening conditions, said Francesco Cappuccio who led the study.There is an expectation in today's society to fit more into our lives.But in doing so,we are significantly increasing the risk of suffering a stroke or developing cardiovascular disease resulting in,for example,heart attacks, Cappuccio was quoted as saying by the Daily Mail.

For their study,Cappuccio and colleagues looked at the sleeping habits of 475,000 participants from 15 previous studies across eight countries.It was found that those who slept for less than six hours were 48% more likely to develop or die from heart disease and 15% more likely to develop or die from a stroke.According to them,not having enough sleep decreases the levels of leptin in our blood,which means we do not feel as satisfied after eating.

Experts recommend adults get at least six or seven hours' shuteye a night to stay healthy.PTI

Heart Pacemaker

FDA approves first safe heart pacemaker during MRI exams (New Kerala: 10.2.2011)

The U.S. Food and Drug Administration (FDA) on Tuesday approved the first heart pacemaker designed to be used safely during certain magnetic resonance imaging (MRI) exams.

According to the FDA, about half of all patients with pacemakers may require an MRI, but are advised not to have one because an MRI's magnetic and radiofrequency fields can disrupt the pacemaker's setting or cause wires to overheat, resulting in unintended heart stimulation, device electrical failure, or tissue damage.

The Revo MRI SureScan Pacing System includes a function that is turned on before a scan to prepare patients for the MRI. The pacemaker's use in MRIs is limited to certain patients, certain parts of the body, and certain scanning parameters. The FDA is also requiring training for cardiologists and radiologists who use the system.

"FDA's approval of the Revo pacemaker represents an important step forward toward greater device innovation," said Jeffrey Shuren, M.D., director of the FDA's Center for Devices and Radiological Health.

"Those patients who meet the parameters for the device will be able to maintain their critical cardiac therapy while benefiting from the precise diagnostic capability of an MRI," Shuren added.

Pacemakers are surgically implanted medical devices that generate electrical impulses to treat irregular or stalled heart beats, and MRIs use a powerful magnetic field, radio frequency pulses and an internal computer to produce detailed images of organs, soft tissues, bone, and other internal body structures not available with other imaging methods.

The FDA reviewed results from one clinical trial of 484 patients. Of those, 464 were successfully implanted with the device and then randomized to receive or not receive an MRI.

None of the 211 who underwent an MRI experienced an MRI-related complication. The clinical results confirmed earlier data from animal studies, computational modeling, and other nonclinical research.

Heart Disease

Potential treatment target for congenital heart disease identified (New Kerala: 23.2.2011)

Two separate but related studies have shown that two drugs – one already approved as an immunosuppressant and the other being tested as an anti-cancer agent – could prevent and reverse hypertrophic cardiomyopathy (HCM) in mouse models of congenital heart disease.

HCM is a condition in which the heart muscle becomes thick, leading to the sudden death in children and young adults.

Researchers at the University Health Network (UHN), Toronto, and Beth Israel Deaconess Medical Centre (BIDMC), Boston, conducted both the studies, co-led by UHN's Benjamin Neel.

“By studying two of the most commonly mutated pathways in cancer, discerning the mechanism by which they cause congenital disease, and treating two of these disorders with different drugs, we have identified potential therapeutic targets for human disease,” said Neel.

“This is what personalized medicine is all about: understanding in detail how different mutations cause disease, and then targeting these mutations appropriately to tailor individualized treatment,” he said.

“These findings exemplify the importance of basic biological research and collaboration across areas of specialization. In this instance, collaboration showed how understanding cancer can lead to unexpected insights into congenital heart disease, and vice versa,” he added.

The researchers were investigating how a cluster of congenital diseases known as ‘RASopathies’, – defects caused by mutations in different genes in the so-called ‘RAS pathway’, develop.

They focused on two genetic disorders – Noonan Syndrome, which occurs in 1 in 1,000-2,500 live births and causes short stature, facial, blood and cardiovascular abnormalities and the much less common LEOPARD Syndrome, which features short stature, as well as skin, facial, skeletal and cardiovascular abnormalities. HCM is prevalent in both syndromes.

The UHN study team investigated Noonan Syndrome while the Boston team investigated LEOPARD Syndrome.

The researchers introduced the genetic mutations that cause these syndromes into special strains of mice, and were able to reproduce the features of the human disorders.

The Toronto group found that ‘excessive activity of an enzyme called ERK, a downstream target of the RAS pathway, caused HCM in Noonan Syndrome, and successfully used a drug that lowers the activity of this enzyme to decrease pathway activity and normalize all of the features of Noonan Syndrome’, said Neel.

The Boston group found that LEOPARD Syndrome results from excessive activity of a different enzyme downstream of RAS, called mTOR.

Using the mTOR inhibitor Rapamycin, which is already approved as an immunosuppressant, they were able to reverse HCM in their mouse model of LEOPARD Syndrome.

“These research findings are important steps towards understanding the pathogenesis of these congenital syndromes, and point the way toward clinical trials of these agents in severely affected patients,” said Neel.

The findings have been published online ahead of the March issue of the Journal of Clinical Investigation.

Healthy Heart

Here's how you can keep your heart happy and healthy (The Tribune; 23.2.2011)

WASHINGTON: A healthful diet and active lifestyle are some of the best weapons to fight heart disease. According to the International Food Information Council Functional Foods/Foods for Health Consumer Trending Survey, cardiovascular health risks, including high blood pressure, stroke and high cholesterol, are the top health concerns for many people. "Consuming a diet that is low in saturated and trans-fats, cholesterol and sodium can help reduce your risk for heart disease," according to David Grotto. "But that's only one side of the equation. It is also important to choose foods that can promote heart health such as fruits and vegetables, whole grains and fibre."

Heart health

What your legs say about your heart health (The Tribune: 23.2.2011)

When it comes to heart health, you shouldn't ignore your legs, say experts. The Vascular Disease Foundation and its P.A.D. Coalition are urging people to listen to the legs and be alert to the signs of peripheral arterial disease, or P.A.D. P.A.D. occurs when arteries in the legs become narrowed or clogged with fatty deposits, reducing blood flow to the legs. This can result in leg muscle pain when walking, disability, amputation, and poor quality of life. If you have blocked arteries somewhere in the body, you are likely to have them elsewhere. Thus, P.A.D. is a red flag that other arteries, including those in the heart, are likely to be affected, increasing the risk of a heart disease, heart attack and even death. —

Heart Disease -New Marker

New Marker for Heart Disease Identified in Study of Firefighters (Science Daily: 24.2.2011)

A new study from the Libin Cardiovascular Institute at the University of Calgary's Faculty of Medicine is shedding light on an underlying cause of heart disease.

Published research led by UCalgary's Dr. Todd Anderson and his colleagues at four sites across Canada finds that endothelial dysfunction (blood vessel lining) can predict who is at risk for developing coronary heart disease. By identifying this new marker in patients doctors may be able to intervene early to prevent the progression of heart disease.

"The study has demonstrated that in addition to traditional cardiovascular risk factors, measures of blood vessel function are predictive of who goes on to develop cardiovascular complications," says Anderson who is the study's principal investigator, and director of the Libin Cardiovascular Institute of Alberta.

The observational study followed 1574 healthy firefighters over a period of ten years. At the beginning of the study each firefighter had an ultrasound of his brachial artery in the arm to measure blood vessel function and was then followed every six months for the 10 year period. Over the course of the study some of the study participants had cardiovascular events such as heart attacks and this allowed the research team to see what measurements correlated.

"The information obtained by these simple tests improves our ability to detect, among healthy individuals, those who will go on to have vascular events, with more precision and reliability than if we just tallied their traditional risk factors, as most clinicians do now," says Dr. Francois Charbonneau, a co-investigator and also from the University of Calgary's Faculty of Medicine and a member of the Libin Institute. "More research is required to see if these tests can be used in the population at large."

Wayne Morris is one of the firefighters who enrolled in the study. He's now 60-years-old, was followed by the researchers for the last decade and luckily had no cardiac events. "I enrolled in the project. I felt this was an extremely worthwhile study. Any study that will help the health professionals better predict who is at greater risk could be a life saver for people," he says.

Coronary artery diseases remain a major cause of death and disability in North America and can lead to heart attacks and congestive heart failure.

The study was published in the January 4th issue of Circulation, a journal of the American Heart Association.

The study was funded by Pfizer, Canadian Institutes of Health Research (CIHR), and the Heart and Stroke Foundation. Dr. Todd Anderson's research is also funded by Alberta Innovates -- Health Solutions.

Hearts

Damaged hearts could one day repair themselves, suggests mice study(New Kerala: 25.2.2011)

Researchers at UT Southwestern Medical Center have discovered that the mammalian newborn heart can heal itself completely.

Researchers, working with mice, found that a portion of the heart removed during the first week after birth grew back wholly and correctly – as if nothing had happened.

"This is an important step in our search for a cure for heart disease, the No. 1 killer in the developed world," said Dr. Hesham Sadek, assistant professor of internal medicine and senior author of the study.

"We found that the heart of newborn mammals can fix itself; it just forgets how as it gets older. The challenge now is to find a way to remind the adult heart how to fix itself again."

Previous research has demonstrated that the lower organisms, like some fish and amphibians, that can regrow fins and tails, can also regrow portions of their hearts after injury.

"In contrast, the hearts of adult mammals lack the ability to regrow lost or damaged tissue, and as a result, when the heart is injured, for example after a heart attack, it gets weaker, which eventually leads to heart failure," Sadek said.

The researchers found that within three weeks of removing 15 percent of the newborn mouse heart, the heart was able to completely grow back the lost tissue, and as a result looked and functioned just like a normal heart. The researchers believe that uninjured beating heart cells, called cardiomyocytes, are a major source of the new cells. They stop beating long enough to divide and provide the heart with fresh cardiomyocytes.

Heart Valve Disease

Inflammation behind Heart Valve Disease, Research Suggests (Science Daily: 16.3.2011)

Research from Karolinska Institutet in Sweden shows that a specific inflammatory factor may be important in the development of the heart valve disease aortic stenosis. The results suggest that anti-inflammatory medication could be a possible new treatment.

Aortic stenosis is the most common heart valve disease, which is caused by calcium deposits and a narrowing of the aortic valve. This is typically seen in the elderly, but can also be caused by a congenital defect. Aortic stenosis is currently treated by surgical replacement of the diseased valve, but research is on-going for identifying medicines which can delay the progress of the disease.

In a new study presented in the journal *Circulation*, researchers from Karolinska Institutet show that specific pathways of inflammation are important underlying factors in the development of aortic stenosis.

By studying heart valves from patients undergoing surgery for various valve diseases, the researchers have shown that immune cells and a group of inflammatory substances called leukotrienes can be found in calcified heart valves. The most significant inflammation was seen in patients with the narrowest valves on ultrasound examination. The researchers have also shown in cell cultures that leukotrienes stimulate the calcification of heart valve cells.

There are similarities between atherosclerosis (calcification of the arteries) and aortic stenosis. However, lipid-lowering medicines known as statins which are capable of preventing atherosclerosis have proved ineffective in preventing calcification of the aortic valve.

"The results suggest that anti-inflammatory medication could be a future treatment for aortic stenosis, and it would mean a lot to these patients, most of whom are elderly, if we could slow the disease to the extent that they do not need surgery," says associate professor and cardiologist Magnus Bäck, one of the researchers behind the study.

Heart Attack

Heart Attack Survival Linked To Hospital Culture and Organization of Care (Medical News Today: 16.3.2011)

A study by Yale University researchers concluded that hospital culture and organization of care, including factors like the values and goals of the organization, and senior management involvement, may explain the wide range in mortality rates among patients treated for heart attacks in US hospitals.

You can read about the findings, and how the researchers conducted their systematic qualitative review, based on site visits and 158 interviews with hospital staff involved in acute myocardial infarction (AMI) care at 11 hospitals throughout the US, in the March issue of the Annals of Internal Medicine.

The researchers noted that previous studies have found rates of death for patients with heart attack or acute myocardial infarction (AMI) vary substantially across hospitals in the US, even when patient severity is taken into account, and little is known about the hospital factors that might explain such variation.

Lead author Dr Leslie A. Curry, a research scientist at the Yale Global Health Leadership Institute, told the press that:

"Previous research looked at whether hospital characteristics like urban location, teaching status, geographical region, and socio-economic status of patients are related to acute myocardial infarction (AMI) mortality rates, but these factors don't explain much of the variation in mortality."

For their study, Curry and colleagues selected the US hospitals that were in the top of bottom 5% of AMI mortality rates for 2005-2006 and 2006-2007 as ranked by the federal agency that administers Medicare & Medicaid Services.

Using a qualitative systematic constant comparative method, a multidisciplinary team of researchers examined the information collected from site visits and in-depth interviews conducted with hospital staff in 2009.

The methods they used to examine the data is more suited to the analysis of qualitative information that comes from what people say freely in interviews in response to questions, or what researchers observe during visits.

With this kind of research, the concepts and hypotheses emerge from the data itself.

The method is different to a quantitative survey where all the questions and the types of answers permitted are worked out in advance so that responses can be analyzed statistically.

Curry said:

"We were particularly interested in the roles of social interactions and organizational culture, which are difficult to measure using common research approaches like surveys."

They found substantial differences between the hospitals with the lowest and highest mortality rates for AMI patients. These differences were in five areas:

Organizational values and goals,

Senior management involvement,

Broad staff presence, and expertise in AMI care,

Communication and coordination, and

Problem solving.

Surprisingly, they found that systems for AMI care made little difference, as they noted in their paper:

Risk Factors Ofzyban - Learn causes, signs, & treatments for nicotine addiction. - www.healthline.com

Mediclaime Policy From - Star Health. Affordable Premium & Tax Savings. Apply Now! - www.Starhealth.in

ICICI Health Insurance - Cashless Hospitalisation, No checkUp Or Paperwork Required. Buy Online! - icicilombard.com

"Participants described diverse protocols or processes for AMI care (such as rapid response teams, clinical guidelines, use of hospitalists, and medication reconciliation); however, these did not systematically differentiate high-performing from low-performing hospitals."

Hence they concluded that:

"High-performing hospitals were characterized by an organizational culture that supported efforts to improve AMI care across the hospital. Evidence-based protocols and processes, although important, may not be sufficient for achieving high hospital performance in care for patients with AMI."

Senior author Dr Elizabeth Bradley, professor of public health and faculty director at the Yale Global Health Leadership Institute, said the key to safety and quality does not have to be expensive; it's not necessarily about having "new gadgets":

"If we could implement our findings in more hospitals, we could improve quality without adding to costs," said Bradley.

The staff in the hospitals with the lowest mortality rates among AMI patients said communication and coordination across disciplines and departments was strong, whereas in the hospitals with high mortality rates, senior managers were involved only sporadically, partly because of high turnover, and they did not encourage people to take responsibility for performance problems.

Curry said long-term investment and concerted efforts are often needed to create high performing organizations that encourage members to engage with and be concerned about quality, where communication and coordination among groups is strong, and where there is capacity for solving problems and learning across the organization.

Co-author Dr Harlan Krumholz, professor of medicine and cardiology at Yale School of Medicine, agreed, explaining that they found the best hospitals "were distinguished by a combination of factors that related to how they organized and managed the care and the performance of the teams".

Grants from the Agency for Healthcare Research and Quality, the Commonwealth Fund, and the United Fund helped pay for the research.

The authors acknowledged that the use qualitative methods meant it was not possible to do statistical analyses, and this could be viewed as a limitation of the study.

"What Distinguishes Top-Performing Hospitals in Acute Myocardial Infarction Mortality Rates?: A Qualitative Study."

HIV/ADS

HIV-infected teens

HIV-infected teens 'at high risk for pregnancy, complications'(New Kerala: 3.2.2011

Johns Hopkins scientists have revealed that teenage girls and young women infected with HIV get pregnant more often and suffer pregnancy complications more frequently than their HIV-negative peers.

The findings come from a multi-center study based on an analysis of records from 181 patients with HIV, ages 13 to 24, treated at four hospitals over 12 years.

The investigators say the findings are alarming for at least two reasons.

First, teen pregnancies — planned or not — put these already vulnerable patients and their fetuses in grave danger for complications.

Second, the findings signal that HIV-infected teens and young women continue to practice unsafe sexual behaviors and to have unprotected sex, the researchers said.

Pregnancy rates were especially high in one subgroup of HIV-infected youth — teens who acquired the virus behaviorally rather than during birth.

Behaviorally infected teens had five times the number of pregnancies compared to their HIV-negative counterparts and were more prone to premature births and spontaneous abortions than their HIV-negative peers.

More than one-third of the 181 patients in the study got pregnant, some of whom had more than one pregnancy for a total of 96 pregnancies.

Premature births were more common among HIV-infected mothers (34 percent), compared with moms in the general population (22 percent) as were spontaneous abortions, 14 percent among HIV-infected moms compared with 9 percent among pregnant women in the general population.

HIV Protection

HIV Protection Not Influenced by Circulating Blood Antibodies (Med India: 1.3.2011)

Protective immunity against HIV can be achieved without the presence of virus neutralizing antibodies in the blood, new research has shown.

The study, published by Cell Press in the February issue of the journal *Immunity*, demonstrates that a vaccine which stimulates production of specific anti-HIV antibodies in the vaginal tissue was sufficient to protect monkeys from exposure to live virus. The results may also help to explain why a few individuals who lack anti-HIV antibodies in the blood are able to resist infection, even when they are repeatedly exposed to HIV.

HIV is most often transmitted by sexual relations when infected body fluids of one individual contact the genital or rectal mucous membranes of another. After initial infection in the mucous membranes, or mucosa, the virus rapidly copies itself and floods the bloodstream. A common HIV-1 vaccine strategy has been to induce HIV antibodies in the blood. However, this approach has not proven effective and alternative strategies are needed. "We designed a vaccine strategy to protect the initial sites of viral entry, especially the female genitals and the rectum, by inducing antibodies within the mucosa itself that hopefully will be able to prevent the establishment of early viral infection," explains lead study author Dr. Morgane Bomsel from the Institut Cochin in Paris.

Dr. Bomsel and colleagues developed a vaccine targeted against gp41, a region of HIV that has shown some promise in studies of mucosal HIV-1 challenge. The vaccine was administered to Macaques through both intranasal and intramuscular routes. Animals were exposed to simian HIV vaginally and tested for infection six months later. Remarkably, five of five vaccinated animals were protected from viral replication in the blood and exhibited vaginal gp41-specific antibodies with various viral neutralizing effects. The mucosal antibodies blocked a pathway that HIV uses to enter the mucosa, while the antibodies in the plasma of these animals completely lacked the ability to neutralize the virus.

Poverty and AIDS

Fighting two villains: Poverty and AIDS (The Hindu: 3.3.2011)

NGO FXB India Suraksha chooses most poor families for three years; funds their basic needs

A Long affair with India:FXB founder Countess Albina du Boisrouvray elaborating on her vision during an interview in New Delhi on Wednesday.

NEW DELHI: Linking a public health paradigm with human rights, Albina du Boisrouvray, founder of non-governmental organisation FXB India Suraksha, has set up a sustainable and community-based solution to fight poverty and AIDS through the FXB-Village network.

The NGO is dedicated to working for vulnerable children, especially those infected and affected by AIDS and poverty.

FXB is an acronym for François-Xavier Bagnoud, the son of Ms. Boisrouvray, who was a rescue worker and died during a helicopter rescue operation. FXB International is the umbrella organisation for FXB entities worldwide

“I had many lives,” she says with a smile. “But I was always concerned with being involved with things to do with change. I have always wished in life to do something to change humbly something that was dysfunctional.”

“In the FXB-Village model, 80-100 families are chosen for three years. These families are the poorest, the most hard-working, and have many children. We take care of all their needs in the first year such as food, education, health care, sanitation training, psycho-social counselling and empowerment of women,” says Ms. Boisrouvray, who has been associated with India for 25 years.

However, the three-year programme is not about lending money or giving out money, she says emphatically: “It is about funding the extreme poverty of people, funding their basic needs till they can take on through their income generating activity and provide for themselves.”

The FXB founder took inspiration from Dr. Jonathan Mann's public health paradigm which laid emphasis on the inextricability of public health and human rights to fight AIDS and she added the dimension of income generating activity so that people could take care of themselves.

FXB villages were set up in West Bengal, Andhra Pradesh, Mizoram and Manipur for three years and the programme has recently concluded. In a fresh cycle, these villages have now been set up in Andhra Pradesh, on the Tamil Nadu-Puducherry border and Manipur.

African model

“We implemented this model in Africa with great success,” says Ms. Boisrouvray. “In India the women are less confident which is understandable given the history and cultures. Moreover there is reliance on assistance and aid and a fear of becoming independent and autonomous.”

She admits that India has been the most challenging country to work in. “When I came here 25 years ago, I did not know anyone. There is bureaucracy at every level, State and Central. A different culture prevails here and one must know how to work with it. Funding too has been an issue here.”

“Strangely I feel at home here!” remarks Ms. Boisrouvray, elaborating on her fascination for Indian philosophy, culture, literature, democracy and diversity.

About her vision for FXB India Suraksha, she says: “We have been sustaining this for some time now mostly with money from outside. Money should be generated here too. I would like to see partnerships not only with the government, but larger Indian involvement to set up more FXB villages to show that it works in all settings in India. I want it to be taken up as a political strategy of poverty eradication.”

In 1992, Ms. Boisrouvray established the FXB Center for Health and Human Rights at the Harvard School of Public Health.

Anti-HIV vaginal gel

Anti-HIV vaginal gel deemed safe for rectal use too (new Kerala: 7.3.2011)

A new study has suggested that a change in the formulation of tenofovir gel, an anti-HIV gel developed for vaginal use, may make it safer for rectal use as well.

Researchers from the Microbicide Trials Network (MTN) found that the "new" gel was less harmful to the lining of the rectum than the original vaginal formulation, and just as effective in protecting cells against HIV.

The find has important implications for the development of a rectal microbicide that could help protect against HIV or other sexually transmitted infections during anal sex.

The original gel may not be safe or effective to use rectally because the rectal epithelium - the lining of the rectum that serves as the first line of defense against HIV - is much thinner than the vaginal lining.

To make tenofovir gel safe and more amenable to rectal use, researchers from CONRAD, a research organization, reformulated it with a reduced amount of glycerin, a common additive found in many gel-like products.

Studies found that the reformulated gel was three times less likely to cause cells in rectal tissue to release water, and equally effective against HIV as the vaginal formulation.

"The lining of the rectum is much more fragile than the vaginal epithelium, so we can't be certain a product like tenofovir gel that is safe for vaginal use will be completely safe to use in the rectum," said Charlene Dezzutti, at the University of Pittsburgh School of Medicine.

"These results provide an important bridge to clinical studies, and we have already begun testing it with men and women."

However, men and women in the study did not particularly like it and some experienced uncomfortable gastrointestinal side effects.

Researchers are hopeful the reformulated gel now being tested in MTN-007 will address these concerns.

The results will be presented at the 18th Conference on Retroviruses and Opportunistic Infections (CROI)

Scriptures - help fight HIV-AIDS

Scriptures to help fight HIV-AIDS (New Kerala: 14.3.2011)

Help of religious scriptures is being sought at a two-day meeting here to end discrimination against people with HIV and AIDS and create awareness to contain the spread of the disease.

The inter-faith meeting began Saturday with Art of Living (AoL) founder Sri Sri Ravi Shankar pointing out that "none of the great religious scriptures of the world teach and preach discrimination against people suffering from HIV and AIDS".

The meeting has been organised by the Art of Living in partnership with UNAIDS, AINA (Asian Interfaith Network on HIV and AIDS), Indian Interfaith Coalition on HIV-AIDS, an AoL release said.

The meeting follows "a directive from the Government of India, Department of Health and Family Planning", the release said.

Scholars and religious leaders representing Muslim, Christian, Sikh, Jain, Buddhist and Hindu faiths "will study the respective approaches and collate it in a document to be used by NACO (National AIDS Control Organisation) and Department of Health and Family planning for public messages on HIV and AIDS", it said.

"We have gathered here to find solutions from our great scriptures which would authenticate our contention that there should not be any discrimination," Ravi Shankar said.

Asa Anderson of UNAIDS said: "Our aim is to come to a zero -- zero new HIV infections, zero HIV-related deaths and zero discrimination."

The release said Indian Inter faith Coalition on HIV AIDS and International Network of Religious Leaders living with HIV-AIDS (INERELA) was also conducting a training on various issues related to HIV and AIDS for the Art of Living volunteers.

These volunteers would "travel across the length and breadth of the country to spread awareness and educate the masses on HIV-AIDS".

Liver Diseases

Chronic Liver Cirrhosis

Study sheds new light on the causes of chronic liver cirrhosis (New Kerala: 15.3.2011)

Scientists have offered new clues into the genetics underlying a chronic form of liver disease, called primary biliary cirrhosis, which can lead to transplant surgery for patients.

The new study identified 15 genetic regions that affect a person's risk of developing primary biliary cirrhosis, more than trebling the number of known genetic regions, which now stands at 22.

The findings suggest that several key immune processes underlie susceptibility to primary biliary cirrhosis (PBC).

Patients with primary biliary cirrhosis suffer irritation and swelling of the bile ducts of the liver – blocking the flow of bile, which normally aids digestion.

"To gain an insight into the causes of primary biliary cirrhosis we compared genetic data from patients and healthy volunteers and found 22 regions of the genome that differed significantly, 15 of which had not previously been identified," said Carl Anderson, from the Wellcome Trust Sanger Institute and one of the senior authors on the paper.

"By scrutinizing the genes within these regions we were able to identify biological pathways that appear to underpin the disease, thus prioritising these for future research and highlighting their potential for therapeutic intervention," he said.

"This study is a key first step in our efforts to unravel the biological complexity of primary biliary cirrhosis and further research building on these results is already underway," he added.

The team found that many of the 15 new regions contain genes involved in regulation of the immune system, with three immune pathways particularly prominent.

"For clinicians involved in the management of primary biliary cirrhosis, this study is exciting because it provides new and meaningful insight into the biological origins of this condition," said George Mells, from the Academic Department of Medical Genetics at the University of Cambridge and a first author on the study.

"By working together, we have recruited almost one in six primary biliary cirrhosis patients in the UK; completed the largest genome-wide association study of primary biliary cirrhosis to date and established a research consortium that will form the foundation of further clinical, genetic and therapeutic studies," added Mells.

This research has contributed to the growing body of evidence that suggested there are many genetic risk factors that are shared between autoimmune diseases.

The results are the first to emerge from the Wellcome Trust Case Control Consortium 3 (WTCCC3) project, a collaboration of UK scientists and clinicians, which aims to unravel the role of genetic variation in several human diseases.

Malaria

Malaria

Spiders that like smelly socks to fight malaria? (The Times of India: 17.2.2011)

Human Scent To Help Attract Mosquito-Eating Arachnid

The stinky smell of sweaty socks may force you out of a room, but scientists have found that the odour enthralls a spider that preys on malaria-carrying mosquito *Anopheles gambiae*.

Researchers who made this amazing discovery said their findings could lead to novel ways to combat malaria that kills thousands of people every year.

In an experiment, the scientists used worn socks to find out if the East African jumping spider, *Evarcha culicivora*, was attracted to human odours like its prey.

It was found that the spider has evolved an affinity for smelly human feet in order to help find its prey — *Anopheles gambiae* that, according to past research, is also attracted to the scent of humans.

It may be a rather ugly, bloodthirsty little creature, but *Evarcha culicivora* could help in the ongoing and complex battle against malaria, the researchers said.

“It’s something that’s there in the environment for free,” study author Fiona Cross from the University of Canterbury, New Zealand, told BBC News.

“So why not do what we can to find out about this remarkable predator?” asked Cross who carried out the study along with Robert Jackson from the International Centre of Insect Physiology and Ecology (ICIPE) in Kenya. The researchers, who reported their findings in the journal *Biology Letters*, said they were interested in this species as it is the only known predator that specifically preys on blood-carrying mosquitoes. Cross said: “We had a suspicion that human odour was attractive to the spiders before we even ran the experiment.”

Dispersing fungal - malaria mosquito

Dispersing fungal spores over water kills malaria mosquito larvae (New Kerala: 21.2.2011)

A new research presents a method of dispersing pathogenic fungi as a means of preventing the spread of malaria.

Malaria is spread by mosquitoes which breed in open water and spend much of their larval stage feeding on fungi and microorganisms at the water surface.

According to the World Health Organisation, there are over 200 million cases of malaria each year, the worst scenario being in 2009, when malaria was responsible for 781,000 deaths worldwide.

The parasite (genus Plasmodium), which causes malaria, is transmitted to humans with mosquito saliva during a bite, where it invades the liver and red blood cells causing fever. Once infected, it can be difficult for a human host to recover because some species of Plasmodium are able to lie dormant and evade antimalarial drugs. These parasites are also becoming resistant to the antimalarials taken to prevent infection.

An alternative way of reducing the risk of malaria infection is to kill the mosquitoes. The fungi, *M. anisopliae* and *B. bassiana*, cause muscardine disease in mosquito larvae, leading to their death before they can pupate and develop into the adult form.

Tullu Bukhari and colleagues from the Laboratory of Entomology, Wageningen University, The Netherlands, have used a synthetic oil (ShellSol T) as a means of dispersing fungal spores over the surface of water. The oil-spore preparation is easy to mix and use of the oil improved the dispersal of spores across the water.

This simple formulation increased both the persistence and effectiveness of spores, killing up to 50 percent more larvae than untreated spores and reducing pupation levels to less than 20 percent at a test site in Kenya.

Speaking about the research Tullu Bukhari said, "these fungi provide an effective means of controlling malaria mosquitoes. Both spores and the oil have minimal risk to fish and aquatic organisms and so are also environmentally safe."

The research is published in BioMed Central's open access journal 'Parasites and Vectors'.

Non-communicable diseases

Non-communicable diseases

PMO meet to review policy on non-communicable diseases (The Times of India: 14.3.2011)

India's tremendous burden of non-communicable diseases (NCDs) like stroke, cancer, diabetes and cardiovascular diseases have now reached Prime Minister Manmohan Singh's doorstep.

The Prime Minister's Office (PMO) has called a meeting of the health ministry and the Planning Commission on Monday to review policies on NCDs and thrash out what needs to be done to lower the country's NCD prevalence.

Health secretary K Chandramouli will attend the meeting on behalf of the health ministry.

After the United Nations summit on HIV in 2001, that made the entire world come together to fight the deadly AIDS causing virus, this September, non-communicable diseases (NCDs) are all set to receive a similar push in New York.

To be attended by the who's who, including Singh, the UN General Assembly on the Prevention and Control of NCDs on September 19 will decide how to better prevent, diagnose and treat cancer, cardiovascular disease, chronic respiratory disease and diabetes, which together are responsible for eight million deaths worldwide, annually.

Prior to this UN meeting, the first global ministerial conference on NCDs is being held in Moscow on April 28 which will be attended by health minister Ghulam Nabi Azad.

The conference will highlight the magnitude and socioeconomic impact of NCDs, review international experience on NCD prevention and control and provide evidence on the pressing need to strengthen global and national initiatives to prevent NCDs.

NCDs caused 54.66 lakh deaths in 2005 — 53% of the total deaths in India and is now the country's main worry. The leading cause of deaths in India among NCDs is due to cardiovascular disease (29.89 lakh), diabetes (1.75 lakh), cancer (5 lakh) and respiratory diseases (6.74 lakh).

According to WHO, cardiovascular diseases will be the largest cause of death and disability in India by 2020. It is estimated that the overall prevalence of diabetes, hypertension, Ischemic

Heart Diseases (IHD) and stroke is 62.47, 159.46, 37.00 and 1.54 respectively per 1000 population of India. Additionally, there are around 25 lakh cancer cases in India.

Fatal Burden

NCDs like cardiovascular diseases, cancers, chronic respiratory diseases and diabetes together cause 35 million deaths every year — 60% of all deaths globally

In South East Asia region, NCDs account for an estimated 8 million deaths annually or 22% of global deaths

Cancer deaths are projected to increase from 7.3 lakhs in 2004 to 15 lakhs in 2030

Cardiovascular deaths are expected to increase from 27 lakh in 2004 to 40 lakh in 2030.

Non Communicable Diseases

India to accord high priority to prevention of non communicable diseases (New Kerala: 17.3.2011)

Union Health Minister Ghulam Nabi Azad today said that India has decided to accord high priority to the prevention and control of Non Communicable Diseases (NCDs).

Inaugurating the World Health Organization's Delhi based meeting - 'Partners for Health in South - East Asia', Azad said: "There is now a growing realisation that the scourge of Non Communicable Diseases is on an ever increasing spiral."

He further informed that a three pronged strategy has been considered to create awareness about these diseases; rapidly upscale infrastructure and human resource and drive down costs to make the treatment more affordable.

"The sheer challenge of reducing mortality on account of Non Communicable Diseases and enhancing quality of life of our people makes this a risk worth taking'," he said.

He said that a revamped and synergised 'National Program for Prevention and Control of Cancer, Diabetes, CVD and Stroke' is being implemented in 100 Districts across 21 States during the 11th Plan period.

"Eventually it will be extended over all the 640 districts in the country," he added.

Azad also stated that India has made impressive gains vis-a vis the Millennium Development Goals (MDG) VI.

"We have also been able to avert more than two million deaths on account of TB with the scaling up of DOTS programme throughout the country," he said.

Against the MDG target of mortality reduction by 50 per cent by 2015, Azad said: "We have already achieved a 68 per cent reduction.

The Minister also informed that nearly Rs 10,000 crores will be spent in the next 2-3 years to establish six state-of- art tertiary care institutions modelled on the lines of All India Institute of Medical Sciences in the under-developed and under-served regions of the country.

He also noted that we have to work in unison to aggressively produce good quality and low cost diagnostics, vaccines and drugs.

"Good quality low cost generic medicines hold the key to improved health care", he underscored

Parkinson's Disease

Parkinson's Disease

Natural Toxin Implicated as Triggering Parkinson's Disease (Science Daily: 11.2.2011)

new research from Saint Louis University, investigators have found evidence that a toxin produced by the brain is responsible for the series of cellular events that lead to Parkinson's disease. The study, published in PLoS One, found that the brain toxin DOPAL plays a key role in killing the dopamine neurons which trigger the illness.

In earlier research, Saint Louis University investigators found that DOPAL seemed to be responsible for killing healthy dopamine cells, which in turn causes Parkinson disease to develop. Now, research in an animal model gives them further reason to suspect the chemical as the culprit.

Parkinson's disease is a debilitating neurodegenerative movement disorder, affecting 2 percent of individuals older than age 65 and 4 to 5 percent older than 85 years. The disorder is due to a loss of dopamine neurons and is characterized by bradykinesia and tremors while at rest.

Dopamine, a vital chemical that allows for coordinated function of neurons controlling the body's muscles and movements, is produced by nerve cells in the substantia nigra. When 80 percent of these cells die or become damaged, symptoms of Parkinson's disease begin to appear, including tremors, slowness of movement, rigidity and stiffness, and difficulty with balance.

Lead researcher, W. Michael Panneton, Ph.D., professor of pharmacological and physiological science at Saint Louis University School of Medicine, says the research offers a big step forward in the understanding of Parkinson's disease.

"In Parkinson disease, we knew that the death of dopamine cells is responsible for patients' symptoms," said Panneton. "But no one knew why the cells are dying."

From a cellular perspective, doctors know some pieces of the puzzle. They know that Parkinson patients have a loss of dopamine neurons in a part of the brain called the substantia nigra, leading to severe dopamine loss in another part of the brain called the striatum, and the aggregation of a protein called alpha-synuclein.

Alpha-synuclein is found throughout the brain. In some people, the protein clumps together. We found that it is DOPAL that causes alpha-synuclein protein in the brain to aggregate. This

induces further increases of DOPAL leading to the death of the dopamine-producing cells, which in turn causes Parkinson's symptoms to develop.

Currently, the main approach to Parkinson's disease is to treat symptoms by replacing dopamine that's lost when the cells die. This approach however does not prevent the loss of dopamine neurons causing Parkinson's disease.

These findings open up promising new research avenues to prevent dopamine neuron loss and the progression of Parkinson's disease.

The research was funded by Saint Louis University School of Medicine.

Pesticide

Pesticide users more at risk of developing Parkinson's? (Times of India: 14.2.2011)

US researchers said on Friday they have found that people who used two specific varieties of pesticide were 2.5 times as likely to develop Parkinson's disease.

The pesticides, paraquat and rotenone, are not approved for house and garden use. Previous research on animals has linked paraquat to Parkinson's disease, so it is restricted to use by certified applicators.

Rotenone is approved only for use in killing invasive fish species.

"Rotenone directly inhibits the function of the mitochondria, the structure responsible for making energy in the cell," said study co-author Freya Kamel, a researcher at the National Institute of Environmental Health Sciences.

"Paraquat increases production of certain oxygen derivatives that may harm cellular structures.

"People who used these pesticides or others with a similar mechanism of action were more likely to develop Parkinson's disease."

The study examined 110 people with Parkinson's disease and 358 people who served as a control group from the Farming and Movement Evaluation (FAME) Study.

FAME is part of a larger Agricultural Health Study looking at the health of approximately 90,000 licensed pesticide applicators and their spouses. The study appears in the journal *Environmental Health Perspectives*.

Parkinson's Disease

An Early Step in Parkinson's Disease: Problems With Mitochondria (Science Daily: 15.2.2011)

For the last several years, neurologists have been probing a connection between Parkinson's disease and problems with mitochondria, the miniature power plants of the cell.

Toxins that mimic Parkinson's effects act specifically to poison mitochondria, and mitochondria appear to be damaged in the brain cells that are endangered in the disease. But one unresolved question has been: are mitochondria simply the vulnerable "canaries in the coal mine" or is their deterioration a key step on the way to neurodegeneration?

Now researchers at Emory University School of Medicine have found that a protein called MEF2D, which helps brain cells withstand stress and toxins, also plays an unexpected role inside mitochondria. MEF2D's ability to keep mitochondria well tuned appears to be especially sensitive to impairment in Parkinson's disease, the research team found.

The results will be published online in the Journal of Clinical Investigation.

"Our data suggest that problems with MEF2D in mitochondria could represent one of the earlier steps in the progress of the disease," says senior author Zixu Mao, PhD, associate professor of pharmacology and neurology at Emory University School of Medicine. Postdoctoral researcher Hua She, PhD, was the first author.

The Emory team showed that MEF2D binds one particular mitochondrial gene, ND6, which is necessary for assembly of complex I. Complex I begins the electron transport process that is necessary for mitochondria to function.

Mitochondria are thought to have evolved from bacteria that once lived independently, but were engulfed and harnessed by a primitive cell millions of years ago. Mao and his colleagues found an example of how this symbiosis has extended to having proteins like MEF2D turn on genes inside mitochondria.

"Our findings make a convincing and very intriguing case that dysregulation of mitochondrial DNA gene expression contributes to Parkinson's," Mao says.

Genes in the nucleus (that is, outside mitochondria) now encode most of the proteins that go into mitochondria. However, mitochondria still make a few of their own proteins, such as ND6.

In addition to showing how MEF2D functions in mitochondria, the team showed that toxins such as MPTP and the natural pesticide rotenone, which interfere with complex I and bring on Parkinson's in animals, also block MEF2D from working in mitochondria.

Mao's laboratory's previous research found that in Parkinson's, MEF2D levels are increased in the cell because of defects in a recycling process called autophagy. Now, they show that in the brains of Parkinson's patients, even when MEF2D levels are increased in the cell as a whole, they are reduced in mitochondria.

Because disruptions in mitochondria have been linked to other neurodegenerative diseases and heart disease as well, Mao says probing MEF2D's involvement in those disease processes may yield new insights.

The research was funded by the National Institutes of Health, the Woodruff Health Sciences Center Fund, and the Michael J. Fox Foundation.

Parkinson's disease'

Using amphetamines 'ups risk of Parkinson's disease' (New Kerala: 21.2.2011)

A new study has shown that use of amphetamines such as benzedrine and dexedrine may increase the risk of developing Parkinson's disease.

The two are often prescribed to increase wakefulness and focus for people with attention deficit hyperactivity disorder and narcolepsy as well as to treat traumatic brain injuries.

Scientists at the Division of Research at Kaiser Permanente Northern California in Oakland, California, studied 66,348 people in northern California. Of the participants, 1,154 people had been diagnosed with Parkinson's disease by the end of the study.

Results showed that people who reported using Benzedrine or Dexedrine were nearly 60 percent more likely to develop Parkinson's than those people who didn't take the drugs.

"If further studies confirm these findings, the potential risk of developing Parkinson's disease from these types of amphetamines would need to be considered by doctors before prescribing these drugs as well as be incorporated into amphetamine abuse programs, including illicit use," said study author Stephen K. Van Den Eeden.

Van Den Eeden explained that amphetamines affect the release and uptake of dopamine, the key neurotransmitter involved in Parkinson's disease.

He added that more research needs to be completed to confirm the association and learn more about possible mechanisms.

The study will be presented at the American Academy of Neurology's 63rd Annual Meeting in Honolulu April 9 to April 16, 2011.

Parkinson's disease

Ibuprofen may reduce risk of Parkinson's disease (New Kerala; 3.3.2011)

Adults who regularly take ibuprofen, a non-steroidal anti-inflammatory drug (NSAID), have about one-third less risk of developing Parkinson's disease than non-users, shows a new study by Harvard School of Public Health (HSPH) researchers.

"There is no cure for Parkinson's disease, so the possibility that ibuprofen, an existing and relatively non-toxic drug, could help protect against the disease is captivating," said senior author Alberto Ascherio, professor of epidemiology and nutrition at HSPH.

In the new study, Ascherio, lead author Xiang Gao, research scientist at HSPH and associate epidemiologist in the Channing Laboratory at Brigham and Women's Hospital, and colleagues analyzed data from nearly 99,000 women enrolled in the Brigham and Women's Hospital-based Nurses' Health Study and over 37,000 men in the Health Professionals Follow-Up Study.

The researchers identified 291 cases (156 men and 135 women) of Parkinson's disease during their six-year follow-up study (1998-2004 in women; 2000-2006 in men). Based on questionnaires, the researchers analyzed the patients' use of ibuprofen (e.g. Advil, Motrin, Nuprin), aspirin or aspirin-containing products, other anti-inflammatory pain relievers (e.g., Aleve, Naprosyn), and acetaminophen (e.g., Tylenol). (Although not an NSAID, acetaminophen was included because it's similarly used to treat pain.) Age, smoking, diet, caffeine, and other variables also were considered.

"We observed that men and women who used ibuprofen two or more times per week were about 38 pc less likely to develop Parkinson's disease than those who regularly used aspirin, acetaminophen, or other NSAIDs," Gao said.

"Our findings suggest that ibuprofen could be a potential neuroprotective agent against Parkinson's disease, however, the exact mechanism is unknown."

'Novel treatment for advanced Parkinson's disease'

'Novel treatment for advanced Parkinson's disease' found (Science Daily: 18.3.2011)

A new study has indicated that a multi-center gene therapy trial for patients with advanced Parkinson's disease demonstrated reduced symptoms of the progressive movement disorder.

The study was designed to deliver the gene for glutamic acid decarboxylase (GAD) packaged in inert viral vectors into an area of the brain called the subthalamic nucleus. GAD makes an important inhibitory chemical called GABA. The subthalamic nucleus is abnormally activated in Parkinson's disease and this activity leads to the debilitating movement problems. The idea of the gene therapy is that the billions of AAV-2 GAD viral vectors delivered into the subthalamic nucleus will increase GABA, thereby quieting this brain region.

A total of 45 patients were enrolled in the study. Roughly half of the patients (23) were randomized into the sham surgery arm of the study, which meant that they had a surgical procedure that did not penetrate the brain, and received infusions of saline under the skin rather than the active GAD-containing viral vectors.

Everyone was assessed at one month, three months and six months after the genes were infused. Each patient in the active treatment received about a billion viral vectors. It is not clear how long the genes will pump out GAD to make GABA.

The scientists only included patients who got bilateral infusions delivered to the correct area of the brain, the subthalamic nucleus. The final analysis included 16 patients who received active (AAV2-GAD) treatment and 21 who received the sham surgery.

"This is a completely novel treatment for advanced Parkinson's disease," said Andrew Feigin, lead investigator of the study, associate professor of neurology and molecular medicine at The Feinstein Institute for Medical Research in Manhasset, NY.

"The treatment was remarkably well tolerated, with mostly only mild adverse events in the AAV2-GAD treated group that were felt to be unrelated to the treatment, and completely resolved," said Feigin.

The study has been published in Lancet Neurology

Parkinson's disease

Early symptoms of Parkinson's disease revealed in dream sleep (New Kerala: 30.3.2011)

Danish researchers have discovered that very early symptoms of Parkinson's disease may be revealed in dream or REM sleep.

Parkinson's disease is a brain disease best known for the trembling it causes. It is an incurable, chronic disease and gradually affects the muscles and mental capacity, seriously afflicting the lives of the patient and his or her immediate relatives.

"In the study we saw that eight years before diagnosis, Parkinson's sufferers exhibited work and health indications that something was wrong," said Poul Jennum, professor of clinical neurophysiology at the Center for Healthy Ageing, University of Copenhagen, and the Sleep Centre at Glostrup Hospital.

Among the very early symptoms is the sleep disorder RBD, or REM sleep behaviour disorder. REM is a particular stage of sleep in which we dream, and our eyes flicker rapidly behind our eyelids, hence the term REM, or Rapid Eye Movement. To prevent us from actually acting out our dreams the body usually shuts down our muscle movement during REM sleep, but in RBD it is still active, and REM sleepers with RBD display a range of behaviours from simple arm and leg spasms to kicking, shouting, seizing or jumping out of bed.

"In some cases their behaviour may be violent and result in injuries to the patients or their partners," explained Jennum.

"Our hypothesis is that the very earliest stages of Parkinson's disease show up as various other diseases such as RBD," added Jennum.

Pneumonia

Pneumonia

Better Way to Diagnose Pneumonia (Science Daily: 21.2.2011)

Researchers from the Georgia Institute of Technology have created a new sampling device that could prevent thousands of people worldwide from dying of pneumonia each year.

Called PneumoniaCheck, the device created at Georgia Tech is a solution to the problem of diagnosing pneumonia, which is a major initiative of the U.S. Centers for Disease Control and Prevention (CDC).

Pneumonia, an inflammation of the lungs, kills about 2.4 million people each year. The problem is particularly devastating in Africa, Southeast Asia and the Eastern Mediterranean, where a child dies of pneumonia every 15 seconds.

Developed by mechanical engineering students, graduate business students and faculty at Georgia Tech, PneumoniaCheck will be commercially launched this month to healthcare professionals through the startup company, MD Innovate Inc.

"Georgia Tech created a simple and new device to detect the lung pathogens causing pneumonia," said David Ku, Georgia Tech Regents' Professor of Mechanical Engineering, Lawrence P. Huang Chair Professor for Engineering Entrepreneurship in the College of Management, and Professor of Surgery at Emory University. "It has the potential to save more lives than any other medical device."

Last year, Ku was asked by the head of virology at the CDC to develop a quick and economical way to diagnose pneumonia, particularly in developing nations where it is a leading cause of death among children.

Ku challenged a group of mechanical engineering and bioengineering graduate students to develop an accurate device for diagnosing pneumonia. Current sampling methods using the mouth and nose are only 40 percent effective. The samples are typically contaminated by bacteria in the mouth, which leads to misdiagnosis and an incorrect prescription of antibiotics.

In developing nations, many children with respiratory infections fail to receive adequate care, and the overuse of antibiotics has led to an increase in drug-resistant bacteria. An accurate, easy-to-use and widely available new diagnostic test could improve identification of bacterial respiratory infection in children, reducing the inappropriate use of antibiotics and the long-term

negative impacts of drug resistance, according to a recent article in Nature titled "Reducing the global burden of acute lower respiratory infections in children: The contributions of new diagnostics."

As a Tech graduate student, Tamera Scholz and her peers developed the solution -- PneumoniaCheck.

The device contains a plastic tube with a mouthpiece. A patient coughs into the device to fill up a balloon-like upper airway reservoir before the lung aerosols go into a filter. Using fluid mechanics, PneumoniaCheck separates the upper airway particles of the mouth from the lower airway particles coming from the lungs.

"It's interesting because it's so simple," said Scholz (M.S. '10 Mechanical Engineering), who is now an engineer for Newell Rubbermaid. "It's not a fancy contraption. It's a device that patients cough into and through fluid mechanics it separates upper and lower airway aerosols. Through each iteration, it got simpler. ... I like that I will be able to see it make a difference in my lifetime."

Once the device was developed, Taylor Bronikowski and a group of Georgia Tech M.B.A. students from the College of Management started developing a business plan for PneumoniaCheck that starts locally and grows globally. They used the device as a test case to develop a Triple Bottom Line company in India that could result in financial profits, environmental sustainability and social benefits, such as jobs and healthcare.

"Our goal is to provide better medicine at a cost savings to patients and hospitals," Bronikowski said. "We wanted a worldwide solution, so patients in developing nations can afford it."

Bronikowski, Ku and Sarah Ku formed the startup company, MD Innovate Inc., in 2010 to manufacture the device in large quantities and organize distribution and commercialization. The device is now being used in pneumonia studies at Grady Memorial Hospital in downtown Atlanta and the Atlanta Veterans Administration Medical Center, Ku said.

The FDA has cleared PneumoniaCheck for sale in the U.S. The device is licensed but its patent is pending. The company will start selling PneumoniaCheck in the U.S. in January and it could hit other countries in two years, Ku said.

"It's a great feeling, working on something that has the potential to save thousands of lives," Bronikowski said.

On the horizon, Ku and future Georgia Tech graduate students will be developing a simple and effective method for diagnosing pneumonia in regions without healthcare facilities or basic infrastructure.

Thyroid

Thyroid hormone

Thyroid hormone is crucial in controlling eye's visual pigments (New Kerala: 31.3.2011)

Thyroid hormone plays a very important role where the eyes are concerned, as it controls which visual pigment is produced in the cones.

Previously, it was assumed that the colour sensitivity of the cones is fixed in the adult retina.

But researchers at the Max Planck Institute for Brain Research in Frankfurt/M., together with colleagues at the University of Frankfurt and universities in Vienna, have now been able to show that in mature cones of mice and rats the production of visual pigment is regulated by thyroid hormone.

It is assumed that this mechanism exists in all mammals, including humans. If so, the adult-onset of thyroid hormone deficiency would affect colour vision.

Thyroid hormone plays a crucial role during development of the body and also of the nervous system.

Studies in mice have shown that thyroid hormone also plays an important role in the development of the eye and particularly the cone visual cells. In the retina of the eye, the cones are the visual cells responsible for colour vision.

Most mammals have two spectral cone types containing either of two visual pigments (opsins), one sensitive to shortwave light (UV/blue opsin), and the other to middle-to-longwave light (green opsin).

Cones express a thyroid hormone receptor. Its activation by the hormone suppresses the synthesis of UV/blue opsin and activates the production of green opsin.

Until now, the control of opsin production by thyroid hormone was considered a developmental phenomenon. Experts assumed that in mature cones the developmentally established "opsin program" is fixed and needs no further regulation.

This perception is now challenged by a study carried out by lead authors Martin Glosmann and Anika Glaschke in Leo Peichl's team at the Max Planck Institute for Brain Research, Frankfurt, and their colleagues at the universities of Frankfurt and Vienna.

The study shows that opsin production in mature cones continues to depend on the thyroid hormone level.

The researchers had started with an analysis of thyroid hormone involvement in the early postnatal development of mouse cones.

"Then we wanted to know how long the time window for the hormone effect was, at what point the hormone's influence on opsin production stopped," Glaschke said.

"To our surprise we did not find such an endpoint, even several weeks after birth there was a hormone effect," Glaschke reported.

So the team analysed the cones in adult mice and rats that had been rendered hypothyroid for several weeks. In these mice all cones switched to the production of UV/blue opsin and reduced green opsin production.

After termination of the treatment, hormone levels returned to normal and the cones reverted to the production of their "regular" opsin - one cone type to green opsin, the other to UV/blue opsin.

The researchers conclude that the spectral cone types, which are defined by the opsin they express, are dynamically and reversibly controlled by thyroid hormone throughout life.

"In addition to their importance for basic retinal research, our findings may also have clinical relevance," Glosmann, who currently examines the genetic foundations of the process at the University of Veterinary Medicine, Vienna, said.

"If this mechanism also acts in human cones, the adult-onset of thyroid hormone deficiency - e.g. as a consequence of dietary iodine deficiency or removal of the thyroid - would also affect the cone opsins and colour vision," he added.

Tuberculosis

Tuberculosis

Govt's TB shot maker to shut (Times of India: 08/02/2011)

New Delhi: BCG Vaccine Laboratory (Chennai) — one of India's oldest vaccine manufacturing units — could soon become just a central drug testing laboratory

The Union health ministry had cancelled the manufacturing license of BCG Lab, housed in more than a century-old heritage building, on January 15, 2008, on the ground that it did not conform to World Health Organization's good manufacturing protocol (GMP).

On February 22, 2010, the suspension of the laboratory's licence was revoked on the condition that it can resume manufacturing vaccines after WHO approved GMP is put in place.

But, a health ministry official told TOI "that to make it GMP compliant, the heritage building will need to be razed to the ground and constructed afresh. Instead, in a few recent meetings, we are looking to turn it into a central drug testing laboratory which will test BCG vaccines. At present, this is being done at CDL Kasauli."

A ministry official said, "We're close to taking a final call. If it becomes a CDL, it will have the capacity to test 400 batches of BCG vaccine a year — each batch containing approximately 30,000 vials."

BCG laboratory in Chennai is the sole manufacturer of BCG vaccine against tuberculosis in India's public sector. The ministry also claims that there isn't any shortage of vaccines. "Private firms like Serum Institute in Pune and Green Signal Bio Pharma Private Limited in Chennai manufacture BCG vaccines, which are exported," said another official.

"Instead of producing vaccines, the unit will now test the safety and efficacy of BCG vaccines produced and sold within the country or exported, besides detecting counterfeit and spurious batches of drugs," he added.

Sixty million children are administered BCG vaccine annually in India to prevent tuberculosis.

TB Infection – Falling the Developing World

Treatments for Recurring TB Infection Failing the Developing World, Study Finds(New Kerala: 16.3.2011)

The standard approach to re-treating tuberculosis (TB) in low and middle income settings is failing, according to research funded by the Wellcome Trust. In a study published March 15 in the open access journal PLoS Medicine, researchers call for improved access to rapid diagnostics for drug resistant TB, second-line TB treatment and antiretroviral HIV therapy.

Each year, between one in ten and one in five patients treated for TB see their disease return after failing, interrupting or relapsing from treatment. This results in an estimated one million people in ninety countries being treated with an eight month long regimen of five drugs. The therapy has been in use for over three decades and is recommended by the World Health Organisation.

A study in Kampala, Uganda, of 140 HIV-infected patients and 148 HIV-uninfected patients found that the re-treatment TB regimen failed to work effectively in a significant proportion of patients -- 26% of HIV-infected patients and 20% of HIV-uninfected patients. Nearly a quarter (23%) of patients died, whilst 6% saw their TB disease return. Fatalities were particularly high amongst HIV-infected patients.

"Our study suggests that the recommended therapy for re-treating TB is failing as many as one in four people with recurrent TB in the developing world," says Dr Edward Jones-López, first author of the study, Assistant Professor of Medicine at Boston University School of Medicine. "This rate is unacceptably high. It is essential that we understand why this is the case and how we might tackle this important health inequality."

The researchers believe that a number of reasons may be to blame. These include poor adherence to the drug regimen and the presence of drug-resistant forms of TB -- including multi-drug resistant TB -- some cases of which may have gone undiagnosed. In HIV-infected individuals, a low CD4 count (an indicator that the individual's immune system has been severely compromised) and poor access to antiretroviral therapy were significant risk factors.

The findings imply that the treatments may need to be tailored depending on whether an individual has HIV. For those that are infected, access to rapid diagnosis as well as improved second-line medication and antiretroviral therapies may provide the best outcome. The study also reinforces the need for Directly Observed Therapy (DOT) in patients with TB. DOT combines diagnosing TB and registering each patient detected, followed by standardised multi-drug treatment, individual patient outcome evaluation and cohort evaluation to monitor overall programme performance.

"It's time for us to improve our management of TB disease and in particular consider how co-infection with HIV should change the way in which we treat the disease," says Dr Alphonse Okwera from Makerere University, Kampala, Uganda, one of the study authors "The lives of hundreds of thousands of people in resource-poor settings are being put at risk, so this change is long overdue."

TB is one of the world's most deadly diseases. One-third of the world's population are believed to be infected with *Mycobacterium tuberculosis*, the agent which causes the disease. In many cases the disease remains latent, but each year, at least nine million people are in need of treatment for TB disease, and more than two million people die from the disease. There are an estimated 500,000 cases of multi-drug resistant TB, the vast majority of which are undiagnosed and have limited access to effective treatment.

Water-borne diseases

Water-borne diseases

Warming may lead to spurt in water-borne diseases (The Times of India: 21.2.2011)

Global warming could spur the growth of toxic algae and bacteria in the world's seas and lakes, with an impact that could be felt in 10 years, US scientists said on Saturday. Studies have shown that shifts brought about by climate change make ocean and freshwater environments more susceptible to toxic algae blooms and allow harmful microbes and bacteria to proliferate, according to researchers from the National Oceanic and Atmospheric Administration (NOAA).

In one study, NOAA scientists modeled future ocean and weather patterns to predict the effect on blooms of *Alexandrium catenella*, or the toxic "red tide," which can accumulate in shellfish and cause severe symptoms, including paralysis, in humans who eat the contaminated seafood.

"Our projections indicate that by the end of the 21st century, blooms may begin up to two months earlier in the year and persist for one month later compared to the present-day time period of July to October," said Stephanie Moore, one of the scientists who worked on the study. But the impact could be felt well before the end of this century — as early as 2040, she said at the annual meeting of the American Association for the Advancement of Science.

"Changes in the harmful algal bloom season appear to be imminent. We expect a significant increase in Puget Sound (off the coast of Washington state where the study was conducted) and similar at-risk environments within 30 years, possibly by the next decade," said Moore. In another study, NOAA scientists found that desert dust, which contains iron, deposited into the ocean from the atmosphere could lead to increases of harmful bacteria in the seawater.

Researchers from the University of Georgia found that adding desert dust to seawater significantly stimulated the growth of *Vibrios*, a group of ocean bacteria that can cause gastroenteritis and infectious diseases in humans.

Swimming - chlorinated water 'ups bladder cancer risk'

Swimming too often in chlorinated water 'ups bladder cancer risk' (New Kerala: 17.3.2011)

Spanish researchers have warned that people who regularly swim in chlorinated water or take lots of showers or baths could increase the risk of developing bladder cancer.

They said carcinogenic chemicals called trihalomethanes (THMs) are created as a by-product of chlorinating water and can be absorbed through the skin, reports the Daily Mail.

The researchers from the Centre for Research in Environmental Epidemiology in Castilla La Mancha, Spain, examined 1,270 people and found that wealthy individuals who drank more bottled water - to avoid the health risks posed by drinking tap water - cancelled out any beneficial effect by swimming more and taking more showers.

“People with more money and more education may think that they're reducing their risk of exposure to water contaminants by drinking bottled water,” said Gemma Castaño-Vinyals.

“However, despite being apparently cleaner and taking more exercise, a result of taking more frequent and longer baths, and using swimming pools more often - they are actually increasing their risk of THM exposure,” she added.

Moreover, Castaño-Vinyals said that the additional risk of developing bladder cancer through the water contaminants was ‘small’.

The findings were reported in the online journal BioMed Central.

Drugs and Medicine

Folic Acid

Why Folic Acid May Prevent a First Heart Attack, but Not a Second (Science Daily: 3.2.2011)

A perplexing medical paradox now has an explanation according to research undertaken at Barts and The London School of Medicine and Dentistry and published in the current issue of the Public Library of Science. The paradox is that taking folic acid, a B vitamin, lowers homocysteine in the blood which, epidemiological evidence indicates, should lower the risk of heart attack, but clinical trials of folic acid have not shown the expected benefit.

The explanation is surprisingly simple; lowering homocysteine prevents platelets sticking, which stops blood clots...something aspirin also does, so if people in the trials were already taking aspirin there would be no extra benefit in lowering homocysteine with folic acid. Aspirin was in fact widely used by participants in the trials because they were mainly conducted in patients who had already had a heart attack or other cardiovascular diseases.

Research led by Dr David Wald at the Wolfson Institute of Preventive Medicine at Barts and The London School of Medicine and Dentistry showed that there was a difference in the reduction in heart disease events between the five trials with the lowest aspirin use (60 per cent of the participants took aspirin) and the five trials with the highest use (91 per cent took aspirin). The observed risk reduction was six per cent but it would have been 15 per cent if no one had been taking aspirin. Research was based on 75 epidemiological studies involving about 50,000 participants and clinical trials involving about 40,000 participants.

"The explanation has important implications," said Dr David Wald, the lead author of the paper. "The negative clinical trial evidence should not close the door on folic acid -- folic acid may still be of benefit in people who have not had a heart attack because they will generally not be taking aspirin."

Cancer drug

Venus gets UK nod for cancer drug (The Economic Times : 3.2.2011)

DRUG maker Venus Remedies on Wednesday said it has received UK health regulator's approval to market 'Gemcitabine', used in treating cancer, in the UK market.

The Chandigarh-based firm has got the approval from Medicine and Healthcare Regulatory Agency (MHRA), UK for Gemcitabine in two strengths of 200 mg and 1,000 mg, Venus Remedies said in a statement.

“Venus is all set to capture substantial market share by entering the highly lucrative market of Europe as it stands amongst the first few to receive the market authorisation for Gemcitabine,” Venus Remedies CMD Pawan Chaudhary said.

The company will produce Gemcitabine from its Baddi, facility in India and plans to launch the product in UK and Germany along with other EU countries by second quarter of 2011.

Gemcitabine, used in the treatment of diseases including the cancer of lungs, pancreas, bladder and breast is a \$1.5 billion drug world wide with more than 30 per cent market share from Europe, the company said.

Drugs

Govt Body Has Shortlisted 11 Chinese & 2 Italian Manufacturing Units For Inspection (Times of India: 07/02/2011)

Chinese and Italian drug manufacturing units, from where drugs are imported into India in bulk, are now under the scanner. After several import licences of local agents of such overseas units were cancelled due to poor drug quality, the health ministry has given the green signal to the drug controller general's (DCGI) office to send a team of drug inspectors to check foreign units for good manufacturing practices (GMP) compliance.

The DCGI's office has shortlisted 11 Chinese and two Italian drug manufacturing units, which will soon be inspected. A team from the Central Drugs Standard Control Organisation (CDSCO) will leave for China and Italy soon.

Confirming this to TOI, DCGI Dr Surinder Singh said, “The ministry has given us the go-ahead to inspect foreign manufacturing sites for the first time. A team will leave for China and Italy soon.”

A health ministry note, available with TOI, said, “On the basis of complaints and doubts on authenticity of GMP certificate, we cancelled 10 registration certificates and related import licences. All these certificates were from China — from Zhejinag, Jingsu, Henan province and Chongqing. Similarly, several cases of imported kits of HIV were declared to be not of standard quality by the government laboratory which are originating from Zhejiang and Fujian provinces. These issues further support this office which stands to carry out foreign site inspections in line with other regulatory agencies of the world.”

According to the rule, once the inspection visit is approved, as has been done in this case by the health ministry, the Indian agent of the shortlisted international company is asked to submit \$5,000 within 15 days as a fee. A ministry official said, “Once the fee is submitted, we will leave for inspection.”

So, how did the DCGI select these 13 sites? The DCGI proposes following criteria for inspection of foreign sites. “Drugs which are of critical nature like sterile products, blood products, vaccines and drugs which are consumed vastly like antibiotics, anti-diabetic, antihypertensive drugs, the sites where there is doubt in authenticity or quality of submission are taken as priority,” an official said.

The team will be led by an official from the DCGI’s office not below the rank of assistant drug controller in position for more than two years and who has more than five years of experience.

Drugs

How safe is an aspirin? Trial to tell (Times of India: 08/02/2011)

New Delhi: Aspirin, the painkiller-turned-heart protector being used by millions of people, is now under scrutiny. Even after 100 years of use, doctors across the world have no clue how it exactly works in protecting against heart attack and stroke and what would be its right dosage.

India, therefore, will soon be part of a trial that is looking to better understand aspirin’s effect on the body and optimal dosing. Medanta Medicity, which joined hands with Duke Medicine, North Carolina, to create the Medanta Duke Research Institute, will be the trial site to unravel the mystery behind aspirin.

Robert Califf, vice-chancellor of clinical research at Duke Clinical Research Unit (DCRU), said, “Aspirin has been available for over 100 years now. But we still don’t know how it works. In different patients, aspirin therapy has different effects. The study will look at how to best use aspirin and in what dosage to prevent heart attack and stroke.”

Across the world, cardiologists prescribe aspirin from 81 milligrams to 325 milligrams a day hoping it will provide the best benefit-to-risk profile. Cardiac surgeon and chairman of Medanta, Dr Naresh Trehan, said aspirin is known to cause internal bleeding in some patients. “We, however, don’t know why that happens and what would be the right dosage for Indians. If you

give a smaller dose, it might not prove beneficial against preventing a heart attack or stroke and if there is an overdose, it could cause bleeding. We are at present groping in the dark.”

“A few hundred people are already being studied in the US by Duke. An equal number of patients with diabetes and cardiovascular diseases will be needed for the study in India which could kick off sometime around May. We will study aspirin’s effect on human platelets which cause clotting of blood,” said John Sundry, director of DCRU.

According to Dr Califf, there is some evidence now that diabetics might need a higher dose of aspirin as high sugar levels could be making platelets resistant. “It’s a very inexpensive and effective drug. Knowing the right dosage for various populations could really benefit. Now even when two patients are given the same dose, they sometime respond differently,” Dr Califf added. Aspirin relieves pain and lowers the risk of heart attacks and strokes because it makes the blood clot less efficient. But aspirin is known to sometimes cause deadly stomach and intestinal bleeding. Today, aspirin is one of the most widely used medications in the world, with an estimated 40,000 tonnes of it being consumed each year.

Recommendations from the US Preventive Services Task Force in 2009 on the use of aspirin for the primary prevention of coronary heart disease encourage men aged 45-79 and women aged 55-79 to use aspirin when the potential benefit of a reduction in myocardial infarction (MI) for men or stroke for women outweighs the potential harm of an increase in gastrointestinal hemorrhage. They said regular low dose (75 or 81 mg) aspirin users had a 25% lower risk of death from cardiovascular disease and a 14% lower risk of death from any cause.

The British Heart Foundation, however, said taking a daily dose of aspirin in the hope that it will prevent heart attacks may do more harm than good among healthy people as it could cause internal bleeding.

POPPING THE QUESTION

Even after 100 years of use, doctors across the world have no clue how aspirin exactly works. Medanta Medicity will join hands with Duke Medicine, North Carolina, for trials to unravel how the pill works. The study will look at how to best use aspirin and in what dosage to prevent heart attack and stroke. Study will also look at aspirin’s effect on platelets which cause clotting.

3 popular drugs face ban for serious side-effects (Times of India: 08/02/2011)

New Delhi: After the recent ban on nimesulide, India is looking to clamp down on three other controversial drugs — Gatifloxacin, Tegaserod and Deanxit. All these drugs are used extensively in the country, under different brand names, and they cumulatively do a business of around Rs 70 crore annually.

A meeting of Drug Technical Advisory Board's (DTAB) sub-committee, headed by Dr Y K Gupta from AIIMS, could take place next week to decide on the fate of these three drugs.

Speaking exclusively to TOI, Drug Controller General of India, Dr Surinder Singh, said, "these drugs are under the scanner. We are finalizing a date with the DTAB sub-committee to meet and take a final call. It will happen soon."

Though a meeting was slated to be held on January 27, it got postponed. Gatifloxacin is used as an antibiotic. But according to Dr Singh, "this drug is known to shoot up and also dip blood sugar levels".

Dr Anoop Misra, former head of department of medicine at AIIMS, told TOI, "In the past one year, I have seen six cases of blood sugar shooting up to abnormal levels — almost 500% among patients after taking Gatifloxacin. Gatifloxacin induced diabetes or worsening of blood sugar has been well documented." Drug expert Dr C M Gulati told TOI, "it is known to cause heart movement abnormality."

Deanxit, which alone does Rs 35 crore of business in India, is used for depression. "It's a fixed dose combination drug, having flupenthixol and mirtazapine. Interestingly, mirtazapine is not approved in India. So how can you approve a combination of which one of the ingredients is not approved?" Dr Gulati asked. "Also, this drug is made in Denmark. However, it is not approved for use in Denmark itself. According to rule 30 B in the drugs act. Any drug not approved in the country of origin cannot be used in India. It's sale is prohibited in the UK, US, Canada, Australia and Japan," he added.

Tegaserod is used in India for irritable bowel syndrome and chronic constipation. According to Dr Gulati, "this drug is banned all over the world after it showed a 10-fold increased risk of heart attacks and stroke."

STRONG MEDICINE

Gatifloxacin, used as an antibiotic is known to shoot up and dip blood sugar levels

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New Drug Discoveries

Public Sector Research Responsible for Many New Drug Discoveries, Researchers Find(Science Daily: 10.2.11)

Researchers from Boston University School's of Medicine (BUSM), Management (SMG) and Law (LAW), along with collaborators from the National Institutes of Health, believe that public-sector research has had a more immediate effect on improving public health than was previously realized. The findings, which appear as a Special Article in the February 10th issue of The New England Journal of Medicine, have economic and policy implications.

Historically, public sector research institutions (PSRI) have not participated in any major way in the downstream, applied phase of drug discovery, in which the actual products are discovered and patented. However, in the mid-1970s, the newly emerging tools of biotechnology allowed PSRIs to create and patent biologic drug candidates and discover and patent small molecule drugs. At that time, all products created in academic institutions were owned by the government, which granted only nonexclusive licenses.

In 1980, Congress passed two pieces of legislation that transformed the ownership, management and transfer of intellectual property that is created by PSRIs. First, the Bayh-Dole Act allowed universities, nonprofit research institutes and teaching hospitals to own the intellectual property resulting from federally funded research and to license it according to terms of their choosing. Second, the Stevenson-Wydler Technology Innovation Act as amended by the Federal Technology Transfer Act of 1986, provided a corresponding authority to federal laboratories. Under this new approach, inventions that arose from PSRIs, in addition to being freely published in the scientific literature, could also be converted into intellectual property and transferred through license agreements to the private sector for commercialization and public use.

In order to quantitate the contribution of public-sector research to the applied-research phase of drug discovery, the researchers identified new drugs and vaccines approved by the Food and Drug Administration (FDA) and classified them according to their therapeutic category and potential therapeutic effect. The researchers found that during the past 30 years, 153 new FDA-approved drugs, vaccines, or new indications for existing drugs were discovered through research carried out in PSRIs. These drugs included 93 small-molecule drugs, 36 biologic agents, 15 vaccines, eight in-vivo diagnostic materials, and one over-the-counter drug. Current and former Boston University researchers were responsible for four of those 153 new drugs, one of which was developed based on research conducted at the University and Boston Medical Center.

"We believe that our study supports the concept that the emergence of biotechnology in the mid-1970s, combined with policy changes implemented in the early 1980s regarding the ownership and management of the intellectual property of PSRIs, allowed these institutions to play an important role in the downstream, applied phase of drug discovery," said lead author Ashley J. Stevens, D.Phil (Oxon), CLP, a lecturer at BUSM as well as Special Assistant to the Vice President for Research, Technology Development and a Senior Research Associate, ITEC, SMG. He is also currently the President of the Association of University Technology Managers.

According to the researchers, the data also suggest that PSRIs tend to discover drugs that have a disproportionately important clinical effect. "Slightly over half of these drugs were for the treatment or prevention of cancer or infectious diseases. Furthermore, drugs discovered by PSRIs received Priority Review by the FDA at twice the rate as for all FDA drug approvals, indicating

that PSRI discovered drugs were expected to have a disproportionately high therapeutic impact," added Stevens.

"We hope our research will help inform the amplified conversation taking place around innovation policy in the US and abroad," said co-author Jonathan Jensen, MBA, Director, Business Development, Technology Development at Boston University. "The factors involved in bringing a single one of these drugs to market are complex. With a more comprehensive understanding of the contribution of the public sector to the development of FDA approved drugs, as our work attempts to establish, one can better appreciate and further study the factors involved in the transfer of knowledge from the public to the private sector," he added.

Patrick Kilgore, a second-year law school student at BU, Mark L. Rohrbaugh, PhD, JD, and Sabarni Chatterjee, PhD, MBA, from the Office of Technology Transfer at the National Institutes of Health, and Katrine Wyller, MBE, from the Norwegian Radium Hospital Research Foundation, Oslo, were also authors on this study.

New Hybrid Drug

New Hybrid Drug, Derived from Common Spice, May Protect, Rebuild Brain Cells after Stroke (Science Daily: 11.2.2011)

Whether or not you're fond of Indian, Southeast Asian and Middle Eastern food, stroke researchers at Cedars-Sinai Medical Center think you may become a fan of one of their key spices.

The scientists created a new molecule from curcumin, a chemical component of the golden-colored spice turmeric, and found in laboratory experiments that it affects mechanisms that protect and help regenerate brain cells after stroke. Research scientist Paul A. Lapchak, Ph.D., director of Translational Research in the Department of Neurology at Cedars-Sinai Medical Center, is presenting these findings at the American Heart Association International Stroke Conference in Los Angeles.

Only one drug is now approved for ischemic stroke, which occurs when a clot blocks blood flow to the brain. Commonly called a "clot-busting drug," tissue plasminogen activator (tPA) is injected intravenously to dissolve clots and reinstate blood flow. If blood and oxygen are restored in time, consequences of the stroke, such as speech, memory, movement and other impairments, may be reduced.

The new curcumin-hybrid compound -- CNB-001 -- does not attack clots but instead repairs stroke damage at the molecular level that feed and support the all-important brain cells, neurons.

Curcumin has been studied for its potential to treat brain injury and disease, and while the substance itself looks promising, it has several drawbacks, especially as an emergency stroke treatment, which must be quick to be effective: It is not well absorbed in the body, fails to reach its target in high concentrations, becomes depleted quickly, and is blocked from entering the brain by a natural protective mechanism called the blood-brain barrier.

"CNB-001 has many of the same benefits of curcumin but appears to be a better choice of compound for acute stroke because it crosses the blood-brain barrier, is quickly distributed in the brain, and moderates several critical mechanisms involved in neuronal survival," Lapchak says, adding that he and his colleagues expect the new drug to move to human clinical trials soon.

When brain tissue is deprived of blood and oxygen, a cascading series of interrelated events triggers at the molecular level, breaking down the normal electrical and chemical "signaling pathways" responsible for nourishing and supporting neurons. The environment quickly becomes toxic, killing brain cells and destroying their support structures.

Theoretically, interrupting these harmful events and restoring normal pathway function could prevent cell death and the memory and behavioral deficits that result, but it will take a cocktail of drugs or a drug capable of targeting many mechanisms to correct the many pathways damaged by stroke, Lapchak says. CNB-001 protects brain cells from damage by repairing four major pathways. One mechanism also plays a major role in the growth and survival of neurons.

The drug reduced stroke-caused "motor deficits" -- problems of muscle and movement control -- in this laboratory study. It was effective when administered up to an hour after stroke, which correlates with about three hours in humans, the same time frame for which tPA is currently approved.

Lapchak and colleagues at the Salk Institute for Biological Studies used the same laboratory rabbit model to mimic human stroke that earlier researchers had employed before the clot-busting drug tPA entered clinical trials. Patrick D. Lyden, M.D., chairman of Cedars-Sinai's Department of Neurology, helped lead a major trial that resulted in the Food and Drug Administration's 1996 approval of tPA, still considered the stroke treatment gold standard.

Those who cook Indian, Thai, Malay and Persian dishes know turmeric well for its zesty flavor, use in curries and for the rich color it imparts to food. Turmeric also has a long history of use in Ayurvedic and Chinese traditional medicine.

Blood Pressure drug

Blood Pressure drug could harm stroke patients(New Kerala; 14.2.2011)

A drug that lowers blood pressure could harm patients if given after a stroke, says a new study.

A Norwegian study of 2,000 stroke patients, who had high blood pressure, found that more of those treated with the drug candesartan suffered from kidney failure than those who were not given it. More also suffered symptoms due to low blood pressure, such as dizziness.

The academics from Oslo University concluded that administering candesartan, which belongs to the family of drugs called angiotensin-receptor blockers, did not give any benefit to the patients "and may actually be harmful", the Lancet reports.

Candesartan is sometimes given to stroke patients to lower blood pressure, which reduces the chances of another event, according to the Telegraph.

However, they said the differences in harmful outcomes between those given the drug and those not was not statistically significant.

Besides, the actual numbers who suffered these side effects was small. Only 18 of the candesartan group suffered kidney failure, compared to 13 in the placebo group; while the figures for low blood pressure symptoms were nine and five respectively.

Elspeth McAusland, of The Stroke Association, UK, said: "This research suggests that stroke physicians should avoid using blood pressure lowering medication at this stage, however more research needs to be done in this area."

Folic Acid

Study Says Folic Acid Supplements Contribute to Breast Cancer Risk(Med india: 14.2.2011)

The offspring of rats that took folic acid supplements before conception, during pregnancy and while breast-feeding have breast cancer rates twice as high as other rats, says a new study.

They also had more tumours and developed them at a faster rate, according to the study led by Dr. Young-in Kim, a gastroenterologist at St. Michael's Hospital in Toronto.

Kim stressed more research needs to be done to determine whether the findings also apply to humans. While there are similarities in breast cancer in rats and humans, there are differences in how rats and human metabolize folic acid.

A diet rich in natural folate, found in grains and dark, leafy vegetables, may help prevent cancer. But Kim's study adds to a growing body of evidence that high folate intake through supplements may promote some cancers-and prevent others.

In Kim's animal study, half the rats were given folic acid supplements-equivalent to what pregnant women in North America take in addition to the mandatory fortification in some foods - three weeks before mating and throughout the pregnancy and lactation. After weaning, half the female pups received the same amount of folic acid supplement as the pregnant rats.

New Anti-Clotting Drug

New Anti-Clotting Drug Added to Recommendations for Treating Irregular Heartbeat (Science Daily: 15.2.2011)

The newly approved drug dabigatran is an alternative to warfarin to help prevent dangerous blood clots in patients with atrial fibrillation, according to updated guidelines from the American College of Cardiology, American Heart Association and the Heart Rhythm Society.

The "Focused Update" -- published in *Circulation: Journal of the American Heart Association*, *Journal of the American College of Cardiology* and *HeartRhythm Journal* -- specifically updates the section on emerging antithrombotic agents in atrial fibrillation treatment guidelines released by the three organizations on Dec. 20, 2010.

Atrial fibrillation is an irregular heart rhythm that occurs when the heart's two upper chambers beat erratically, causing the chambers to pump blood rapidly, unevenly and inefficiently. Blood can pool and clot in the chambers, increasing the risk of stroke or heart attack. More than two million Americans live with the condition.

According to this most recent update, dabigatran is useful as an alternative to warfarin to prevent stroke and blood clots in patients with either paroxysmal (recurrent episodes that stop after seven days) or permanent (an on-going episode) atrial fibrillation, and with risk factors for stroke or blood clotting who do not have a prosthetic heart valve, significant heart valve disease, severe renal failure or advanced liver disease.

Warfarin, an anti-clotting drug used since the 1950s, requires patients to have regular testing to monitor its effectiveness and dosage adjustment.

In December 2010 the atrial fibrillation guidelines were updated and recommended that a combination of aspirin and the oral antiplatelet drug clopidogrel might be considered to prevent stroke or other types of blood clots in patients with atrial fibrillation who are poor candidates for the clot-preventing drug warfarin.

Osteoporosis Drug

Osteoporosis Drug Associated With Jaw Disease (Med India: 15.2.2011)

Oral bisphosphonates, commonly used osteoporosis drug is linked with a slightly elevated risk of developing a rare but serious condition of the jaw known as osteonecrosis. Even though the findings are bit annoying, the benefits of the drug to treat and prevent osteoporosis should be considered.

The study was funded by the National Institutes of Health and conducted by researchers from the Kaiser Permanente Center for Health Research and HealthPartners Research Foundation. The study examined medical records from nearly 600,000 patients and is part of the Dental Practice-Based Research Network a consortium of participating practices and dental organizations committed to advancing knowledge of dental practice and ways to improve it.

"Oral bisphosphonates, usually prescribed for osteoporosis patients, appear to increase the risk of osteonecrosis of the jaw, but the risk is still very low," said the paper's lead author, Jeffrey Fellows, PhD, an investigator with the Kaiser Permanente Center for Health Research. "Previous studies suggested that about one percent of oral bisphosphonate users may develop osteonecrosis of the jaw, but our study found a much lower rate, less than one-tenth of one percent. The risk is still real and patients should take necessary precautions, but they shouldn't be alarmed."

"These drugs are very helpful in treating osteoporosis and preventing fractures so for the large majority of patients the benefits of taking them far outweigh the small risk found in this study," says Michael Herson, MD, Chief of Endocrinology and Metabolism, Northwest Permanente Medical Group, which was not involved in the study. "If patients have questions about taking these drugs they should consult with their physicians

Drugs

Govt to ban two drugs The Indian Express: 17.2.2011)

Gatifloxacin increases risk of serious hyperglycemia among elderly while Tegaserod has been found to cause cardiac ailments

GATIFLOXACIN, an antibiotic widely prescribed for throat infection, and Tegaserod, a medicine for chronic constipation, are likely to be banned in India.

The sub-committee of the government's chief advisory body, the Drug Technical Advisory Board (DTAB), will meet on Thursday to recommend the ban. Both drugs have been withdrawn from the US market. Deanxit, which is used as an anti-depressant, is also under the scanner, but it may escape a ban.

The move to ban Gatifloxacin is significant as the drug has been found to lead to serious side effects. In a study published in the New England Journal of Medicine it was revealed that the risk of developing serious hyperglycemia was almost 17 times higher among elderly patients who took Gatifloxacin (Tequin, Bristol-Myers Squibb) than for those who took another antibiotic. In 2008, the Food and Drugs Administration of the US removed it from the list of approved drugs. In India, Gatifloxacin, belonging to a class of antibiotics called Fluoroquinolones, is prescribed by doctors for respiratory and throat infections as well as typhoid. More than a year after the Drug Controller General of India (DCGI) Dr Surinder Singh decided to review the drug, the DTAB now seems all set to recommend the Health Ministry to ban it.

According to Dr Anoop Misra, Head of Department of Diabetes and Metabolic Diseases, Fortis Group of Hospitals, "This drug can produce abnormally high blood sugar which could be dangerous for a patient of diabetes."

Tegaserod has been found to cause cardiac ailments in people using it. The drug has been banned in Europe.

The decision to ban the drugs, according to DCGI Dr Surinder Singh, is based on data available outside India.

"We have to bank on outside data to decide on the fate of the drugs. But it is necessary to take these steps. I am hopeful that things will improve in the next two years when we develop our own pharmacovigilance programme," he said..

Transmission-blocking vaccines are an important intervention to support malaria eradication efforts. However, a major barrier to evaluating vaccine potential of Pf48/45 has been the inability to effectively manufacture the antigen - substances that trigger immune responses - in the necessary quantity and form.

Common Bone Drugs

Common Bone Drugs May Reduce Colon Cancer Risk (Medical News Today: 17.2.2011)

An international team of researchers has found that the use of bisphosphonates - drugs already taken by millions of healthy women to prevent bone-loss - for more than one year was associated with a 50 percent reduction in the risk of postmenopausal colorectal cancer. The results were published this week in the Journal of Clinical Oncology.

According to lead researcher Prof. Gad Rennert, M.D., Ph.D., of the Technion-Israel Institute of Technology Faculty of Medicine and chairman of the Department of Community Medicine and

Epidemiology at the Carmel Medical Center of Clalit Health Services, these findings further support the role of bisphosphonates as a possible new drug class for cancer prevention.

"We formerly identified a new class of drugs associated with a reduced risk of breast cancer," said Rennert. "And, now, by showing a similar effect on colorectal cancer risk reduction, we can assume that this class of medications has a broad effect - not necessarily limited to a specific cancer site." Such an effect, if proven in randomized trials, could lead to the recommendation for the use of these medications by the general population for cancer prevention, he added.

Rennert and colleagues extracted data from the Molecular Epidemiology of Colorectal Cancer (MECC) study, a population-based case-control study in northern Israel, conducted together with senior author Stephen Gruber, M.D., MPH, Ph.D. of the University of Michigan, Ann Arbor. Using pharmacy records, the team evaluated the use of bisphosphonates in 1,866 postmenopausal female participants.

The researchers found that the use of bisphosphonates prior to diagnosis was strongly associated with a significant reduced relative risk for colorectal cancer - even after making adjustments for a large variety of known risk or protective factors for colorectal cancer such as family history, dietary components, physical activity, body mass index, and the use of other medications such as aspirin, statins and hormone replacement therapy.

"Bisphosphonates share the same mevalonate metabolic pathway as do statins, which we have previously shown to be associated with risk reduction of colorectal cancer," said Dr. Gruber. "This fact adds to the credibility of the current finding by adding biological plausibility."

Colorectal cancer is among the leading cancers in western countries, with more than 150,000 new cases diagnosed every year. In the U.S. alone, colorectal cancer kills some 50,000 deaths per year, making it one of the country's leading causes of cancer death.

"While the disease is generally caused by bad dietary habits and lack of physical activity, it can possibly be prevented by several medications, such as aspirin and cholesterol-lowering medication of the statins group," said Prof. Rennert. "And now, we can add bisphosphonates to the list of tools for potential prevention of colorectal cancer."

Zinc Supplements

Zinc Supplements Lessen Severity, Duration Of Common Cold(Medical News Today: 17.2.2011)

A new systematic review that pooled data from 15 trials concluded that taking zinc supplements in syrup, lozenge or tablet form within a day of symptoms starting can reduce their severity and shorten the length of illness.

To be published on Wednesday in The Cochrane Library, the review updates an earlier Cochrane Systematic Review from 1999 that found there was no strong evidence that zinc lozenges reduced the duration of the common cold and highlighted numerous side effects, including mouth irritation, unpleasant taste, nausea and diarrhoea.

In this latest review, lead researcher Meenu Singh and colleague Rashmi R. Das of the Postgraduate Institute of Medical Education and Research in Chandigarh, India, pooled and re-analyzed data from 15 trials covering a total of 1,360 participants as if they had taken part in one large trial.

They found that:

Taking zinc in syrup, lozenge or tablet form within a day of onset of cold symptoms reduced the severity and duration of illness.

At seven days after onset, a higher proportion of participants who took zinc had cleared their symptoms compared to those who took placebo.

Children who took zinc in syrup or lozenge form for five months or more contracted fewer colds and had less time off school.

The authors also noted that zinc appeared to lessen the need for antibiotics in children which is important in that overuse of antibiotics leads to resistance.

The suggestion that zinc might be effective for the common cold came from a 1984 study that indicated zinc lozenges could shorten the duration of illness.

Since then, trials to test the effect of zinc on the common cold have shown conflicting results and while various plausible explanations for how it might work have been put forward, for instance that it suppresses inflammation and directly stops the virus binding and reproducing in the tissues lining the airways, none has been confirmed.

Singh told the press that this latest review strengthens the evidence for zinc as an effective treatment for the common cold, but cautioned that it was too early to make any recommendations because we don't know enough to say what the optimum dose, formulation or length of treatment should be.

Singh also said more research was now needed to look at the benefits of zinc on treating the common cold in particular groups.

"Our review only looked at zinc supplementation in healthy people," she said.

"But it would be interesting to find out whether zinc supplementation could help asthmatics, whose asthma symptoms tend to get worse when they catch a cold," she suggested.

The authors also called for further studies based in low-income countries where zinc deficiency is common.

Zinc is an essential mineral that is present in some foods, including oysters, which contain more zinc per serving than any other food.

Most Americans get their zinc from red meat and poultry. Other good sources include beans, certain seafoods like lobster and crab, fortified cereals, dairy food, whole grains and nuts.

Plant-based zinc, such as from legumes and grains, is more difficult for the body to absorb because these foods also contain phytates that bind to the mineral and reduce its bioavailability compared to animal-based foods.

Zinc is essential for normal growth and development during pre-birth, childhood and adolescence, and for our sense of smell and taste.

It plays a key role in cell metabolism. For instance it helps synthesize DNA, proteins and enzymes, and it is also important for the immune system, wound healing, and cell division.

We need to consume zinc every day because the body has no specialized storage mechanism for zinc.

The common cold accounts for about 40% of sickness absence from work and millions of school days missed every year.

Nimesulide

Nimesulide banned for kids five other drugs also on the list(The Tribune: 18.2.2011)

With the drug controller notifying a ban on the paediatric use of the analgesic, nimesulide suspension, following imposition of a ban by the Ministry of Health and Family Welfare, its manufacturing, sale and distribution has been put on hold in the state since last evening.

Drug controller Navneet Marwaha said an intimation had been sent to the director, health services, all drug inspectors, and presidents of Chemist and Druggist Associations and the Himachal Drug Manufacturers Association to ensure its compliance at their end as licence to manufacture the product had been withdrawn.

He added that the doses of 100 mg and above would be required to bear a warning, “not for children below 12 years of age” on their label.

Interestingly, the drug is banned in most of the countries but MNCs like Panacea Biotech and Dr Reddy's Lab were among its key manufacturers in the state. The directions followed the

recommendations of a sub-committee of the government's chief advisory body, the Drug Technical Advisory Board.

The Central Drugs Standard Control Organisations of India have also banned its use. A ban on its production would severely impact these MNCs which manufactured these on a large scale in the Baddi-Barotiwala-Nalagarh industrial area.

The drug has been under the government scanner for long as several reports of adverse reactions, including liver toxicity, were coming forth. While the drug has only been banned for paediatric use, physicians recommend its ban even for adults. Barring a few nations, the drug is banned in most of the countries. Several European countries, the Irish Medicines Board and the Singapore Health Science Authority were among those who had banned its use. Interestingly, the drug was never used in Switzerland, where it was invented.

The drug controller has also notified a ban on other drugs, including the use of human placenta extract and its formulations, cisapride, a drug which increases motility in the upper gastrointestinal tract, phenylepropralamine which is used as a stimulant decongestant.

The use of sibutramine and R-sibutramine, which are used for losing weight, has also been banned as studies have confirmed that these drugs increase the risk of cardiovascular diseases like heart attack and stroke.

Marwaha added that the manufacturers had been directed to withdraw their stock from the market with immediate effect failing which an action under Section 18 of the Drug and Cosmetics Act, 1940, would be taken against them.

BANNED

Cisapride

Human placenta extract

Sibutramine

R-Sibutramine

Phenylepropralamine

Manufacturing, sale and distribution of nimesulide has been put on hold

Physicians propose its ban even for adults

New Drug Policy

New drug policy to curb misuse of antibiotics (The Times of India; 18.2.2011)

A formal proposal to create India's first ever antibiotic policy will be submitted to the Union health ministry soon.

A high-level panel of experts including the drug controller general of India, Dr Surinder Singh, additional director general of health services H Jani and health ministry joint secretary Arun Panda, for the first time on Monday made a formal presentation of the draft antibiotic policy to Union health minister Ghulam Nabi Azad.

Confirming this, Union health secretary K Chandramouli told TOI, "We are giving utmost importance to the antibiotic policy and how to stop third and fourth generation antibiotics from being misused or used in bulk. On Monday, the minister saw the expert committee's presentation of the draft policy. We will now have to formalize it. Before bringing in a regulatory mechanism, we will have to inform all hospitals. I will meet the experts once again and decide how to go about it."

Under the proposal, several drugs will now be sold only against prescription while several others would be available only for hospital use and not in pharmacies.

The policy calls for the creation of a new schedule under the Drugs and Cosmetics Act called Schedule HX which will be mentioned on the label of the drug itself as a direction to consumers and physicians. Schedule H will denote those drugs which would be given only on prescription while Schedule X denotes those drugs which will have to be kept under lock and key in hospitals. A Schedule HX drug would come with a label warning, "Dangerous to take this preparation except in accordance with medical advice and not to be sold on retail without prescription of a registered medical practitioner."

"Antibiotics are the most important drugs to fight infections. Therefore, it is of utmost importance that they are prescribed judiciously or else Indians would become resistant to them. The time has now come to curb irrational use of antibiotics. We will now ensure both rational and restricted use," Dr Singh told TOI.

He said, "There are certain third generation antibiotics which would be dispensed only from tertiary hospitals. So they would go from manufacturers directly to hospitals which in turn would need a licence to keep them. These are drugs meant for serious life threatening infections or the last line of treatment."

The policy would also entail a prescription audit. Doctors will have to give two copies of prescriptions to every patient. One copy will have to be kept for two years by the chemists while the other one will be audited by the DCGI.

Schedule HX would have two parts. Part A of Schedule HX (only to tertiary hospitals) would include 16 drugs like Moxifloxacin, Meropenem, Imipenem, Ertapenem, Doripenem, Colistin, Linezolid and Cefpirome. Part B of Schedule HX (against prescription only) would include 75 drugs like Gentamicin, Amikacin, Pencillin, Oxacilin, Zolpidem, Cefalexin, Norfloxacin, Cefaclor and Cefdinir.

PRESCRIPTION ONLY: The policy calls for creation of a new drug category, Schedule HX

Stress-busting drug

Stress-busting drug offers cure to baldness (The Times of India: 18.2.2011)

DESTRESS TRESS

US researchers studying the effects of stress on the gut may have stumbled on a chemical compound that stimulates hair growth.

By blocking a stress-related hormone linked with hair loss, mutant mice that made too much of the hormone were able to regrow hair they had lost, the team reported on Wednesday in the online journal PLO One. “Almost 100% of the mice responded. The hair grows back fully. It is a very dramatic effect,” Million Mulugeta of the University of California at Los Angeles, who worked on the study, said in a telephone interview.

Moulage said the findings could open new areas of research on hair loss in humans, especially in people whose hair loss is caused by stress and aging. The team, which included researchers from the Veterans Administration and the Salk Institute for Biological Studies in California, had been experimenting on mice that were genetically altered to overproduce a stress hormone called corticotrophinreleasing factor or CRF.

As these chronically stressed mice age, their hair turns gray and eventually falls off their backs. Mulugeta likens the effect to watching a US president age over the course of two four-year terms in the White House.

The team injected these mice with a stress-blocking chemical compound called astressin-B, which blocks the action of the stress hormone CRF. The mutant mice got a daily injection of the compound over five days, then the team measured the effects of this drug on their colons and put the mice back in their cages.

“When we came back three months later, their hair had all grown back. They were not distinguishable from their littermates who were not genetically altered,” Mulugeta said. “It was totally unexpected.”

The effect lasted up to four months, a relatively long time in the life span of a mouse, Mulugeta said.

Medicines Compendium

We are trying to create a medicines compendium for India' (Business Standard: 18.2.2011)

The United States Pharmacopeia (USP), an official public standards-setting authority for all prescription and over-the-counter medicines and other healthcare products, has been working in India for over 10 years, mostly supporting Indian pharmaceutical manufacturers who want to get into the US market. In an interview to K Rajani Kanth, USP Managing Director and Chief Executive Officer ROGER L WILLIAMS shares the organisation's plans, including creating a medicines compendium, which could facilitate Indian pharma manufacturers in entering newer export markets, and its proposed new standards for prescription container labels, which would help reduce medication misuse and promote patient understanding. Excerpts:

With India being a huge generic drug market, what are the new initiatives that you are lining up for this country?

Indian manufacturers are critically important for the US market. And, if you think about standards, there are a lot of standards that they have to meet both from USP and FDA. In the US, USP and the National Formulary are the two official compendia. But the real question is what about the Indian manufacturers who are shipping into all parts of the world? Sometimes, there are no standards that Indian manufacturers can use abroad. Hence, we are trying to create what we call a medicines compendium for them.

In what way will this medicines compendium help Indian pharmaceutical firms?

There are many pharma compendia out there. But at the end of the day, they have got a lot of gaps in public standards. If you look at the medicines that are available across the globe, there are thousands of ingredients and products. And, no pharma compendia can solely cover all these. What we are trying to do with this medicines compendium is to create a sort of focus on the best standards, monographs and reference material, which a manufacturer can use to convince his customers and make good products. This will set a good public standard for them that can be used to ship to countries like Ethiopia, South Africa and Australia ... if the regulators there recognise them (public standards). This will be made freely available and any Indian pharma company can adopt or adapt it ... if they wish.

What is the status of the proposed new standards for prescription-container labels?

USP is currently working to standardise the prescription container labels in the US. It is more a matter for the pharmacies. As more patients enter the healthcare system and the nation (US) becomes increasingly diverse, more patients will have difficulty in understanding and using

important healthcare information provided to them. The new standards propose that prescription container labels generated by pharmacies are organised in a patient-centric manner, give explicit instructions (like take 2 tablets in the morning and 2 tablets in the evening instead of take two tablets twice daily), improve readability (black print on white background, large font size and horizontal text only) and include purpose of use (example: for high blood pressure rather than for hypertension). Right now, this is in development in the US. If this can help India, it could be freely used here.

What is your take on the patent infringements or noncompliance issues?

Any company in the US market can get into trouble in terms of good manufacturing practices (GMPs) or affiliated standards. It just happens and people shouldn't think that as a terrible offence. They can always correct themselves in terms of standards, get their contracts and get back to the market.

ROGER L WILLIAMS

Managing Director and Chief Executive Officer, United States Pharmacopeia

Q&A

THE NEW STANDARDS PROPOSE THAT PRESCRIPTION CONTAINER

labels generated by pharmacies are organised in a patient-centric manner, give explicit instructions, improve readability and include purpose of use. Right now, this is in development in the US. If this can help India, it could be freely used here

Bans 4 Drugs

Govt Bans 4 Drugs, More to Follow (The Economic Times: 18.2.2011)

The government banned four drugs on Thursday, including popular anti-inflammatory drug nimesulide for children, and may also prohibit domestic sales of antibiotic gatifloxacin and tegaserod used to treat digestion disorders. The four drugs banned by the health ministry was under review by the government for over a year. The Drug Technical Advisory Board (DTAB), headed by the country's drug controller general of India (DCGI) Dr Surinder Singh, has examined three other drugs and may ban two of them, said a person familiar with the development on condition of anonymity.

The third medicine, anti-depressant deanxit may be put under review as to whether it should also be taken off the market, he said.

Although a DCGI official said nothing has been formally finalised, the person quoted above said the broad thinking among the members of DTAB who met on Thursday is to ban the two drugs and put deanxit under pharmacovigilance study. Despite repeated attempts, the DCGI could not be reached for comments. Tegaserod is banned in many countries after it was reported to increase cardiac ailments. Gatifloxacin is also reported to have serious side effects and has been pulled off markets in many countries.

In the case of deanxit, one of the two chemical ingredients melitracen has been under scrutiny due to the health hazards. In India, melitracen was never approved by DCGI but some companies use it to make deanxit in violation of laws. The market size of deanxit in the country is estimated at around . 100 crore.

The government banned sale of four drugs — pain and fever medicine nimesulide for use by children below 12 years, gastrointestinal drug cisapride, nasal congestion drug phenylpropanolamine (PPA) and drugs made using human placenta extract with immediate effect. These drugs were put under review last year due to concerns over their serious side effects.

“The following drugs are likely to have certain risks to human beings and safer alternatives of the drugs are available,” a government notification said on Thursday.

But industry and regulatory experts say the ban has come too late and in case of nimesulide, the prohibition will be ineffective. How will the government ensure nimesulide is not given to children when they are prescribed by doctors and freely available in market for adults, Manoj Tongra, drugs control officer in Rajasthan said.

Advertisement

Bone drugs

Elderly women on bone drugs may live longer (The Times of India: 21.2.2011)

While bone drugs have gotten a bad rap in the media recently, experts hope mounting evidence of benefits may convince patients not to shun the medicines.

This month, Australian researchers published the latest report to hint that elderly women who take bisphosphonates — as the bone drugs are known — live longer than those who don't get treatment.

Out of every hundred women in their study, three who were not taking bone drugs died every year, compared to less than one of those who were on the drugs.

Although the findings don't prove the bone drugs actually boost longevity — it's possible that women on treatment are generally healthier, for instance — they fit with earlier studies.

“To me, this was good news,” said Dr. Ethel S. Siris, who heads the Toni Stabile Osteoporosis Center at Columbia University in New York and was not involved in the study.

Examples of bone drugs are Merck's Fosamax, Roche's Boniva, Novartis's Reclast, and Warner Chilcott's Actonel. They are usually prescribed for the bonethinning disease osteoporosis, which affects about 10 million Americans, the majority of them postmenopausal women.

Cancer Drug

Cancer drug used in IVF sent for tests 9The Times of India: 23.2.2011)

The Indian Council of Medical Research has been asked to conduct a large-scale two-yearlong Phase IV clinical trial to generate “structured and complete data” on whether the drug Letrozole when given to infertile women actually leads to physical and genetic deformities in the child born through IVF.

A 16-member committee set up by the health ministry that met on Tuesday decided against banning the drug's sale. However, it also asked the country's 12 adverse drug monitoring centres to keep a check on the drug's effects when used on women for induction of ovulation.

Letrozole is actually a drug against breast cancer. However, in India, it is also used extensively to help young infertile women conceive.

Experts also decided to put Letrozole under Schedule HX — a new schedule being created in the Drugs and Cosmetics Act. A Schedule HX drug would come with a label warning “dangerous to take this preparation except in accordance with medical advice and not to be sold on retail without prescription of a registered medical practitioner.”

A committee member told TOI that clinicians using the drug to treat infertility were against its ban. “The clinicians felt only 2% of the children born to mothers who were given Letrozole had deformities, which could happen even in the general population. Hence, the Phase IV trial will be initiated by ICMR to look at how safe the drug is since its efficacy is already known,” he said. used in IVF sent for tests

Diabetic Drug

DRL diabetic Drug set for phase II trials (Financial express; 23.2.2011)

FOLLOWING the race with global pharma majors such as Merck and Roche, Dr Reddy's Laboratories is set to commence its phase II trials of DRL 17822, a class of CETP inhibitors, in May. Cholesteryl ester transfer proteins (CETPs) are useful for controlling both diabetes and also lowers blood cholesterol. CETP are a class of compounds which have a similar market potential like that of statins. The company has completed the phase-I trials which are essentially the drug safety studies and is gearing up for phase-II trials.

Speaking during the inaugural session at the BioAsia 2011 conference in Hyderabad, K Anji Reddy, chairman, Dr Reddy's Laboratories, said, "In May this year, we are going to take one of our molecules DRL 17822 into phase-II stage where there are only two companies at present, Roche and Merck, which are developing a similar molecule and are in phase III trials."

"So, we are going to start as the third company in the world in this segment which is known as CETP inhibitor having a potential to increase HDL by handling 110% as opposed to the current 26%," Reddy said.

This should change the way cardiovascular diseases will be treated in future. With this, Dr Reddy's reiterated that the Indian pharma companies are not copy cats and can also discover drugs. "The generic version of copy cats was over in 2005 when the patent regime came in place and we have marched onto the journey of drug discovery," he said. Further, with over 150 USFDA-approved plants, Indian pharma companies are set for a new era in research, he added.

As on March 30, 2010, Dr Reddy's had six new chemical entities (NCEs) of which five are in clinical development and one in the preclinical stage. However, the company has found no progress for its Balaglitazone molecule, which is targeted for Type 2 diabetes. It is currently in the process of finding a partner for taking for further research of Balaglitazone.

Aspirin

Taking aspirin for heart disease prevention is less costly, more effective (New Kerala: 23.2.2011)

A new study has suggested that using aspirin for coronary heart prevention is less costly and more effective than doing nothing in men older than 45 with more than 10 percent 10-year-risk of the disease.

For the study, researchers at RTI International, University of Michigan, and University of North Carolina at Chapel Hill used a Markov model to compare the costs and outcomes of prescribing low-dose aspirin alone, aspirin plus a proton-pump inhibitor, or no treatment for coronary heart prevention.

The researchers specifically considered the effects of each treatment on cardiovascular events and risk of upper gastrointestinal bleeding.

"This analysis supports the role of aspirin for primary prevention of cardio heart disease events in middle-aged men across a range of cardio heart disease and gastrointestinal bleeding risk levels," said lead author Stephanie Earnshaw, of the RTI Health Solutions.

"Increased risk of gastrointestinal bleeding does not reduce aspirin's net benefit until gastrointestinal bleeding risk becomes quite high," she said.

The researchers also found that adding proton pump inhibitors was not cost-effective for men with average gastrointestinal tract bleeding, but may be cost-effective for selected men at increased risk for gastrointestinal bleeding.

The findings have been published in the Archives of Internal Medicine.

Healthcare programme

Healthcare programme for elderly approved (New Kerala: 22.2.2011)

The government has approved a special programme for providing proper healthcare facilities for the elderly, parliament was informed Tuesday.

Global Drug

Global drug makers making strong comeback in India (The Business Standard: 24.2.2011)

Armed with a product patent regime and a string of large acquisitions, multinational drug companies are making a strong comeback in India.

Ten multinational companies (MNCs) — Daiichi Sankyocontrolled Ranbaxy, GlaxoSmithKline (GSK), Abbott which owns Piramal's domestic formulation business, Pfizer, Abbott and Solvay combine, sanofi-aventis, Novartis, Merck & Co, MSD and AstraZeneca —accounted for 25.4 per

cent, or `11,840 crore, of the `47,690 crore domestic pharmaceutical market in 2010 calendar year, according to IMS India.

Five years back, their share was less than 15 per cent. Industry experts predict their share should exceed 35 per cent by 2015, like before 1971.

India's decision to adopt a process patent regime in 1971 catapulted the growth of domestic pharmaceutical companies. The regime legalised copying of original drugs invented by big pharma and this allowed domestic companies, like Ranbaxy and Dr Reddy's, to develop cheaper versions of patented drugs. To comply with World Trade Organisation norms, India decided to enforce a product patent regime in 2005, which banned copying and selling of patented drugs launched after 1995.

"Now, the MNCs are willing to pay attractive money for suitable targets and this will trigger more acquisitions in the domestic market. That will create a situation by which the multinational drug majors will dominate the Indian drug market within a few years from now," said Ranjit Kapadia, vice-president, equity research of HDFC Securities.

His prediction may soon become a reality, considering the growth of big pharma companies in India. Most are growing above the average industry growth rate of 16.5 per cent per annum. For example, Abbott grew 25.8 per cent in 2010, while sanofi-aventis grew 20.4 per cent. Pfizer, Merck & Co and Novartis grew 20.7 per cent, 20 per cent and 17.7 per cent, respectively.

"The growth of multinational drug companies in India is good for the country, since that will help Indian patients quickly access the latest effective quality medicines. Most large drug makers are concentrating on extending their marketing reach to even rural villages. The propaganda on dominance of multinational drug makers may cause drugs unaffordable to many is wrong, since prices of majority of essential drugs in India are regulated by the government and competition determines prices of unregulated drugs," said Mehernosh Kapadia, senior executive director at GSK.

A McKinsey report predicts the Indian pharmaceutical market to grow to \$55 billion by 2020 from \$12.6 billion in 2009.

Last year, not a single brand of home-grown companies could make to the list of topselling drug brands in the domestic market. With sales of

`205 crore and growth of 11.7 per cent, Pfizer's cough and cold drug Corex was the largest-selling drug brand in 2010. It was followed by Abbott's insulin brand Huminsulin. It reported sales of `184 crore and growth of 37.8 per cent. Novartis' pain killer Voveran stood third, with sales of `182 crore and growth of 6.4 per cent. Abbott-owned cough and cold drug Phensedyl (formerly with Piramal Healthcare) was ranked fourth, with `173-crore sales (8.5 per cent growth), followed by GSK's bacterial infection drug Augmentin (sales of `171 crore and growth of 23.4 per cent).

“Abbott estimates the growth of its Indian pharmaceutical business will exceed the broader 12-16 per cent growth and expects its pharmaceutical sales in India to exceed \$2.5 billion by 2020,” Mike Warmuth, senior vice-president of established products at Abbott, had said in a recent interaction. Abbott had sales of less than \$250 million in India till the Piramal acquisition a year ago, but now, the US-based multinational is the largest player in India’s domestic market.

“We hope to maintain the same level of about 15 per cent growth organically during 2011,” said Kapadia of GSK.

The financial health of most multinational drug companies operating in India is robust and most are debt free. This will be handy for them to buy brands and companies in near future to boost business in India, without relying on the purse of their overseas parents, noted Ranjit Kapadia.

For example, GSK Pharmaceuticals is sitting on a cash pile of `1,900 crore and same is the case with the Indian arms of companies like Pfizer, Novartis and sanofi-aventis, according to him.

PHARMA MNCs IN INDIA

TOP-5 DRUG BRANDS IN DOMESTIC MARKET

Rank Company Brand Sales Growth (` cr) (%)

1 Pfizer Corex 205 11.7 2 Abbott Huminsulin 184 37.8 3 Novartis Voveran 182 6.4 4 Abbott Phensedyl 173 -8.5 5 GSK Pharma Augmentin 171 23.4

(Data IMS India (Jan-Dec 2010))

MAJOR ACQUISITIONS BY BIG PHARMA IN INDIA

Year Acquirer Target Price

2007 Mylan Matrix \$736 million 2008 Fresenius Kabi Dabur Pharma \$342.6 billion 2008 Daiichi-Sankyo Ranbaxy \$4.6 billion 2009 Sanofi Aventis Shantha Biotech \$786 million 2009 Hospira Orchid’s injectable business \$400 million 2010 Abbott Piramal health \$3.7 billion

(formulation business)

2011 Reckitt Paras Pharma \$724 million Benckiser

80% CGHS drugs

80% CGHS drugs bought locally (The Times of India: 25.2.2011)

Centralized Procurement, Price Criteria Given The Go-By, Says PAC Report

New Delhi: Almost 80% of the drugs purchased for Central Government Health Scheme (CGHS) dispensaries in Delhi between 2002 and 2007 were bought from local chemists while only 20% were procured through the centralized route.

In absolute numbers, the value of medicines purchased through local chemists stood at Rs 366.33 crore of the total expenditure of Rs 459.21 crore.

Similar was the story with CGHS dispensaries (which provide health care facilities for central government employees and pensioners and their dependents residing in CGHS covered cities) in Hyderabad, Bangalore, Allahabad, Patna, Kolkata, Mumbai, Pune and Guwahati.

Almost 74%-91% of the drug purchases between 2002 and 2007 in these dispensaries were from local chemists, according to the Public Accounts Committee's latest report. Also, most of the medicines in the formulary (centralized drug list) did not have a rate contract.

The report said the committee was given to understand that the purchase system of approaching local chemists was introduced to enable the CGHS dispensaries to supply to the beneficiaries those medicines which were not in stock.

"Audit had pointed out that there was procurement of smaller number of medicines from the formulary list. According to the audit, CGHS dispensaries made extensive purchases of medicines from local chemists ignoring the quality and cost effectiveness of these purchases," the PAC report said.

The major suppliers of these drugs purchased in bulk were generally the well-established larger pharma companies who were providing discounts upto 40% on MRP, the report said.

But over the period of time the system degenerated. The committee's examination of the subject has revealed that such degeneration crept in as there was no database regarding procurement, distribution and inventory management of the drugs for which no effective monitoring could be put in place to ascertain the reasons of largescale procurement through local purchases.

However, the committee headed by Murli Manohar Joshi added that the health ministry lately has swung into action and taken a number of measures to cut down on local purchases as well as to bring in efficiency in the procurement system.

PAC said that the measures included computerization of all the dispensaries in Delhi, culling out a list of about 262 medicines that were not in the formulary of Medical Stores Organization (MSO) but frequently prescribed by doctors and procured locally, and entering into a rate contract for all these drugs.

Health ministry pulled up for calling spurious drug menace minor

The Public Accounts Committee has pulled up the health ministry for claiming that the menace of the spurious/adulterated drug market in the country was minor. In its latest report, the PAC headed by Murli Manohar Joshi said, “The committee is of the firm opinion that the element of adulteration of drugs should be absolutely non-existent and there should be zero tolerance by the government on spurious drugs. The committee, therefore, urges upon the ministry to intensify the measures initiated, including recruitment of 400 inspectors.”

Drugs

Designer Drugs (The Times of India: 3.3.2011)

Medicine must cater to Indian body types

Growing medical knowledge is rapidly rendering a one-size-fits-all medical policy obsolete. In making the case for developing Indiaspecific medical guidelines, a recent study flags the need for conducting exhaustive research into how specific non-western population groups respond to medication. The study carried out by two Indian doctors, A Misra and L Khurana, has been endorsed by others who call for change in the medical regimen prescribed for Indian patients. It compared South Asians with white Caucasians and found that differences between ethnic groups are not limited to social norms – such as knowledge, lifestyles and attitudes – but extend to the physiological. For instance, South Asian levels of body fat are very different to white Caucasians. South Asians have uncommonly low levels of adiponectin – a hormone which modulates glucose regulation in the body. Bodies differ in many ways along ethnic lines, but continue to be treated the same.

Generating guidelines tailored to Indians – and even sub-groups within India – is a first step to addressing this mismatch. The next is creating population-specific medicines, because they can combat disease far more effectively. Underpinning all this is R&D – the speciality of the mega-global drug manufacturers. While India needs to step up pharma research in both the private and public sectors on medical regimens suited to this region, multinational firms too should be enticed to relocate to India. That should work for them too, as drug development costs would be cheaper in India. And the outcome could be drugs and medical regimens more suited to Indian body types. Innovative medical research in India has a bright future. Some of it ought to be devoted to medical protocols suitable for Indians.

Six Drugs

Indian Government Bans Six Drugs Over Safety Issues (Med India: 14.3.2011)

Based on the recommendations of the Expert Committee constituted by DTAB, the Central Government has banned the use of six drugs with immediate effect, over safety issues.

The names of these drugs along with the brief reasons for their ban are furnished below:

1. Nimesulide formulations in children below 12 years of age - Nimesulide containing products are not permitted in many countries in children under 12 years of age. The drug has been considered to be hepatotoxic and children are considered more susceptible to hepatotoxicity.
2. Cisapride and its formulations for human use - Use of this drug is reported to be associated with increased risk of serious cardiac arrhythmia.
3. Phenylpropanolamine and its formulations for human use - Use of this drug is associated with risk of hypertensive episodes like cardiac congestive failures and hemorrhagic strokes.
4. Human Placental Extract and its formulations for human use - There is no clear evidence of efficacy of this drug in most of the conditions and there are safety concerns like transmission of blood borne infections, immunoreactions and unwanted exposure to hormones associated with its use.
5. Sibutramine and its formulations for human use - Use of this drug is associated with increased risk of cardiovascular events such as heart attack and stroke.
6. R-Sibutramine and its formulations for human use - Use of this drug is associated with increased risk of cardiovascular events such as heart attack and stroke.

High Drug prices

High Drug prices: Not a healthy sign, says experts: (Hindustan Times: 14.3.2011)

PANEL SET UP BY PM SAYS, PRICES OF DRUGS HAVE INCREASED 170% COMPARED TO 70% FOR OTHER COMMODITIES

The government's bid to provide healthcare to all may not work, if the prices of drugs continue to rise at the present, a high-level expert group on health opined.

A study done by a group formed by Prime Minister Manmohan Singh to prepare a road map for providing healthcare to all citizens by 2020 has said the prices of drugs and medicines have increased 170% compared to 70% for other commodities since late 1990.

The high cost of medical facilities has resulted in 28% of ailments in rural India, whereas 20% of population in urban areas goes untreated. And, of those who get hospitalised, 47% in rural India and 31% in urban India have to sell their assets to pay for medical expenses.

The National Sample Survey Organisation has found that on average an Indian spends 78% of the medical costs on medicines alone.

“It is a serious problem,” said K Shrinath Reddy, who heads the expert group.

“Domestic production of medicines has fallen as many companies are being taken over by MNCs.”

The way forward, suggested by the group, is to infuse investment in public sector pharmaceuticals and revive old PSUs to augment production.

For the private sector, the group said the foreign direct investment (FDI) in pharmaceutical sector should be reduced from 100% to 49%.

Congress MP Jyoti Mirdha, a doctor by profession, wanted regulation of FDI in health sector saying automatic route for FDI was making basic health service out of reach of aam aadmi.

CPM MP PK Biju said there were huge variations in prices up to 1,000 times in anti-cancer drugs manufactured by MNCs and Indian firms and urged the Centre to bring them under the drug price control policy.

The group has asked the government to set up retail outlets on contract basis, where the drugs should be supplied through a centralised procurement.

8,000-plus drugstores - heal rural health care

8,000-plus drugstores planned to heal rural health care (The Financial Express: 14.3.2011)

In what would come as a shot in the arm for rural healthcare, the government is planning to form a chain of over 8,000 retail outlets spread across India to take affordable medicine to the hinterlands.

The plan is to set up one drugstore in every block in addition to about four-five outlets in all district headquarters, report Soma Das & Subhash Narayan in New Delhi.

Government aims to have one warehouse in each district, centralise procurement at state-level while decentralising drug distribution

It is what would come as a shot in the arm for rural healthcare, the government is planning to form a chain of over 8,000 drug retail outlets spread across the length and breadth of the country to take affordable medicine to the hinterlands. The plan is to set up or contract one drugstore in every block in addition to about four-five drug outlets in all district headquarters. India has 640 districts and 6,000 blocks.

The government aims to have at least one warehouse in each district, centralise the drug procurement at the state level while decentralising the drug distribution system. The idea is to create a Drug Supply Logistics Corporation, under which national and state level utilities would be set up to ensure transparency in provisioning of adequate, low cost, generic drugs. To attain an efficient drug supply chain, emulating the model of Tamil Nadu has been suggested in the plan. The state has floated Tamil Nadu Medical Services

Corporation which procures, stores and distributes essential drugs in government hospitals and primary health centres throughout the state. The drug stores are proposed to be linked to the state-level centralised procurement to ensure uniform quality standards in the drugs being circulated and minimise cost by removing intermediaries. The drug stores in such a scheme would be stocking low cost generic drugs. The financing of such an ecosystem would be met by scaling up public spending on drugs to 0.5% of GDP, according to the plan proposed by a PM-constituted, high-powered expert committee which has been entrusted the task of drawing the blueprint to attain the goal of 'health for all' by 2020.

The plan, if implemented, can to a great extent correct the skewed distribution of over 6 lakh chemist stores which retail drugs worth over ₹60,000 crore and are mostly concentrated in urban areas. There have been various proposals emanating from the industry and different government departments to correct this urban bias which hinders access to drugs in rural areas.

For instance, the multinational pharma companies had approached the government with a proposal calling for the utilisation of the 1.7 lakh post offices across

the country to distribute over-the-counter drugs. This proposal, which is expected to increase the reach of OTC drugs in the country by 20% had been sent to the Planning Commission about four years back, but the project failed to take off as it required multiple ministries to work in tandem. The fate of the plan kept hanging between these ministries. It would need the approval of and coordination between department of pharma under the ministry of chemicals and fertiliser, department of post under ministry of communications and the health ministry. Even if the plan was accepted, prescription drugs clearly remained out of the purview.

Another proposal, similar to what is being conceived by the expert committee, was launched in 2008 by the Department of Pharma in the form of the Jan Aushadhi scheme. This programme makes an attempt to provide low cost unbranded generic drugs to the poor by sourcing them

from small scale manufacturers and public sector drug firms. In the original plan, the central government was re-

sponsible for the supply of quality medicines, while the state governments or government-appointed NGOs were supposed to run the shops on a not-for profit basis and eventually the plan had to be scaled up to cover the entire nation to have at least one store per district which would add up to over 600 stores by the end of 2011. This well intentioned ambitious program however is facing great teething problems, specially in the area of supply chain management and is yet to take off. Cold response from states among other issues has only resulted in around 80 such stores getting set up till now. According to sources, department of pharma has been introspecting on the sluggish pace of the project and is in the process of identifying and plugging the loopholes to turn it into a success story.

Type 2 Diabetes Drugs

Newer Doesn't Mean Better When It Comes to Type 2 Diabetes Drugs (science daily: 15.3.2011)

An inexpensive type 2 diabetes drug that has been around for more than 15 years works just as well and has fewer side effects than a half-dozen other, mostly newer and more expensive classes of medication used to control the chronic disease, new Johns Hopkins research suggests.

In their report, published online March 14 in the journal *Annals of Internal Medicine*, the Hopkins team found that metformin, an oral drug that was first approved by the U.S. Food and Drug Administration in 1995, not only controlled blood sugar, but was also less likely to cause weight gain or raise cholesterol levels.

"Metformin works for most people. It's cheaper, there's a generic form -- it's tried and true," says study leader Wendy L. Bennett, M.D., M.P.H., an assistant professor in the Division of General Internal Medicine at the Johns Hopkins University School of Medicine. "Our study shows that even though there are all these newer drugs, metformin works just as well and has fewer side effects."

The study is an update of Hopkins research published in 2007 that also showed there were advantages to metformin. New classes of medication for adult-onset diabetes have been approved by the FDA since then, and Bennett and her colleagues wanted to know if the newer drugs were any better than the older crop. The research team also looked for the first time at the efficacy of two-drug combinations to treat the chronic disease, which has become increasingly common with more than one-third of diabetes patients needing multiple medications. Researchers found that while two drugs worked better than one in those patients whose blood sugar remained poorly controlled on a single medication, there were also side effects associated with adding a second medication.

"Diabetes is an enormous public health problem, and patients have difficult decisions to make about what medications they should be taking," Bennett says. "Our study provides good information comparing drugs and can be used to inform those decisions."

Bennett and her colleagues reviewed 166 previously published medical studies that examined the effectiveness and safety of diabetes drugs, as well as their impact on long-term outcomes including death, cardiovascular disease, kidney disease and nerve disease. The team had previously looked at several popular classes of oral diabetes medication -- metformin (sold as Glucophage, Fortamet and others), second-generation sulfonylureas (Amaryl, Glucotrol and more), thiazolidinediones (Avandia and Actos) and meglitinides (Starlix and Prandin) -- and added two new classes of drugs, dipeptidyl peptidase-4 (DPP-4) inhibitors (Januvia and Onglyza) and glucagon-like peptide-1 (GLP-1) receptor agonists (Byetta and Victoza), which are given by injection.

No drug or combination of drugs was shown to have an advantage in improving long-term outcomes, Bennett says, primarily because there weren't enough long-term studies, particularly of newer medications.

While most drugs reduced blood sugar similarly, metformin was consistently associated with fewer side effects. Though metformin is associated with increased risk of gastrointestinal side effects, Bennett, an internist, says she finds many of her patients can overcome them by starting with a low dose and taking it with meals, though patients with severe kidney disease may avoid it. The sulfonylureas and meglitinides were associated with increased risk for hypoglycemia, or dangerously low blood sugar levels. The thiazolidinediones increased risk of heart failure, weight gain and fractures. In September 2010, the FDA placed restrictions on the use of Avandia because of concerns that the drug increases the risk of heart attack.

Meanwhile, the new medications, because there are no generic options, are significantly more expensive than older ones. One hundred metformin pills cost about \$35.57, or 35 cents a pill, while 30 Januvia pills (a DPP-4 inhibitor) cost \$192.52, or \$6.42 a pill -- nearly 18 times as much.

While the drugs all reduce blood sugar levels, Bennett says more research is needed into whether they actually improve outcomes for diabetics in the long run. It remains an open question as to whether patients with type 2 diabetes who have their blood sugar controlled by medication will reduce their chances of having complications associated with the disease, including eye, kidney and nerve diseases, she says.

"Some of the drugs haven't been on the market long enough to study the long-term effects or even some of the short-term rare side effects, so we need longer studies in patients who are at highest risk for complications" she says.

More than 25 million Americans have type 2 diabetes, and the number of diagnoses have been steadily rising, with 1.9 million new cases diagnosed in 2010. Like many chronic illnesses, diabetes disproportionately affects older people, and its prevalence is higher among racial and

ethnic minorities. The annual economic burden of diabetes is an estimated \$132 billion and increasing, mostly attributable to costly complications of the disease.

Anti-HIV Preventive Oral Drug

Early Success of Anti-HIV Preventive Oral Drug Regimen Is Promising, but Questions Remain (Science daily: 15.3.2011)

The first human studies of an oral drug regimen to prevent HIV infection in high-risk individuals yielded a promising near 50% reduction in HIV incidence, but a number of issues require additional research before oral pre-exposure prophylaxis (PrEP) can be implemented on a large scale, according to an article in AIDS Patient Care and STDs, a peer-reviewed journal published by Mary Ann Liebert, Inc.

After the success of a trial of PrEP in a high risk population of men who have sex with men (MSM), expanded studies are set to begin that will enroll more than 20,000 men and women. Although PrEP, composed of a two-drug regimen (the oral antiretroviral agents tenofovir and emtricitabine), was shown to be safe and effective in early clinical testing, Gavin Myers, MA and Kenneth Mayer, MD, Alpert Medical School of Brown University (Providence, RI) emphasize the need for more research in several key areas: the need for ongoing PrEP clinical monitoring of side effects; the diminished preventive benefits seen in patients who do not adhere to the PrEP regimen and the need for counseling; the attitudes and awareness of physicians who would be prescribing PrEP; and the potential for intermittent PrEP to be as effective as once-daily dosing. They discuss these issues in the article, "Oral Preexposure Anti-HIV Prophylaxis for High-Risk U.S. Populations: Current Considerations in Light of New Findings."

"This is an extraordinary example of translational medicine in the service of HIV prevention. But implementation faces major social obstacles. Adherence to a PreP regimen is key. And the cost of the drugs may make it impractical for all but the highest at-risk populations," says Jeffrey Laurence, MD, Editor-in-Chief of the Journal and Director of the Laboratory for AIDS Virus Research at Weill Medical College of Cornell University (New York, NY).

Tamoxifen

Taking tamoxifen to prevent breast cancer can save lives and cut medical costs (New kerala: 15.3.2011)

A new research has revealed that tamoxifen, taken by certain women as a preventive measure against breast cancer, saves lives and money.

The study's results suggest that the benefits of tamoxifen to prevent cancer can sufficiently compensate for its side effects in post-menopausal women under age 55 years who have an increased risk of developing breast cancer.

Research has shown that tamoxifen can protect against breast cancer for years after treatment ends, but identifying the group of women who can most benefit from the drug as a cancer preventive agent, without experiencing serious side effects, is a challenge. Side effects of the drug can include pulmonary embolism, endometrial cancer, deep vein thrombosis, and cataracts, as well as hot flashes and early menopause.

To investigate those women who would benefit the most from taking tamoxifen as a cancer preventive drug, Peter Alperin, MD, of Archimedes Inc. in San Francisco, and his colleagues used a mathematical model to simulate a post-menopausal population under age 55 years in a virtual clinical trial comparing tamoxifen treatment with no treatment.

The investigators modeled tamoxifen therapy based on an analysis of four randomized, placebo-controlled cancer prevention trials, and they assessed the effects that tamoxifen would have on women's breast cancer risk for 10 years following the end of treatment.

Cancer incidences and survival information were taken from the Surveillance Epidemiology and End Results cancer registry, while factors such as non-cancer disease incidences, quality of life, and costs were taken from the medical literature.

The researchers found that in post-menopausal women ages 55 years and younger with a 5-year risk of developing breast cancer of 1.66 percent or greater, the benefits of tamoxifen are maximized while its side effects are minimized.

"In this group of women, using tamoxifen to prevent breast cancer saves lives and has a low frequency of side effects," said Dr. Alperin. He added that it also saves medical costs.

The study has been published early online in *CANCER*, a peer-reviewed journal of the American Cancer Society.

Malaria Drug

Malaria Drug Slows Pancreatic Cancer Growth in Mouse Models (Science Daily: 16.3.2011)

Dana-Farber Cancer Institute scientists report they have shrunk or slowed the growth of notoriously resistant pancreatic tumors in mice, using a drug routinely prescribed for malaria and rheumatoid arthritis.

The pre-clinical results, which will appear in the April issue of the journal *Genes & Development* and is currently published on its web site, have already prompted the opening of a small clinical trial in patients with advanced pancreatic cancer, one of the deadliest and hardest-to-treat forms of cancer, said the investigators, led by Alec Kimmelman, MD, PhD, a radiation oncologist at Dana-Farber.

"We are seeing robust and impressive responses in pancreatic cancer mouse models," said Kimmelman, whose laboratory specializes in studies of pancreatic cancer, the fourth-leading cause of cancer death in the United States. The oral drug, hydroxychloroquine, is inexpensive, widely available, and causes relatively mild side effects, he said. A second, planned clinical trial will combine the drug with radiation.

"While these findings are indeed exciting and a cause for optimism, one needs to be mindful that so far the effects, while impressive, have only been shown in mice," said Ronald DePinho, MD, director of the Belfer Institute for Applied Cancer Science at Dana-Farber. "I eagerly await to see how the human studies will progress."

A new treatment avenue would be extremely welcome in pancreatic cancer. The National Cancer Institute estimates that 43,140 people were diagnosed in 2010 and 36,800 died. Despite some recent gains with targeted molecular agents and combination regimens, only about 6 percent of patients live five years, and the median survival is less than six months.

Hydroxychloroquine is a form of the drug chloroquine, which is used to prevent and treat malaria and also prescribed for autoimmune diseases, including lupus and rheumatoid arthritis. These compounds have recently stirred much interest in cancer research, because they inhibit a process called autophagy (from the Greek for "self-eating") that is elevated in cancer cells.

Autophagy is present in normal cells as well, but at a much lower level. The process enables cells to break down and eliminate proteins, such as damaged cell membranes and worn-out organelles like mitochondria. But it is also a survival strategy. When nutrients are scarce, cells can digest and feed on their own non-critical proteins to avoid starvation.

Cancer cells also use autophagy to outwit chemotherapy treatment. Research has shown that cancer cells can activate this process in response to a variety of cancer treatments, allowing them to survive during the stress of therapy. But, as Kimmelman noted, autophagy can also be a cell-death mechanism. Cancer researchers are intensely studying -- and debating -- how to manipulate autophagy as a potential method to slow tumors' growth or make them more sensitive to other therapies.

In their research reported in *Genes & Development*, Kimmelman and colleagues were stunned to find that autophagy was turned on at all times in pancreatic cancer cell lines -- not just under conditions of stress, treatment or starvation. "This was a big surprise," he said. "These cells

weren't deprived of nutrients; they were swimming in all the nutrients they could ever want." This suggested that for some unknown reason, pancreas tumors are highly dependent on autophagy, and therefore potentially uniquely good candidates for autophagy-inhibiting treatment.

In their next experiments, the team administered chloroquine to several different pancreatic cancer cell cultures, and also tested its effects in three types of mouse models. In the laboratory cultures, they reported, the drug "markedly decreased" the growth of the tumor cells, showing that the cells were heavily dependent on autophagy to for continued growth.

In vivo testing involved three types of mouse models -- human pancreatic cancer cells placed under the rodents' skin (xenografts); human cells injected into the animals' pancreases (orthotopic transplants); and a genetic model (mice bioengineered to develop native pancreatic tumors).

The response to chloroquine was "profound" in the xenograft models, Kimmelman said: All eight untreated mice died of their cancer within 140 days, while only one of eight treated mice had died by 180 days.

The drug's effects were less dramatic but still impressive in the orthotopic and genetic mouse models, the researchers said. The tumors that developed in the genetically pancreatic cancer-prone mice were, like their equivalent in human patients, extremely resistant to all treatments. Among other properties, these tumors were embedded in tough, fibrous tissue that is difficult for drugs to penetrate.

Nevertheless, the scientists reported that chloroquine treatment as a single agent increased the rodents' survival by 27 days compared with untreated control mice. This is encouraging, Kimmelman commented, because even the newest targeted drugs aimed at pancreatic cancer "don't have much effect in this genetic mouse model."

The Dana-Farber trial of hydroxychloroquine, led by Kimmelman and oncologist Brian Wolpin, MD, is designed to enroll 36 pancreatic cancer patients in whom first- or second-line treatments have failed. The drug is taken in pill form twice a day. Results won't become available for at least a year, said Kimmelman.

Kimmelman said the next step will be to investigate the combination of hydroxychloroquine with radiation in patients with operable pancreatic cancer.

"This is a very interesting and promising approach, attacking the Achilles' heel in pancreatic cancer's defenses," commented Robert Mayer, MD, of Dana-Farber's Center for Gastrointestinal Oncology. "But it's too early to say whether hydroxychloroquine should be added to chemotherapy, and what the risks and benefits might be, so we want to examine it in a clinical trial."

Kimmelman's lab is also investigating other forms of cancer that might be good candidates for inhibition of autophagy by the drug. He said that their work, as well as recent findings from other

labs, suggests that those cancers may be ones that are primarily driven by the KRAS oncogene -- as nearly all pancreatic tumors are.

Antioxidants

Intake of Antioxidants during Pregnancy Prevent Obesity in Kids (Med Indias: 16.3.20121)

Children born to mothers who consume high-fat diet during pregnancy are more likely to develop glucose intolerance or become obese.

An animal study at The Children's Hospital of Philadelphia suggests that a high-fat, high-carbohydrate diet causes oxidative stress -- an excess of deleterious free radicals -- during pregnancy, predisposing the offspring to obesity and diabetes. Feeding rats antioxidants before and during pregnancy completely prevented obesity and glucose intolerance in their offspring. If the results in animals prove to be similar in humans, the research may have implications for reducing obesity rates in children. "We already know that there are critical periods during human development that influence the later development of obesity," said senior author Rebecca A. Simmons, M.D., a neonatologist at The Children's Hospital of Philadelphia. "This research suggests that if we can prevent inflammation and oxidative stress during pregnancy, we may lower the risk that a child will develop obesity." The study by Simmons and co-author Sarbattama Sen, M.D., was published in the December 2010 print edition of *Diabetes*. Oxidative stress is a condition in which quantities of highly reactive oxygen-containing molecules (free radicals and other chemicals) exceed the body's ability to control their biological damage to cells. It is already known that obesity in people contributes to oxidative stress, in part by causing inflammation. Furthermore, obesity during pregnancy creates an abnormal metabolic environment during human gestation. The current study tested the hypothesis that a high-fat diet during pregnancy increases oxidative stress and leads to obesity in the offspring of animals. Simmons and Sen also investigated whether supplementing the animals' diet with antioxidants would prevent obesity in the offspring. The researchers simulated a Western-style diet by feeding high-fat, high-carbohydrate chow to one group of rats, compared to a control group fed a more balanced diet. In two other groups (one fed a Western diet, the other fed a control diet), the researchers added antioxidant vitamins. Among the rats that ate only the Western diet, the offspring had significantly higher measures of inflammation and oxidative stress, and as early as two weeks of age, were significantly fatter, with impaired glucose tolerance compared to control rats. However, rats eating the Western diet plus antioxidants had offspring with significantly lower oxidative stress, as well as no obesity and significantly better glucose tolerance. The effects persisted at two months of age. "These results suggest that if we prevent obesity, inflammation and oxidative stress in pregnant animals, we can prevent obesity in the offspring," said Simmons. Simmons added that a next step in this research is to determine the mechanisms by which inflammation and oxidative stress cause more fat tissue to develop. She cautioned that until these effects are carefully studied in people, one shouldn't conclude that the biological effects seen in animals are the same in humans. In the meantime, she added that,

whether pregnant or not, women should certainly not conclude from this study that they should consume large doses of antioxidant vitamins.

Non-hormonal pill

Non-hormonal pill without side-effects soon (New Kerala: 18.3.2011)

A scientific breakthrough claims to have opened the way to a non hormonal contraceptive pill for women, which will be free of side-effects.

Lab experiments show a hormone released by an egg ready to be fertilised acts as a 'come hither' message to sperms which then react in a blink.

The discovery means it may be possible to develop a non-hormonal pill to turn the signal off, the journal Nature reports.

Researcher Polina Lishko and colleagues at the University of California, US, carried out experiments on mouse and human sperm to investigate how they detect an egg ready for fertilisation, according to the Daily Mail.

They measured the electrical currents that drive the wiggling movements of a sperm's tail on its journey towards an egg newly released from the ovary.

They found that when the sperm gets a boost of progesterone, a hormone released by cells surround the egg, the electric current get a boost and their tails move faster.

Developed in the 1960s, the pill is credited with giving women sexual freedom. But it can cause dangerous side effects, such as increased risk of blood clots, high blood pressure and breast cancer.

It works in women by using hormones to suppress ovulation - the release of an egg. As there is no egg to be fertilised, pregnancy cannot occur.

But now scientists believe they have discovered a chemical, CatSper, a calcium channel on the sperm that is attracted to the hormone progesterone which is released by eggs.

Scientists say it would be possible to create a non-hormonal drug that prevents the process and, as a result, stops sperm from swimming towards the egg.

New Targeted Drug

New Targeted Drug Helps Smokers Quit (Science Daily: 18.3.2011)

Researchers working in a research project within the Academy of Finland's Research Programme on Substance Use and Addictions have been developing a targeted drug that could aid in smoking reduction therapy. The new drug slows down the metabolism of nicotine, which would help smokers to cut down their smoking.

Nicotine is absorbed rapidly through the lining of the mouth but most readily through the lungs, from where it quickly passes through the body and into the brain. Once the nicotine reaches the liver, it is metabolised by an enzyme called CYP2A6. Preliminary studies by the Canadian partner of the research project have shown that inhibitors of the nicotine-metabolising CYP2A6 enzyme can help smokers curb the need to smoke. Unfortunately, current CYP2A6 inhibitors are not viable options for anti-smoking therapy, as they involve too many adverse effects.

"We're working on developing a CYP2A6 inhibitor, a targeted drug that would only be effective in specific parts of the body. Thankfully, we have a very clear picture of the structure of CYP2A6, and we'll be able to use computer-aided modelling methods to design molecules that will bind specifically to the target without disturbing other functions in the body. We've now finished our four-year project and have discovered several molecules of an until-now-unknown structure. Along the way, we've gained new insights into how the molecules bind to the active centre of the CYP2A6 enzyme. However, it'll take a good while -- and money -- before these molecules can be developed into a targeted drug," says Hannu Raunio, the principal investigator of the research project and Professor of Pharmacology at the University of Eastern Finland.

Traditional anti-smoking therapy has long been focused on smoking cessation. At present, there are a wide variety of treatments available to help smokers quit. Nicotine, bupropion and varenicline are among the most common drugs used in the treatment of smoking addiction. The idea behind pharmaceutical nicotine products is to relieve and prevent withdrawal symptoms so as to pave the way for smoking cessation. However, such forms of treatment are often unsuccessful, which has led to suggestions that new methods are needed, methods that would help in smoking reduction. It is this type of targeted drug that Raunio's project is developing.

Vitamin A

Vitamin A Plays Key Role in the Human Body, Study Suggests (Science Daily: 18.3.2011)

In a recently-published study mapping the structure and function of the so-called "orphan" nuclear receptor TR4, Van Andel Research Institute (VARI) investigators suggest that Vitamin A may play a more direct role than was previously known in certain physiological functions including sperm cell formation and the development of the central nervous system.

Scientists had previously determined that Vitamin A derivatives such as retinal and the retinoic acids are involved in physiological functions in the human body. But there has been little direct evidence to show that Vitamin A, or retinol, the most common dietary form of the vitamin and the parental compound of the retinoid group, is directly involved in nuclear receptor signaling pathways -- a process which activates genes in the human body.

"Our study found that Vitamin A itself is active for activating nuclear receptor TR4," said VARI Research Scientist Edward Zhou, Ph.D. "Because TR4 plays roles in sperm cell production, lipid and lipoprotein regulation, the development of the central nervous system, and the regulation of hemoglobin production in the embryo, we can imagine that Vitamin A may play more important roles in human physiology than was previously believed."

The study, published in the Journal of Biological Chemistry, was named by the journal as a "Paper of the Week," indicating that the study is in the top 1 percent of published papers in terms of significance and overall importance. About 50 to 100 such studies are selected from the more than 6,600 published by the journal each year.

Nuclear receptors activate genes in important biological processes in the human body. Orphan nuclear receptors are a group of nuclear receptors whose ligands, or the substance to which receptors bind, have not yet been identified, and whose physiological functions have not been very well investigated.

"Recent evidence has shown that orphan nuclear receptors are required for many essential physiological functions in the human body, and can be used to help discover drug targets for human diseases," said Zhou. "Additionally, the identification of ligands for nuclear receptors usually leads to the discovery of new types of therapeutic drugs for human diseases. A very successful example is PPARs (peroxisome proliferator-activated receptors), whose ligands are used for the treatment of diabetes."

Dr. Zhou and his colleagues in VARI's Laboratory of Structural Sciences, under the direction of VARI Center for Structural Biology and Drug Discovery Director H. Eric Xu, Ph.D., used X-ray crystallography to determine the structure of TR4's ligand binding domain. They also identified small molecules involved in TR4 transcription -- the synthesis of RNA using DNA as the blueprint -- that could serve as potential drug targets.

Asthma drug

Asthma drug could help fight Alzheimer's (New Kerala: 28.3.2011)

An asthma drug has shown promise in inhibiting the formation of a brain peptide (compound) known as amyloid beta, known to cause Alzheimer's disease.

In previous studies, Temple University researchers discovered that 5-lipoxygenase, a brain enzyme, controls the activation of gamma secretase, another enzyme responsible for the production of amyloid beta.

When produced in excess, amyloid beta causes nerve cell death and forms plaques in the brain. The amount of these amyloid plaques in the brain is used as a measurement of the severity of Alzheimer's (loss of brain function that affects memory, thinking and behaviour), the American Journal of Pathology reports.

Led by Domenico Praticò, associate professor of pharmacology in Temple's School of Medicine, researchers tested the drug Zileuton, which is used in treating asthma, in an engineered mouse model of Alzheimer's disease, according to a Temple statement.

At the end of the treatment they found that this drug, by blocking the 5-lipoxygenase, reduced the production of amyloid beta and the subsequent build up of amyloid plaques in the brain by more than 50 percent.

"This drug is already in the market and, most importantly, is already approved by the FDA (Federal Drugs Agency). So you don't need to go through an intense drug discovery process," said Praticò.

"We could quickly begin a clinical trial to determine if there is a new application for this drug against a disease.

Parkinson's Drugs

Researchers Tie Parkinson's Drugs to Impulse Control Problems (Science Daily: 28.3.2011)

Mayo Clinic researchers found that dopamine agonists used in treating Parkinson's disease result in impulse control disorders in as many as 22 percent of patients.

Mayo Clinic first reported on this topic in 2005. The follow-up study was published online in the February 2011 issue of *Parkinsonism and Related Disorders*.

Dopamine agonists, a class of drugs that include pramipexole (Mirapex) and ropinirole (Requip), are commonly used to treat Parkinson's disease. The drugs stimulate the brain's limbic circuits, which are thought to be pathways for emotional, reward and hedonistic behaviors. The medications have been linked to such impulse control disorders as pathological gambling and hypersexuality and to compulsive behaviors such as binge eating, spending, computer use or "hobbying."

Researchers reviewed Parkinson's disease patients' records over a recent two-year period, says Anhar Hassan, M.B., B.Ch., a neurology fellow at Mayo Clinic and lead investigator on the study.

"During this time, movement disorder physicians at Mayo Clinic were keenly aware that impulse control disorders could occur with these dopamine agonist drugs. If they encountered a patient who was taking this drug, they asked them or an accompanying family member whether or not they had noticed any new type of behavior. What we found was that in as many as 22 percent of patients during that two-year period had a new onset impulse control disorder," she says.

The study found that the higher the dose, the greater the likelihood of an impulse control behavior. "One in four patients who were on a medium therapeutic dose of the medication had an impulse control disorder," Dr. Hassan says. "For patients who were taking a higher range of the medication, about one in three developed an impulse control disorder."

Patients taking dopamine agonists should be aware of potential behavioral changes so they can be caught early, before they or their families are harmed, Dr. Hassan says. Once a new behavior is identified, reducing or stopping the medication usually resolves the problem over a few days to a month, she says.

New 'nanodrug'

New 'nanodrug' can attack breast cancer cells from the inside out (World Newspapers: 31.3.2011)

Researchers at Cedars-Sinai's Maxine Dunitz Neurosurgical Institute have developed a new nanodrug that breaks down barriers to attack breast cancer cells from the inside out.

Unlike other drugs that target cancer cells from the outside with minimal effect, this therapy consists of multiple drugs chemically bonded to a 'transport vehicle'.

This 'transport vehicle' spares healthy cells, accumulates inside tumour cells and attacks molecular targets that enable cancer cells to grow and spread.

Studies using a mouse model showed this highly targeted approach, using combinations of drugs, to be more effective than standard treatment methods.

Researchers targeted HER2-positive breast cancer, a type that, due to a genetic mutation, makes excessive amounts of a protein that promotes the growth of cancer cells.

One commonly used antitumor drug, trastuzumab (Herceptin), is sometimes beneficial, but with advantages and disadvantages.

It is an antibody to the HER2 antigen, which means it naturally seeks out this protein in cancers.

The researchers reported in their recent studies that the new drug carried multiple molecular components, each with a distinct role.

These key components included: Herceptin to target the existing HER2 protein; another molecule to attack a genetic mechanism responsible for the production of new protein; and a molecule to open tumor blood vessels and deliver the drugs into the cancer cells for release.

Injected into mice with implanted human breast cancer cells, the drugs accumulated in the cancer cells and worked together to significantly reduce tumour growth.

The drug is in an emerging class called nanobiopolymeric conjugates, or nanoconjugates.

"Nanobiopolymers enhance cancer cell targeting and treatment in several ways: Certain antibodies can be attached to precisely target proteins in tumor cells; drug resistance and systemic side-effects are reduced because drugs are 'bound' to the platform and delivered to the interior of cancer cells without affecting healthy cells; and multiple drugs can be carried on a single platform, making it possible to simultaneously attack several targets," said senior author Julia Y Ljubimova.

"Based on our studies, our nanobioconjugate appears to be a safe and efficient delivery platform that may be tailored to treat a wide array of disorders. It is harmlessly degraded to carbon dioxide and water, nontoxic to normal tissue, and, unlike some drugs, it is non-immunogenic, meaning it does not stimulate the immune system to the point of causing allergic reactions, which may range from mild coughs or rashes to sudden, life-threatening symptoms," she added.

The findings appear in the recent issue of Cancer Research.

Drugs

No data sharing on drugs in trade pacts: Sharma (The Hindu; 31.3.2011)

Many countries, including the European Union, want India to go beyond data protection to data exclusivity

Indian on Wednesday firmly stated that it would not share any test data of drugs or data exclusivity with multinational companies or developed nations, setting at rest speculation about India granting of various concessions in the drugs and pharma domain under the garb of free trade agreements (FTAs).

Making a presentation before the Consultative Committee of Parliament, Union Commerce and Industry Minister Anand Sharma said the provision for data exclusivity, as sought to be incorporated by many countries, would not be part of FTAs that India was pursuing with various countries.

Rejecting the demand for data exclusivity, the Minister told the Parliamentary Committee that such exclusivity would prevent genuine and competing version of a drug from entering the market even when there was no patent as the patent had expired. Data exclusivity provided protection to the test data generated by pharma companies producing generic drugs.

“India does not provide data exclusivity for pharmaceuticals and agro-chemicals which is in the paramount interest of our generic pharmaceutical industry as grant of data exclusivity would have considerable impact in delaying the entry into the market of cheaper generic drugs,” Mr. Sharma said in an official release.

He said Trade Related Aspects of Intellectual Property Rights (TRIPS) provided for data protection and it should be complied with. Article 39.3 of TRIPS provided for protection of undisclosed test data submitted for obtaining marketing approvals for pharmaceuticals and agricultural chemical products.

Many countries, including the European Union, with which India is in the final stages of FTA, want India to go beyond data protection to data exclusivity.

Mr. Sharma said a large section of the pharmaceutical industry in India was producing generic drugs and any data exclusivity provision at this stage would have a considerable impact on it.

He also spoke against the seizure of Indian generic medicines by the EU in the Netherlands.

“These detentions of Indian generics by Europe were deemed to be TRIPS violative by us and India submitted its request to the Dispute Settlement body of the World Trade Organization.

India and Brazil have jointly held two rounds of consultation with the EU in July and September last year.

As a result of our persistent efforts, during the recent India-EU summit, the EU informed that the Commission has intensified its efforts on finalisation of the proposal for revision of Regulation 1383 and hopefully they should be able to complete their international processes shortly," he added.

Environmental Health

Nano solution

Nano solution for safe water (The Hindu: 24.2.2011)

A new nanotechnology is likely to make drinking water a lot more safer and keep infections at bay by filtering out deadly bugs at the source.

Both water molecules and bugs are so tiny that they are measured by the nanometre, 100,000 times thinner than a human hair. But at the microscopic level, the two actually differ greatly in size.

A single water molecule is less than a nanometre wide, while some of the littlest bugs are 200 nanometres.

Working with a specific block co-polymer, a University of Buffalo team has synthesized a new kind of nanomembrane containing pores about 55 nm wide, large enough for water to slip through, but too small for bacteria, reports the journal Nano Letters.

Urban challenge – Disaster Management

Looming urban challenge (The Tribune: 28.3.2011)

Need for policy interventions

THE global percentage of urban population grew from 13 in 1900 to 29 in 1950, and 49 in 2005. If the present trends continue, by 2030 nearly 60 per cent of the global population will be living in cities. In 2015, the world will have 58 cities with 5 million people each; and by 2025, 27 mega cities with more than 10 million people each.

A Harvard economist, Edward Glaeser, in his recent book, “Triumph of the City: How our Greatest Invention Makes us Richer, Smarter, Greener, Healthier and Happier”, argues that cities are “our species’ greatest invention”, as they make people more inventive, productive and kinder to the planet. But are the cities indeed such an unmixed blessing, particularly in the global south?

Cities do offer advantages of agglomeration, better infrastructure and economic and social opportunities. They serve as cultural melting pots, centres of knowledge and innovation; fora of political engagement; and sites of investment. Cities thus become magnets that attract people from less developed regions. But particularly in the global south, cities are also home to acute congestion, slums, deprivation and poverty. Their large ungoverned spaces are conducive to organised crime, drug and human-trafficking and urban warfare.

Cities expand due to natural growth, migration, greater employment and economic opportunities, declining labour-intensity of agriculture and globalisation. Instability and civil strife in parts of the global south, coupled with weak governance, also contribute to rural-urban migration.

For the first time in history, most of the world’s population will be concentrated in cities located in the world’s poorest countries, where policing, sanitation and medical facilities are scanty. The World Bank estimates that between now and 2050 over 70 per cent of population growth will take place in 24 low and lower-middle income countries that have an average per capita earning of less than \$3855 (2008). Asia’s urban population is currently 37 per cent. Over the next two decades, it is projected at 55 per cent. By 2030, India’s urban population will be 500 million. The mega cities of South Asia are expanding even more because of rural poverty and high fertility rates rather than economic dynamism. Mumbai, where at least half the population lacks adequate shelter, is projected to have a population of 22.6 million in 2015. Karachi, already trapped in chronic political turbulence, will have 16.2 million people by 2015. Dhaka, one of the world’s poorest cities, is likely to have 17.9 million inhabitants by 2015.

Cities in the developed world grew at a more leisurely pace than those in Asia’s developing countries. For example, between 1950 and 2015, New York’s population will have grown by just 30 per cent, whereas Karachi’s will have grown by 2000 per cent and Dhaka’s by 5400 per cent. In the developed West, moreover, growth took place after nation-states and governments were firmly established. The developed world’s urbanisation also predated the information revolution, which has led to rising expectations and a heightened sense of deprivation among the less affluent.

The cities of the global south are unlikely to be what Edward Glaeser calls the mankind’s “greatest invention”. Their pattern of growth will pose a serious challenge to human security in diverse ways. Firstly, deprivation, poverty and social exclusion will have a predominantly urban face. Between 1993 and 2002, the number of poor living on US \$1 a day declined by 150 million in villages, but increased by 50 million in cities. Deprivation and disparities are particularly acute in slums and shanty towns, which lack basic amenities like water. Slum-dwellers sometimes pay 50 times more for clean water than those living in serviced colonies.

Secondly, in many urban spaces, and particularly in poorer neighbourhoods, effective governance is non-existent or is overwhelmed by the magnitude of the challenges. In such

pockets, violence becomes the basis for alternative “parallel” forms of order, control, identity, legitimacy and resource distribution. The poor in such areas survive in chronic insecurity and face the risk of urban warfare.

Thirdly, haphazard and rapid urbanisation leads to severe environmental degradation. Crowded cities become centres of disease and epidemics. Inhabitants of congested cities are highly vulnerable to devastation in the wake of extreme weather events. Cities close to low-lying coastal zones will be prone to flooding and consequent economic loss.

Fourth, cities marked by religious, ethnic and linguistic diversity can accentuate tensions arising from other factors like competition for the limited number of jobs and resources. Rapidly urbanising centres affected by a youth bulge can foster violence in an environment of deprivation and denial.

Cities are also becoming both the sources and targets of urban terror. They offer tempting opportunities for shock and publicity, which are greatly valued by terrorists. It is hardly surprising that recent terror attacks have targeted iconic symbols in cities like New York and Mumbai.

The urban challenge looms large in India. A UN-HABITAT report notes that 63 per cent of South Asia’s slum-dwellers are Indian. The largest number of slum-dwellers in the country live in four mega cities: Mumbai (6.5 million, which is more than the entire population of Norway); Delhi (1.9 million), Kolkata (1.5 million) and Chennai (0.8 million).

If governments continue to adopt a business-as-usual attitude towards the urban challenge, chronic chaos in most mega cities of Asia is the most likely scenario. While cities like Karachi already present a picture of unending disorder, other mega cities like Dhaka, Lahore, Mumbai, Kolkata and Jakarta could well face a similar fate.

Densely populated urban centres will be particularly vulnerable to natural disasters and these in turn will challenge governments’ capacities to address them. Climate change scientists forecast extreme weather events and disasters like the Asian tsunami of December 2004. The recent earthquake and the tsunami in its wake have been termed by the Japanese Prime Minister as the country’s greatest crisis since World War II. Massive damage caused by natural events, epidemics or other disasters may overwhelm city and national governments.

Chronic neglect and exclusion make people particularly prone to embracing radical ideologies. Left-wing extremism, which presently afflicts 196 districts in 20 states of India, is making systematic inroads in several cities. This is likely to grow unless the urbanisation process can be managed more imaginatively and efficiently.

The urbanisation phenomenon, therefore, needs to be viewed from a strategic perspective. Policy interventions to tackle the challenge may include sound planning for urban growth and effective implementation of such plans; giving due emphasis to environmental protection; vigorous efforts to provide basic amenities; slum improvement, pro-poor policies and inclusive growth.

Appropriate measures are also needed to prevent disasters if possible, and mitigate and manage them when they cannot be prevented.

Plastic bags

Banning plastic bags (Business Standard: 28.3.2011)

There are limits to what even the Supreme Court of India can do to discipline Indians into more socially acceptable behaviour. The SC's order imposing a ban on the use of plastic bags has met with as much success, or failure, as earlier attempts by the civic authorities in Mumbai and Delhi.

Even a month after the apex court's decree to this effect, both plastic bags and a variety of products in nonbiodegradable plastic sachets are still available around the country. Nonbiodegradable plastic poses a threat, both to the environment, and to civic infrastructure management. In the absence of adequate scientific recycling or disposal facilities, the bulk of plastic bags end up either in landfills, where they tend to last practically forever, or on city roads, where they pose a traffic hazard, and in drains, where they end up clogging sewage systems. Mumbai's unprecedented flooding, in July 2005, following a monsoon deluge was caused more by the blocking of drains by plastic bags than the rainfall itself. Flooding of roads, especially during the monsoon season, is quite common in other urban centres as well, the national capital being no exception. Civic bodies spend huge amounts annually to combat this menace. Yet, regrettably, result-oriented action is not forthcoming to enforce ban on plastic bags.

The main argument of plastic bag manufacturers and of the traders who use them, is that there is no equally inexpensive and convenient alternative. This is factually correct. But the argument is based on private costing rather than the social cost of plastic bags. This draws attention to the contradiction between private benefit and social cost. The social and environmental costs of using plastics bags far outweighs the very obvious private benefit. The incentive to look for ecologically acceptable alternatives would go up if the manufacture of plastic bags is effectively prohibited and the ban on their use effectively policed.

There was life before plastic bags came into mass use. Most shoppers, especially those buying vegetables and other consumables of daily use carried their own cloth, jute and paper bags and cane baskets from home to bring groceries. Reusable bags made from other kinds of non-plastic environment-friendly fabrics can also replace these bags. If necessary, to facilitate transition, the use of alternatives to plastic bags can also be subsidised or incentivised in a variety of ways. Such subsidies can be financed through carbon credits that would be earned from a ban on burning of plastics, quite common in India, that emits environmentally-dangerous gases into the atmosphere.

India can learn from the experience of countries that have managed to sharply reduce the use of plastic bags. Ireland levied a tax on the use of plastic bags in 2002. This led to an over 90 per cent reduction in the use of plastic shopping bags. China imposed a ban in 2008 on free plastic bags, making their sale compulsory. This is estimated to have curbed demand by two-thirds. Several other countries such as Australia, Bangladesh, South Africa, Thailand and some states in the US, have taken similar measures with varying degrees of success. Back home, some of the hilly states, notably Himachal Pradesh and more recently Uttarakhand, have shown some success in restricting the use of plastics. What, however, is really needed is the will to act. Success would follow.

Many countries doing it successfully, India also can

Contraception

Contraception

Sure shot: A contraceptive jab for men (Times of India: 07/02/2011)

Women have been awaiting it for years — a contraceptive option for men to help them share the family planning burden.

And now, scientists at Edinburgh University have confirmed that such a contraceptive jab has proved successful in preventing unplanned pregnancies after tests in Scotland, the Scotsman reported.

The World Health Organisation trial, involving 200 couples around the globe, uses a combination of the hormones testosterone and progesterone which dramatically reduce a man's sperm count.

The contraceptive, given in the trial in two jabs, works by reducing sperm counts from above 20 million sperm per millilitre to zero, and to less than one million in others, below the viable threshold for a pregnancy.

This result provides better contraceptive protection than condoms and a similar success rate to the female pill.

Professor Richard Anderson, who led the Scottish team, was quoted as saying, “The results are very encouraging and it has gone very well. Most of our couples will be finishing (the trial) over the course of the spring. A couple of other centres will go on the rest of this year, so it will be a while before we get a final analysis.”

It will still need to satisfy researchers that it is effective on a large scale and does not have any unwanted side effects. A major barrier to the acceptance of male contraception has been reluctance of men to undergo a daily ritual. But the new injection technique only needs to be given every two months, it is hoped men will now accept a greater share of the responsibility for contraception.

Foeticide

Mass awareness can check foeticide: CM (The Tribune: 09/02/2011)

Haryana Chief Minister Bhupinder Singh Hooda has asserted that the social evil of female foeticide could be wiped from society out by creating mass awareness on the significance of having the girl child.

Hooda was addressing the gathering as the chief guest at the 10th Annual Kelvinator Great Women Awards-2011 function organised late last evening.

Women achievers from various fields were presented with awards in 31 categories, including lifestyle, films, entertainment, medicine, beauty, fashion and style, music, advertising, corporate and entrepreneurship, at the function organised by Anu and Shashi Ranjan.

A special presentation of 'Beti'- Anu Ranjan's campaign against female foeticide, was also made on the occasion. Union minister for information and broadcasting Ambika Soni was awarded for her contribution in politics for 41 years.

Nimmi Raza, a noted Hindi movie actress of the 1950s, was presented with the Kelvinator Lifetime Achievement Award amidst the screening of her popular song "Jiya bekarar hai, baghon mein bahar hai..."

Bollywood actress Rani Mukherjee got the Kelvinator Actress of the Decade Award, while Raveena Tandon Thadani bagged the award for supporting the girl child.

Swati Ravindra Paradkar, president of Shri Mahila Griha Udyog Lijjat Papad, got the Kelvinator Great Women's Award for Social Service, while Dr Nandita Palshetkar received the award for her contribution to medicine and healthcare. Ulka Gupta was presented with Young Achiever Award for her lead role in the TV serial 'Jhansi Ki Rani'. The first woman Air Marshal, Padma Bandopadhyay, was also awarded for her achievement. Stand-up comedian Bharti Singh entertained the spectators.

The Chief Minister highlighted the steps taken by the state government to give the girl child her due status in society.

He mentioned the 'Laadli' scheme, under which a sum of Rs 5,000 is given for five years to a family in which a second daughter. Similarly, a sum of Rs 500 is given to the mother or father, whoever is elder, from the age of 45 years onwards if the family has only daughters.

Hooda further stated that the tuition fee of girl students had been waived and the Haryana government had also reserved 25 per cent seats for girls in the Industrial Training Institutes of

the state. The women candidates had also been given 33 per cent reservation in teachers' recruitment, he added.

The Chief Minister also presented a cash award of Rs 1 lakh to two sisters Pratibha and Joly who have prepared a one-minute short film titled 'Every Adam needs an Eve' with the message to stop female foeticide.

Female Menopause

Managing the male midlife crisis (he Tribune: 16.3.2011)

FEMALE menopause is a much talked about and well researched subject. All of us know that women, mostly around their mid-forties pass through certain biological, physiological and psychological changes which are studied and adequately managed. But in case of men, modern medicine had to convince itself decades later that something of that happens to them also. Though more conveniently described as male midlife crisis, this watershed phase in the life of men was recognized as andropause or viropause.

According to ancient Ayurvedic beliefs the human body undergoes natural changes from birth through childhood, adolescence, youth and geriatrics. In this chronology the menopause and the male midlife can be considered as 'vayasandhi' or the meeting point of youth and old age. Major health abnormalities of chronic nature like reduced digestive power, high cholesterol, hypertension, diabetes, coronary artery disease and a reduced sexual drive most commonly strike males during the midlife only.

Modern research contends that the falling level of testosterone has a definite role in producing certain symptoms associated with this phase in men's life. The level of this hormone starts gradually decreasing in the mid-adult life and by the time a man reaches 80, it comes to the pre-puberty point. This hormone is believed to stimulate sexual development in the male child, helps building bone and muscle growth in adults and is responsible for their sexual drive. Most evident presentations of andropause start occurring between the age of 40 to 55, though these can also happen as early as 35 or as late as 65.

While studying the male midlife crisis, social scientists are of the view that by this time, men attain an all around peak but with a price. This is the period when they are under pressure to perform better not only in at their jobs but also at the domestic and social front. Whether taking care of their aged parents, planning career or marriage of the children or making their house and climbing the social ladder of success, all such milestones are achieved amidst the increasingly competitive environment. Multiple pressures compounded with fears of economic insecurity and post retirement oblivion not only lead to conditions such as irritability of the temperament, indecisiveness, insomnia, anxiety and depression but finally lead to many other physical ailments.

Depending on the different corollaries of andropause, this condition needs a comprehensive management. Since male midlife problems have relations to many aberrant physical, psychological and social factors, it is imperative that each of these should be dealt with accordingly. In fact the ancient Indian dictum of 'health first' is the basis of leading a virtuous, abundant and successful life and it should be borne in mind that despite the present day advancement of the medical science, prevention is still considered to be the best affordable option.

A re-look at the diet is the first and foremost corrective measure and there is no better time to do this than the middle age. Regular and timely meals and that too not exceeding the digestive capacity and with a check on the intake of refined foods and saturated fats keep many of the biochemical markers under control. Alcohol, smoking, frequent partying and late night dinners are one of the known health hazards for middle age men. An easily digestible diet with grains and vegetables, a very limited amount of non-vegetarian food and fat-drained dairy products are ideal for this age.

Regular exercise should be the most adoptable part of the daily routine of all middle age men. Work out plans set according to the endurance of a person and by keeping in view his cardiovascular status, help to control weight and keep the biological clock in order. Persons with sitting job should stay active by less depending upon aides and doing the necessary chores themselves. Apart from getting the cardio-vascular system checked once or twice a year, other important tests like blood sugar, lipid profile and routine urine check up must be done at regular intervals. Vitamins, herbs and other health supplements should be taken only on the advice of a physician.

Many of the health problems related to men's midlife are the direct outcome of their raised stress level by indulging into unhealthy competition and chasing the unrealistic goals. One should find time and ways to relieve stress by adopting relaxation techniques and making positive and flexible attitude towards life. Yoga and meditation are proven stress busters. With advancing age, both sexual urge and performance undergo a change. Adopt sexuality appropriate to the second half of life and expand it to include companionship, love and intimacy into life. One should learn that every age has its own charms and a healthy middle age should be a passage to an overall contented time in a man's life.

(The writer is a Ludhiana-based senior Ayurveda consultant and Guru at the Rashtriya Ayurveda Vidyapeeth.)

Fertility and Infertility

Fertility

Women Aged 35 'are Six Times More Likely to Suffer Fertility Problems' (Med India: 2.2.2011)

Couples must not to leave it too late to try for a baby as it can lead to fertility problems in women, doctors have warned.

With more and more women pursuing careers, they and their partners are leaving parenthood to at least their late thirties.

But women aged 35 are six times more likely to have problems conceiving compared to those ten years younger, according to a major study from the Royal College of Obstetricians and Gynaecologists.

The report said older parents are making it harder for themselves to have children - and increasing the likelihood of serious medical complications for both mother and baby. By the age of 40, a woman is more likely to have a miscarriage than give birth.

Men's fertility also declines rapidly from the age of 25 and the doctors estimate that the average 40-year-old takes two years to get his partner pregnant - even if she is in her twenties. Up to 30 per cent of 35-year-olds take longer than a year to get pregnant, compared to only 5 per cent of 25-year-olds, according to the figures in the report by the Royal College.

Male Fertility

Male Fertility Is in the Bones: First Evidence That Skeleton Plays a Role in Reproduction (Science Daily: 18.2.2011)

Researchers at Columbia University Medical Center have discovered that the skeleton acts as a regulator of fertility in male mice through a hormone released by bone, known as osteocalcin. The research, led by Gerard Karsenty, M.D., Ph.D., chair of the Department of Genetics and Development at Columbia University Medical Center, is slated to appear online on February 17 in Cell, ahead of the journal's print edition, scheduled for March 4.

Until now, interactions between bone and the reproductive system have focused only on the influence of gonads on the build-up of bone mass.

"Since communication between two organs in the body is rarely one-way, the fact that the gonads regulate bone really begs the question: Does bone regulate the gonads?" said Dr. Karsenty.

Dr. Karsenty and his team found their first clue to an answer in the reproductive success of their lab mice. Previously, the researchers had observed that males whose skeletons did not secrete a hormone called osteocalcin were poor breeders.

The investigators then did several experiments that show that osteocalcin enhances the production of testosterone, a sex steroid hormone controlling male fertility. As they added osteocalcin to cells that, when in our body produce testosterone, its synthesis increased. Similarly, when they injected osteocalcin into male mice, circulating levels of testosterone also went up.

Conversely, when osteocalcin is not present, testosterone levels drop, which causes a decline in sperm count, the researchers found. When osteocalcin-deficient male mice were bred with normal female mice, the pairs only produced half the number of litters as did pairs with normal males, along with a decrease in the number of pups per litter.

Though the findings have not yet been confirmed in humans, Dr. Karsenty expects to find similar characteristics in humans, based on other similarities between mouse and human hormones. If osteocalcin also promotes testosterone production in men, low osteocalcin levels may be the reason why some infertile men have unexplained low levels of testosterone.

Skeleton Regulates Male Fertility, But Not Female

Remarkably, although the new findings stemmed from an observation about estrogen and bone mass, the researchers could not find any evidence that the skeleton influences female reproduction.

Estrogen is considered one of the most powerful hormones that control bone; when ovaries stop producing estrogen in women after menopause, bone mass rapidly declines and can lead to osteoporosis.

Sex hormones, namely estrogen in women and testosterone in men, have been known to affect skeletal growth, but until now, studies of the interaction between bone and the reproductive system have focused only on how sex hormones affect the skeleton.

"We do not know why the skeleton regulates male fertility, and not female. However, if you want to propagate the species, it's probably easier to do this by facilitating the reproductive ability of males," said Dr. Karsenty. "This is the only rationale I can think of to explain why osteocalcin regulates reproduction in male and not in female mice."

Other Novel Functions of Osteocalcin Reported Earlier

The unexpected connection between the skeleton and male fertility is one of a string of surprising findings in the past few years regarding the skeleton. In previous papers, Dr. Karsenty has found that osteocalcin helps control insulin secretion, glucose metabolism and body weight.

"What this work shows is that we know so little physiology, that by asking apparently naïve questions, we can make important discoveries," Dr. Karsenty says. "It also shows that bone exerts an important array of functions all affected during the aging process. As such, these findings suggest that bone is not just a victim of the aging process, but that it may be an active determinant of aging as well."

Next Steps and Potential Drug Development

Next, the researchers plan to determine the signaling pathways used by osteocalcin to enhance testosterone production.

And as for potential drug development, since the researchers have also identified a receptor of osteocalcin, more flexibility in designing a drug that mimics the effect of osteocalcin is expected. Whether it's for glucose metabolism or fertility, says Dr. Karsenty, knowing the receptor will make it easier for chemists to develop a compound that will bind to it.

"This study expands the physiological repertoire of osteocalcin, and provides the first evidence that the skeleton is a regulator of reproduction," said Dr. Karsenty.

Infertility

Infertility in Punjab (The Tribune: 24.2.2011)

Need to wean youth away from drugs

A WHO study has pointed to a sharp increase of infertility among Punjab's males and attributed it to drug abuse, alcoholism and pesticides. Drug abuse is affecting not only the health of Punjab youth but also their chances of employment. The police and the armed forces used to attract well-built, tall youngsters from Punjab's rural areas. Now, as media reports indicate, many fail to meet the minimum physical standards. During the recruitment of constables in Patiala last week there were 3,300 aspirants and more than half could not run even half the qualifying distance. Their height was not up to the required level.

Earlier, given the pathetic state of government educational institutions in the rural areas, youth lacked the basic skills needed for a job. Since educationally they could not compete with urban students, they were successful at least in jobs requiring physical strength. Now they all lag behind in health. Unemployment drives them to depression. This, in turn, forces them to take to drugs, which are easily available all over Punjab, thanks to a thriving nexus of politicians, policemen and drug peddlers. Media reports indicate that the number of drug addicts has risen sharply to 60-70 per cent of the population in the border districts of Amritsar, Gurdaspur and Ferozepur. The network is well known. Narcotics are available over the counter at chemist shops.

At least three steps are needed to tackle the drug menace. First, drug availability should be stopped by firm police action and political backing. Secondly, the government should spend more on sports and provide adequate facilities in every school and college instead of just holding big tournaments for NRIs. Punjabis are known for their excellence in games. Thirdly, awareness should be spread among rural youth about innovative agricultural practices and agri-businesses by providing cheaper credit and training. Poverty is a mother of various ills, including poor health. A healthy environment alone can produce healthy youth.

Food and Nutrition

Organic Food

Pregnancy and Organic Food (Medical News Today: 2.1.2011)

Who eats organic food when they are pregnant? Is it just certain groups? What kind of organic foods are most popular? A recent study from the Norwegian Institute of Public Health provides some answers. The study includes nearly 65,000 women in the Norwegian Mother and Child Cohort Study.

"We know little about the consumption of organic food during pregnancy, and the goal of this study was to find out what is consumed and the characteristics of women who choose organic food," said PhD student Hanne Torjusen.

Questions were asked about six different food groups: milk and dairy products, bread and cereals, eggs, vegetables, fruit and meat. The results show that organic food is widely used among pregnant women in Norway across different groups.
One in ten consume organic food

Almost one in ten pregnant women consumes organic food regularly, and organic eggs and vegetables were most often selected. Compared to those who did not consume organic food, the women who did had the following characteristics:

They were either in the group with more than 4 years of higher education, or in the group with under 12 years of education in total

Most were either under 25 or over 40 years old

There were many with low family incomes (below 300,000 Norwegian kroner per year)

Many were students or had a partner who was a student

They had normal or low weight (body mass index)

They exercised frequently - at least 3 times a week

Overall, there were very few who were vegetarians (0.2 %), and a minority drank alcohol (11.6 %) or smoked (8.4 %) during pregnancy. However, the use of organic food is more widespread in these three groups.

"We see that although there are several elements that are consistent with health recommendations, organic food consumption in pregnancy is not unambiguously associated with what is perceived as a healthy lifestyle. It is also not uniquely associated with the group that traditionally is most healthy - those with the highest education and income. This shows that it is important to take into account other factors besides education and income in the further research of possible health effects of organic foods in the diet," said Hanne Torjusen.

About MoBa

The study is based on a large number of women participating in the Norwegian Mother and Child Cohort Study (MoBa) from the Norwegian Institute of Public Health. MoBa is a unique follow-up study of 108,000 pregnancies among women recruited in the years 1999-2008.

This study includes 63,561 women who responded to two different questionnaires in MoBa during the years 2002-2007. The first questionnaire, containing questions on general health, was answered in week 15 of pregnancy. The second questionnaire about diet was answered during week 17-22 of pregnancy.

Good Breakfast

A Good Breakfast - Necessary or Not? (Medndia:3.2.2011)

An interesting study published in the Nutrition Journal reports that the kind of breakfast we have does not affect our eating at other times of the day.

The German researchers under the leadership of Dr. Volker Schusdziarra, a professor of internal medicine at the Technical University of Munich, studied the eating habits of 280 people who included both obese and of normal weight. They were expected to keep a record of all their meals they have during the day for a fortnight. When the number of calories consumed was counted every day for each participant, it was evident that whatever breakfast they may have had, the calorie intake at the rest of the meals was the same. A big breakfast did not mean fewer calories at the other meals. The researchers concluded that a big breakfast actually totaled up to more calories through the day.

In fact, Dr. Schusdziarra goes to the extent of stating that he commends people who tell him that they have no breakfast and that he urges them to continue to do just that!

On the other hand, Dianne Moeller, a registered dietitian at the Health District of Northern Larimer County, reiterates that breakfast is the most important meal for a number of reasons. Energy level is high, brain function is acute, a healthy weight is maintained, and the risk of developing diabetes is reduced.

So, then, what is it to be? A hearty breakfast? Or, no breakfast?

Coffee Boosts

Coffee boosts women's brain power, scrambles men's (The times of India: 3.2.2011)

Drinking coffee can boost the brainpower of women in stressful situations, but scrambles men's thinking, says a new study.

Researchers in Britain have found that while sipping a cappuccino or downing an espresso boosts women's performance when working with others, the same drinks could impair men's memories and slow their decision-making.

In their study, the researchers from Bristol University examined what coffee does to the body when it is already under stress.

They recruited 64 men and women and put them in same-sex pairs. Half of the pairs were given decaffeinated coffee, and the others a cup of a large shot of caffeine. Each pair was given a range of tasks. The men took an average of 20 seconds longer to complete the puzzles than those on decaff coffee. But women completed the puzzles 100 seconds faster if they had been given caffeine.

The Mushroom Council- The 2010 Dietary Guidelines

Fresh Mushrooms Help Americans Meet The 2010 Dietary Guidelines (Medical News Today: 4.2.2011)

The Mushroom Council supports the 2010 Dietary Guidelines for Americans released today by the Department of Health and Human Services (HHS) and the Department of Agriculture (USDA). Highlights from the new guidelines include the recommendations for healthy eating patterns that maximize nutrient-dense foods, maintain calorie balance to sustain a healthy weight, and reduce sodium intake. Mushrooms have long been celebrated as a source of powerful nutrients, particularly those of public health interest such as vitamin D and potassium, but they can also help Americans meet the newly recommended guidelines for reducing sodium and increasing vegetable consumption.

The new Dietary Guidelines place continued emphasis on the importance of vegetables and choosing foods that provide nutrients of concern, like potassium and vitamin D. This guideline can be met with small steps that fit within a well-rounded, flexible diet that includes all of the food groups. Fresh mushrooms can be added to everyday dishes to provide an extra serving of vegetables and deliver important nutrients, including vitamin D, potassium, selenium, ergothioneine and B vitamins. Mushrooms' hearty and meaty texture makes for a satiating main dish. They're also an ideal accompaniment to salads, pastas, stir-fry and omelets; and a flavor-enhancing topper for meats, poultry and fish. They pick up and complement subtle flavors, adding taste without weighing down the dish with calories, fat, cholesterol or sodium. Combining nutrient-rich foods should provide a full range of important nutrients, not to mention a more pleasurable eating experience to promote health among Americans.

The 2010 Dietary Guidelines recommend that Americans reduce daily sodium intake to less than 2,300 mg; and that specific populations, including people who are 51 and older and those of any age who are African American or have hypertension, diabetes or chronic kidney disease, reduce daily intake to 1,500 mg. While consumers and the foodservice industry face the collective challenge to reduce sodium, there are certain foods, like mushrooms, that can help satiate the "craveability factor" they're accustomed to with salty foods, but are ultimately low in sodium. Mushrooms are rich in umami (the 5th taste known for its savory, brothy, rich or meaty taste sensation), which counterbalances saltiness and allows for less salt to be used in a dish without compromising taste. Umami-rich foods, like mushrooms, act as a flavor multiplier - adding depth

of flavor. "Tasting Success with Cutting Salt," a collaborative report from the department of nutrition at Harvard School of Public Health and the Culinary Institute of America, recognizes mushrooms as a tool to help decrease sodium

Food & Nutrition

Chocolate healthier than most fruits (Times of India: 08/02/2011)

London: Chocoholics, you can now gorge on your favorite treat without a sense of guilt, for scientists have claimed that it's actually healthier than many fruit.

Not only that, but chocolate is being heralded as the latest “super food” by the scientists who carried out a study. They have proved that it is packed with more healthy plant compounds and antioxidants gram-for-gram than fruit juice and provides far more nutritional goodness than food experts had previously thought.

The scientists have based their findings on a comparison of cocoa powder, the raw ingredient of chocolate, with powders made from fruits like acaiberries, blueberries, cranberries and pomegranates, the Daily Express reported.

Research into dark chocolate, containing around 60% cocoa, and cocoa drinks found that they too had more antioxidant activity and more flavanols — health-giving plant chemicals — than fruit.

The discovery means cocoa beans meet the nutritional criteria needed for fruits to be classed as “super fruits” according to the scientists at the Hershey Center for Health & Nutrition in the US.

However, the findings do not alter the fact that their favourite is high in fat and sugar, meaning dieticians say it should be balanced with less yummy foods such as brown rice and pulses, say the scientists.

Junk food

Unhappy meal? Junk food lowers children's IQ (Times of India: 09/02/2011)

It's a research which may anger many busy parents who rely on processed foods to placate kids — eating junk food lowers a child's IQ.

Researchers in Britain have carried out the study of 4,000 kids and found that those under the age of four eating a diet of processed food, fat and sugar have lower brain power at eight-and-a-half years. Their IQ fell by 1.67 for every increase on a chart which reflected how much

processed fat they ate. And the damage could not be reversed – as diet at the ages of four and seven had no effect on IQ scores.

In the study spanning several years, the researchers at Bristol University monitored the diet of kids at age three, four, seven and eight-and-a-half years, the Sun reported.

Kate Northstone, who led the research at Bristol University, said: “In this population of contemporary British children, a poor diet, associated with increased intake of processed foods, fat and sugar in early childhood may be associated with lower IQ at the age of 8.5 years.

“In addition, a healthy diet may be associated with higher IQ. It is possible that good nutrition during this period may encourage optimal brain growth.”

But she added: “Further research is required to help determine the true effects of early diet on intelligence.”

Barbara Gallani, of the Food and Drink Federation, said: “It isn’t surprising that a healthy, balanced diet is important in IQ development – just like it is generally for children’s health and growth. We believe it is important for everyone to eat a wide variety of foods. It’s possible to eat a healthy diet and still include some treat foods.”

Aerated drink

HEALTH HAZARD?

Are aerated drinks harmful? Definitive study to find out (The Times of India: 11.2.2011)

Is gulping down litres of carbonated soft drinks harming your health? We will soon know.

The Union health ministry on February 7 informed the Supreme Court that a definitive study is now being undertaken by the National Institute of Nutrition (Hyderabad) to “assess the effects of consumption of carbonated water beverages and soft drinks on the health of adolescents and young adults”. The final report of the study is expected by February 2012. A letter written by ICMR scientist Dr G S Toteja said the study being conducted by NIN involved the screening of 2,000 adolescents and young adults (aged 18-35 years) each for identification of subjects with high and low carbonated beverage consumption levels.

“These subjects will then be followed to assess harmful effects of carbonated beverages,” the letter to under secretary in the ministry Mohammad Saleem said.

Speaking to TOI, NIN director Dr B Sesikeran said screening has already been completed. Nearly 200 young adults who consume 600 to 4,200 ml/week have been recruited. An equal number of people who don’t consume soft drinks at all have also been selected by matching age and gender. The diet and nutrient intake of the 400 subjects has already been documented.

The letter says, “They will be followed up to nine months and the investigations like biochemical parameters relating to bone, liver and kidney function tests, lifestyle patterns and dietary intakes will be assessed at baseline after four months and the end of 8-9 months. Changes if any will be observed.” The consumption pattern of carbonated beverages will also be assessed.

Diet soda

Diet soda raises heart attack risk (The Times of India: 11.2.2011) Also Ups Chances Of Strokes, Says Study

London: Diet soda may be a wise choice for those who are keen to look after their health, but a new study has claimed that sugar-free fizzy drinks could actually raise the risk of having a heart attack or stroke.

The study of more than 2,500 people found that those who had diet drinks every day were 61% more likely to get vascular problems than those who did not have any carbonated drinks. “If our results are confirmed with future studies, then it would suggest that diet soda may not be the optimal substitute for sugar-sweetened beverages for protection against vascular outcomes,” said researcher Hannah Gardener, an epidemiologist at the University of Miami Miller School of Medicine.

For their study, Gardener and colleagues recruited about 2,560 participants who had to report whether they drank diet fizzy drinks, regular fizzy drinks, a mixture of the two or none at all, the Daily Mail reported. The researchers, however, said the survey did not include data on the types of diet and regular drinks consumed, which could have given further information on how drinking different brands affected participants.

Doctors have no chemical or biological explanation for why diet soda may be risky. It could be that people who drink lots of it also fail to exercise, weigh more, drink more alcohol or have other risk factors like high blood pressure and smoking. However, the researchers took these and many other factors into account and didn’t see a change in the trend.

Further studies would have to be carried out to explore how consuming diet drinks potentially raised the risk of vascular problems, said Gardener.

Sharlin Ahmed, from The Stroke Association, said: “According to this study, drinking diet fizzy drinks on a regular basis could pose the same or even higher risk for cardiovascular disease as standard fizzy drinks, providing a word of warning to those who often opt for diet versions in order to be ‘healthy’.” “Everyone can reduce their risk of stroke by consuming a balanced diet and exercising regularly,” Ahmed added.

Earlier studies have tied diet and regular soda consumption and greater risk of diabetes and a group of weight-related problems.

Cheese

Say cheese? Don't. Too much of it causes cancer (The Times of India: 11.2.2011)

Do you have a fetish for cheese? Beware, eating more than 50 grams of cheese daily may increase your risk of bladder cancer, a new study has claimed.

A team of Dutch and Belgian researchers found that the risk increased by more than 50% in those who ate more than 53 grams of cheese a day — roughly the same weight as a small chocolate bar.

But eating less than that did not appear to increase the dangers, said the researchers, who also found that a daily portion of olive oil, on the other hand, can more than halve the risk of getting the disease.

For the study, the researchers looked at how dietary fats influence a person's chances of getting bladder cancer, which kills thousands of people every year worldwide. In the latest research, the team set out to discover if saturated fats, such as those found in meat and dairy products, made cancer more likely while healthier fats, such as olive oil, offered some protection. They studied the eating habits of 200 bladder cancer victims and compared them with 386 volunteers who had not developed tumours.

The results showed eating cheese had little effect unless amount exceeded 53 grammes a day. After that the risk went up by more than half. The researchers said the numbers of people in the study may be too small to conclude that cheese is a major health threat and called for further investigations to verify the findings.

Milk

Drinking milk every day 'keeps cancer at bay'(New India: 11.2.2011)

A new research has found that kids who drink milk are 40 per cent less likely to suffer bowel cancer as adults.

Scientists from New Zealand found that half a pint of milk a day had a powerful protective effect against the cancer.

The key to its anti-cancer effects lies in daily consumption over long periods.

“Our results suggest daily consumption of milk in childhood may reduce bowel cancer incidence, possibly by the action of calcium,” the Daily Express quoted associate Professor Brian Cox, who led the research, as saying.

Experts believe calcium helps kill off cancer cells and accumulating a supply in the system can help to ward off the disease.

The team discovered pupils were 40 per cent less likely to suffer a tumour later in life if they had milk every day for six years or more.

The study was published last week in the American Journal of Epidemiology.

'Dangerous' energy drinks

'Dangerous' energy drinks 'can leave children hospitalized' (New Kerala: 15.2.2011)

Doctors have warned that energy drinks such as Red Bull should be as closely regulated as alcohol, tobacco and prescription medicines.

A study claimed high-caffeine drinks could cause seizures, strokes or even sudden death in children, and those with diabetes or behavioural disorders were most at risk.

Researchers found some beverages claiming to boost energy levels contained three to five times as much caffeine as an eight-ounce fizzy drink.

They said energy drinks, often overused by teenagers targeted in glossy marketing campaigns, frequently contained ingredients that could enhance the effects of caffeine and should be stringently regulated.

“Energy drinks have no therapeutic benefit and many ingredients are under-studied and not regulated,” the Daily Mail quoted Dr Steven Lipshultz, of the University of Miami’s school of medicine, who co-authored the study, as saying.

“A lot of young people don’t realise what’s in these drinks and the combinations could be serious, even deadly,” Lipshultz added.

Soft drinks

‘Caramel add-ons in soft drinks may cause cancer’ (The Times of India: 18.2.2011)

DARK & DEADLY?

Some artificial food colourings used in widely consumed soft drinks like Coca-Cola and Pepsi may cause cancer and they should be banned, a US consumer advocacy group has claimed, drawing a strong reaction from the industry.

Pure caramel is made from melted sugar. But two other versions approved to colour food products include the chemical ammonia and produce compounds shown to cause various cancers in studies of animals, the Center for Science in the Public Interest (CSPI) said in a statement.

“The ‘caramel colouring’ used in Coca-Cola, Pepsi, and other foods is contaminated with two cancer-causing chemicals and should be banned,” the group said.

In a petition to the Food and Drug Administration of the US, the group has urged to ban the ammonia-containing caramels, which are also used in other dark-coloured soft drinks. "We're asking the FDA to ban the use of caramel colouring that's used in colas and certain other soft drinks and a variety of other foods," said Michael Jacobson, executive director of CSPI, was quoted as saying by ABC News.

Pepsi, Other Foods

Cancer Risk: Ban Caramel Coloring In Pepsi, Other Foods Says Group (Medival News Today: 18.2.2011)

A nonprofit group is calling for the US Food and Drug Administration (FDA) to ban artificial caramel coloring used in Coca-Cola, Pepsi and other foods because animal tests suggest the additive is contaminated with two cancer-causing chemicals.

The Center for Science in the Public Interest (CSPI) filed a regulatory petition to the FDA on Wednesday, asking for them to ban the use of the artificial brown coloring, which contains two chemicals, 2-methylimidazole and 4-methylimidazole (2-MI and 4-MI also referred to as 2-MEI and 4-MEI), that government-led studies have shown caused liver, lung, leukemia, and thyroid cancer in lab mice and rats.

CSPI executive director Dr Michael F Jacobson told the media that:

"Carcinogenic colorings have no place in the food supply, especially considering that their only function is a cosmetic one."

He urged the FDA to "act quickly to revoke its approval of caramel colorings made with ammonia".

The CSPI say the artificial caramel coloring used in the beverage and food industry is "quite different to real caramel" and is not made in the same way as one might make it at home, by melting sugar in a saucepan.

They say manufacturers make the artificial brown coloring by reacting sugars with ammonia and sulfites under high temperature and pressure, and this leads to the formation of the two chemicals.

The current federal regulations allow four types of caramel coloring: two of which are made with ammonia. It is these two that the CSPI want the FDA to ban. One is known as Caramel III and the other as Caramel IV.

Caramel III is made with ammonia but not sulfites, this is used to color beer, soy sauce, and other foods. Caramel IV is made with ammonia and sulfites and is used to color colas and other dark soft drinks.

To make their case the CSPI say chemicals that cause cancer in animals are considered to be potentially carcinogenic to humans and cite animal studies conducted by the National

Toxicology Program, a division of the National Institute of Environmental Health Sciences, that showed there is "clear evidence" that 2-MI and 4-MI cause cancer in animals.

They say researchers at the University of California, Davis, found significant levels of 4-MI in five brands of cola.

Some of the scientists who worked at the National Toxicology Program are among the five experts on causes of cancer in animals who have joined with the CSPI on calling for the FDA to ban the use of artificial caramel made with ammonia.

They wrote a letter to Dr Margaret Hamburg Commissioner for Food and Drugs, in which they said:

"The American public should not be exposed to any cancer risk whatsoever as a result of consuming such chemicals, especially when they serve a non-essential, cosmetic purpose."

Chemical Color Indices - Color Measurement For Food, Flavor & Fragrance, Chemical and Pharma - www.konicaminolta.com

Ayurveda Treatment - Complete Control with Healthy Life No Side Effects. Permanent Results.
- Cowurine.com/ConsultUs

Autism Cured Cases - Read how homeopathy cures autism Autism specialist Dr. Sharma - www.DrHomeo.com

The CSPI also argues that the phrase "caramel coloring" is misleading when used to describe those made with ammonia or sulfite, and manufacturers should not be allowed to label products that contain them as "natural". They maintain it would be more accurate to use phrases like "ammonia process caramel" or "ammonia sulfite process caramel".

Jacobson said most people would think "caramel coloring" meant "colored with caramel", but this ingredient is nothing like ordinary caramel as in caramel candy, it's "a concentrated dark brown mixture of chemicals that simply does not occur in nature".

He said even though regular caramel isn't good for your health, "at least it is not tainted with carcinogens".

The CSPI points out that California has added 4-MI to its list of "chemicals known to cause cancer", which means, because of California's Proposition 65 regulation, food or other products that have above a certain level of these carcinogens must carry warning labels. In California the threshold for 4-MI is 16 micrograms per person per day from an individual product.

But popular makes of cola have about 200 micrograms of 4-MI per 20-ounce (0.6 litres) bottle, say the CSPI, which is less than many people consume every day, especially adolescent boys. If California finalizes this legislation, then Coke, Pepsi, and other soft drinks would have to carry labels saying they contain chemicals that can cause cancer.

The CSPI initiative has provoked a strong reaction from manufacturers.

The American Beverage Association (ABA) say it is an "outrageous and egregious attempt to dupe and scare the public", from a group that "makes its living bashing the food and beverage industry".

They told the press that the CSPI petition "is not based on sound science and is unnecessarily raising the fears of consumers".

They accuse the CSPI of conducting a "science-by-press-release" campaign to scare the public into thinking caramel coloring is harmful because of 4-MI, a byproduct of heating, roasting and cooking that they say is found in a wide variety of foods and drinks, from baked goods like breads and cakes to molasses and coffee.

The ABA says caramel color is not a threat to human health "even when it contains minute amounts of 4-MEI [4MI]", and that studies have confirmed this and the FDA has classed caramel color as generally recognized as safe, as have many regulatory bodies worldwide.

The ABA say even the National Toxicology Program (NTP), which the CSPI has cited in order to make its case, has not classed 4-MI as a cancer causing agent, not even as "reasonably anticipated to be a human carcinogen".

They told the press that the former director of the Toxicology Research and Testing Program, Dr Ernest McConnell, wrote that "4-MEI [4MI] does not have sufficient evidence of carcinogenicity to be placed on the list".

They appealed to consumers to use their common sense, and ask whether it is plausible that an industry with companies that have been in business for more than 100 years would ever "put the safety of their consumers at risk".

Caramel coloring is one of several artificial food colorings that the CSPI is asking the FDA to ban. The others include Yellow 5 and Red 40, which are thought to cause behavioral problems like ADHD in children, and Red 3 and Yellows 5 and 6, which, according to the CSPI, also pose cancer risks.

The FDA Food Advisory Committee is due to review the issue at the end of March.

Diets High

Study Reveals How Diets High in Fish Oil Fight Alzheimer's(Med India: 18.2.2011)

The way in which diets high in Omega 3 oils and low in cholesterol fight Alzheimer's has been discovered by scientists.

Daniel Michaelson of Tel Aviv University's Department of Neurobiology at the George S. Wise Faculty of Life Sciences found that APOE—one of the five molecules that are known to affect or cause Alzheimer's disease and created by the apolipoprotein E. gene found in all of our bodies—comes in two forms, a 'good' APOE gene and a 'bad' APOE gene, called APOE4.

In preliminary results, the researchers found that a diet high in fish oil appeared to significantly reduce the negative effects of the APOE4 gene in mouse models.

In differentiating between the good and bad variants of the APOE gene, Michaelson and his team studied many variables.

They determined that while a rich and stimulating environment is good for carriers of 'good' APOE, the same environment has a negative effect on those at risk for Alzheimer's because they carry the APOE4 gene. While this environment stimulated the formation of new neuronal connections in the 'good APOE' mice, it caused the death of brain neurons in the 'bad APOE' mice.

The stimulating environment included running wheels and tubes for hiding and sliding, as well as ropes and other toys for the mice to play on, replaced and updated with new toys weekly. Those in a non-stimulating environment had access to no toys at all.

Food

Dish out healthy yet tasty food with kitchen chemistry (The Times of India: 21.2.2011)

Obama Chef Shows How Texture Influences Taste

Some sweetened tangerine juice. A little soy protein. A blender. Voila: A trendy, frothy dessert becomes a lesson in kitchen chemistry. It turns out the chef who whips up pies for the president is also a bit of a scientist — calling on knowledge of how to help bubbles hold their shape and how crystals affect chocolate and salt, in the quest for healthier goodies.

You wouldn't think taste tests would be on the menu, er, agenda when the American Association for the Advancement of Science assembles some of the world's leading molecular biologists and geneticists and astronomers for a once-a-year look at exciting discoveries.

But White House pastry chef Bill Yosses exchanged his white apron for a bow tie on Saturday to talk with scientists about how chefs are changing perceptions of taste. He brought samples — chocolates that gleamed, and that tangerine foam that held up spoonfuls of juicy berries for about an hour.

His point: Texture plays a huge role in taste. Consider chocolate mousse with its sumptuous mouth feel, caused largely by added cream that, Yosses notes, also clogs arteries. He substitutes water and gelatin for cream to deliver that feel with less fat.

Or take that tangerine foam. The soy protein helps form structures around the air bubbles from Yosses' blender. Look, he said as he spooned a plateful: "It's just tangerine juice, but we can fill the whole plate." Maximize texture to maximize a taste, Yosses said, and suddenly people are

happy with fewer bites — a message that goes hand in hand with the healthy-eating mantra of his bosses, President Barack Obama and first lady Michelle Obama. Dessert in moderation, he said, can be part of a healthy balanced diet. “What chefs want to achieve with modern cooking is a kind of fascination with food” that also is “able to move people toward a healthier approach to eating,” Yosses said. AP

Cooking

What’s cooking? NO2-dipped burgers, ultrasonic fries (The Times of India: 21.2.2011)

Washington: Nathan Myhrvold believes that cooking is not just an art, but a science too — meet the man who cooks nitrogen-dipped burgers and ultrasonic French fries.

Author of 2,400-page, 625-dollar self-published book, ‘Modernist Cuisine: The Art and Science of Cooking’, Myhrvold, a former technology chief for Microsoft, combines science and his culinary skills to create food.

He treats French fries with starch and places them in an ultrasonic bath. And dips the hamburger meat in liquid nitrogen to crunch up the exterior and keep the center a tender medium rare. “Why not use nitrogen — it’s 78% of the air around us?” ABC News quoted Myhrvold as saying. “It’s not unsafe in any way. It’s cheap, about the same amount as Evian water. After spending 14 years at Microsoft, he founded Intellectual Ventures, a small company that supports his culinary lab and inventions, like cures for malaria and nuclear power.

“I have always been in to food. When I was 9 years old I announced to my mother I was cooking Thanksgiving dinner. Food has interested me my whole life,” he says.

Cereal with milk

Cereal with milk is healthiest way to start the day (New Kerala: 21.2.2011)

A new study has revealed that the healthiest breakfast choice is cereal with milk.

According to the research, breakfast is the key to a healthy lifestyle determining the quality of your whole day's nutrition.

And the best way to start the morning is with a simple bowl of cereal, as it makes people less likely to turn to fatty, sugary food through the rest of the day.

The study, by nutritionist Sigrid Gibson, and published in the BNF Nutrition Bulletin, revealed that cereal is a good source of calcium and numerous other key nutrients, such as fibre, protein and carbohydrate.

The research team analysed 12,068 food records from the National Diet and Nutrition Survey, which interviewed Britons aged from 19 to 64.

The results showed that one in five adults ate no solid food for breakfast, one third chose cereal and 45 per cent enjoyed a non-cereal breakfast. The most popular item was tea or coffee, taken on 84 per cent of breakfast occasions.

Milk was consumed with 82 per cent of breakfasts, followed by cereal (39 per cent), bread (33 per cent) and fruit (14 per cent).

Women were less likely than men to choose bread, sausage, bacon or eggs and more likely to have fruit instead.

The study found that eating breakfast was associated with a lower fat and higher carbohydrate intake over 24 hours compared with skipping breakfast.

But this was mainly attributable to cereal-based breakfasts as non-cereal meals were associated with a higher intake of saturated fatty acid and lower protein intakes.

"This provides yet more evidence of the importance of eating breakfast and shows the value of making wise choices," the Daily Express quoted Newcastle University's nutrition professor Chris Seal, a member of The Breakfast Panel which commissioned the study, as saying.

"People who eat breakfast cereal generally eat less fat, saturated fat and sugar than those who do not and have better intakes of protein and important micro-nutrients, such as iron, vitamins and calcium."

Mums' Milk

Research Says Preterm Mums' Milk Has Less Antioxidants (Med India: 21.2.2011)

Preterm mother's milk contains lower concentrations of coenzyme Q10-an important antioxidant and a vital component of the electron transport chain, a new study has said.

Researchers at the University of Granada and at the University Hospital San Cecilio took a sample of 30 nursing mothers, of which 15 had completed their gestation and 15 were preterm mothers.

This study counted with the participation of a group of researchers of the Institute of Nutrition and Food Technology Jose Mataix, and with the collaboration of the Department of Pediatrics of the University Hospital San Cecilio of Granada, Spain.

The main objective of this study was to analyze the presence of coenzyme Q10 in breast milk and to examine variation in Q10 concentrations in the three stages of breast milk (colostrum, transitional and mature milk). The second goal was to determine whether the milk of mothers at term and that of preterm mothers have different Q10 concentrations.

For the study, participants were asked to complete a questionnaire about their eating habits, which was processed later with software developed by the Institute of Nutrition and Food Technology 'Jose Mataix', of the University of Granada.

The milk samples were examined to measure -among other parameters- concentrations of coenzyme Q, tocopherol (isomers a, g and d) and the total antioxidant capacity of breast milk.

The study found that CoQ10 concentrations in mothers at term are 75 percent higher than in preterm mothers. Similar results were obtained regarding tocopherol.

Wheat

This wheat can resist diseases The Times of India: 24.2.2011)

British scientists are developing a new wheat variety which they say could be resistant to drought and diseases, an experiment, if successful, may lead to better crop yields. A consortium of researchers, who will spend about seven million pounds on breeding the special wheat crops, believe that better productivity could help cut prices and improve availability worldwide.

Energy Drinks

Energy Drinks Harm Health of Mentally Ill Patients (Med India: 24.2.2011)

People suffering from mental illness are at a greater risk of suffering from an episode if they drink energy drinks rich in caffeine, Auckland University Professor David Menkes said. Professor Menkes recently treated a young man suffering from schizophrenia who underwent two psychotic episodes after drinking an energy drink known as Demon Shot. He said that the man was responding well to anti-psychotic medication but on drinking two 60ml bottles of Demon Shot, he complained that some people wanted to harm him.

The test was repeated a week later and Menkes said that started to initially laugh and talk constantly, but later withdrew, becoming restless and argumentative. Writing in his report in the Medical Journal of Australia, Menkes said that it proved that energy drinks to exacerbate the condition of some mentally ill patients.

“The fact that our patient had the same reaction on two distinct occasions is important. This is the evidence that some patients with treated schizophrenia may be vulnerable to exacerbation of their illness by caffeine-containing energy drinks”, he said.

Protein

Protein may be Responsible for Weight Regain after Diet (Med India: 25.2.2011)

Women who regain weight straight after dieting display a change in a particular protein in their body, prompting hopes that a test could be developed in the future to identify those who are at risk of regaining weight.

Recent studies have shown that more than 80 percent of dieters suffer from the “yo yo effect” and regain weight within a year of dieting. Researchers from the Maastricht University's Department of Human Biology analyzed more than 100 women aged between 20 to 45 years with half of them managing to avoid regaining their weight after dieting.

Researchers found that those who gained weight quickly after dieting displayed higher concentration a protein, known as angiotensin I converting enzyme (ACE), when they were dieting.

“We do not yet have an explanation for the results, but it does appear that it should be possible within a few years to use this finding to develop a test to show who is at high risk of putting weight back on after a diet”, lead researcher Edwin Mariman said in the study which has been published in the online scientific journal PloS ONE.

Organic Fruit and Vegetable

Organic Fruit and Vegetables are Less Nutritious (Med India: 25.2.2011)

Buyers of organic fruit and vegetables are in for a shock because a study has revealed that organic fruit and veggies are less nutritious and do not taste better when compared to those grown using chemicals. One advantage of organic food is that it does benefit the environment.

Trials of three garden crops, potatoes, broccoli and tomatoes, found the non-organic items were more nutritious and tastier, reports the Daily Express.

For the broccoli, those grown normally had higher levels of antioxidants than the organic samples.

With potatoes, research by consumer group Which? found that the version grown using chemical fertilizers contained more Vitamin C.

Non-organic tomatoes had a stronger flavor and were sweeter than their counterparts, according to 69 per cent of tasters.

Nutritionist Carina Norris said: "This research shows that fruit and vegetables grown non-organically also have plenty of goodness in them. The most important thing is to eat such foods, not whether they are organic or not."

Tea

Tired? A cup of hot tea will perk you up, boost brain power (The Times of India: 28.2.2011)

Feeling exhausted? Just sip a cup of hot tea, for a study has claimed that drinking the beverage not only gives human brain a lift, but also reduces tiredness.

Tea drinking has already been linked with lowering the risk of heart disease, cancer and Parkinson's. Other research has shown that drinking tea on a regular basis for ten or more years may help improve bone density.

Now, Dutch researchers have carried out the study and found that it's the natural ingredients in tea which improve brain power and increase alertness, the latest edition of the 'Nutritional Neuroscience' journal reported.

For the study, the researchers looked at the effect of key chemicals found in tea on the mental performance of 44 young volunteers.

The effects of these ingredients, an amino acid called L-theanine — which is also found in green tea — and caffeine at levels typically found in a cup of tea, were compared with a dummy treatment.

The active ingredients significantly improved accuracy across a number of switching tasks for those who drank the tea after 20 and 70 minutes, compared with the placebo. The tea drinkers' alertness was also heightened, the study found.

Tea was also found to reduced tiredness among the subjects, who were aged under 40, say the researchers. "The results suggest the combination helps to focus attention during a demanding cognitive task," they were quoted by the 'Daily Mail' as saying.

Dr Tim Bond, of the industry-backed Tea Advisory Panel, said the latest findings backed a previous study which showed drinking two cups of black tea "improves the ability to react to stimuli and to focus attention on the task in hand.

Antioxidants

Antioxidants in Pecans Protect Against Heart Disease, Cancer (Med India: 28.2.2011)

Naturally occurring antioxidants in pecans may help contribute to heart health and disease prevention, according to a new study from Loma Linda University (LLU).

Pecans contain different forms of the antioxidant vitamin E-known as tocopherols, plus numerous phenolic substances, many of them with antioxidant abilities.

The nuts are especially rich in one form of vitamin E called gamma-tocopherols. The study demonstrated that after eating pecans, gamma-tocopherol levels in the body doubled and unhealthy oxidation of LDL (bad) cholesterol in the blood decreased by as much as 33 percent. Oxidized LDLs may further contribute to inflammation in the arteries and place people at greater risk of cardiovascular problems.

"Our tests show that eating pecans increases the amount of healthy antioxidants in the body," said Ella Haddad, associate professor in the School of Public Health department of nutrition, LLU.

"This protective effect is important in helping to prevent development of various diseases such as cancer and heart disease," she said.

Haddad analyzed biomarkers in blood and urine samples from study participants (a total of 16 men and women between the ages 23 and 44) who ate a sequence of three diets composed of whole pecans, pecans blended with water, or a control meal of equivalent nutrient composition. The pecan meals contained about three ounces of the nut. Samples were taken prior to meals and at intervals up to 24 hours after eating.

Protein

Protein may be Responsible for Weight Regain after Diet (Med India: 28.2.2011)

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Expensive breakfast, cheaper medicines

Expensive breakfast, cheaper medicines (Business standard: 1.3.2011)

“I RATE this Budget 3 on 10,” says a disappointed Shubha Ojha, a 50-year-old housewife from Amritsar. She attributes the low rating to the absence of any substantial relief for households from the spiralling cost of fuel and daily necessities. Instead, the finance minister has offered duty cuts on exotic foodstuffs like raw pistachios, raisins and cranberry products.

The Budget has reduced the basic Customs duty on raw pistachios and cranberry products from 30 per cent to 10 per cent and on raisins from 100 per cent to 30 per cent. According to Ernst & Young tax partner Saloni Roy, “Usually, tax benefits given to businesses get passed on to consumers. However, a price rollback is not guaranteed.” However, households do stand to gain from indirect benefits of Customs duty cuts on certain medical products. It has been dropped from 10 per cent to five per cent on some life saving drugs. Similarly, the Customs duty has been reduced from 25 per cent to 10 per cent on the lactose used in the manufacture of homeopathic medicines. Tax experts feel this has been done with a view to making drugs affordable. But, businesses will take at least six months to pass on any benefits to the consumers.

Further, in a move to bring more items under the tax ambit, the Budget has imposed an excise duty of one per cent on 130 specified items, which were exempt from the tax till date. These include consumables like coffee, tea, sauces, ketchups, soups, broths, all kinds of food mixes, ready-to-eat packaged foods and milk containing edible nuts with sugar. At the same time, the excise duty on other essentials like sanitary napkins, baby and adult diapers has been brought to one per cent from the existing 10 per cent.

“This move is geared towards widening the base of products to be covered under the Goods and Services Tax, when it gets implemented. The logic is to tax more goods at a lower rate,” explained Ashutosh Thaker, tax partner, BDO. Besides, the actual price hike, if any, passed on to the consumers, will be marginal due to the low rate of taxation, feels Thaker. Besides, most of these items are also exempt from the value added tax and therefore the actual impact should not be very significant, adds Roy. Brand aficionados will be especially disappointed this time. In a first, the Budget has imposed an excise duty of 10 per cent on branded clothing and a per cent on branded jewellery and other articles of precious metals.

THE POSITIVES

- Lower prices of certain drugs

- No substantial price hikes or taxes introduced for essential items

THE NEGATIVES

- Excise duty on additional 130 specified items

Higher prices of branded clothing and jewellery

HOUSEWIVES' BUDGET

coffee, tea, ready-to-eat packaged foods and ketchups, the Budget has hiked expenses further

Sugar-sweetened drinks

Sugar-sweetened drinks linked to higher BP (New Kerala: 1.3.2011)

: A new study has revealed that soda and other sugar-sweetened beverages such as fruit drinks are associated with higher blood pressure levels in adults.

In the International Study of Macro/Micronutrients and Blood Pressure (INTERMAP), for every extra sugar-sweetened beverage drunk per day participants on average had significantly higher systolic blood pressure by 1.6 millimeters of mercury (mm Hg) and diastolic blood pressure higher by 0.8 mm Hg. This remained statistically significant even after adjusting for differences in body mass, researchers said.

Researchers found higher blood pressure levels in individuals who consumed more glucose and fructose, both sweeteners that are found in high-fructose corn syrup, the most common sugar sweetener used by the beverage industry.

Higher blood pressure was more pronounced in people who consumed high levels of both sugar and sodium. They found no consistent association between diet soda intake and blood pressure levels. Those who drank diet soda had higher mean BMI than those who did not and lower levels of physical activity.

"This points to another possible intervention to lower blood pressure," said Paul Elliott, senior author and professor in the Department of Epidemiology and Biostatistics in the School of Public Health at Imperial College London.

"These findings lend support for recommendations to reduce the intake of sugar-sweetened beverages, as well as added sugars and sodium in an effort to reduce blood pressure and improve cardiovascular health."

In INTERMAP, researchers analyzed consumption of sugar-sweetened drinks, sugars and diet beverages in 2,696 participants, 40- to 59-years-old, in eight areas of the United States and two areas of the United Kingdom. Participants reported what they ate and drank for four days via in depth interviews administered by trained observers, underwent two 24-hour urine collections,

eight blood pressure readings and responded a detailed questionnaire on lifestyle, medical and social factors.

The researchers found that sugar intake in the form of glucose, fructose and sucrose was highest in those consuming more than one sugar-sweetened beverage daily. They also found that individuals consuming more than one serving per day of sugar-sweetened beverages consumed more calories than those who didn't, with average energy intake of more than 397 calories per day.

Those who did not consume sugar-sweetened beverages had lower average body mass index (BMI) than those who consumed more than one of these drinks daily.

"People who drink a lot of sugar-sweetened beverages appear to have less healthy diets," said Ian Brown, Ph.D., research associate at Imperial College London. "They are consuming empty calories without the nutritional benefits of real food. They consume less potassium, magnesium and calcium.

"One possible mechanism for sugar-sweetened beverages and fructose increasing blood pressure levels is a resultant increase in the level of uric acid in the blood that may in turn lower the nitric oxide required to keep the blood vessels dilated. Sugar consumption also has been linked to enhanced sympathetic nervous system activity and sodium retention."

The study's limitations include that it was cross-sectional and diet was self-reported.

"This is a population study. It's one piece of the evidence in a jigsaw puzzle that needs to be completed," Brown said. "In the meantime, people who want to drink sugar-sweetened beverages should do so only in moderation."

Salty meal

A salty meal cuts blood flow in just 30 minutes (The Times of India: 3.3.2011)

Alters Function Of Cells That Line Arteries: Study

RISKY BITE

It may sound alarming, but a new study has claimed that eating a single salty meal could reduce blood flow in your main arteries in just 30 minutes.

And, blood flow becomes temporarily more restricted for between 30 minutes and an hour after the salty food has been consumed, say researchers. The researcher tested how quickly salt had a damaging effect on the body by recruiting 16 healthy adults and feeding them each a high-salt meal, containing 4g and later a low-salt meal, made with just 0.3g, the Daily Mail reported.

Before and after each meal, they tested how smoothly blood was flowing in the brachial artery—the main blood vessel in the upper arm normally used for checking blood pressure. Although the artery does not measure blood flow directly to the heart, it is commonly used to give an indication of cardiovascular health.

The results showed blood flow was significantly more impaired within 30 minutes of eating the salty meal than low-salt alternative and restriction reached a peak after an hour. In a report on the findings, the authors from a group of research organisations in Adelaide, Australia, said, “This study showed the amount of salt similar to that in a commonly eaten meal impairs blood flow in healthy men and women. The mechanisms for this need to be investigated more intensively.”

Graham MacGregor, the Chairman of the lobby group Consensus Action on Salt and Health in the UK, said, “This research is of great interest. It clearly shows a rapid effect on the stiffness of the blood vessels. It looked at effects of eating just four grams of salt.

“In fact, if you eat out you will probably consume more than that. This kind of damage to blood flow is thought to be a very early sign of heart disease. Every time you eat a salty meal you are altering the function of the cells that line your arteries.”

Honey

Honey, this Oz variety is most potent’ (The Times of India: 3.3.2011)

Honey sourced from a native myrtle tree in Australia has been hailed as the “world's most potent” after it's found to have the strongest antibacterial properties in the globe.

A research team has claimed the honey from the myrtle tree could be used to treat antibiotic-resistant bacterial infections that commonly occur in hospitals and nursing homes. According to researchers, the myrtle honey has very high levels of the anti-bacterial compound Methylglyoxal (MGO) and it outperforms all medicinal honeys currently available on the market.

Lead researcher Yasmina Sultanbawa said potency of the honeys meant a small amount was required to fight infection. “The sheer strength, due to high levels of active compounds in these honeys, has meant that we have been able to completely inhibit MRSA for example in *in vitro* studies with a small quantity of the honey,” she said.

Food Allergies

Researchers Devise Easy, Accurate Way To Predict Food Allergies (Medical News Today: 7.3.2011)

An on-line calculator that predicts, within seconds, the presence of the three major food allergies in children has been developed by researchers at University College Cork. They have devised a new 'Cork-Southampton calculator' that gives 96% accuracy compared to current methods that are 61% 81% accurate. The research will be published online tomorrow in the leading international allergy journal, Journal of Allergy & Clinical Immunology.

Food allergies have increased over the past decade as has the number of patients and parents seeking diagnosis. Double-blind, placebo-controlled food challenges are the gold standard for diagnosing food allergy, but they are time-consuming, costly and, often, a source of parental and medical fear that a severe allergic reaction (anaphylaxis) might occur during a food challenge. In addition, not all clinical facilities have the staff or resources to carry out high quality food challenges.

The two Cork researchers, Dr Audrey DunnGalvin and Professor Jonathan Hourihane of the Department of Paediatrics and Child Health devised a highly accurate, allergen-specific algorithms for each of the most important food types (cow's milk, egg, peanut). The mathematical model consisted of known or suspected predictors that when combined greatly increased the accuracy of the final model. The researchers reasoned and proved that the more clinical information that could be considered, the more accurate the predictive model would be. They looked at the outcomes of combinations of data on clinical factors (skin prick test, allergen specific IgE in serum, total IgE, allergic reaction history, sex and age). The researchers then compared those to the results of the children's food challenges. From this analysis, they developed an effective prediction model, a 'calculator' of a positive food challenge that was a more accurate predictor than individual allergy tests.

This new calculator will improve the quality of life of parents and patients (on average seven years old) and will reduce significantly the cost of food allergy tests. "Young children can find the normal food allergy tests quite stressful and this test will take a lot of the distress out of the process, even just by delaying a challenge until the odds of passing it improve over time, which is the norm." says Dr Audrey DunnGalvin. "It has also implications for oral immunotherapy where clinicians try to desensitise children to their allergies by giving them controlled doses of the food to which they are allergic. The Cork-Southampton calculator will help assess appropriate stop/continue/ maintenance points in this treatment."

"Conventional food allergy tests are less than perfect but the UCC patented diagnostic is very reliable and should replace uncertainty with certainty for many doctors treating children with food allergy," says Kevin Dalton of UCC's Office of Technology Transfer. "We foresee a commercial product being launched this year resulting in better patient care and substantial savings for the healthcare service."

Coffee

Coffee Drinking Linked to Reduce Stroke Risk in Women (Science Daily: 11.3.2011)

Drinking more than a cup of coffee a day was associated with a 22 percent to 25 percent lower risk of stroke, compared with those who drank less, in a study reported in *Stroke: Journal of the American Heart Association*.

Low or no coffee consumption was associated with an increased risk of stroke in a study of 34,670 women (ages 49 to 83) followed for an average 10.4 years. It's too soon to change coffee-drinking habits, but the study should ease the concerns of some women, researchers noted.

Coffee is one of the most widely consumed beverages in the world. "Therefore, even small health effects of substances in coffee may have large public health consequences," said Susanna Larsson, Ph.D., lead author of the study and a researcher in the Division of Nutritional Epidemiology, National Institute of Environmental Medicine, Karolinska Institute in Stockholm, Sweden.

Groups who reported drinking 1-2 cups per day, 3-4 cups per day or 5 or more cups per day had similar benefits compared with those who reported daily intake of less than a cup of coffee, researchers said.

The differences were unchanged by smoking status, body mass index, history of diabetes, hypertension or alcohol consumption, indicating that coffee's effects are not influenced by those known cardiovascular risk factors.

Scientists have theorized that coffee could have either beneficial or harmful effects on the cardiovascular system, but earlier studies have been inconclusive. Only one previous prospective study, which was also inconclusive, examined the association between coffee consumption and stroke incidence in healthy women.

"Our research group has previously observed an inverse association between coffee consumption and risk in Finnish male smokers," Larsson said. "We wanted to assess the situation in women."

The women participated in the long-running Swedish Mammography Cohort, an epidemiological study investigating the association between diet, lifestyle and disease development. All the women were free of cardiovascular disease and cancer at baseline in 1997, when they answered the food frequency questionnaire analyzed in the study.

Researchers collected data on cases of first stroke that occurred between Jan. 1, 1998 and Dec. 31, 2008, by linking the study group with the Swedish Hospital Discharge Registry that provides almost complete coverage of Swedish hospital discharges.

Researchers documented 1,680 strokes: 1,310 cerebral infarctions/ischemic strokes (caused by blockages), 154 intracerebral hemorrhages (caused by bleeding inside the brain), 79

subarachnoid hemorrhages (caused by bleeding on the surface of the brain) and 137 unspecified strokes.

After adjustment for other risk factors, coffee consumption was associated with a statistically significant lower risk of total stroke, cerebral infarction and subarachnoid hemorrhage, Larsson said.

The small numbers of intracerebral hemorrhage could have factored in the lack of an association with that stroke subtype, she said. In general, cerebral infarction is most strongly associated with dietary factors.

The food frequency questionnaire made no distinction between regular and decaffeinated coffee but decaffeinated coffee consumption in the Swedish population is low, Larsson said.

Potential ways that coffee drinking might reduce the risk of stroke include weakening subclinical inflammation, reducing oxidative stress and improving insulin sensitivity, she said.

The study's limitations include the use of a self-administered questionnaire to determine medical history and history of coffee consumption -- which inevitably includes some measurement error and misclassification of exposure -- and the possibility of an unrecognized confounding factor associated with either low or moderate coffee consumption, Larsson said.

"Some women have avoided consuming coffee because they have thought it is unhealthy. In fact, increasing evidence indicates that moderate coffee consumption may decrease the risk of some diseases such as diabetes, liver cancer and possibly stroke."

More studies on coffee consumption and stroke are needed before firm conclusions can be reached, Larsson said.

Veggies- Cancer-Fighting Diet

Biologists Show How Veggies Work In Cancer-Fighting Diet (Medical News Today: 11.3.2011)

Mothers around the world now collectively can say, "I told you so."

Your vegetables are good for you, says a research review published by scientists from the University of Alabama at Birmingham in the journal Clinical Epigenetics.

In particular, vegetables such as broccoli and cabbage are filled with compounds that could help reverse or prevent cancers and other aging-related diseases as part of the "epigenetics diet," a new lifestyle concept coined after the article's publication.

"Your mother always told you to eat your vegetables, and she was right," says co-author Trygve Tollefsbol, Ph.D., D.O., a biology professor in the UAB College of Arts and Sciences. "But now we better understand why she was right compounds in many of these foods suppress gene aberrations that over time cause fatal diseases."

Epigenetics is the study of the changes in human gene expressions with time, changes that can cause cancer and Alzheimer's, among other diseases. In recent years, epigenetics research worldwide, including numerous studies conducted at UAB, have identified specific food compounds that inhibit negative epigenetic effects.

Those foods include soybeans, cauliflower, broccoli and cabbage. Green tea, fava beans, kale, grapes and the spice turmeric round out the diet.

"The epigenetics diet can be adopted easily, because the concentrations of the compounds needed for a positive effect are readily achievable," says lead author Syed Meeran, Ph.D., a research assistant professor in Tollefsbol's UAB Department of Biology laboratory.

For example, Meeran says sipping tea compounds called polyphenols in daily amounts that are equivalent to approximately three cups of green tea has been shown to reverse breast cancer in laboratory mice by suppressing the gene that triggers the disease. Similarly, a daily cup of broccoli sprouts, which has sulforaphane as an active compound, has been shown to reduce the risk of developing many cancers.

"Our review article has drawn everything together from global studies, and the common theme is that compounds in the epigenetics diet foods can, at the very least, help us lead healthier lives and help our bodies prevent potentially debilitating diseases like breast cancer and Alzheimer's," Tollefsbol says.

Dietary Supplements

Dietary Supplements A Common Recommendation To Patients Within Various Physician Specialties.(Medical News Today)

For physicians within several medical specialties, including dermatology, cardiology and orthopedics, personal usage of and patient recommendations for dietary supplements are quite common¹, according to a study published in Nutrition Journal, a peer-reviewed, on-line journal that focuses on the field of human nutrition.

The 2008 "Life...supplemented" Healthcare Professionals (HCP) Impact Study found that 75 percent of dermatologists personally use dietary supplements and 66 percent recommend

supplements to their patients; 57 percent of cardiologists personally use dietary supplements and 72 percent recommend supplements to their patients; and 73 percent of orthopedic specialists personally use dietary supplements and 91 percent recommend supplements to their patients.

"Health professionals including physicians have an interest in healthy lifestyles and in habits that may contribute to wellness, which may include the use of dietary supplements. Some surveys of physicians suggest that they are as likely as members of the general public to use dietary supplements," the study authors state.

The most commonly reported product taken by these specialists was the multivitamin - with 44 percent of all cardiologists, 61 percent of all dermatologists, and 57 percent of all orthopedists indicating they had taken a multivitamin within the past year. Additionally, over 25 percent of physicians in each specialty said they had used omega-3/fish oil supplements, and over 20 percent of each of the three specialty groups said they had taken a botanical supplement in the past year, with green tea being the botanical most frequently mentioned.

Overall health and wellness was the top reason these physicians reported for taking supplements, including 32 percent of cardiologists, 42 percent of dermatologists and 43 percent of orthopedists. Heart health was mentioned by more than a quarter of cardiologists and orthopedists, while bone health was mentioned by about a quarter of orthopedists and dermatologists. Lowering cholesterol was cited by 20 percent of cardiologists, joint health by 29 percent of orthopedists, and skin, hair and nails by 16 percent of dermatologists.

The survey found that most of the physicians who reported supplement use were long-term users. About half of the supplement users in each specialty said they had taken supplements for four to 10 years, and about a third said they had taken supplements for more than 10 years.

When it comes to why these specialists recommend supplements to patients, top reasons were often related to the physicians' specialty: among cardiologists, lowering cholesterol, maintaining healthy cholesterol, and general heart health; among dermatologists, skin, hair, and nails; and among orthopedists, bone health, joint health, and musculoskeletal pain.

Findings from this survey add to the existing body of research on healthcare professionals' use of/recommendations for dietary supplements. In 2009, Nutrition Journal published findings from a separate 2007 study from "Life...supplemented" that found that physicians and nurses are as likely as members of the general public to use dietary supplements, and most physicians and nurses recommend supplements to their patients.

Fish

Eating fish can reduce blindness risk by half (New Kerala: 16.3.2011)

Eating fish just once or twice a week could reduce the risk of suffering from the most common form of blindness by nearly half.

Research shows that eating omega-3 fatty acids, most commonly found in tinned salmon and tuna, can help prevent the onset of age-related macular degeneration (AMD), a condition that leads to the gradual loss of vision.

This finding backs up previous research which showed similar results in men. William Christen, of the Harvard Medical School, the US, who led the study said that "dark meat" fish appeared to help the most, the Telegraph reports.

"This lower risk appeared to be due, primarily, to consumption of canned tuna fish and dark-meat fish," said Christen.

The disease, which mainly effects people over 40, robs sufferers of their sight by creating a black spot in the centre of their vision which slowly gets bigger.

With the number of AMD sufferers expected to treble in the next 25 years as the population ages, there is an urgent need for a breakthrough.

The team at Harvard Medical School piggybacked on another study of more than 38,000 women to obtain the findings. All the participants began the study AMD-free.

Tea

Milk in tea could prevent weight loss (New Kerala: 28.3.2011)

Beware, especially if you want to lose weight - don't add milk to tea, or you would pile on the pounds.

Scientists have discovered that tea contains high levels of compounds that help reduce the amount of fat but proteins found in cows' milk neutralise this fat-fighting ability.

New research has shown that the compounds, called theaflavins and thearubigins, prevent obesity when given to rats that were also on a high-fat diet.

Researchers now believe this could explain why people in Britain appear not to benefit from the healthy affects of tea despite being among the world's biggest consumers of the beverage, the Telegraph reports.

Devajit Borthakur, a scientist at the Tea Research Association at Jorhat in the Indian state of Assam, said: "When tea is taken with milk, theaflavins and thearubigins form complexes with the milk protein, which causes them to precipitate."

"It means that we don't get the health benefit from these compounds nor from milk protein. Therefore, it is always advised to take tea without milk."

A study by scientists in Japan, reveals that extracts from tea leaves inhibit the absorption of fat in the guts of rats being fed high-fat diet.

These rats also had less fat tissue on their bodies and lower fat content in their livers, reports the Journal of Nutrition.

Hiroaki Yajima, a scientist with the Kirin Beverage Company in Japan who carried out the Japanese research, said: "Black tea extracts may prevent diet-induced obesity by inhibiting intestinal lipid absorption."

Bad Eating Habits

Bad Eating Habits Linked To Anemia Risk In Older Women (Medical News Today: 28.3.2011)

A noticeable proportion of postmenopausal women with anemia are not eating properly, researchers from Tucson, Arizona, reveal in a study published in the Journal of the American Dietetic Association. When the total number of red blood cells or hemoglobin concentrations are too low, a person has anemia. Hemoglobin, a protein, exists in red blood cells, it contains iron and transports vital oxygen.

Study leader, Cynthia A. Thomson, PhD, RD, said:

"This study suggests that inadequate nutrient intakes are a significant risk factor for anemia in this population of older women and use of multivitamin/mineral supplements is not associated with lower rates of anemia. Overall mortality is increased in relation to a diagnosis of anemia, and anemia, particularly iron deficiency, has been associated with reduced capacity for physical work and physical inactivity, injury related to falls and hospitalizations, making this an important health care concern in the aging."

The authors explained that there have not been many studies focusing on the relationship between diet and anemia in independently living women over the last two decades.

The researchers gathered data from WHI-OS (Observational Cohort of the Women's Health Initiative), consisting of 72,833 adult females. They discovered that if women were not consuming enough of one single nutrient, they ran a 21% higher risk of persistent anemia; deficiencies in three nutrients raised their risk by 44%.

The following ethnic female groups had deficiencies of three anemia-associated nutrients:

Non-Hispanic whites - 7.4%

Native Americans and Alaskans - 15.2%

Asian/Pacific Islander - 14.6%

African-Americans - 15.3%

Hispanic/Latinos - 16.3%

Anemia in females was linked to inadequate consumption of vitamin B12, vitamin C, red meat, folate, protein and energy. The researchers also found that deficiencies in iron, folate and vitamin B12 were individually associated with a 10% to 20% higher risk of developing anemia - with a 21% risk of persistent anemia. There was also a link between anemia and smoking, BMI (body mass index) and age.

The authors added that the Women's Health Initiative is one of the most wide-ranging sources of health, diet and general data ever gathered in the USA, including information over a 9-year period.

The authors conclude:

"Efforts to identify anemia that may be responsive to modifiable factors such as diet to improve health outcomes are needed. Additional efforts to regularly evaluate postmenopausal women for anemia should be considered and should be accompanied by an assessment of dietary intake to determine adequacy of intake of anemia-associated nutrients including iron, vitamin B12 and folate.

While the type of anemia is often designated by a more comprehensive biochemical assessment than hemoglobin alone, nutritional therapy to improve overall nutrient-density and quality of the diet should also be a clinical focus."

Accompanying Editorial - Lisa Turring-Humphreys, PhD, RD, wrote:

"The study by Thomson and colleagues extends the literature by providing one of the largest prospective assessments of diet and anemia in US postmenopausal women."

Anemia is common in older people anyway, the authors added. A significant number of older patients have anemia which is not linked to nutritional causes.

"Nutrient Intake and Anemia Risk in the WHI Observational Study"

Cynthia A. Thomson, PhD, RD, Jeffrey Stanaway, MPH, Marian L. Neuhouser, PhD, RD, Linda G. Snetselaar, RD, PhD, LD, Marcia L. Stefanick, PhD, Leslie Arendell, MS, and Zhao Chen, PhD, MPH. Journal of the American Dietetic Association (April issue)

Tea therapy

Tea therapy: To lose weight, don't add milk to your cuppa (Times of India: 28.3.2011)

London: It's a known fact that tea contains antioxidants that help you lose weight, but a new research led by an Indian scientist found that this fat-fighting ability is neutralised if milk is added to it.

It has long been found that tea contains high levels of antioxidant such as theaflavins and thearubigins which help reduce the amount of fat absorbed by the gut and can also cut cholesterol. Now, researchers at the Tea Research Association in Assam, India, found the compounds also help prevent obesity when given to rats that were on a highfat diet.

The benefits are cancelled out by proteins found in cows' milk, they said. "When tea is taken with milk, theaflavins and thearubigins form complexes with the milk protein, which causes them to precipitate," Devajit Borthakur, a scientist at the Tea Research Association, said. "Therefore, it is always advised to take tea without milk," he said.

The scientists at the centre are now looking for ways of making the antioxidants less susceptible to being neutralised by milk. PTI

Heart-Healthy Nuts

Walnuts are Heart-Healthy Nuts (Med India: 29.3.2011)

A University of Scranton study has revealed that walnuts are one of the best readymade food items available that keep your heart healthy since they are rich in anti-oxidants.

According to researchers at the university in Pennsylvania, walnuts are the best source of antioxidants and are also rich in proteins, minerals, vitamins and healthy fiber. A number of previous studies have suggested that regular consumption of nuts can have a positive effect in reducing the risk of heart disease and diabetes.

The researchers compared nine commonly consumed nuts including pistachios, hazelnuts, pecans, walnuts, macadamias, almonds, Brazil nuts, cashews and peanuts and analyzed the level of antioxidants in each nut.

The researchers found that walnuts had the highest content of antioxidants as well as some of the most powerful antioxidants compared to other nuts. “A handful of walnuts contains almost twice as much antioxidants as an equivalent amount of any other commonly consumed nut. But unfortunately, people don't eat a lot of them. This study suggests that consumers should eat more walnuts as part of a healthy diet”, lead researcher Dr Joe Vinson said.

Drinking tea daily ‘as good as water in keeping you hydrated’

London: A new study has found that drinking four to six mugs of tea daily is as good as a litre of water for keeping yourself hydrated. The finding disproves the idea that regular tea drinking can dehydrate the body because of its caffeine content.

The research also found no negative health effects from drinking that amount of tea.

In the high quality UK clinical trial, 21 volunteers drank either four 240ml mugs of tea over a 12-hour period — equivalent to just under one litre of tea in total — or a similar amount of plain, boiled water served warm. The tea included 20ml of semi-skimmed milk but no sugar.

The test was also repeated using six cups of tea or plain water, equivalent to nearly 1.5 litres of fluid, to investigate the effect of intakes.

Eating ‘handful’ of walnuts best bet for healthy heart

Washington: A new study has suggested that walnuts have a combination of more healthful antioxidants and higher quality antioxidants than any other nut.

It positioned walnuts in the No. 1 slot among a family of foods that lay claim to being among Mother Nature’s most nearly perfect packaged foods: Tree and ground nuts.

“Walnuts rank above peanuts, almonds, pecans, pistachios and other nuts,” said Joe Vinson, who did the analysis.

“A handful of walnuts contains almost twice as much antioxidants as an equivalent amount of any other commonly consumed nut. But, unfortunately, people don’t eat a lot of them. This study suggests that consumers should eat more walnuts as part of a healthy diet,” he added.

Vinson found that the quality, or potency, of antioxidants present in walnuts was highest among the nuts. Antioxidants in walnuts were 2-15 times as potent as vitamin E, renowned for its

powerful antioxidant effects that protect the body against damaging natural chemicals involved in causing disease.

“There’s another advantage in choosing walnuts as a source of antioxidants,” said Vinson, who is with the University of Scranton in Pennsylvania.

“The heat from roasting nuts generally reduces the quality of the antioxidants. People usually eat walnuts raw or unroasted, and get the full effectiveness of those antioxidants,” he added.

The report was presented at the 241st National Meeting and Exposition of the American Chemical Society.

Nicotine raises blood sugar among diabetic smokers

Washington: Researchers have found that nicotine is the main culprit responsible for persistently elevated blood sugar levels — and the resulting increased risk of serious health complications — in smokers who have diabetes.

They said the discovery also might have implications for people with diabetes who are using nicotine-replacement therapy for extended periods in an attempt to stop smoking.

“This is an important study. It is the first study to establish a strong link between nicotine and diabetes complications. If you’re a smoker and have diabetes, you should be concerned and make every effort to quit smoking,” said Xiao-Chuan Liu.

The gold standard for monitoring long-term blood sugar levels in people with diabetes is the hemoglobin A1c (HbA1c) blood test. —

Fresh Foods - Hormone Disruptors BPA and DEHP

Switching To Fresh Foods Cuts Hormone Disruptors BPA and DEHP (Medical News Today 31.3.2011)

Switching to a fresh food diet devoid of canned and packaged foods reduces levels in the body of the hormone disruptors BPA and DEHP, according to a new study published in the journal Environmental Health Perspectives this week.

Researchers from the Silent Spring Institute and Breast Cancer Fund in the US found that just three days living on a fresh food diet significantly reduced levels of the food packaging chemicals bisphenol A (BPA) and bis(2-ethylhexyl) phthalate (DEHP) in children and adults.

Lead author Ruthann Rudel, who is a research director at the Silent Spring Institute, told the press that:

"The study provides compelling evidence that removing BPA and DEHP from food packaging would substantially reduce exposures for adults and children."

"The good news is that now we know how much food packaging contributes to our overall exposure to BPA and DEHP, and we know how to significantly reduce exposures, both on a personal and societal level," she added.

BPA and DEHP, high-production-volume chemicals used in plastics and resins for food packaging, have been linked to hormone disruption in animals and also in some human studies, wrote the authors. However, no studies have tried to quantify the impact of diet to exposure in humans, they noted.

For the study, Rudel and colleagues recruited 20 adults and children from five families and tested their evening urine levels of BPA and DEHP for eight days in January 2010, that is before, during and after a three-day fresh food diet.

They selected the participants based on their self-reported use of canned and packaged foods.

The participant started with their usual diet, then for three days they switched to a "fresh food" diet of organic foods that were not canned or packaged in plastic, and then went back to their usual diet. Also, the families were asked to store their foods at home in glass and stainless steel containers rather than plastic ones.

The results showed that:

When the participants switched to fresh foods, their average level of BPA fell by over 60%.

Similarly, average levels of DEHP metabolites fell by over 50% during the fresh food diet.

The drop was even greater for those individuals whose exposure was highest before the diet switch, over 70% reduction for BPA and over 90% for DEHP.

Co-author Connie Engel, program coordinator with Breast Cancer Fund, said:

"The study should serve as a wake-up call to industry and government to enact big-picture solutions that eliminate harmful chemicals from food packaging and protect public health."

Rudel cautioned that:

"As we replace BPA and DEHP, substitute chemicals need to be tested for safety before they're put into use so we don't end up with a revolving door of hazardous chemicals in consumer products."

BPA is used in the manufacture of hard polycarbonate bottles and the epoxy resin lining of food and beverage cans. DEHP is used to soften plastic, including some used as food wrap. Both chemicals are also present in various consumer products such as shower curtains and toys.

The authors noted that consumers can reduce their exposure to both chemicals by avoiding canned food and foods in plastic packaging, eating more home-cooked foods prepared with fresh ingredients, and storing their foods at home in glass and stainless steel containers.

"Food Packaging and Bisphenol A and Bis(2-Ethylhexyl) Phthalate Exposure: Findings from a Dietary Intervention."

Soft drinks

Everything bitter will turn sweet with this chemical (The Times of India: 31.3.2011)

May Be Used To Make Drugs, Diet Drinks More Palatable

Cough syrups and diet drinks could soon become more tastier as scientists have found a new compound which they say blocks taste buds' ability to detect bitter flavours.

The discovery of the compound, called GIV3616, which is tasteless and prevents tart tastes being sensed by the tongue, could be added to foods and beverages to make them more palatable, said the researchers. Ioana Ungureanu, of the research team that developed the compound at Givaudan Flavors Corporation in Cincinnati, Ohio, said, "A lot of people are very sensitive to bitter taste in medicines, calorie-free sweeteners and foods."

"We'd like to be able to make their diets more enjoyable by masking the off-putting flavors of bitterness," Ungureanu was quoted as saying by LiveScience. "Blocking these flavors we call

'offnotes' could help consumers eat healthier and more varied diets. It could encourage them to switch to non-calorie soft drinks and help children and seniors swallow bitter-tasting medications," he said.

The researchers, who presented their findings at the annual conference of the American Chemical Society in Anaheim, California, said GIV3616 is not the first compound capable of masking bitter tastes from the tongue.

That honour belongs to GIV3727, which improves the taste of artificial sweeteners such as saccharin and sucralose.

But, the bitterness blocker GIV3616 is more potent than its predecessor and dissolves more quickly in food and beverages, Ungureanu said. As people have become more concerned about the amount of salt, fat and sugar in processed foods, interest in flavor blockers has jumped, according to the American Chemical Society.

Instead of masking bad or bitter flavors with salty, fatty ingredients, food manufacturers are interested in using chemicals that interfere with the taste receptors on the tongue, leaving them temporarily unable to detect unpleasant flavors. PTI

Health Education

Doctors Training

Doctors Training needs to be more wholesome (The Tribune: 17.2.2011)

Besides medical expertise, a physician has to be equipped with skills to cope with bad news, treatment failures, patient suffering, medical futility and death
Doctors' training needs to be more wholesome

A physician comes across varied situations full of excitement, anxiety, fear, emotional trauma and legal issues resulting from unfavorable outcome of the best medical care, or at times, due to an act of omission. Coping with such situations is a skill in itself that can either be learnt with hit and trial or by imparting the structured capsules of teaching programmes.

The present medical curriculum, however, lays stress mainly on imparting the loads of medical knowledge only. Thus the medical students with top academic ranks have rarely interacted with the public life. A medical student usually enters the course at the age of 17, and finishes it at the age of 21 years. The period of 4.5 years is mostly spent in a similar environment thus restricting the overall maturity and development of the personality. Suddenly after the course, the medical student enters an environment which demands great responsibility, courteousness, communication skills and mature behaviour out of him.

Prepare them

n Majority of the legal cases pertaining to medical profession can be avoided with optimum level of communication. Thus it is the need of the hour that short courses in developing the communication skills should be introduced into the medical curriculum

n The pangs of medicine may be better tolerated by a soul nourished by an icing of art and literature on the cake of medicine than the one tasting only the monotonous medicine-laden cake

n Doctors who are themselves happy are able to provide superior care, make fewer mistakes and are sued less often

When I entered the clinical environment as an intern, I was not prepared for the psychological trauma of life and death. I remember that during my first duty of internship in paediatrics, 25 years back, a two-year- old child visited the OPD in the lap of his mother with the problem of breathlessness. A prescription was handed over to the patient by the consultant after thorough examination and the patient was advised to take medicine at home. But the mother insisted on

the child to be admitted because she had come from a remote village and she wanted her child to get well before she went home. The child was accordingly admitted. I was on night duty along with the junior resident and nurse. At midnight the child suddenly developed a bout of breathlessness and could not be revived. The scene was full of trauma and horror for me. The thoughts of conviction of the mother about the seriousness of her child resulting in hospital admission and the error of judgment on our part for treating the child as an outpatient were knocking my mind repeatedly. The question whether we took the disease of the child too casually resulting into some act of omission was haunting me. I almost cried and was consoled by the co-residents and the nurses explaining that it was a part of our career.

It is a known fact now that the adverse events have significant impact on the behaviour of doctors. Terry Mizrahi from Hunter College School of Social Work, New York describes 3 'Ds' as a range of negative coping mechanisms employed by doctors in training when a mistake is made:

n 'denial' - which involves redefining errors as nonerrors and may even involve negation of the concept of error.

n 'discounting' - when personal responsibility is minimised and blame externalised.

n 'distancing' - when we manage our guilt by removing ourselves from the patient's care.

These mechanisms are often unsuccessful; a finding confirmed by Baylis. With the unveiling of mistakes with time, the resultant emotional reactions as per the scientific studies can take the form of shame, doubt, fear, guilt, sadness, loss, frustration and panic.

Furthermore, the situations of unfavorable outcome in spite of the best medical care are also a well recognised cause of emotional trauma. Tait Shanafelt, in his article "When Your Favorite Patient Relapses: Physician Grief and Well-Being" has described the grief of a physician due to sudden and unexpected bad outcome of a patient. Dr Frank L. Meyskens, in his poem "Tidal wave" has expressed the feelings of a physician as to how he feels powerless and overwhelmed by tidal waves of bad news, treatment failures, patient suffering, medical futility, and death.

In a book, *Trauma and Recovery*, written by Dr Judith Herman, the author has emphasised that certain emotional traumas sustained by a physician during the course of his/ her career can manifest as a bona fide form of post-traumatic stress disorder.

Furthermore, there are instances when even the dedicated and competent medical men have to face unwarranted circumstances like rude behaviour of patients, legal cases, and even interpersonal rivalries. Although, in due course of time they come out of the adverse situations, but during that time and for some time later on, the trauma and stress gets manifested in their behaviour affecting the performance of their work.

I remember a colleague of mine who was slapped with a legal case when he operated upon a 90-year-old male patient for a hip fracture who developed thrombus in the legs on the tenth day of surgery that travelled to the lungs and ultimately the patient could not be saved. My friend went through a lot of mental stress during those days. He wasted a lot of time and energy to prove that the thrombus in elderly patients can occur after hip surgery in spite of the best care. In the

present era of information technology, the patients need to be informed about the nature of their problems and the possible solutions and risks in their own language.

The physician is supposed to have the skills so that he has the capability of communicating with the richest and the poorest, the elite and the down trodden, and the literate and the illiterate. Majority of the legal cases pertaining to medical profession can be avoided with optimum level of communication. Thus it is the need of the hour that short courses in developing the communication skills should be introduced into the medical curriculum. Dr John D Kelly in his article "Medical Student Education: Time for a Different Radical Change" has suggested that the knowledge of literature can also go a long way in enhancing the overall communication skills of the physicians to establish a life-giving emotional connection with patients. This will also help in accelerating the two-way flow of knowledge in the classrooms as well as writing their research projects and papers.

Thus even a short stint of training in emotional crisis management will be helpful to the medical graduates not only in the well being of these caregivers but is also likely to go a long way in enhancing the performance of medical work. Therefore, it is essential that the medical curriculum should be revised with addition of some optional courses. The coaching should be provided for handling death, dying, litigation stress, and adverse events. Dr Kelly has also suggested many tools like cognitive behaviour therapy, support groups, and stress management techniques that most of the medical personnel are never exposed to. The experts have earlier suggested that development of medical men with wholesome and mature personalities can be enhanced by introducing the optional courses in humanities and arts to medical students. The pangs of medicine may be better tolerated by a soul nourished by an icing of art and literature on the cake of medicine than the one tasting only the monotonous medicine-laden cake. The subjects from nonmedical streams will not only facilitate the overall development of the medical students thus helping them dealing with untoward situations in a mature manner, but also can act as stress busters by relaxing their mind from the monotonous routine of medicine.

Lastly, this is also an important fact that our mistakes and traumas tend to force us to carry the effect of our work place to our homes with a risk of even disturbing the family life and ultimately coming to work place with more frustration thus entering into a vicious loop of unending circle. Thus training of the physicians in acquiring the better communication skills, and handling the emotional trauma and adverse situations in a better way must be introduced into the medical curriculum in order to produce doctors who are themselves happy and are able to provide superior care, make fewer mistakes, and are sued less often.

The writer is associated with Government Medical College and Hospital, Sector 32, Chandigarh

LEARNING

LEARNING TO GROW (Business Standard: 17.2.2011)

INDICUS ANALYTICS

Despite a demographic advantage, India's growth has faced considerable constraints from an inadequate supply of qualified manpower. To begin with, despite a rise in the number of general and professional colleges over the last two decades, the enrolment in higher education lags the world average. The 11th five year plan document on education noted a low gross enrolment ratio (GER) of 11 per cent in higher education in 2004-05, much lower than the world average of 23.2 per cent. Further, even as rural GER stood at 6.7 per cent, urban GER was 19.9 per cent. The plan, therefore, set out to increase GER to 21 per cent by the end of the 12th plan with an interim target of 15 per cent by 2011-12.

According to the latest data available from the ministry of human resources development for 2006-07, the largest number of professional colleges are in Andhra Pradesh, Maharashtra, Tamil Nadu and Karnataka, in large part due to the presence of the private sector. In Tamil Nadu, Karnataka and Kerala, the number of professional colleges is higher than that of general colleges—this reflects the emphasis on technical education in these states. Interestingly, when it comes to general colleges, Uttar Pradesh had 1,676 in 2006-07, while Andhra Pradesh had 1,674, the top two in the country. However, the population in the age group 15-24 years in Andhra Pradesh was roughly half that in Uttar Pradesh in 2006. Disparities in access, therefore, abound in the country. Students do have the option to migrate to other states for higher education, but this is available only to those who can afford the higher costs of tuition and living away from home.

In effect, there is a huge problem of access to higher education. The government, however, has made efforts to mitigate this deficit by giving extra support to boost expansion in states with low GERs, setting up new degree colleges in 370 districts that have been identified with very low GER. In addition, expansion is on for setting up new Central Universities, Indian Institutes of Technology (IITs), Indian Institutes of Management and so on. Although the private sector now accommodates more than half of total higher education enrolment, there are severe problems with regard to quality, fees and accreditation that need to be resolved through appropriate regulation.

The Report to the People on Education 2009-10 noted that the GER target of 15 per cent for 2011-12 will be reached. There is a simultaneous effort to raise the quality and effectiveness of higher education courses. Reforms that are pending in Parliament include accreditation through a National Accreditation Regulatory Authority, prohibition of unfair practices in technical colleges, regulating entry of foreign educational institutes and so on. There have also been many initiatives to broaden access to learning. The National Programme on Technology Enhanced Learning, for instance, has developed online courses in collaboration with seven IITs and the Indian Institute of Science, Bangalore; more than 1,000 courses will be accessible through the mobile phone free of charge. Investment in education is an important determinant of economic

growth; a sector that has been neglected for decades is finally getting the attention it deserves, providing the vital infrastructure for the development of human capital.

Indian States Development Scorecard is a weekly feature by Indicus Analytics that focuses on the progress in India and the states across various socioeconomic parameters sumita@indicus.net

[INDIAN STATES DEVELOPMENT SCORECARD]

After decades of neglect, access to higher education is finally being recognised a growth driver

COLLEGE COURSE India Colleges Professional for general colleges education

1991-92 5,058 950 1996-97 6,759 1,770 2001-02 8,737 2,409 2006-07 11,458 7,024 Note: Professional educational includes engineering, technical, architecture, medical, teacher training colleges and polytechnics

Source: Ministry of Human Resources Development Source: Annual Report 2009-10, Ministry of Human Resources Development; Professional Education includes engineering, technical, architecture, medical, teacher training colleges and polytechnics

0 25 50 75 100 250 500 750 1,000 1,250 1,500 1,750

Andhra Pradesh Maharashtra Tamil Nadu Karnataka Gujarat Uttar Pradesh Madhya Pradesh Kerala Rajasthan West Bengal Punjab Jammu and Kashmir Haryana Orissa Himachal Pradesh Delhi Assam Bihar Chhattisgarh Uttarakhand Jharkhand Puducherry Goa Chandigarh Manipur Arunachal Pradesh Nagaland Sikkim Tripura Meghalaya Mizoram Andaman and Nicobar Daman and Diu Lakshadweep

1,674 1,051 1,018 972 693 869 462 823 535 552 1,676 426 712 337 189 303 812 244 375 236
232 228 65 155 168 151 700 124 110 72 68 71 348 66 800 63 334 57 107 53 113 44 17 37 23 20
12 14 58 11 10 7 42 7 5 7 14 7 58 5 22 5 3 3 1 3 2 1 Professional colleges (2006-07)

INDIA, ACADEMICALLY

World Plumbing Council

World Plumbing Council to spread awareness on health (New Kerala: 11.3.2011)

Nearly 3.1 million children die every year due to lack of access to safe drinking water and other water-borne diseases, World Plumbing Council (WPC) Chairman Robert Burgon said today.

Speaking to mediapersons on the eve of World Plumbing Day, Mr Burgon said according to a World Health Organisation (WHO) study, more than 1.1 billion people did not have access to safe drinking water and another 2.6 billion to improved sanitation across the globe, throwing serious health challenge to the authorities.

Maintaining that adopting effective plumbing systems would improve the situation, Mr Burgon said the WPC, a body associated with WHO, was engaged with raising awareness about the need to have better plumbing facilities for better living across the globe.

He said after receiving international recognition last year, the WPC is successfully celebrating World Plumbing Day for the second time tomorrow. He said WPC endeavours to promote and celebrate March 11, every year as the World Plumbing Day for years to come.

Stating that the day would be dedicated to those involved in the global plumbing industry, Mr Burgon said, "By celebrating World Plumbing Day we aim to spread the message of management, care, reuse and conservation of the natural resources of the world. It is also our responsibility to promote the role of the plumbing industry in safeguarding the environment which is another intention of recognising this day." World Plumbing Day was an opportunity to highlight the message of safe plumbing practices for healthy living, he said, adding to mark the occasion a health check of over 10,000 labourers engaged in the plumbing industry in India would be carried out.

ESIC

ESIC to open medical colleges and nursing schools (New Kerala: 29.3.2011)

Union Minister for Labour and Employment Mallikarjun Kharge today said Employees State Insurance Corporation (ESIC) would open medical colleges and nursing training schools to overcome the shortage of doctors and nurses for its hospitals.

Such a college was under construction in Faridabad of Haryana, Mr Kharge said while addressing the media persons after dedicating the newly constructed super specialty ESIC hospital in IMT Manesar in district Gurgaon today.

The 100 bedded hospital has been constructed at a cost of Rs 100 crore in three acres of land and will be run by the ESIC directly.

This is second ESIC hospital in district Gurgaon, the earlier one has been built in sector 9 of Gurgaon. Both of these will be run by ESIC directly and not by the state government.

He said that under the ESIC scheme 1.43 crore people had been covered and the number of the beneficiaries had increased to more than 5.5 crore. The medical facilities to the insured and their family members was being provided through a network of 1400 dispensaries and 147 hospitals.

Under the scheme an insured person was given two Identity Cards so that one remains with the family members and the other with the person if he had to work away from the family.

Family medicine& medical education

Family medicine & medical education reform (The Hindu: 29.3.2011)

This week could see far-reaching beneficial consequences for health care in India. But we need to ensure that the emerging paradigm shift does not miss out on what medical education can and should do to overcome the inadequacies.

Recent events in our country have been full of sound and fury, which have disillusioned the public with their futility. But this week has the potential for promising developments in Indian medical education which, in turn, could have far-reaching beneficial consequences for health care in India. The Board of Governors of the Medical Council of India (MCI) has been continuously refining its proposals for major reforms in undergraduate medical education. These are to be discussed today with the State Directors of Medical Education and the Vice-Chancellors of universities, who together are the CEOs in this field of education.

The Board has been hard at work on these proposals for some months, with the aid of a designated Working Group for Undergraduate Medical Education. This Working Group, in turn, has been holding wide and sustained consultations with scores of expert groups, which have resulted in a general consensus that major changes are overdue and must occur expeditiously. Thus this week could be a rare, opportune and pregnant moment in the troubled history of regulation of medical education in India. The nation has a vital stake in ensuring that the emerging paradigm shift does not miss out on what medical education can and should do to overcome the inadequacies and inequities in our health care system. And to take our country to

the happy consummation of quality assured and universal health care. There should not be a slip between the cup and the lip.

It is important to recognise the special potential and limitations of the present Board of Governors of the MCI, inherent in its origins. The long simmering discontent with the inefficiency and improprieties of the MCI finally erupted when, in April last year, its president was arrested on charges of corruption. The government moved quickly, in May 2011, to issue an ordinance entrusting the considerable powers of the elephantine Council to a small group of six nominated Governors. They were chosen with commendable care, both for their eminence in the profession and their reputation for integrity. In August, Parliament gave its assent to the provisions of the ordinance, but only for a one-year term ending in May 2011.

Thus, on the one hand, for the first time, a small body of reputed experts has the power and, indeed, the mandate to rectify the perceived wrongs of the MCI. They have recognised the need to move quickly on many other fronts as well such as shortage of medical manpower, quality of medical education, shortage of faculty in medical colleges, deficiencies in postgraduate training and so on. The issue of the short period of their trusteeship has now been resolved by extending their term to May 2012.

New medical graduate

Thus the MCI and the Health Ministry together are in a position to consummate this long process of gestation and produce a new Indian medical graduate. And hence the need and urgency to raise in the public domain one crucial aspect of reform of medical education which may not receive the priority it deserves. In spite of the danger of over simplification, the argument here can be stated briefly.

(1) It is generally agreed that the major challenge in health care is in ensuring sound and competent basic health care to the disadvantaged communities, both rural and urban. Indeed, it is an every day experience that even for those who can afford it, dependable and quality assured basic care is a very rare commodity.

(2) This type of care is non-specialised, has to address all common and urgent medical conditions, with limited laboratory and other facilities. It should ensure continuity of care for all members of the family, of all ages. It is mainly ambulatory. And it must include disease prevention and promotion of health, in the family and the community.

(3) Obviously this is not the kind of care that medical students are now exposed to in the so-called teaching hospitals. It is a different kind of clinical practice, usually referred to as Family Medicine (or family practice, though the former is a better term). This can be taught only through a significant exposure to secondary and primary levels of care, the lack of which is the foremost deficiency in Indian medical education today.

(4) Unless and until this component is introduced as a required part of the undergraduate course, India will never be able to solve the lack of competent, well trained, basic doctors in our primary and secondary level health clinics and hospitals. Without this, the proposed new medical

graduate will not be the basic doctor who forms the backbone of a sound health care system all over the world and which India sorely needs.

The logic of this is such that a high powered “Retreat” of the Health Ministry on September 28 and 29, 2010 expressed its approval as follows: “Request the MCI to address the issue of curriculum change to make doctors more sensitive to primary health care. Subjects such as Family Medicine need to be given importance.”

But there are many difficulties in this proposal which might result in its being put aside for the present. Health issues have never been a powerful element in our political discourse. They have never been a decisive factor in the elections, unlike in Britain or the U.S. So there is no great incentive for political parties to reflect on or act decisively on the societal responsibilities of medical education.

Electorate easily pacified

In the public perception, sound medical care is equal to access to particular medical interventions and publicised advances in medical care. The electorate is more easily pacified by the offer of medical insurance of the type instituted recently in the southern States. The move suggested above requires the creation of a speciality which hardly exists now. This discipline has to work in close coordination for the State health care system whereas the MCI works at a national level.

Family Medicine is not a field of medical practice that readily attracts the private sector or professionals who make their career decisions based on socio-economic rewards. And, therefore, at this moment in the formulation of the reforms in medical education, there is a special need for all the custodians of Indian medical education, especially the Ministry of Health, to act on behalf of the public to ensure the following:

About 20 to 25 per cent of clinical training, during the “clinical” phase of MBBS, should occur outside the teaching hospitals, at the primary/secondary levels.

Since this is quite different from tertiary care, new departments of Family Medicine should be established in all medical colleges to implement the above.

Either by arrangement with the State health care system or on their own, medical colleges must have sufficient clinical services at the primary/secondary levels to implement the above two. The outlay required for these, in faculty and infrastructure, is minor compared to the prevailing requirements for medical colleges.

There is a tide in the affairs of men. This week has the possibility of a tide which, taken at the flood, could lead to better health for all of us. “Omitted, all the voyage of their life is bound in shallows and in miseries.”

(Dr. P. Zachariah was formerly a Professor of Physiology and continues to engage in issues in medical education.)

Health Insurance Policy

Health Insurance Policy

HIV+ may get med insurance soon

Health Ministry Argument: As Disease Is Manageable, It Should Be Covered (The Times of India: 2.2.2011)

STIGMA-FREE CARE

India could soon see a national medical insurance policy for people living with HIV (PLHIV). In a meeting with insurance companies and the Insurance Regulatory Development Agency on February 3, the National Aids Control Organization (Naco) will press them to make insurance “inclusive and universal for PLHIV”.

Currently, HIV is excluded from all insurance policies available in the country “violating the national mandate of providing stigma-free care and support services”.

Union health ministry officials said that HIV/AIDS which was earlier regarded as a “incurable disease” has now become a “manageable health problem” and, therefore, should be included in medical insurance policies.

“Right now, there are individual health schemes in some states which cover certain healthcare related costs of PLHIV. Many health insurance policies exclude services to PLHIV and there is need for a package designed specially for such people. We will discuss global best practices to see how a viable insurance policy can be created for them,” joint secretary Aradhana Johri told TOI.

Another ministry official said, “Those living with HIV are living longer and have less morbidity cases, thanks to the increase in anti-retroviral therapy (ART) coverage. With timely initiation of ART, PLHIV may live a normal life up to 20 more years. Companies need to realize that covering HIV patients with a medical policy is no more a loss making proposition.”

India with a HIV prevalence rate of 0.31% is home to the third largest number of people living with HIV/AIDS in the world — 23.9 lakh. Some countries with higher prevalence rates of HIV have already taken measures to mainstream HIV through commercial health insurance cover. These include South Africa (17.8), Namibia (13.1), Uganda (6.5), Guyana (1.2) and United States (0.6).

K K Abraham, chief of Indian Network of People Living with HIV, said, “Insurance is life saving for us.”

At present, only Star Health and Allied Insurance has an insurance policy for PLHIVs in four states — Karnataka, Maharashtra, Andhra Pradesh and Tamil Nadu. More than 7,000 PLHIVs

have subscribed to this insurance which provides a health cover of Rs 30,000 with a yearly premium Rs 1,511.

NACO says that with about 89% of all HIV/AIDS infections being in the 15-49 age group, it effects in the most productive years. Currently, the financial burden of treatment and care is shared by NACO and PLHIVs. While NACO pays for ART, PLHIVs face economic burden of travel, nutrition and loss of wages.

Recently, India launched the national health insurance scheme, Rashtriya Swasthya Bima Yojana (RSBY), for BPL. It is to be rolled out in 366 districts in 29 states. As on December 23, 2010, a total of 22,354,462 smart cards have been issued across 260 districts in 27 states.

NACO says, “HIV has been taken out from the exclusion list making it possible for poor PLHIVs to be covered under health insurance, which can make them entitled to one time hospitalization for nearly 700 in-patient procedures with costs up to Rs 30,000 by paying a minimal registration fee of Rs 30 per annum.”

Health Insurance

A first: Govt mulls insurance cover for HIV/AIDS-infected (The Tribune: 3.2.2011) Calls top public, pvt insurance firms for a meeting

The 23.9 lakh people living with HIV/AIDS (PLHIV) in India will finally have a chance of being covered by the existing health insurance plans in India.

Since the disease was first reported and the National AIDS Control Programme (NACP) was launched in 1992 to halt the epidemic, the government will for the first time, over the next two days, engage with the public and private insurance providers to mainstream HIV/AIDS in the sector and explore options for healthcare financing for the affected population.

The move is critical as 89 per cent of the HIV/AIDS infections in India are in the age group 15 to 49 years -- the most productive cohort. It is also in line with the NACP III's mandate of providing a discrimination-free life to PLHIVs, who have hitherto been denied access to health cover.

“Expanding health insurance coverage for PLHIVs to strengthen their social security is important to create an enabling environment. Currently, these people are excluded from all insurance products available in India. This exclusion violates the national mandate of providing stigma-free care and support services. We believe that at least the public insurance firms must feel obliged to cover the HIV positive with insurance to respect the government's social mandate,” the Health Ministry's background note on the subject states.

It argues that insurance coverage for PLHIVs is now plausible as HIV/AIDS -- earlier regarded an incurable disease -- is now manageable, with people living long lives since the government rolled out the antiretroviral therapy (ART) in 2004.

The government experience shows that insurance companies have been inhibitive of covering PLHIVs due to lack of data on morbidity and mortality. "We now have evidence of people living for 15 to 20 years with ART. That explains why insurance is now feasible," officials of the National AIDS Control Organisation (NACO) today said. They will lead the consultations with the insurance firms, beginning tomorrow.

Among the confirmed participants are public firms like General Insurance Corporation, Oriental Insurance Company, New India Assurance, National Insurance and United Insurance and the private firms include Royal Sundaram Alliance, Reliance General Insurance, IFFCO Tokio, TATA AIG, Bajaj Allianz, and ICICI Lombard. Insurance regulator -- the Indian Regulatory Development Authority (IRDA) -- will also be represented in the dialogue.

Importantly, countries with a much higher HIV prevalence than India have already mainstreamed HIV/AIDS through commercial health insurance cover. Among these are South Africa (with 17.8 per cent HIV prevalence), Namibia (13.1 per cent), Guyana (1.2 per cent) and the US (0.6 per cent).

India with a low prevalence of 0.31 per cent is yet to act. The government feels that given a stabilised epidemic, overall low and declining seroprevalence, advancements in arresting clinical progression of AIDS, India's insurance companies can be the leaders in South Asia in non-discrimination by removing the exclusion of HIV from generic insurance products.

Health Insurance

Insurers: Show us business, we will cover HIV+ (The Tribune: 4.2.2011)

The government may have invited insurance companies to share part of the financial liabilities of HIV positive people but the insurers are in no mood to readily oblige. They want their piece of business.

After Health Minister Ghulam Nabi Azad argued that "other sectors" must compliment the government's efforts in responding to the HIV/AIDS epidemic, one of the tallest figures in India's insurance sector reminded the minister that he must bring business sense to the table if insurance companies are to come in for mainstreaming HIV/AIDS in their schemes.

Hitherto, the disease is excluded from the insurance cover while the government spends Rs 330 crore annually on providing care, treatment and support services to the People living with HIV (PLHIV). The rest of the burden is borne by the infected.

“First, let us remember that insurance companies will come in where there is some business. I hope we will be able to drive commercial sense in providing insurance cover to PLHIVs,” S.B. Mathur, secretary general of the Life Insurance Council, a conglomerate of life insurance firms in India, today said.

Some representatives of the insurance sector wanted to know why the government wants an insurance cover for the PLHIVs when it gives them free antiretroviral therapy and tuberculosis treatment.

The fact is, the government does not cover the treatment cost of other infections and medical conditions the infected persons might face. For that to be borne, it has roped in insurance companies, many of who were present at the dialogue the Health Ministry organised today.

Mathur said that though the government claims mortality and morbidity on account of HIV/AIDS had dropped significantly, that data had never been shared with the insurance sector.

Health Insurance

IRDA ALLOWS PORTABILITY OF HEALTH INSURANCE (Business Standard: 11.2.2011)

Policyholders can now switch insurer and carry the benefits of the previous health insurance policy. The Insurance Regulatory and Development Authority (Irda) today allowed portability of health insurance products. It will be applicable for all existing and new contracts from July.

Irda had asked insurance companies to allow policyholders to carry forward the credit gained for pre-existing conditions in terms of waiting period when he or she switches from one insurer to another or from one plan to another, provided the previous policy has been maintained without break.

“Even though policyholders were not happy they could not shift to other insurance company. Now they can carry benefits for pre-existing conditions,” said a senior Irda official.

At present if policyholder wishes to switch from one insurer to other, they do not gain any credit for the period of cover with previous insurer. Health insurance policies have specific exclusions for pre-existing diseases for a specified period of cover during the initial years.

Moreover, if the policy results into discontinuance because of any delay by the insurer in accepting the proposal, Irda said the insurer should not treat the policy as discontinuance and allow portability.

The regulator had asked all insurance companies to share the database, including the claim details of the policies, where the policyholders had opted for portability with their counterparts, if requested by the counterpart within seven working days of such request. The regulator asked insurers to acknowledge applications within three working days.

Non-life insurance industry is working on a portable health insurance product where the cover size is limited to Rs 11 lakh. Policyholder of up to 65 years can migrate under this common portable health insurance product from one insurer to another mediclaim policy provides.

Last year, industry collected Rs 8,000 crore from health insurance, including both group and retail portfolio. This is around 25 per cent of the premium collected by all nonlife insurers in 2009-10. Of this, retail health was around Rs 3,500 crore. Insurance experts anticipate the health insurance to grow by 30-35 per cent during this financial year.

Irda had asked insurance companies to allow policyholders to carry forward the credit gained for pre-existing conditions in terms of waiting period when he or she switches from one insurer to another or from one plan to another, provided the previous policy has been maintained without break

Health insurance policy

Health insurance policy portability from July 1 (The Economic Times : 11.2.2011)

Facility To Allow Switch-Over To Another Co With Same Terms

IN A big relief to dissatisfied health insurance policyholders, sectoral regulator Irda on Thursday allowed them portability — shifting policies from one insurer to another on same terms — from July 1.

“The regulator has examined various issues involved in the portability of health insurance plan and has issued necessary orders for effecting portability which will be implemented from July 1, 2011,” Insurance Regulatory and Development Authority (Irda) said in a statement.

The portability facility will allow policy holders to switch over to another insurance company with the same conditions.

“The accepting insurer shall provide cover, at least up to the sum assured in the previous insurance policy,” the regulator said.

The new facility will also help those policyholders who stick to one insurer throughout life for fear of losing the cover for pre-existing diseases (PED).

“It is essential to protect the policyholders against discontinuity and consequential loss of PED cover by making the health insurance plans portable across the insurance companies,” Irda said.

In general, health insurance policies have specific exclusions for PED for a specified period of cover during the initial year, and policyholders do not get this cover in the event of changing insurance firm. It was considered “detrimental to competition”.

Irda decision comes after it received several representations from consumer associations and policyholders for enabling portability of health insurance policies.

Currently, the regulator allows portability of motor insurance policies.

Health Insurance

Get the Most Out of Health Cover Portability (The Economic Times: 23.2.2011)

Here are some of the things that you should know before you move your health cover to another insurance company

Last year, several customers of a private general insurer were up in arms against its decision to increase health premiums. They went to town crying themselves hoarse over the disproportionate hike, but many could not switch to another insurer. This was because they would have had to forgo critical continuity benefits. However, cases like these could become a thing of past once health insurance portability becomes a reality from July 1, provided it is implemented by insurers in its true spirit.

MORE POWER TO POLICYHOLDERS

The key issue that prevents policyholders from insurer-hopping at will lies in the pre-existing disease (PED) cover offered by health insurers. In most cases, claims arising out of such pre-existing illnesses are reimbursed only after a waiting period of 3-4 years. A pre-existing disease is defined as any ailment or condition that the policyholder was suffering from, within 48 months prior to buying the policy. And, the period during which the insurer will exclude coverage to such illnesses – typically around 3-4 years – is referred to as the waiting period. So far, policyholders who switched loyalties to another company were treated by it as new customers, thus requiring them to go through the waiting period all over again. Suppose, you want to shift to another insurer after three years of paying premiums under a policy with a waiting period of four years. Now, if the new policy too prescribes a four-year waiting period, you would be at a considerable disadvantage. This is because, instead of waiting for just one more year for the pre-existing illness coverage, you would be forced to bide your time for another four years. With portability coming through, the odds are now stacked in your favour as you can carry forward the PED cover 'credit'. Under the changed circumstances, the waiting period in the new policy would be reduced to merely one year in the above example. There are some limitations though. Irda has directed that the credit in terms of waiting period will be restricted to the sum insured (including bonus) under the existing policy. Explains Ajay Bimbhet, MD, Royal Sundaram: "Say a policyholder has an existing policy with a sum insured of 2 lakh with an accumulated bonus of 40,000 and now, he wishes to go in for a higher sum insured, say 4 lakh. Here, the credit for the waiting period shall be only in respect of 2.4 lakh (existing sum insured & bonus) and not for 4.4 lakh (new sum insured & bonus)."

MAKING THE SWITCH

No specific procedure as such has been laid out by Irda. “The policyholder will have to go through the usual process of applying to the new insurance company. The forms are likely to have a section to capture information regarding previous continuously renewed policies to enable portability,” explains Mahavir Chopra, head, personal lines and ebusiness with insurance broking firm medimanager.com. “Details on previous coverage would also be noted. Customers may have to attach proof regarding previous continuous coverage.” The insurer will have to acknowledge the receipt of your application for portability within three working days. Likewise, the companies have to communicate their decision within 15 days. If the policy lapses due to delay in processing the switching request, this insurer will have to accept it.

IMPACT ON THE SUM INSURED...

According to Irda, those wishing to switch will be assured of health cover equal to at least the sum insured in the previous policy. But, this may not always be the case. “There is no obligation on the part of the new insurer to match the sum insured if it has not filed such a product with Irda. If your current cover is 5 lakh and your proposed new insurer has filed a product with Irda with maximum sum insured of 3 lakh, you cannot force the new insurer to offer a 5-lakh-cover,” says Subramanyam B, V-P & head, health vertical, Bharti-AXA General. “The new insurer will offer portability in the closest product available,” adds Sanjay Datta, head, health insurance, ICICI Lombard.

...AND THE FRINGE BENEFITS

There are other continuity benefits like no-claim bonuses and free medical check-ups too, but some confusion on how portability will affect these persists. “The circular issued by Irda is vague. It appears that the new insurer would have to match the sum insured. But the terms and conditions governing the policy would be in accordance with what the insuring company offers. So, my interpretation would be that on migration, if the insuring company offers no-claim bonus, the consumer would get that benefit; otherwise not,” says consumer rights activist Jehangir Gai. However, ICICI Lombard’s Datta is of the opinion that the new cover would include the no-claim bonus. “If the policyholder has earned a no-claim bonus in terms of additional sum insured, then the new insurer providing portability has to offer a product with minimum sum insured equivalent to the base sum insured plus bonus (i.e. additional sum insured), as available with the policyholder in the expiring policy.”

THE FLIP SIDE

The intention of the regulator in allowing portability may be honourable, but it still leaves much to be desired, causing some industry watchers to be sceptical about its success. “Unless regulations are framed for enforcing the portability of the policies, it is not going to help at all. Moreover, the 15-day time is given for communicating the insurance company’s decision of a proposal submitted by a consumer for portability, which would mean that the discretion vests in the insurance company whether or not to accept the proposal for portability. All that is required is that the decision must be communicated within 15 days from the date of receipt of the proposal,” points out Gai. Also, while increased competition, post implementation of portability,

could benefit young and healthy individuals, those in the higher age brackets may not be so lucky. “It is not likely to help policyholders in the older age bands (say, 50 and above) and those who suffer from pre-existing ailments. Such proposals are likely to be rejected by the new insurance company,” feels Chopra.

LACK OF CLARITY

Then, there are some grey areas. “Clarity is required on whether underwriting would be allowed for portability proposals; if portability will be offered from group to retail health products and similarly from benefit products like hospital daily cash to indemnity health products; and whether portability has to be provided for first one/two year exclusions too,” says Datta. “We expect more clarity on binding the insurance company of the expiring policy to provide the required information to the new insurer in specified time limits, so that smooth portability can operate. Any mischief here could result in major hiccups in porting the policy,” says Chopra.

EXERCISE CAUTION

Loopholes abound, but it is a step in the right direction. However, for it to work in your favour, you need to plug all the gaps at your end. You need to ensure that you submit the request for portability to the insurer of your choice well before the renewal date. Any consequent delay in processing and rejection by the new insurer could leave you unprotected.

“Since 15-days’ time is given for processing the proposal of portability, the application should be made around one to two months prior to the expiry of the existing policy,” says Gai. Also, you need to make efforts to continuously renew your policy by regularly paying the premiums so that it remains eligible for portability. Finally, study the policy offered by the new insurer and take a call on the trade-off between the existing benefits and any likely increase or decrease in premiums in the new policy.

Health Insurance

Look Before You Switch Health Cover (The Economic Times: 23.2.2011)

If your policy doesn’t really match your expectations, relief is at hand. Come July 1, health portability will let you choose who your insurer should be. This may well be a game changer. But the action plan seems riddled with too many inconsistencies, discovers Debjoy Sengupta

The insurance regulator may have stipulated that all health policies will be portable from July 1, but insurers may refuse to accept policies on the pretext of poor risk profile of individuals and upper age of entry — especially for senior citizens. They may also ask for steep premiums in case they do not want to offer health cover to persons opting for transfer of cover from another company.

Portability of health insurance refers to the ability to change companies keeping the cover intact while the risk profile of an individual refers to the probability of a person getting sick and

making a claim. The poorer the risk profile, the higher the probability of claims arising from an individual and in such cases, premiums charged are higher. Age of entry, on the other hand, refers to the upper limit for an individual to buy a cover. “Why would an insurer want to let his premium customers — who have had no claims history, go away to others. And why would they also accept individuals with a bad claims history? We expect some more clarity over the recent guidelines issued by the regulator or there is bound to be confusion,” SB Mathur, secretary general, Life Insurance Council, said.

Whether it leads to customers shifting from one insurer to another, companies may be forced to lift their service levels on fears of losing some business. “The move will call for minimum service requirements among all insurance players,” said Antony Jacob, CEO, Apollo Munich Health Insurance.

Although the objective behind the move is laudable, there are many shortcomings in it. “The circular on portability issued by the regulator does not mention anything on the premium one has to pay when he transfers his health cover from one company to another. This means that the individual who wants to move will have to accept the terms and conditions of the health policy of the new company,” said Subrahmanyam B, head of health vertical at Bharti AXA General Insurance. For example, a 3-lakh cover for a 25-year old will cost 3,039 from United India Insurance while the same will cost 2,776 from Royal Sundaram General Insurance, and a similar cover from Reliance General will set you back by 8,366. Hence, if one wants to move from United India to Reliance General, an individual will have to shell out the increased amount.

“Portability will ensure greater competition among insurers which will benefit customers in the long run,” says Subrahmanyam. “However, as an industry, we still need to find an effective data sharing mechanism to ensure continuity in maintaining highest standards of service delivery.” There may not be any immediate monetary gains either for insurance buyers, who are battling rising claims, though customers complain that many claims are dishonoured exploiting many tiny lettered conditions which buyers don’t go through. “In fact, insurers are now thinking of hiking premiums to match claims ratio,” said Rahul Agarwal, director at Optima Broking.

Just like in the mobile telecom business, many customers may stick to the existing services provider despite complaining about them. The health segment is split into two. The public sector players are National Insurance, New India Assurance, Oriental Insurance and National Insurance Company. Private ones like ICICI Lombard, Bajaj Allianz, IFFCO Tokio and Reliance General are also gaining share.

Additionally, there are three health insurance companies — they only offer medical insurance products, including Star Health & Allied Insurance, Apollo Munich and Max Bupa. Private players held a 42% market share till December 2010 and the remaining is with the public sector. In fiscal 2009, claims ratio was 103% down from 105% a year earlier. From 2009, the industry started introducing a host of restrictions like sub-limits on room rents, different ailments and doctors’ fees. All these pulled down claims ratio below 100% in 2009-10. “The inertia to change insurers is huge, which means most people complain about bad services, but do not generally move. And in any case, customers satisfied with their existing insurers will not move to a new

one, but portability offers a sort of peace of mind — that if I am not happy with my insurers, I can go to a new company,” said Agarwal.

The absence of uniformity of policies and the different age limits that various companies set could be a hindrance for this to take off. “There are few companies that offer cover till the age 80, however, the average age of entry for an individual for most companies varies between 60 and 65. A person older than 65, therefore, may not be accepted in another company which does not cover individuals beyond 65 years. He may have to stay with his existing company,” said Subrahmanyam.

There could be instances where an individual seeking to change his health provider may ask for an increased cover and may be ready to pay increased premiums. But even then, the waiting period could become a potential irritant. The waiting period refers to a time — generally two to four years, only after which pre-existing diseases get covered, provided there is no recurrence of the ailment during the waiting period. Diseases that exist in a person at the time of buying a policy is referred to as pre-existing.

Not all companies have all types of health products. For example, a particular company may not have a floater policy — a cover that provides a fixed sum assured for a family. For a company that does not offer floater covers, we are not sure how would it be possible to extend covers under portability. Medical insurance used to be offered by public sector insurers even during the pre-privatisation days. Later, private companies started offering it when the sector was opened up. The insurers at a later stage also allowed pure health cover companies. Health covers are valid for a year. During 2009-10, all the general insurers put together sold 68 lakh health covers, which covered 5.5 crore individuals.

With all that, the lack of financial penalty for not honouring the portability demands could be a dampener.

Insurers May Have An Upper Hand

- A poor risk profile and upper age of entry may give insurers a chance to say ‘No’ to your offer to shift
- Since the terms and conditions of the new company are final and binding, a possible high premium will be a big turn-off
- No uniform policies and different age limits mean this could pose an additional challenge
- There may also be instances where an individual is ready to pay higher premiums. But the waiting period may be a spoiler
- Given this scenario, many customers may just stick to the existing service provider despite their reservations

- But in the ultimate analysis, health portability may lead to a better service environment

Muscle cramps

Muscle cramps: Prevention remains the best remedy (The Tribune: 23.2.2011)

Muscle cramps are extremely common and almost everyone experiences them at some stage in life. These cramps are caused due to the sudden uncontrolled contraction of a muscle. The contracted muscle does not relax, leading to symptoms varying from mild-discomfort to agonising pain.

Typically, an individual suffers sudden painful sensation in the leg while sleeping this leads to this getting awakened. The duration of a cramp varies from a few seconds to 10 minutes or even longer. The commonly affected muscles are :

- (i) Calf muscle
- (ii) Hamstring (back of thigh)
- (iii) Muscles of feet, hands, etc.

Causes

The exact cause of muscle cramps is not known, but it is believed that muscle fatigue, hyperexcitability of the nerves and inadequate stretching leads to abnormalities in the mechanism that controls muscle contraction. The following may be the causes:

Exercising in intense heat, dehydration and depletion of salt and minerals. Muscle exhaustion depletes a oxygen supply leading to the accumulation of waste products and spasm.

Muscle fatigue from sitting or lying for an extended period in an awkward position or any repetitive use.

Leg cramps can be due to the lumbar nerve root involvement, metabolic disturbances as in diabetes mellitus, thyroid disease, etc.

Certain medicines, too, can cause muscle cramps like diuretics — Lasix causes vigorous removal of the body fluid thereby causing the depletion of electrolytes. Similarly, patients on dialysis often complain of leg cramps.

Poor circulation to muscles can also cause cramps as in intermittent claudication. Poor circulation results in decreased oxygen supply to the muscles, leading to severe pain. The most common muscle involved is the calf muscle.

Leg cramps are common during pregnancy, especially after second trimester. The likely reason is leg muscles getting fatigued from carrying the extra weight of pregnancy. The other reason can be circulation problems in the legs when an enlarged uterus puts pressure on the blood vessels that return blood from the legs to the heart. A low level of calcium and magnesium can also cause cramps. To avoid cramps during pregnancy, one should avoid sitting or standing with crossed legs for a long period.

Try these steps when cramping occurs:

1 Walk on or move the foot up and down and then elevate it.

1 For a calf muscle cramp, pull up the toes towards the head with the legs as straight as possible.

1 Repetitive activities like writing and typing may produce cramps of the hands due to muscle fatigue. For immediate treatment, pressing the hand on the flat surface will stretch the cramping finger muscles.

1 Massage of the muscles is very useful in treating cramps as it increases circulation to the muscles, which helps in its relaxation.

The most important aspect of dealing with the muscle cramps disorder is prevention. The important preventive measures are:

Persons undertaking vigorous physical activities must do adequate warm up and stretching before the event.

Cramps associated with dehydration due to vigorous physical activities can be treated with fluid and electrolyte replacement. Therefore, drinking water before, during and after physical activities is very important.

Quinine is very effective in treating cramps as it decreases the excitability of muscles. Excessive intake can cause nausea, vomiting, headache etc.

Calcium, magnesium and Vitamin 'E' supplements prevent cramps. Calcium intake of at least 1 gram daily is required. Magnesium in a dose of 50-100 milligram daily is required. Magnesium is present in grains, fish, meat, banana, nuts, etc.

Doing calf-stretching two to three times just before going to bed can prevent night cramps. Also stretch calf muscles regularly throughout the day.

Place a blanket at the foot end to prevent the toes and the feet pointing downward while sleeping to avoid the shortening of the calf muscle.

Cramps are very common in people who suddenly increase their exercise. Therefore, one should gradually increase the training intensity. The best way is to increase exercise only by 10 per cent of the previous week's regimen.

The following exercises can prevent muscle cramps:

Calf muscle stretch — Stand about two to two-and-a-half feet away from a wall. Place both hands on the wall. Move one foot forward and bend at the knee without raising the heel of the back leg. A stretch can be felt at the calf. Stay for a count of 15. Repeat three times.

Hamstring muscle stretch — Lying on the back, keeping the legs straight, lift one leg and pull it towards the body by holding at thigh. Stretch can be felt at the back of the thigh muscle. Hold for a count of 20 and repeat three times.

Quadriceps muscle stretch — While standing, hold your ankle with the hand from back and gently pull the heel towards buttocks. Hold for a count of 15 and repeat three times.

Most of the cramps are benign in nature, with no serious complications. Cramps, which are severe, frequent and not responding to the usual modes of treatment must be investigated properly.

Health Care Cost

Rising healthcare costs enough to make you sick (The Times of India: 1.3.2011)

Getting treated in a medium-sized hospital will cost you more. Not only will the doctor's fees go up, hospitals with over 25 beds and a central air-conditioning unit will also have to pay service tax. With India already facing an acute shortage of hospital beds, the poor often need to use small nursing homes where the costs will now go up. Jaslok Hospital's Col M Masand said, "We will have to pass on these costs to the patients."

Also, the service tax on healthcare providers will

push up the cost of health insurance. The Budget has widened the tax ambit to cover all payments made to maternity homes, sanatoriums, diagnostic centres, etc. Earlier, only cashless payments were under the ambit of service tax, now even reimbursements will be taxed.

Overall, fund allocation for the health sector recorded a 20% increase in 2011-12 to Rs 26,760 crore. Allocation for cancer care in government hospitals saw a 250% increase to Rs 175 crore (from Rs 50 crore in 2010-11) while polio faced a cutback in funds, from Rs 835 crore last year to Rs 664 crore in 2011-12.

The UPA's flagship National Rural Health Mission saw its allocation soar from Rs 13,463.67 crore to Rs 16,056 crore. Rashtriya Swasthya Bima Yojana, which provides basic health cover to poor and marginal workers, will now extend to MGNREGA beneficiaries and beedi workers. Its allocation has gone up from Rs 9 crore to Rs 90 crore. Alternate medicines too got a Rs 900 crore push.

Ravi Duggal of Centre on Budget and Policy Priorities said, “It appears the government is committed to increasing social security.” But, Dr Prathap C Reddy, chairman, Apollo Hospitals Group, said, “Yet again, initiatives to reform the healthcare agenda have gone unanswered.”

Medicines to become dearer

The increase in prices of allopathic medicines will be in the range of 2-3% due to the cascading effect of the 1% increase in excise duty from the existing 4%. Similarly, ayurvedic, unani and homeopathic preparations will be taxed for the first time. “It is a missed opportunity with no bold reforms, and very little done for the health sector,” said Pfizer India MD Kewal Handa. Though companies are still evaluating the exact quantum, Cipla director S Radhakrishnan said: “the increase in excise will be passed on to the consumer”

Health Policy

Multiple Health Policies

Multiple Health Cover Claims Made Easy (The Economic Times : 2.1.2011)

Having more than one health policy will work only if you are aware of the rules applicable in different situations.

THANKS to the burgeoning healthcare costs, an increasing number of Indians have become increasingly aware of the importance of having a health insurance policy. Many prefer to buy a separate plan despite being covered by their employers under group medical health policies, as it eliminates the chances of going uncovered in the event of a job loss or while switching jobs.

Managing Multiple Policies:

Sure, opting for an individual cover is indeed a wise decision. However, many people are not aware of the details involved in making a claim when they have more than one health cover. Especially, because 'one plus one' does not necessarily equal two in this case. This is due to the contribution clause in your policy which states that if you have purchased insurance policies from more than one insurance company, all the insurers will share the payout in the ratio of the sum assured.

On your part, you are required to be transparent while buying a health cover. "While signing up for an insurance policy, the individual is under an obligation to declare if s/he is already covered under any other health policy. If s/he acquires another policy during the course of the first one, s/he is required to intimate the latter," says Anthony Jacob, CEO, Apollo Munich Health Insurance. In practice, though, industry-watchers admit that individuals do not always disclose the presence of another policy in their portfolio which, according to them, is not the right approach. "No attempt should be made to withhold the information as it could go against you during processing of the claim. It is best to be transparent," says Sanjiv Bajaj, managing director, Bajaj Capital. Also, the clause will not come into the picture all the time – its applicability depends on a variety of factors. Here's a list of scenarios a policyholder with multiple policies may encounter at the time of making a claim :

Group & Individual Cover Combo:

You must inform both the companies when you make the claim. However, this will not apply if the terms and conditions of the two policies vary hugely. "The group health insurance schemes are pretty wide in terms of coverage and features. For instance, pre-existing illnesses are covered under such policies whereas in case of retail covers, this cover is extended only after 3-4 policy years. If a claim — pertaining to one of these pre-existing illnesses — is made before completion of the waiting period, issuer of the individual claim will not share the payout," says Jacob. For other claims, though, both the companies need to be informed. "Usually, in case of a cashless claim, one company has to be contacted and provided details of the second policy. From thereon, the two companies will coordinate and settle the claim," he says. However, Pawan Bhalla, CEO of third-party administrator Raksha TPA suggests that even in case of a cashless claim, the

hospital is required to alert both the insurance companies/TPAs. The procedure may not be smooth all the time. “The issues could be in the nature of both companies insisting on original discharge documents,” points out Bajaj.

Two Reimbursement Policies:

Barring critical illness covers, most general insurers offer only reimbursement policies – the ones which undertake to pick up the expenses you may have incurred during hospitalisation. Life insurers, too, offer reimbursement covers, but many also sell fixed benefit policies. If you have bought two reimbursement covers, the contribution clause will come into effect since the operating principles of the two policies are the same. “Irrespective of who the issuer is, if the features are the same, the claim payout will have to be split between the two companies,” adds Jacob.

Reimbursement & Fixed Benefit Policy Combo:

Fixed benefit covers, which are typically offered by life insurance companies, promise to hand out a predefined sum upon hospitalisation. In such cases, you can make a claim under both the policies separately – that is, both the companies will settle the claim you are eligible for. Moreover, the issuers of fixed benefit policies usually do not insist on original hospitalisation documents. This could perhaps be the ideal combination, as the claim amount from the reimbursement cover will pay for hospitalisation expenses while the fixed benefit dole can be used to fund post-hospitalisation recovery costs.

Two Policies From One Insurer:

Consider another situation, where you decide to buy a health policy from the same insurer that provides your group

cover. Here, it is best to make enquiries first. “Due to the accounting procedures, the insurer could insist on dividing the disbursement between two policies, even if both are issued by it,” adds Bhalla.

Two Policies Serviced By Common TPA:

Again, this could help simplify the entire procedure. If the claim servicing of your health insurance policies is handled by the same TPA (third party administrator), the time taken could considerably come down, as the need to transfer the documents from one TPA to another is done away with. If you have to deal with different TPAs, you may need to ask for a certificate from the TPA in possession of your original bills, stating that the documents have been retained for verification of the claim made. This, along with photocopies of the relevant documents, has to be submitted to the other TPA for processing at its end.

Despite the complexities involved, you should opt for an additional individual cover. Especially, since the group will cease with your employment. Besides, if you were to buy an

individual mediclaim when you are working, you would have also crossed the milestone of four policy years, which is the waiting period for covering pre-existing illnesses.

Double Protection

If you have two health policies that are similar in principle, the claim payout will be shared between the two

The disbursal will take place in proportion of the sum assured under the two policies

However, in case one policy covers pre-existing illnesses while the other doesn't, and the claim relates to such an ailment, the former will pick up the entire amount. If one policy is reimbursement-based and the other is a fixed benefit one, you can claim the entire eligible amount under both policies

You will be better off informing both the insurers while making a claim. It also makes sense to retain copies of all the bills

The insurers or the TPAs will then co-ordinate with one another and pay out their respective share

Health Budget

Govt plans 3-fold hike in Health Budget: Minister (The Tribune: 18.2.2011)

The state government plans a three-fold increase in the budgetary allocation for health in the coming financial year. This was revealed here today by Health Minister Rao Narender Singh.

A proposal to this effect will be made in the budgetary proposals by the government in the Vidhan Sabha in its coming Budget session. The minister, who was on his first visit here after assuming charge of the Health portfolio, inspected the local Badshah Khan Civil Hospital.

He said improving healthcare facilities in the state was among the top priorities of the government.

He said the process to recruit 400 doctors had been started to fill vacancies in hospitals and other health centres in the state.

He said on account of the government's priority to expedite the filling of the vacancies, the responsibility of recruitment of doctors had been taken out of the ambit of the Haryana Public Service Commission and handed over to the department.

He cautioned doctors not to be found wanting in delivering medical services and care to the patients. He directed the hospital authorities here to be prompt in providing medicines to patients free of cost as had been mandated by the government.

He said a trauma centre would soon be opened in Faridabad.

Hospital Care Cost

Will set limits on what a hospital can charge: Health Minister Azad (The Indian Express: 16.3.2011)

IN the name of streamlining the cost of hospital care, Union Health Minister Ghulam Nabi Azad said today that the government is planning to fix a band by defining the upper and lower limit of what can be charged by hospitals for procedures and treatment.

This band, officials said, will depend on the facilities that a hospital provides.

"There will be a categorization of hospitals keeping in view its size, the equipment, faculty and doctors available in the institution. The range of rates will be fixed for a procedure. It can't be unending. For instance, for a heart surgery, the fee could range from Rs 50,000 to Rs 1,50,000, it can't be Rs 4 lakh or Rs 5 lakh.

That (these rates) will have to be published and put on the notice board," Azad said in the Rajya Sabha today.

While there will be a minimum standard that hospitals will have to adhere to, a hospital will be categorised in the "A" list if it maintains the "highest" standards. "If some institution does not comply with what has been published, then the District Collector will take action against that institution," said Azad.

These rules, under the Clinical Establishment Act, will be notified once all states come on board. As of now, Himachal Pradesh, Arunachal Pradesh, Sikkim and Mizoram have given their nod. The rules also envisage setting up a National Council under the Director General of Health Services (DGHS) which will classify and develop standards for clinical establishments.

Hepatitis B

Hepatitis B

Hepatitis B Rates Drop Among Kids Due To Effective Vaccination Programs, More Efforts Needed For Adults (Medical News Today: 1.3.2011)

Approximately 5.1% of the American population had been exposed to HBV (Hepatitis B virus) between 1988 and 1994, researchers wrote in *Annals of Internal Medicine*.

Since that date, extensive vaccination campaigns for children, as well as education about safe practices should have led to a drop in HBV infection rates.

Unfortunately, however, during the same timeframe, rates for those at highest risk of HBV infection rose. Leaving a question regarding current HBV rates in the United States.

Scientists carried out a national population-based survey to find out what the prevalence and associations of HBV, past exposure, and immunity in America was between 1999 and 2008.

They found that HBV exposure among individuals aged 18 years or less was extremely low, an indication of effective vaccination programs among the young.

Even though young Americans are most likely have considerable protection, adults in high-risk groups still have low rates of immunity for HBV.

The authors conclude future vaccination efforts should target at-risk adults.

Hepatitis B - this is a sexually transmitted disease. It is caused by the virus HBV (Hepatitis B Virus) and is spread by contact with infected blood, semen, and some other body fluids. You get Hepatitis B by having unprotected sex with an infected person, using a syringe that was used by an infected person, having your skin perforated by unsterilized needles, consuming an infected mother's milk, or being bitten by an infected person.

The liver of an individual with Hepatitis B swells. They can suffer serious liver damage. In some cases the disease becomes chronic (lifelong or long-term). Donated blood today is always tested for Hepatitis B.

"Hepatitis B Virus in the United States: Infection, Exposure, and Immunity Rates in a Nationally Representative Survey"

Home Remedies

Turmeric

Curry cure: Turmeric can rebuild brain after stroke (The Times of India: 11.2.2011)

Studies on animals suggest that a new hybrid drug, made in part from the chemical in the yellow spice turmeric, could help regenerate brain cells after a stroke, according to US researchers.

The molecular compound is made with curcumin, a yellow pigment that originates from turmeric. Human trials on the drug, which works by restoring pathways that feed neurons, could begin soon, according to scientist Paul Lapchak.

The new drug does not attack clots, but if administered to rabbits in one hour, which translates to three hours in human time, it “reduced strokecaused ‘motor deficits’ — problems of muscle and movement control,” the study said.

The compound, CNB-001, “crosses blood-brain barrier, is quickly distributed in the brain, and moderates mechanisms involved in neuronal survival,” Lapchak said. The findings were presented at the American Heart Association International Stroke Conference. AFP

Turmeric

Turmeric builds brain cells after stroke (The Asian Age: 11.2.2011)

A new molecule from curcumin, a chemical component of the golden-hued Indian spice turmeric, helps build brain cells after stroke, research has found.

Turmeric is used in curries and for the rich colour it imparts to food. Turmeric also has a long history of use in Ayurvedic medicine.

Paul A. Lapchak, director of Translational Research at the Cedars-Sinai Medical Centre, who conducted the research, presented these findings at the American Heart Association's International Stroke Conference in Los Angeles.

Only one drug is now approved for ischemic stroke, which occurs when a clot blocks blood flow to the brain, according to a Cedars-Sinai statement.

Commonly called a "clotbusting drug," tissue plasminogen activator (TPA) is injected intravenously to dissolve clots and reinstate blood flow. If blood and oxygen are restored in time, consequences of the stroke, such as speech, memory, movement and other impairments, may be reduced. The new curcumin-hybrid compound-CNB-001 does not attack clots but instead repairs stroke damage at the molecular level that feeds and supports the all-important brain cells - neurons.

"CNB-001 has many of the same benefits of curcumin but appears to be a better choice of compound for acute stroke because it crosses the blood-brain barrier, is quickly distributed in the brain...", Mr Lapchak said.

Remedies

Remedies for hyperactivity (The Times of India: 15.2.2011)

It is difficult to handle hyperactive children. Nothing holds their attention for long. Alternative healing offers ways that help both the child and parent in staying calm, says Mita Bhan

Bringing up a hyperactive child can be difficult. Not only is it tiring to handle a child with so much energy, understanding their moods can also be frustrating. Nothing seems to hold their attention for too long and their emotional outbursts can leave the parents drained. Alternative healing offers certain remedies that help both the parent and child in staying calm. They reduce stress levels and frustration

Deep breathing:

This is an effective technique that immediately calms you down. Teach your child to breathe deeply when they're beginning to get restless

Massage:

Gently rub lavender-infused massage oil into your child's temples or shoulders. Lavender has a calming effect and helps in releasing stress. Besides, the bond between the parent and child also grows

Bath Salts:

Scented bath salts like lavender, jasmine and sandalwood are good cleansers and help in removing toxins from the body. Mixing a few teaspoons in a tub will help a hyperactive child in relaxing

Natural Light: Studies have revealed that children who spend more time indoors or in artificial lighting get bored and restless more than children who play outdoors daily. Ensure that your child gets enough physical exercise outdoors. While indoors, ensure that they receive adequate sunlight in the room

Pastel colours:

Bright red, orange and yellow are stimulating colours. Too much of red in the wardrobe or on walls and bedlinen raises blood pressure and subsequently increases stress levels. Pastel colours like sky blue, light green and baby pink soothe the child and help bringing body's energies back in balance

Healing crystals:

Moonstone, blue lace agate and rose quartz are the gentle soothers in crystal healing. Moonstone brings a sense of calmness and clarity and reduces impulsiveness. While blue lace agate reduces anger, rose quartz brings a sense of kindness towards oneself and others

Medicinal plants

Karnataka government to bring policy to protect medicinal plants(New Kerala: 18.2.2011)

Karnataka Western Ghat Protection Force Chairman, Anant Hegde Ashisar said that the State Government was seriously considering to bring in a comprehensive policy to protect and create awareness about medicinal plants in forest areas.

Addressing a four-day workshop in Forest Training Center here, organised in collaboration with Foundation for Revitalization of Local Traditions and National Medicinal Plants Board, he said at present most of the medicinal plants had been destroyed due to lack of proper knowledge.

"Most of the local people damage such plants. Many people engage in fake sale of medicinal plants. Under such circumstances there has been dire need to train the local people also," he added.

The police would include such training and creation of awareness.

He appreciated the services of erstwhile senior forest officials like Yallappa Reddy who created an atmosphere of movement to protect forest resource. He also wanted the forest officials to follow the suit.

Major Ayurvedic brands

Major Ayurvedic brands likely to be brought under price control regime (The Financial Express: 11.3.2011)

In a bid to slash the prices of some of the top over-the-counter drug brands, the government is contemplating a move to bring ayurvedic drugs under price control. The plan is to prepare an essential drug list of ayurvedic drugs and medicine from other traditional systems such as Unani and Homeopathy on the lines of chemical drugs and determine a price ceiling of these drugs based on a scientific formula.

Currently, there are no price controls on ayurvedic medicines and prices of select allopathic drugs is regulated by the drug price regulator, National Pharmaceutical Pricing Authority (NPPA) which falls under the ambit of ministry

of chemicals and fertilisers.

“There is a need to bring in AYUSH medicines under Essential Drug List. A pervasive price control on all essential drugs is needed, especially in the post patent regime,” said a high-level ex

pert panel under the Planning Commission which is currently preparing a blueprint to achieve the goal of ‘Health for All’ by 2020. This 15-member expert panel was constituted in October 2010 by Planning Commission with Prime Minister’s approval under the chairmanship of K Srinath Reddy, president, Public Health Foundation of India.

While the Commission is giving a push to bring alternate systems of medicines under the price control, the proposal has already met stiff resistance from the ₹8,000-crore ayurveda industry which has termed the move unfeasible. “A proposal like this can only come from sections which have very little knowledge of ayurveda.

This stream of medicine has over 32,000 combinations and is based on the principle that every individual has a unique composition. How can you prepare a standardised essential drug list for ayurveda when what is essential for you may not be for me,” said Ranjit Puranik, CEO, Shree Dhootapapeshwar.

CHARTING PLAN The plan is to prepare an essential drugs list of ayurvedic drugs and medicine from other traditional systems on the lines of allopathic drugs and determine a price ceiling based on a scientific formula. Currently, there is no price control on ayurvedic medicines

and prices of select allopathic drugs are regulated by the drug price regulator NPPA, which falls under the ambit of ministry of chemicals & fertilisers

Herbs - Chinese medicine 'more effective against severe malaria

Herbs used in Chinese medicine 'more effective against severe malaria'(New Kerala: 17.3.2011)

Scientists have found that antimalarial drug artesunate, which is derived from herbs used in Chinese medicine, is more effective than quinine at preventing death in patients with severe malaria.

Severe malaria occurs when the disease affects the function of vital organs. It is associated with rarer cerebral malaria, which affects the brain and can lead to long-term disability.

Artesunate was recommended as the preferred treatment for adults with severe malaria by the World Health Organization (WHO) in 2006, but there was insufficient evidence at the time to recommend a change from the standard treatment of quinine in children.

Cochrane researchers updated the review of artesunate by adding a new large multicentre trial of African children in 2010 to the existing 8 trials.

The review now includes a total of 1664 adults and 5765 children, from a variety of settings across Africa and Asia.

According to the results, taking artesunate reduces the risk of death by 39 percent in adults and 24percent in children compared to quinine.

In adults, deaths caused by severe malaria were reduced from 241 per 1000 with quinine to 147 with artesunate. In children, deaths were reduced from 108 per 1000 with quinine to 83 with artesunate.

Immunisation

New oral vaccinations

New Research Suggests Vaccinating Through Salivary Glands May Provide Protection against A Wide Range Of Diseases (Medical News Today: 15.2.2011)

If you don't like shots or needles, you're in luck. New research published online in The FASEB Journal gives the development of new oral vaccinations a shot in the arm thanks to discoveries involving the salivary glands of mice. In addition, this research report also offers a tantalizing glimpse of vaccines that could prevent infection at mucosal surfaces, even if direct injections into the body fail to cause immunity. This technique may be effective for a wide range of diseases from influenza to cholera.

"Our work highlights the ability of the salivary glands to act as an alternative mucosal route for administering vaccines, which would lead to protective immune responses both locally and systemically," said Lucille London, Ph.D., a researcher involved in the work from the School of Dental Medicine and Department of Oral Biology and Pathology at Stony Brook University in Stony Brook, NY. "Thus, in the future, salivary gland inoculation may become a clinically acceptable method in which to vaccinate groups of individuals against new and emerging pathogenic challenges."

To make this advance, the researchers studied two groups of mice. The first group received live cytomegalovirus directly into their salivary glands. These mice demonstrated an immune response in the salivary glands, and the researchers observed an increase in the number and types of cells associated with antibodies that were protective in the saliva. Importantly, these antibodies were also found in other mucosal secretions and in the serum of these mice, suggesting that these proteins spread to other locations in the body. Additionally, the researchers observed structural and functional changes in the immunized salivary glands, causing them to resemble lymph node-like structures commonly seen in injection-based immunizations. The second group of mice was given an inactive virus that did not cause an infection in the salivary glands. These mice demonstrated no active immune response when compared to the first group. When both sets of mice were exposed to the same virus at a later time, only the group immunized with an active virus was protected from future infection. This discovery opens the doors for similar research involving the use of weakened viruses to determine if they will also confer immunity through salivary glands.

"It's no fun for doctors or parents when kids struggle during routine immunization," said Gerald Weissmann, M.D., Editor-in-Chief of The FASEB Journal. "It's even less fun when you are dealing with adults who are deathly afraid of shots in various parts of their body. This work shows that salivary glands may become the first line of defense in active and passive immunization."

Polio

5.10 lakh children to be given polio drops on February 27 (New Kerala: 24.2.2011)

Krishna District Health and Medical Officer Dr Shalini Devi today said, no polio case had been diagnosed since 1999 in the district and a target to administer polio drops to 5.10 lakh children was set in the second phase of pulse polio programme on February 27.

Addressing a press conference here, she said only one polio case was diagnosed in 1999 at Gudivada near here. Since then, no case was detected. She attributed this to implementation of pulse polio programme perfectly.

She said 10,000 medical and para-medical staff, 2,560 medical teams and 90 mobile medical teams would be deployed on February 27.

On February 28 and March one, door to door inspection would be carried out to ensure that no kid had been left out in the programme, she said.

Allaying fears of recurrence of mishap like the death of a girl child after being administered polio drops at Mudinepalli village in January this year, she said there would be no scope for this as even if the polio medicine was not stored in a cool place, its colour would change, indicating that it has expired, She said. Even if date expired drops were administered, nothing would happen.

Health Department - Pulse Polio Immunisation Programme

Health Department targets to immunise over 1 crore children (New Kerala: 28.2.2011)

Andhra Pradesh Medical and Health Special Secretary Dr Ramesh said the government's target to immunise over one crore children below five years of age in the second phase of Pulse Polio immunisation programme began across the state.

Talking to newsmen after participating in the pulse polio programme here, he claimed that no polio case was reported from anywhere in the state and appealed to the public to utilise the programme.

The polio drops would be administered in about 60,000 booths across the state and also in booths set up at railway stations and RTC bus stands at various places in the state, he said.

A door to door campaign would also be organised from tomorrow to cover the left out children, he added.

According to reports, the immunisation programme was also conducted simultaneously by officials and NGO organisations at Visakhapatnam, Rajahmundry, Vijayawada, Guntur, Kurnool and Warangal Municipalities.

Meanwhile, the pulse polio programme also organised by the TTD-run Aswini hospital at the Tirumala hills.

In view of local body election poll code, state ministers, MLAs and political party leaders did not participate in the programme

Pulse Polio

Over 10 lakh children administered Pulse Polio drops (new Kerala; 28.2.2011)

More than 10.6 lakhs children upto the age group of 5 years were administered pulse polio drops under 2nd phase of Pulse Polio Immunisation Programme (PPIP) in the valley.

In Srinagar, Director Health Services, Kashmir, Mohammad Amin Wani inaugurated the programme at Jawahar Lal Memorial Hospital, Rainawari.

In other districts of the valley, the Deputy Commissioners concerned launched this programme by administering the PP drops to children.

According to official figures 1061409 children were administered Pulse polio drops.

In this connection, in Srinagar district 164235 children were administered the polio drops and 2296 employees were deployed among 574 polio booths set up in the city.

In Anantnag district 131428 children were administered polio drops for which 457 polio centres were established and 2188 employees were deployed.

In Kulgam, 92607 children were covered under this programme and 1764 employees were deployed and 441 polio booths setup.

In Pulwama and Shopian districts 132210 children were administered pulse polio drops for which 660 polio booths were setup and 2642 employees deployed.

In Ganderbal district 44122 children were covered under this programme for which 212 polio booths were set up and 848 employees deployed.

In Braramulla and Bandipora districts 228725 children were administered polio drops for which 3816 employees were deputed and 999 booths set up.

Similarly, in Kupwara district 131730 children were administered polio drops for which 2664 employees were deputed in 666 polio booths.

The same programme was also launched in Leh and Kargil districts where 28483 children were administered polio drops for which 738 booths were setup and 2942 employees deployed.

Vaccinations

Vaccinated Children Not at Higher Risk of Infections or Allergic Diseases, Study Suggests (Science Daily: 7.3.2011)

Do vaccinations put too much strain on or weaken children's immune systems? Roma Schmitz and her colleagues from the Robert Koch Institute investigate exactly this research question in the current issue of Deutsches Ärzteblatt International.

Their data are based on the results of the German Health Interview and Examination Survey for Children and Adolescents (KiGGS).

In their study, the authors compare the occurrence of infections and allergies in vaccinated and unvaccinated children and adolescents. These include bronchitis, eczema, colds, and gastrointestinal infections.

The evaluation showed that unvaccinated children and adolescents differ from their vaccinated peers merely in terms of the frequency of vaccine preventable diseases. These include pertussis,

mumps, or measles. As expected, the risk of contracting these diseases is substantially lower in vaccinated children and adolescents.

Infant mortality

Infant mortality

Awareness on Infant mortality: MCD initiates programmes(Indian Express: 18.3.2011)

MONGA said the role of ASHA and Anganwadi workers is crucial as they work as the interface between the community and the public health system

WITH just 60 per cent mothers breastfeeding their newborns in the city, the Municipal

Corporation of Delhi (MCD) on Thursday organised an orientation programme for Accredited Social Health Activists (ASHA) and Anganwadi workers to promote breast feeding, hygiene, institutional delivery and bring down child mortality rates.

The programme was the first in a series of 30 such programmes over a period of one year in different parts of Delhi. Dr V K Monga, Chairman of Medical Relief and Public Health Committee said that much needs to be done as the infant mortality ratio in the country is still 59, and 40 out of every 1,000 infants die within the first month of their birth. He added that over 50 per cent deliveries take place in non-institutional conditions and only 40 per cent infants are breast fed within one hour of their birth.

Calling on health workers to spread awareness on hygiene and curb infant mortality, Monga said that the role of ASHA and Angan wadi workers is "crucial as they work as an interface between the community and the public health system." Breast-feeding, he added, "should be started early and last as long as possible to keep newborns healthy." The programme was inaugurated by the Mayor of Delhi, Prithvi Raj Sawhney at a primary MCD school in New Ashok Nagar ward in East Delhi. It was conducted by experts from Kasturba hospital in collaboration with the MCD's Health department.

Maternal and Child Health

Child health

New approach for monitoring child health in developing countries (New Kerala: 3.2.2011)

Scientists have suggested a new approach to monitoring the relationship between nutrition and child mortality in developing countries.

Based on dozens of surveys compiled over 20 years, changes in the number of mildly underweight children could be used as an early-warning signal of underlying public health threats that are difficult to monitor in other ways, such as disease epidemics or changes in child feeding practices.

"Low bodyweight, in which nutrition plays a key role, is a well known symptom and also a cause of ill-health and mortality for children in developing countries. Observers and clinicians usually focus on the most severe cases, but for public health, the extent of mild underweight could be even more meaningful," said William A. Masters, a professor at the Friedman School of Nutrition Science and Policy at Tufts University.

"One reason is that there are so few children at the extremes and they are difficult to measure. Mild under-nutrition, which affects a much greater number of children, could be a powerful predictor of population health," he added.

Masters and colleagues examined 130 Demographic and Health Surveys (DHS) conducted in 53 African, Asian, and South American countries between 1986 and 2006.

Their data cover thousands of children between 3 months and 3 years of age, classified by weight according to WHO standards.

The study focused on children who are underweight in terms of their weight-for-height ratio, signalling that they have not recently absorbed enough nutrients to meet their growing needs, and compared the prevalence of severe underweight to the number of children who are only mildly malnourished.

"Controlling for other variables, our tests showed that changes in the number of mild cases were more closely linked to child mortality than changes in the number of extreme cases," said Masters.

"For an individual child, severe underweight is much worse than mild underweight. Mildly undernourished children face only a small increase in their own mortality risk. But when a lot of children fall behind, something dangerous could be happening, perhaps the spread of contagious disease, a worsening of water quality, or food shortages," he added.

Masters stressed that the results are just the beginning to opening up a new avenue of research.

The paper is published in the January issue of the journal Economics and Human Biology.

Infant Botulism

To Avoid Infant Botulism Don't Give Honey to Children below 1year (MedIndia: 3.2.2011)

To avoid infant botulism children below one year of age should not be fed honey, says Health Canada. According to the agency honey is the only food in Canada that has been linked to infant botulism. Therefore the authorities have advised against mixing honey in infant food.

Clostridium Botulinum causes infant botulism in children less than 1 year of age and can even lead to paralysis. The bacteria does not change the color, odor or taste of honey and is neither destroyed by cooking. It is incapable of growing or producing any toxins in honey, however if the child swallows such honey the spores in the bacteria grow and produce toxins in the body.

After ingestion of honey if an infant shows signs like- weak cry, inability to suck, no bowel movements, weak neck, wobbly muscles, lack of facial expressions, inability to swallow or difficulty in breathing then please contact the doctor immediately

Child Under nutrition

Under nutrition poses a herculean challenge(The Tribune: 4.2.2011)

It is shocking to find that even in Haryana the calorie intake is lower than the all-India average

Agricultural progress in the last decade has made India self-sufficient in major food grains. Yet, under nutrition continues to be a major nutritional problem, especially in rural populations. The National Family Health Survey (NFHS-3) statistics reveal shocking proportion of child malnutrition (children under three years). In terms of the proportion of underweight children its levels are exceptionally high in India - higher than the average for all of sub-Saharan Africa. The irony is that India's per capita income is much higher and the growth record much better than that of sub-Saharan Africa.

Undernutrition of children directly affects many aspects of their development. In particular, it retards their physical and cognitive growth. Literature reveals that most growth retardation occurs by the age of two and is largely irreversible. The consequences of child undernutrition for morbidity and mortality are enormous. It has been estimated that pediatric malnutrition is a risk factor for 16 per cent of the global burden of disease and is responsible for 22.4 per cent of India's burden of disease. Studies show that malnutrition increases susceptibility to infection and diseases in childhood and adulthood. Undernutrition also undermines educational attainment as it increases their dropout due to ailments. Moreover, the consequences of undernutrition go beyond the individual affecting total labour force productivity and economic growth.

FactFile

- * India is home to 40 per cent of the world's malnourished children and 35 per cent of the developing world's low-birth-weight infants
- * Every year 2.5 million children die in India, accounting for one in five deaths in the world
- * More than half of these deaths could be prevented if children were well nourished. India's progress in reducing child malnutrition has been slow.
- * The prevalence of child malnutrition in India deviates further from the expected level at the country's per capita income than in any other large developing country
- * India has many nutrition and social safety net programs, some of which (such as Integrated Child Development Services [ICDS] and the Public Distribution System [PDS]) have had success in several states in addressing the needs of poor households. All of these programmes have potential, but they do not form a comprehensive nutrition strategy, and they have not addressed the nutrition problem effectively so far, according to the International Food Policy Research Institute

It is true that there are large inter-state variations in our country and all-India figures may get affected by this. Paradoxically, in case of Haryana too, which is economically one of the most developed state, NFHS data shows that in all three measures of child malnutrition, i.e. in stunting, underweight and wasting, it fares very poor (i.e. 46, 42 and 19 per cent respectively). Stunting is deficit in height-for-age, wasting is low weight for height and underweight is low weight-for-age. It must be noted that several studies have repeatedly shown that given similar opportunities, children across most ethnic groups, including Indian children, can grow to the

same levels, and that the same internationally recognised growth references can be used across countries to assess the prevalence of malnutrition. These measures of nutrition are expressed in standard deviation units (z-scores) from the median for the international reference population. Children who are more than two standard deviations below the reference median on any of the indices are considered to be undernourished, and children who fall more than three standard deviations below the reference median are considered to be severely undernourished. It may also be noted that in many cases being short or lean is not a serious impairment. However, there are evidences that pronounced stunting and wasting in childhood is associated with serious deprivation, such as ill health, diminished learning abilities or even higher mortality.

Nutritional status of children in Haryana is shockingly poor, whether it is measured as prevalence of underweight, stunting or wasting. This is a puzzling pattern and hence requires a closer scrutiny. The prevailing situation is perhaps due to these reasons. The all-pervasive spatial pattern of undernutrition among children do points to unbalanced dietary practices prevalent in the state. People in rural areas are largely vegetarians and their diet lacks diversification in terms of intake of fruits, vegetables and pulses. Most of the rural population is dependent on the foodcrops grown in the fields and non-cereal crops are missing from the cropping pattern. Secondly, this is also associated with low women status in the region and literature shows that that there is little attention paid to mother's health. According to NFHS and district level household survey (DLHS), the state does have a high proportion of children born as low weight babies. Thirdly, the lack of education among women and awareness regarding balanced diet also have a telling impact on women and child health.

Further, the nutritional intake statistics of National Sample Survey Organisation (NSSO 61st round, 2004-05), which presents data on calorie intake vis-a vis monthly per capita consumer expenditure classes (a surrogate of income classes) shows that except upper quintile, per capita intake of calorie intake is much below the norm in the state. In lower monthly per capita expenditure classes (3 lower MPCE classes combined together represent lower 20 percent population), the per capita calorie intake is less than 1500 kcal. It is shocking to find that in food surplus state the intake of calorie is lower than the all-India average. The food basket however shows that proportion of expenditure on food items is 60 percent, meaning thereby that the rest of income is spent on non-food items. It should not be taken that money is spent on other items when food need is completed. Rather it also points to the fact that like food, clothing, housing, education etc are necessities of life and population in lower quintile too is forced to spend on these by cutting on food items, which is reflected in lower calorie intake and consequently reflecting poor nutritional status of children. There is no tight link between health and nutritional status and calorie consumption, yet calories are important and one can obtain from NSS data that in case of Haryana, large amount of calories are obtained from the consumption of cereals only. The bio- availability of iron in cereal-based diets is low and is, therefore it is important that the diet must include adequate intake of fruits, vegetables and pulses.

Here emerge some pertinent questions. Is adequacy or surplus with respect to foodgrains production sufficient? Though the state has managed to have large stock of foodgrain production which is largely wheat and rice and there is a neglect of pulses, millets and vegetables. Diets exclusively based on rice or wheat will be deficient in a range of micro-nutrients, apart from being relatively poor in protein quality. Though milk intake is above national average in the

state, but its per capita consumption has declined over a period of time. Further, the intake of pulses is also low. With neglect or decline in area under these crops, the intake of protein which was otherwise easily available to its population has reduced over a period of time, which has its reflection in mothers and children health, both in short term and long term nutrition.

There is an urgent need to take short and long-term measures to achieve nutritional security in the state. Among short term measures, it suggests the need for awareness campaign for healthy dietary practices as well as special attention towards maternal health as more than 60 per cent of expectant mothers were found anaemic and a high proportion born to them were low weight babies (NFHS-III). Among long-term measures, there is a need to seriously think over the fact that diversification of food production is necessitated not just because of play of market forces but more importantly, due to nutritional considerations.

Underweight Children

Mode's thriving Gujarat is not in pink of Health (The Indian Express: 4.2.2011)

Nearly half of state's children are underweight, reveal govt data

IF you thought Gujarat is growing and prosperous, you are right. But what most of you probably did not know that there is a dark side to the rapid growth. It is not communal divide but a high rate of malnutrition that is fast turning out to be the underbelly of a growing and thriving state.

A brainstorming session of the Gujarat government to discuss what has been achieved, what has gone wrong and what could be or needs to be done throws light on some alarming facts on the state of nutrition security.

Chief Minister Narendra Modi, his ministers, 150 top bureaucrats and key policymakers are currently meeting in the four-day closeddoor chintan shibir.

The Indian Express has accessed the discussion papers.

Sample this. Though the agricultural growth stood at 9.6 per cent in the last 10 years — three to four times the national average — and milk production increased by 66 per cent, every second child under five years of age is underweight.

In simpler terms, 45 per cent of all children are underweight, the papers state.

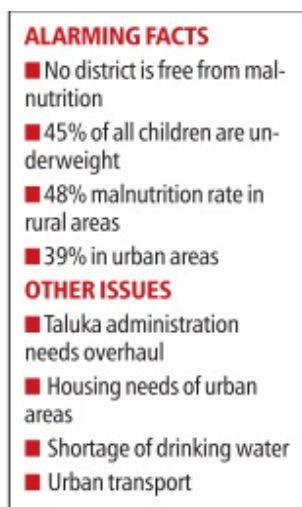
No district is free from malnutrition: 16 out of 26 districts have 45-64 per cent underweight children and 9 of the 12 tribal districts have 45 per cent or more underweight children.

There is high prevalence of anaemia among married women (55 per cent), pregnant women (61 per cent), adolescent girls (57 per cent) and children (80 per cent). Worse, the rate is in

creasing at an alarming rate.

The state government has identified several reasons.

Key among them is that in rural areas, milk is sold to cooperatives, which does not leave enough for the family and children, the document says. Even in agriculture, the normal practice is to grow cash crops and not cereals and pulses and the families end up with less food grains at home.



Education Right –For Children

'Right to education helping kids' health too' (New Kerala : 4.2.2011)

The Right to Education (RTE) Act, besides giving children between six and 14 years access to free and compulsory education, also helps their health as voluntary groups often target schools for their programmes, experts said Thursday.

Deworm the World (DTW), a voluntary organisation giving deworming medicine against intestinal parasites to children between 6 to 14 years, will soon be covering the capital's government schools and slums.

"After a year-long successful work in seven districts of Andhra Pradesh since 2009, we will now target Bihar and Delhi where our prevalence studies have been going on for quite some time," DTW's executive director Lesley Drake told IANS on her visit to India.

"We realised how effective health plans can be when they are pitched in with educational schemes. RTE is an important catalyst for our policy in India," added Drake.

The NGO, in its massive action plan, stated that the programme in Bihar will be rolled out in over 67,000 schools of its 38 districts from February to April.

"Deworming is often ignored in developing nations because it does not affect the mortality rate. The need is to realise its impact on the cognitive growth of the child, his education, mental and physical abilities," explained Drake.

The deworming schemes will also rope in the state governments and additional technical support from the All India Institute of Medical Sciences (AIIMS).

"In Delhi, our studies across slums and schools are underway, and a school-based deworming programme will be launched in identified at-risk areas later this year," said Perna Makkar, regional director of DTW's south Asia wing.

"Adequate sanitation, hygienic living conditions, and safe drinking water are other key approaches to the deworming plan," added Makkar.

Maternal Milk

Quality and Quantity of Maternal Milk Impacts Stress Response of Adult Offspring(Science Daily: 4.2.2011)

The Chinese philosopher, Lao Tzu, stated that love not only attacks the heart, but also the head. New research findings from the Douglas Mental Health University Institute support this ancient claim, by demonstrating how a mother's love positively affects her offspring's developing brain. The two recently published studies highlight how maternal care makes the baby's brain less vulnerable to stress .

Mom's touch and diet

The quality and quantity of maternal milk and maternal-infant contact impact the stress response of the adult offspring, according to recent research published in Developmental Psychobiology. "This manuscript reviews and highlights how critical factors early in life can shape the physiology and behaviour of adult offspring," says Claire-Dominique Walker, Douglas research scientist and study senior author. "For example, we have shown that, in rodent models, maternal

high-fat feeding during the prenatal and lactational period blunts stress responsiveness in neonatal pups. In addition, we demonstrated that maternal licking of pups also blunted adult sensitivity to stress." To put it in other words, they were less vulnerable to stressful situations.

Walker, also director of the Neuroscience Research Division at the Douglas and her team, including PhD candidate Lindsay Naef, suggest that these studies have important implications for human infants. Non-invasive interventions targeted at maternal nutrition and care, are relatively easy to implement and might have a significant effect on the health outcome of the infant.

Human maternal care studies

According to a new finding published in the Journal of Psychiatry and Neuroscience the level of parental care received in early life has an important impact on responses to stress of young men and women. This study looked at the influence of early life experiences on the ability of young adults to cope with stressful situations. Psychological and physical indicators of stress, and levels of the stress hormone, cortisol, were measured. "Surprisingly, both low and high maternal care groups were associated with reduced cortisol stress responses," says Jens Pruessner, Douglas research scientist and senior author of the study. "However, while the low hormonal stress levels in the high maternal care group were associated with high self-esteem, subjects in the low maternal care group exhibited low self-esteem."

Based on these findings, Pruessner and his team suggest that low levels of stress hormones might be good or bad, and that only when combining screening of cortisol stress responses with psychological assessments one can describe the individuals' risk to develop stress-related disorders.

Child Health

Raising a balanced child (The Tribune: 08/02/2011)

Someone has rightly said, "Two parents can't raise a child any more than one. You need a whole community — everybody — to raise a child." Obviously, today it is just not possible in the little nuclear family paradigm to raise a child, as it should be done. It only means that smaller the family unit, more difficult to raise a child properly, and more important the role of the parents.

In today's world, the market-driven economy shapes our lives more than anything else, and the primary concern for most is to survive by adapting to this new-age necessity. This situation has been pointed out by Mathew Arnold in his book, *Dover Beach*, where he argues that we have been reduced to the status of ignorant armies fighting by mid-night and we don't know whose

battle we are fighting. In this scenario, one can easily understand why human beings are referred to as commodities whose “price” is decided by market trends.

The commercialization of education is a very serious problem warranting immediate attention of our government, which is committed to the noble Gandhian goals of education. These goals are very close to those of Bertrand Russell who advocated that education must foster four virtues of vitality, courage, sensitivity and intelligence. The present education system fares very poorly on all these four accounts. This brings to focus the very important role of parents. Parents have the most powerful influence, above and beyond any other, on the new lives that bless their homes. If they don't avail of this God-given opportunity to the best advantage of their children, they are not only failing in their primary duty but are also failing God who gave them this wonderful opportunity.

Gandhi had this to say about the role of parents in educating their children, “Children inherit the qualities of their parents no less than their physical features. Environment does play an important part, but the original capital on which a child starts life is inherited from its ancestors. I have always seen children successfully surmounting the effects of evil inheritance that is due to purity being an inherent attribute of the soul.”

There are a number of reasons why parents must dedicate themselves to the education of their children. First, every parent has to understand that education does not mean merely learning to read and write. A holistic view of education includes development of character, providing nourishment to mind and soul and helping a student to earn a decent livelihood by the sweat of the brow after passing out of an educational institution.

Most of the parents fail to recognise that by leaving their children in the hands of teachers at schools and colleges, they are just abdicating their basic responsibility. Educational institutions of today are no more the centres of learning; they are also centres of many types of vices. How often the parents interact with the teachers and friends of their children and what remedial actions they take on the feedback decide what course the children must pursue during their initial learning period.

Most of the religions preach that educating the children is the most solemn obligation of the parents, since they have conferred life on them. In fact, family is the first school of social virtues which every society needs. What Gandhi says about the parents being the best teachers is very true as children can learn far better and in much lesser time from their fathers or mothers at home, which happens to be the cosiest place on earth for them, especially in early years.

Unfortunately, no parents can have all the knowledge and skills required for the child to meet the basic objectives of education. If it was possible for parents to become full-time teachers of their children and if they had all the knowledge and skills, no doubt, the children would be much better “educated”. Since no parents can ever have the knowledge and skill required by their children, the best they can do is to lay a good foundation for their sons and daughters for all types of future learning. Parents must put in their best efforts to make them self-reliant, well-balanced good human beings.

Most of the educational institutions look at education only from a capital and revenue point of view and, therefore, all their efforts are directed to generate maximum profits. This makes students a mere commodity and the institution a commercial establishment. Parents must not expect from such institutions any development or growth of their children, though admission in such institutions helps a student in passing the examination, which further guarantees a certificate/diploma/degree. In such a scenario, educated and responsible parents can play the role of ideal mentors for their children. They can help in instilling the values in their children by telling them the difference between right and wrong and helping them in practising such values at home. If such value system is integrated with education at the school/college, a conscientious practise of these values will become part of a student's overall personality.

A parent's role becomes all the more important when the teacher is abdicating his responsibility of being the torch-bearer of values and morals of students. It is unfortunate that the psychological distance between the members of a family is increasing day by day, even though the physical distance may be decreasing, as more and more people are forced to live in lesser open spaces. The parents and children no more share an intimate relationship between themselves. They are also the victims of a cautious and doubtful relationship between different human beings prevailing outside the four walls of the house. It was never more important for parents to accept their responsibility of educating their children than it is today.

Child Health

How to handle parents with a drinking problem (Hindustan Times: 09/02/2011)

“Taking charge in this situation can many a time be the only solution for a child”

An ideal family is hard to come by. As a child and as an adolescent, one has certain basic expectations about one's family and home atmosphere. We all desire a healthy atmosphere when we grow up. This would mean being surrounded by responsible, caring parents who foster a sense of security, happiness and satisfaction in children.

When these things do not happen, it can jolt us. It shatters our beliefs and colours our views, our thoughts about what and how life should be.

And, most certainly, this is not easy. Having a parent who has a drinking problem can be a significant precursor to disrupting home atmosphere.

The causes are varied and the impact, all pervasive. It affects not just the physical health of the alcoholic but also leads to a deterioration in relationships, has a detrimental effect on the mental health of other members of the family and can impact finances as well.

Growing up in such a home is not easy, to say the least. It tends to be very disorienting, very discouraging and shakes a child's world view. It casts a shadow on the mental and physical health of the child. It can bring about a rift in the relationship between the parent and the child.

Furthermore, it also can affect the child's academic and personal life.

What such a child needs to or should do is not easy.

However, taking charge in this situation can many a time be the only solution, even for a child, when it comes to his/her own well-being. For a child, it would mean thinking in a way that is beyond his/her age, which does not come naturally. Nevertheless, there are some things a child can most certainly do which can reduce his/her distress and potentially take care of the problem at hand.

Do not blame your parents Understand that alco holism is an illness and requires intervention to stop Help in maintaining a positive environment at home Do not get into confrontations Discuss consequences of drinking on the health with your parent Create awareness and understanding of alcohol use Encourage the parent to take medical opinion Help the parent be regular for treatment Be a support system Learn yourself: Never get into alcohol The author is a psychiatrist, and chief, Department of Mental Health and Behavioural Sciences, Max Healthcare.

Preterm Delivery

Clues to Mystery of Preterm Delivery (Science Daily: 14.2.2011)

Researchers at Yale School of Medicine have found that excessive formation of calcium crystal deposits in the amniotic fluid may be a reason why some pregnant women suffer preterm premature rupture of the membranes (PPROM) leading to preterm delivery.

This is a key breakthrough in solving the mystery of preterm birth, a leading cause of death and permanent disability in newborns. The findings will be presented in an abstract at the Society for Maternal-Fetal Medicine Scientific Sessions on February 10 in San Francisco, California.

Researchers know that infection, maternal stress and placental bleeding can trigger some preterm deliveries, but the cause of many other preterm deliveries remains unknown. In these cases, women experience early contractions, cervical dilation and a torn amniotic sac.

A team of researchers in the Department of Obstetrics, Gynecology & Reproductive Sciences at Yale, including first author Lydia Shook and her mentor Irina Buhimschi, M.D., investigated the idea that calcification -- excessive buildup of calcium -- of the fetal membranes may lead to PPRM and preterm birth. "We noticed that in many women, analysis of the proteins in their amniotic fluid did not show signs of inflammation, and we could not find any cause for their preterm birth," said Shook, a Yale medical student. "We took a fresh look for what was causing breakdown of the membranes, which can lead to lost elasticity, integrity and eventually rupture."

Scientists know that calcifying nanoparticles are involved in many degenerative conditions including arthritis and atherosclerosis. "These mineral-protein complexes can disrupt normal

cellular processes and cause cell death," Shook said. "We wondered whether they could also be responsible for damage to the fetal membranes in pregnant women."

Shook and her co-authors used a stain to look for calcium deposits in placental and fetal membrane tissue from patients with PPROM and preterm birth, as well as full-term deliveries. They used a sterile culture technique to determine whether amniotic fluid can form nanoparticles. They then exposed fetal membranes to the cultured nanoparticles to determine their ability to induce cell dysfunction, damage and cell death.

The team found evidence of calcification of fetal membranes collected from preterm deliveries. Fetuin, one of the major proteins involved in nanoparticle formation, was found in these deposits. Levels of fetuin in amniotic fluid were lower in women who delivered with PPROM compared to those who delivered early with intact membranes.

"This preliminary evidence suggests that amniotic fluid has the potential to form nanoparticles and deposit them in the fetal membranes," said Shook. "Low fetuin may be a biomarker for women at risk of PPROM. The goal of this research is to identify women at risk of developing this condition early in their pregnancy and to intervene with targeted therapy."

Other Yale authors on the abstract include Catalin Buhimschi, Antonette Dulay, Guomao Zhao, Unzila Ali, Christina Han, Katherine Campbell and Erika Werner.

Children's Dental Health Month

Children's Dental Health Month; Get It Done Early! (Medical news Today: 23.2.2011)

February is National Children's Dental Health Month and the American Academy of Pediatric Dentistry is encouraging parents and caregivers to use protective measures and care for healthy teeth. Pediatric dentists say parents should make an appointment with the dentist before the child's first tooth appears. In fact, 90% of dental decay can be prevented.

Studies indicate dental costs for children who have their first dental visit within 12 months of birth are 40% lower in the first 5 years than for those who do not see a dentist before to their first birthday.

Dr. Alan C. Sherrill, who has an office in Russellville comments:

"Prevention is the essential key. Brush and floss daily and have two check-ups a year so you won't have to have a root canal. It hurts me to see people let their mouths go. Take time to floss once a day and brush twice."

The American Academy of Pediatric Dentistry (AAPD), the authority on children's oral health, also announced this month the creation of their Pediatric Oral Health Research and Policy Center.

The goal of the Center is to inform and advance research and policy analysis that will promote optimal oral health care for children. Through the AAPD, the Center will conduct research studies and policy analysis to further the understanding of practices which will improve oral health for all children. Upcoming work will focus on areas such as successful Medicaid dental reforms, effective oral health literacy efforts; the benefits of establishing a dental home by age one and the efficacy of expanded function dental assistant laws. The Center will assist federal and state policymakers in determining the best policies to positively improve the oral health status of children.

AAPD President Dr. John R. Liu states:

"Our Center will allow the AAPD to produce timely and high quality research and policy analysis on critical issues impacting children's oral health. Too often, policymakers are presented with simplistic 'solutions' to children's oral health that don't hold up to rigorous scrutiny. The AAPD's Center will serve as the resource for children's oral health policy and research."

Pediatric Dentistry places special importance in preventing tooth decay. Studies show that poor oral health care in children can lead to impaired school performance and poor social relationships. Therefore, Pediatric Dentists give advice on how to make teeth strong the importance of developing healthy eating habits and other ways to prevent disease from occurring.

Additionally, Pediatric Dentists work toward the maintenance of primary teeth (baby teeth) until they are naturally lost. This is due to the importance they serve in permitting children to chew properly and therefore maintain good nutrition, their role in speech development, and the maintenance of space for the eventual eruption of the permanent teeth.

The role of the Pediatric Dentist changes as children enter adolescence. Recognizing the growing importance of appearance and self-image in their patients, Pediatric Dentists work to ensure that adolescents' dental needs are met. Preventative dental health care is emphasized and when necessary information is provided to adolescents about subjects such as wisdom teeth, tobacco use, sealants and oral piercing.

Breast Milk

Breast Milk Bank(Med India: 23.2.2011)

Victoria, Australia has its first breast milk bank, enabling sick and premature babies to get a firmer grip on life.

Breast milk is vitally important for the new born as it provides, besides nutrition, specific proteins and sugars that build immunity and fight infection. It also gives protection against necrotising enterocolitis (NEC), a fatal condition where part of the gut tissue dies.

As Melissa Italia, a 28-year old mother of twins born 11 weeks early, says, "Breast milk over formula is a great start to life for any baby."

Donors will be women who produce too much milk and they will not be paid. They will be screened for infections such as hepatitis C and HIV; their milk is then checked for bacteria, before being pasteurised. Once it is confirmed that the milk is sterile it will be given to needy infants born before 32 weeks gestation and with a birth weight less than 1500g.

Although the bank's head, Dr Gillian Opie has said that the milk would be available only for patients at Mercy Hospital for Women, Heidelberg, it is hoped that the service would expand to meet the needs of other infants in Victoria.

"The bank will help many very premature babies to achieve the best possible start in life," she said.

Child brain

Child brain scans help to pick out future criminals (Te Asian age: 23.2.2011)

In what echoes Hollywood science fiction movie Minority Report which focused on detection of pre-crime, criminologists have claimed that brain scans could help pick up violent tendencies in children as young as four.

Two leading criminologists, who have put forward the theory, say by predicting which children have the potential to be trouble-makers, treatments could be introduced to keep them on the straight and narrow.

Prof. Adrian Raine, one of the two British criminologists, argued that abnormal physical brain make-up could be a cause of criminality as well as helping to predict it, the Daily Telegraph reported.

His studies have shown that psychopaths and criminals have smaller areas of the brain such as the amygdala and prefrontal cortex, both of which regulate and control emotion and behaviour.

He also believes a lack of conditioning to fear punishment which can be measured in toddlers before disruptive behaviour is apparent, could also be a strong

indicator. Another criminologist, Dr Nathalie Fontaine, argued that children as young as four exhibited “callous unemotional traits” such as lack of guilt and empathy that could also suggest future bad behaviour.

Linking these features with “conduct problems” such as throwing tantrums could be a strong way to predict who could be antisocial in later life.

Both said that identifying these issues earlier could be important in stopping children from becoming criminals.

Prof. Raine, a former home office psychologist who works at the University of Pennsylvania, said therapy could include counselling to counteract innate behavioural problems and boosting the brain with drugs or foods rich in Omega 3.

Dr Fontaine of Indiana University said the work showed that punishment did not necessarily work and that reinforcing positive behaviour rather than punishing bad might be the solution.

“If we could identify those children early enough, we could help them as well as their families,” she said.

Dr Fontaine used data from more than 9,000 twins from the Twins Early Development Study, a survey of twins born in England and Wales between 1994 and 1996.

Assessments of callous unemotional traits and conduct problems were based on teacher questionnaires when the children were seven, nine and 12. Information was taken from parents when the children were as young as four.

She found there was a correlation between risk factors at a young age and bad behaviour at an older age.

Dr Raine said he acknowledged the ethical implications of treating children before they had done anything wrong, but argued that “biological” causes of crime could not be ignored. —PTI

Premature Babies

Premature Babies Win Fight to Live (Med India: 24.2.2011)

A British couple can rejoice now, for after five long months they can hold and cuddle their twin babies at last.

Born prematurely, 14 weeks too soon, in September last year at Poole Hospital in Dorset, Willow and Stanley Senior were so tiny their arms could easily fit into their father's wedding ring. Each weighed just 2lb 1oz and 2lb 3oz.

Their lungs were underdeveloped and they were so fragile that changing their nappies or giving them a cuddle was near to impossible since there was always the danger of serious injuries.

They stopped breathing 100 times during their hospital sojourn and their mother recalling the heart stopping times says, 'I've lost count of the times the doctors and nurses have saved the lives of our babies. They've been through so much. We feel really proud of them.'

After being nearly five months at the hospital, they are now at home in Bournemouth, a healthy 11lb 7oz and 9lb 15oz. And their proud parents, Leela and Anthony Senior can hold them and cuddle them all they want!

Vitamin D

Low vitamin D levels associated with allergies in children (New Kerala: 25.2.2011)

A new study has shown that low vitamin D levels are associated with increased likelihood that children will develop allergies.

Researchers from Albert Einstein College of Medicine of Yeshiva University, which headed the study, reached the conclusion by studying more than 3,000 children.

They looked at the serum vitamin D levels in blood collected in 2005-2006 from the samples derived from the National Health and Nutrition Examination Survey (NHANES) of more than 3,100 children and adolescents and 3,400 adults. One of the blood tests assessed was sensitivity to 17 different allergens by measuring levels of Immunoglobulin E (IgE), a protein made when the immune system responds to allergens.

When the resulting data was analyzed by Einstein researchers, no association between vitamin D levels and allergies was observed in adults. But for children and adolescents, low vitamin D levels correlated with sensitivity to 11 of the 17 allergens tested, including both environmental allergens (e.g., ragweed, oak, dog, cockroach) and food allergens (e.g., peanuts).

For example, children who had vitamin D deficiency (defined as less than 15 nanograms of vitamin D per milliliter of blood), were 2.4 times as likely to have a peanut allergy than were children with sufficient levels of vitamin D (more than 30 nanograms of vitamin D per milliliter of blood).

The research shows only an association and does not prove that vitamin D deficiency causes allergies in children, cautioned Michal Melamed, assistant professor of medicine and of epidemiology and population health at Einstein and senior author of the study. Nevertheless, she said, children should certainly consume adequate amounts of the vitamin.

"The latest dietary recommendations calling for children to take in 600 IU of vitamin D daily should keep them from becoming vitamin-D deficient," she said.

The study has been published in the online edition of the Journal of Allergy and Clinical Immunology.

Budget - Children's Health Needs Attention

This Budget, children's health needs attention' (The Times of India: 28.2.2011)

Govt Currently Spends A Meagre 1% of GDP

As the Union Budget draws near, activists have demanded increase in the spending on children. As a proportion to the total government expenditure, share of health, nutrition, water supply and sanitation stood at 5.48% on an average during 2005-2009. India spends less than 2% of GDP on health while out-of-pocket spending on health is 73%.

With some of the world's worst indices, India can ill-afford this indifference. Consider this: two million children under 5 years die every year in India, almost one out of three malnourished children live in India and 45.9% children under 3 years are underweight.

Demanding an increase in the health budget, Save the Children CEO Thomas Chandy said children were dying of preventable and treatable causes. Reduction of high levels of child and maternal mortality would be difficult to achieve with the current rate of spending. Chandy said, "The government must demonstrate the political will to stop this silent epidemic that is diminishing the country's future."

According to an analysis of public spending on health, nutrition, water and sanitation by Save the Children, expenditure had reached 1.58% in 2008-09 despite successive governments' claims to increase the health spending to 2%- 3% of GDP. But health expenditure alone without expenditure on water supply and sanitation and nutrition was less than 1% of GDP in 2004-05. This has only gone up marginally to 1.09% of GDP in 2008-09, according to the health ministry.

Spending on health care in India remains low in comparison to many developing and developed countries. Most European countries spend about 9%-11% of their GDP on public health. Government expenditure as a share of the total health expenditure in India is less than what Asian countries such as China and Indonesia spend on health care.

This has a direct impact on maternal and child mortality. Globally, it is estimated that an annual rate of decline of 4.4% is needed to reduce deaths of children under 5 by two-thirds by 2015. In India, the annual rate of decline in child mortality between 1990 and 2008 is 2.25%. As per the 2015 target, required rate of decline from 2009 to 2015 per year must be 6.28% to meet the MDG goal.

GREAT EXPECTATIONS: Finance minister Pranab Mukherjee giving final touches in his office on the eve of Budget

Low birth weight children

Low birth weight children 'programmed to eat more' (New Kerala: 11.3.2011)

A new study has revealed that low birth weight children are "programmed" to eat more because they develop less neurons in the region of the brain that controls food intake.

The study by Los Angeles Biomedical Research Institute at Harbor-UCLA Medical Center (LA BioMed) suggests that overeating is programmed at the level of stem cells before birth when the mother has poor or inadequate nutrition.

The find is important in that it offers potential opportunities for prevention and treatment for obesity and other related disorders.

"This study demonstrates the importance of maternal nutrition and health in reducing obesity," said Dr. Mina Desai.

"Obesity and its related diseases are the leading cause of death in our society, yet we have few effective strategies for prevention or treatment. These studies suggest maternal nutrition could play a critical role in preventing obesity and related disease."

The findings of altered brain development suggest that foetal growth restriction may be associated with cognitive and/or behavioural alterations.

The study is published today in the journal, Brain Research.

Low Birth weight

Low Birth weight And Obesity Link: New Clue Found In Brain (Medical News Today; (11.3.2011))

Nutritionally deprived newborns' brains are "programmed" to eat more because they have fewer pathways for signalling fullness in the brain region that controls appetite: the discovery is a new clue for the link between low birthweight and obesity later in life, concluded a study published this week in the journal Brain Research.

Researchers from Los Angeles Biomedical Research Institute at Harbor-UCLA Medical Center (LA BioMed) compared the brains of low birthweight newborn rats whose mothers had a 50% food-restricted diet during pregnancy to those of rats born to mothers who had free access to food during pregnancy.

What they found led them to conclude that a tendency to overeat in adulthood could be programmed at stem cell level before birth in people whose mothers had a poor or inadequate diet during pregnancy.

They found less division and differentiation of neural stem cells in the brains of low birthweight newborn rats compared with normal birthweight ones.

Previous studies have already suggested that adult obesity is tied to low birthweight followed by accelerated "catch-up", as are other chronic conditions such as cardiovascular disease, type 2 diabetes, high blood pressure and osteoporosis.

LA BioMed principal investigator and corresponding author of the study, Dr Mina Desai, told the press that the study shows how important it is that mothers look after their health and follow a healthy diet in pregnancy to reduce the risk of their children turning into obese adults.

"Obesity and its related diseases are the leading cause of death in our society, yet we have few effective strategies for prevention or treatment," said Desai.

This study offers one such strategy: help mothers follow a nutritious diet in pregnancy.

Nearly two-thirds of American adults are overweight and more than 1 in 5 is obese. Also, about 17% of 2 to 19-year-olds in the US are obese.

This type of stem cell alteration in fetal brains suggests poor maternal diet and health in pregnancy may also be linked to other developmental shortfalls in children, affecting aspects like thinking and behaviour.

"Hypothalamic neurosphere progenitor cells in low birth-weight rat newborns: Neurotrophic effects of leptin and insulin."

Prenatal Exposure

Prenatal Exposure of Higher Levels of Testosterone Linked to Smartness (Med India: 15.3.2011)

Being bright is linked to prenatal exposure of higher levels of testosterone, a new study from University of Alberta has said.

According to Marty Mrazik, in the same way that physical and cognitive deficiencies can be developed in uterus, so, too, could similar exposure to this naturally occurring chemical result in giftedness.

"There seems to be some evidence that excessive prenatal exposure to testosterone facilitates increased connections in the brain, especially in the right prefrontal cortex," said Mrazik.

"That's why we see some intellectually gifted people with distinct personality characteristics that you don't see in the normal population."

Mrazik's notion came from observations made during clinical assessments of gifted individuals.

"It gave us some interesting ideas that there could be more to this notion of genius being predetermined from a biological perspective than maybe people gave it credit for," said Mrazik.

"It seemed that the bulk of evidence from new technologies (such as Functional MRI scans) tell us that there's a little bit more going on than a genetic versus environmental interaction."

Based on their observations, the researchers made the hypothesis that this hormonal "glitch" in the in-utero neurobiological development means that gifted children are born with an affinity for certain areas such as the arts, math or science.

Mrazik hopes that devices such as the Functional MRI scanner will give them a deeper understanding of the role of neurobiology in the development of the gifted brain.

Newborns standardized

Vital signs for newborns standardized (The Times of India: 15.3.2011)

How many times should a newborn breathe per minute? And what is his ideal heart rate? Scientists may have finally put an end to the confusion.

After analysing 69 studies — comprising 1.5 lakh children — scientists have now produced the most definitive reference range of respiration and heart rate, which differs from existing published guidelines.

According to the new findings published in The Lancet on Monday, the respiratory rate of a newborn should be 44 breaths per minute which reduces to 26 breaths per minute at the age of two. As for heart rate, it is 127 beats per minute at birth and goes up to a high of 145 beats per minute at about one month. It goes to 113 beats per minute by two years.

Lead author Dr Matthew Thompson of Oxford University said, "Our new charts provide the most accurate information about vital signs for children, which will be useful for doctors worldwide. Clinicians can now better assess an unwell child."

Dr Viresh Mahajan, head of department of pediatric cardiology at Max Hospital, said children's hearts beat faster when they are born and naturally get slower as they get on in age.

According to Dr Thompson, heart rates and breathing rates are vital signs. They are used by paramedics, nurses and doctors as part of initial assessment of an unwell child.

Children

Delhi team to study deaths of children in Gujarat (The Hindu: 18.3.2011)

GANDHINAGAR: A special medical team from Delhi is scheduled to arrive in Gujarat in a day or two to study the cause of death of four children after they were given oral vaccines for measles in Adipur-Kutch on Wednesday.

An official spokesman of the State government said Foods and Drugs Division officials had collected samples of the same vaccines from other major centres in the State including Ahmedabad, Surat, Vadodara, Rajkot and Bhuj and sent them to Himachal Pradesh for laboratory test.

Health Department officials from different parts of the State have also rushed to Adipur for a thorough check of the men and equipment involved in the immunisation drive.

The State government suspended the drive till further orders following the Adipur tragedy.

Leader of the Opposition in the Assembly Shaktisinh Gohil blamed the State government for the tragedy claiming that the authorities had been “very negligent.”

He said that as per instructions of the Central government based on the guidelines of the World Health Organisation, every staff member involved in the immunisation drive must be specially trained in the “Adverse Effects After Immunisation (AEAI)” programme since measles vaccines particularly had the tendency to cause “Anaphylactic Shock,” which could cause death within minutes if not treated immediately.

Unfortunately, the State government made no arrangements for training the staff involved in the immunisation programme, he charged.

Prenatal test

‘Prenatal test can detect Turner syndrome’ (World News Paper: 29.3.2011)

City-based geneticist and paediatrician, Dr Prakash Gambhir, wants to create awareness on Turner syndrome (TS), a disorder that affects one in 2,000 female live births. Not much is known about this condition in which women suffer infertility and absence of menstruation. In a talk with Nozia Sayyed, Dr Gambhir said that the genetics department of the Maharashtra University of Health Sciences (MUHS) is planning to undertake a research study to track the incidence of Turner syndrome in the city.

What is Turner syndrome?

Turner syndrome is a disorder caused either by the absence or abnormality of one of the two X chromosomes in females. This condition occurs quite commonly during conception, but a majority of such conceptions are lost in early pregnancy as they are not viable and lead to early abortions. The incidence of TS is one in 2,000 female live births. These girls also look different from normal girls.

They look different in what way?

Girls born with this disorder have certain characteristic features. The symptoms include short stature, failure to get menstrual cycle at the appropriate age due to lack of normally functioning ovaries. These ovaries do not ovulate or produce hormones that are essential for normal breast development and other physical characteristics. These girls can also be identified by the shape of their neck as they have a peculiar structure known as webbed neck. Some of them may also have heart or kidney abnormalities.

What are the causes of TS and how can it be diagnosed?

There are no known causes and TS is congenital. It affects the foetus at the time of conception. TS can be diagnosed at any stage of life. Through chromosome analysis, it can be detected even before the child is born. This analysis is done during prenatal testing in which the doctor performs a physical test to look for signs of underdevelopment. The condition is diagnosed by studying the chromosomes, but it is usually detected late due to lack of awareness. Normal females have two X chromosomes, whereas a majority of TS patients lack one of the X chromosomes.

What is the main symptom of TS?

If the paediatrician or nurse is educated about this syndrome, this condition can be suspected in female newborns. The main symptom after birth is swelling of the hands and feet. Other symptoms include webbed neck, broad flat chest, dry eyes, infertility, absence of menstruation and so on.

What is the treatment available?

This disorder is not curable, but presently the mainstay of management consists in giving hormones that are not produced in the adequate amounts in the patient. The growth hormone therapy is one such treatment given to patients. Given from a young age, it may help achieve close to normal height as these females are usually short.

Another therapy includes estrogen therapy, which is started at the age of 12 to 15 years. However, due to non-affordability, many do not have access to this treatment. This therapy helps patients in breast development. With hormone therapy too, women with this syndrome will remain infertile due to lack of ovaries.

Can these women conceive?

No, they cannot but there are chances of achieving pregnancy if they get donor eggs. However, older women usually face infertility caused due to this syndrome and fail to conceive.

Have you planned any research study under the genetics department?

Yes. We are planning to undertake a chromosome DNA study in this field, which will help us understand this disorder better. It will also help in knowing the incidence rate of TS patients in Pune.

Babies Brain

Brain growth in babies linked to mothers' 'investment' (New Kerala: 30.3.2011)

A new Durham University research has revealed that brain growth in babies is linked to the amount of time and energy mothers 'invest'.

The study of 128 mammal species, including humans, shows that brain growth in babies is determined by the duration of pregnancy and how long they suckle.

The research concludes that the longer the pregnancy and breastfeeding period in mammals, the bigger the baby's brain grows.

The researchers say the findings reinforce the suggestion that breast is best for brain development and add further weight to the World Health Organisation's advice of six months' exclusive breastfeeding followed by continuing breastfeeding up to the age of two or beyond supplemented with solid foods.

The study helps to explain why humans, who suckle their babies for up to three years in addition to their nine-month pregnancies, have such a long period of dependency as this is necessary to support the growth of our enormous 1300cc brains.

In comparison, species such as fallow deer, which are about the same body weight as humans, are only pregnant for seven months with a suckling period of up to six months, resulting in brains of only 220cc, six times smaller than the human brain.

The study has been published in the Proceedings of the National Academy of Sciences.

Breast feeding

Longer breast feeding helps babies develop bigger brains (New Kerala: 31.3.2011)

Breast feeding for longer stretches could be a safe way to help babies develop bigger brains.

A three-year study of 128 mammal species, including humans, found that longer pregnancies and longer suckling times produce bigger brains in babies, possibly leading to a higher IQ.

The study suggests that women who breastfeed their babies for up to three years following nine-month pregnancies have a long period of dependency because it is required to support the growth of 1,300cc brains, the journal Proceedings of the National Academy of Sciences reports.

But animals such as fallow deer, which have roughly the same body weight as humans, are pregnant for just seven months with a suckling period of up to six months.

This results in 220cc brains, six times smaller than human brains, according to the Daily Mail.

Robert Barton, anthropologist from Britain's Durham University, said: "We have discovered that brain growth in babies is linked to the amount of time and energy mothers invest in their child."

"There is a strong relationship between specific issues in the way a mother invests in producing her offspring and a link between growth of the foetus and length of gestation."

The scientists focused on brain and body size, maternal investment and life history variables in mammals such as gorillas and whales.

Thyroid hormone

Thyroid hormone is crucial in controlling eye's visual pigments (New Kerala; 31.3.2011)

Washington, Mar 30 : Thyroid hormone plays a very important role where the eyes are concerned, as it controls which visual pigment is produced in the cones.

Mental Health

Mental Health

Emotional Response May Predict How the Body Responds to Stress (Science Daily: 21.2.2011)

Your emotional response to challenging situations could predict how your body responds to stress, according to research published this month in the journal *Brain, Behavior, and Immunity*. People who reported high levels of anger and anxiety after performing a laboratory-based stress task showed greater increases in a marker of inflammation, than those who remained relatively calm," said Dr Judith Carroll, who conducted the study at the University of Pittsburgh. "This could help explain why some people with high levels of stress experience chronic health problems," she added.

The investigators asked healthy middle-aged individuals to complete a speech in the laboratory in front of video camera and a panel of judges. During the speech, they monitored the physical responses to the task and then afterwards asked them about the emotions that they had experienced.

"Most people show increases in heart rate and blood pressure when they complete a stressful task," explained Dr Carroll, "but some also show increases in a circulating marker of inflammation known as interleukin-6. Our study shows that the people who have the biggest increases in this marker are the ones who show the greatest emotional responses to the task."

"Our results raise the possibility that individuals who become angry or anxious when confronting relatively minor challenges in their lives are prone to increases in inflammation," explained lead author Dr Anna Marsland, an Associate Professor of Psychology and Nursing at the University of Pittsburgh. "Over time, this may render these emotionally-reactive individuals more vulnerable to inflammatory diseases, such as cardiovascular disease," she said.

The research, funded by the National Institute of Nursing Research, is part of a burgeoning field, known as Psychoneuroimmunology, which investigates the interactions between psychological processes and health. "This paper addresses a key question in psychoneuroimmunology -- what explains individual differences in the inflammatory response to stress," said Dr Margaret Kemeny, a Professor at the University of California, San Francisco. "These findings suggest that the specific nature of the emotional response to the task may be a key predictive factor and set the stage for future work defining these pathways and addressing their clinical implications," she added.

Emotional distress

Emotional distress does not stop fertility treatment from working: Study (New Kerala: 25.2.2011)

Stress and tension do not stop fertility treatment from working, according to a new study.

Many infertile women believe that emotional distress (for example stress and tension) is a factor in not getting pregnant naturally or lack of success with fertility treatment. This view is largely based on anecdotal evidence and fertility myths such as "don't think about it and you'll get pregnant".

The authors, led by Professor Jacky Boivin from the Cardiff Fertility Studies Research Group, investigated links between the success of fertility treatment and stress by undertaking a large scale review (meta-analysis) of related research.

Fourteen studies with 3,583 infertile women undergoing a cycle of fertility treatment were included in the review. The women were assessed before fertility treatment for anxiety and stress. The authors then compared data for women who achieved pregnancy and those who did not.

The results show that emotional distress was not associated with whether or not a woman became pregnant.

Professor Boivin therefore argues that "these findings should reassure women that emotional distress caused by fertility problems or other life events co-occurring with treatment will not compromise their chance of becoming pregnant".

Mental illness

Infants, toddlers too suffer mental illness (New Kerala: 28.2.2011)

A new research has shown that infants and toddlers can suffer serious mental health disorders, yet they are unlikely to receive treatment that could prevent lasting developmental problems

One barrier to mental health care for young children is "the pervasive, but mistaken, impression that young children do not develop mental health problems and are immune to the effects of early adversity and trauma because they are inherently resilient and 'grow out of' behavioral problems and emotional difficulties," according to researchers Joy D. Osofsky, of Louisiana State University, and Alicia F. Lieberman, of the University of California, San Francisco.

Contrary to traditional beliefs that infants cannot have mental health problems "because they lack mental life," even young infants can react to the meaning of others' intentions and emotions because they have their own rudimentary intentions and motivating emotions, according to an article by Ed Tronick, of the University of Massachusetts, Boston, and Marjorie Beeghly, of Wayne State University.

While trauma can be a significant factor in developing mental health issues, the authors encourage more study of the impact of everyday life and continual interactions between infants and parents or other caregivers.

"Infants make meaning about themselves and their relation to the world of people and things," Tronick and Beeghly stated, and when that "meaning-making" goes wrong, it can lead to development of mental health problems.

"Some infants may come to make meaning of themselves as helpless and hopeless, and they may become apathetic, depressed and withdrawn. Others seem to feel threatened by the world and may become hyper-vigilant and anxious." Apparent sadness, anger, withdrawal and disengagement can occur "when infants have difficulty gaining meaning in the context of relationships," they write.

Because early childhood mental health has very few practitioners, it is often difficult for parents or children's programs to find help when they think it is needed, according to Osofsky and Lieberman.

If they do find such help, "the cost of preventive services or treatments for children under the age of three years may not be covered by insurance or other resources," notes another paper, by Florence Nelson, of the national nonprofit ZERO TO THREE and Tammy Mann, of the Frederick D. Patterson Research Institute.

Mental health risks to infants are magnified by the fact that "the youngest children, from birth to age 5, suffer disproportionately high rates of maltreatment with long-term consequences for mental and physical health, pediatric health, and child care providers seldom identify or refer children under 5 years old to mental health services," according to Osofsky and Lieberman.

Their study cites U.S. Department of Health and Human Services statistics from 2008 and 2010 showing that 79.8 percent of the children who died from abuse and neglect were younger than 4 years old, and that the first year of life is the most dangerous. The paper also examines the impact of poverty and points out that previous studies have revealed that "one in five children in poverty has a diagnosable mental health disorder."

ADHD Medication - Common Childhood Psychiatric Disorders.

FDA Approves New ADHD Medication; Intuniv (Medical News Today: 1.3.2011)

ADHD is one of the most common childhood psychiatric disorders. In the United States, the prevalence of ADHD is approximately three to seven percent in school-aged children according to the Centers for Disease Control and Prevention (CDC). This week the FDA has approved a new drug to treat this condition called INTUNIV manufactured by Shire.

In the United States, 37% of those with ADHD do not get a high school diploma even though many of them will receive special education services.

Robert Findling, MD, Director of Child & Adolescent Psychiatry at University Hospitals Case Medical Center and Professor of Psychiatry & Pediatrics at Case Western Reserve University School of Medicine states:

"This approval of INTUNIV for treating ADHD as adjunctive therapy to a stimulant offers physicians a new treatment option for children and adolescents with ADHD who are having a suboptimal response to their current stimulant therapy. In this study, the once-daily dosing of INTUNIV was effective when taken in the morning or the evening, giving physicians flexibility when it comes to treating their patients with ADHD."

The approval is based on results from a 9-week placebo-controlled study of INTUNIV when given in combination with a stimulant, in children and adolescents with ADHD.

Attention deficit hyperactivity disorder is a psychiatric behavioral disorder that manifests as a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development.

ADHD is diagnosed two to four times more frequently in boys than in girls, though studies suggest this discrepancy may be partially due to subjective bias of referring teachers. ADHD management usually involves some combination of medications, behavior modifications, lifestyle changes, and counseling. Its symptoms can be difficult to differentiate from other disorders, increasing the likelihood that the diagnosis of ADHD will be missed.] Additionally, most clinicians have not received formal training in the assessment and treatment of ADHD, particularly in adult patients.

The specific etiology of ADHD is unknown, and there is no single diagnostic test for this disorder.

Michael Yasick, Senior Vice President of Shire's ADHD Business Unit continues:

"This approval marks a significant development in our ADHD portfolio - one that may help to address symptoms that many children with ADHD may experience while on stimulant treatment. We understand that every child is unique, and it is our goal to offer treatment options for ADHD in a variety of situations, whether a child could benefit from treatment with a stimulant, nonstimulant, or both."

Many of the symptoms of ADHD occur from time to time in everyone; in patients with ADHD, the frequency of these symptoms is greater and patients' lives are significantly impaired. Impairment must occur in multiple settings to be classified as ADHD. As with many other psychiatric and medical disorders, the formal diagnosis is made by a qualified professional in the field based on a set number of criteria. In the USA these criteria are laid down by the American Psychiatric Association in their Diagnostic and Statistical Manual of Mental Disorders.

ADHD's global prevalence is estimated at 5% in people under the age of 19. There is, however, both geographical and local variability among studies. Geographically, children in North America appear to have a higher rate of ADHD than children in Africa and the Middle East, well published studies have found rates of ADHD as low as 2% and as high as 14% among school aged children. The rates of diagnosis and treatment of ADHD are also much higher on the East Coast of the USA than on the West Coast.

Rates of ADHD diagnosis and treatment have increased in both the UK and the USA since the 1970s. In the UK an estimated 0.5 per 1,000 children had ADHD in the 1970s, while 3 per 1,000 received ADHD medications in the late 1990s. In the USA in the 1970s 12 per 1,000 children had the diagnosis, while in the late 1990s, 34 per 1,000 had the diagnosis and the numbers continue to increase.

Mental health

Looking On the Bright Side Improves Life Expectancy of Cardiac Patients (medical News Today; 3.3.2011)

A positive mental attitude appears to have a more powerful impact on the 15-year survival chances of cardiac patients even after the severity of their disease is taken into account, scientists from Duke University Medical Center revealed in the journal Archives of Internal Medicine.

Lead study author, John Barefoot, PhD, explained that theirs was a unique study because it demonstrated that an individual's attitude towards their illness has a double impact:

It influences their return to a normal lifestyle

It significantly improves their long-term health and survival chances (helps patients live longer)

Barefoot and team tracked the progress of heart patients after they had undergone coronary angiography to evaluate blood flow in the heart. Even though previous studies had gauged how a patient's expectations influenced how well they went about their work, exercise and other daily activities, this study showed how it also influenced overall physical health and longevity.

Over 2,800 cardiac patients were asked to evaluate how well they expected to recover and return to a normal lifestyle - each was given a psychological questionnaire.

1,637 of them died within fifteen years. 885 (54%) from cardiovascular disease.

Even after taking into account several impacting factors, such as coronary disease severity, sex, socioeconomic status, social support, age, and general functional ability when hospitalized, the higher risk of death remained.

Barefoot said:

"We know there is a relationship between depression and increased rates of mortality. These findings demonstrate the magnitude of the impact of patient expectations on the recovery process above and beyond depression and other psychological or social factors."

The authors explained that positive thinkers had several things that favored them, such as better treatment compliance (adherence), and a higher likelihood of trying things out that are good for their physical and mental health. Some say that pessimism, i.e. negative thinking, leads to stress and tension, which can be damaging for health.

Barefoot said:

"The take-home message is that having positive expectations can not only make you feel better but also potentially live longer."

Happiness

What is Happiness? (Med India: 30.3.2011)

Britain's 'well-being' index has led to different personal expressions in defining the term, as seen in online surveys and interviews.

The Office for National Statistics (ONS) had been asked by Gordon Brown's government to conduct household surveys that could evaluate the satisfaction people get from their lives. As a preliminary exercise, people were encouraged to think about what 'well-being' meant to them personally.

Job security, personal health and relationships with family members were some factors that mattered more to people. Although several people have been very idealistic and philosophical in their responses, many had very practical ideas on what happiness and well-being meant to them.

Paul Allin, Director of the ONS's measuring national well-being programme, said: "These events have been both lively and passionate at times. They are a crucial part of the overall programme as we are able to get to the ground roots of what people think."

From April, the office will be asking "subjective well-being monitoring questions" in its Integrated Household Survey, on how satisfied people were with their lives and how worthwhile they believe their activities are.

The whole exercise is expected to assist in new Government policies that will target at building its people's happiness. And all the Government may need to ensure after all is said and done could be just the simple things in life.

For, taking into consideration many people's feelings, all that seem to be required to be happy and have a sense of well-being is - a walk in the park and the fragrant aroma of coffee.

Mental Health

Mental Health Problems in Children Growing (Med India: 30.3.2011)

More and more children are becoming susceptible to a host of mental health problems. It is time funding for research into the issue was stepped up, Australian experts stress.

"We get kids as young as three who we know are on a path to significant problems in later life," says Professor Mark Dadds, a research director of Child Behaviour Research Clinic at the University of New South Wales.

"Most mental health problems begin in childhood and adolescence but these kids get very little attention and very little of the health dollar," Professor Dadds says. "Only eight per cent of mental health funding is spent on children but we know from ground-breaking work done right here in Australia that mental health problems are identifiable and treatable much earlier than most people think."

Professor Dadds was speaking on the eve of the launch of The Children's Mental Health Research Fund by Professor Marie Bashir, Governor of New South Wales early this month.

Donations are being sought for the new fund, which is administered by the UNSW Foundation. It will support specialist staff and specific projects to improve understanding and treatments of children's mental health issues.

One project is a trial aimed at using a natural human hormone for early intervention in treating the social interaction difficulties experienced by people with autism spectrum disorders (ASD). Another is for new equipment to track children's attention and eye gaze while scanning brain activity, based on a recent discovery that children with a severe form of conduct disorder also have difficulties recognizing specific emotions in other people.

Obesity

Childhood Obesity

Childhood Obesity Linked to Unhealthy Lifestyle (Med India: 2.1.2011)

Children who are obese are more likely to consume school lunch instead of packed lunch from home and spend two hours a day watching TV or playing video game. This new trend in lifestyle leads to childhood obesity, says a study.

The study was conducted by the University of Michigan Cardiovascular Center and includes 1,003 Michigan 6th graders in a school-based health program.

The results suggest unhealthy habits are feeding the childhood obesity trend.

"For the extremely overweight child, genetic screening may be a consideration," said study senior author Kim A. Eagle.

"For the rest, increasing physical activity, reducing recreational screen time and improving the nutritional value of school lunches offers great promise to begin a reversal of current childhood obesity trends," Eagle said.

Children involved in the study participate in Project Healthy Schools, school-based program supported by communities and the U-M Health System to teach middle school students about healthy lifestyles, in hopes of reducing their future risk of cardiovascular disease and diabetes.

Researchers found that 58 percent of obese children had watched two hours of TV in the previous day, compared to 41 percent of non-obese children.

45 percent of obese students always ate school lunch, but only 34 percent of non-obese students ate school lunch.

Significantly fewer obese kids exercised regularly, took physical education classes, or were a member of a sports team.

Because the eating and exercise patterns of obese children were so different than their normal weight peers, researchers concluded that lifestyle was more closely linked with childhood obesity, than genetics.

Obesity

New Treatment That Freezes Extra Fat (Med India: 11.2.2011)

A Scientist from Harvard University has developed a new medical treatment that freezes away extra body fat and tightens the skin.

The one-hour treatment called Zeltiq is the brainchild of Rox Anderson and was just approved by the FDA, reports ABC News.

A vacuum like device pulls in those annoying bits around the middle and literally freezes them. The fat cells die a slow death over 6 to 8 weeks and the results are dramatic.

"It's incredibly popular. I mean, first of all, when people first hear about it, they think it's too good to be true. They can't even believe it. And then when I explain it, they say, "Does this really work? But the patients we've done, they've just been ecstatic," said Debra Jaliman, a dermatologist.

In its ability to target a specific area, Zeltiq is similar to liposuction. But it's not surgery, and the lack of pain and recovery time has made this one of the hottest treatments.

However, results are not immediate - they can take five to eight weeks.

Childhood Obesity

Study Links Childhood Obesity to Working Mothers(Med India: 11.2.2011)

A US study published on Friday suggests the more mothers work during their children's lifetimes, the more likely their kids are to be overweight or obese.

Researchers from American University in Washington, Cornell University in New York state and the University of Chicago studied data on more than 900 elementary- and middle-school-aged children in 10 US cities.

They found that the total number of years the children's mothers worked had a cumulative influence on their children's body mass index (BMI) -- the weight to height ratio used to measure if a person is overweight or obese.

"Every period of time (averaging 5.3 months) a mother was employed was associated with an increase in her child's BMI of 10 percent of a standard deviation," says the study which was

published in the journal Child Development.

"For a child of average height, this is equivalent to a gain in weight of nearly one pound (half a kilogram) every five months above and beyond what would typically be gained as a child ages."

The findings were strongest among sixth graders, the oldest children for whom data was studied. Sixth graders are typically 11 years old.

Changes in the children's physical activity, time spent unsupervised or watching television did not explain the link between maternal employment and children's BMI, the study says.

Moreover, a mother working odd hours or overnight was not significantly associated with their children's BMI.

Obesity

Obesity can cause cancer: Experts (New Kerala: 15.2.2011)

Body fat, known to trigger problems related to diabetes and cardiovascular diseases, is also a potential cause of different types of cancer, experts believe.

"Excess fat leads to a high body mass index (BMI - the percentage of fat in proportion to weight and height of a person), which increases the risk of colon cancer by 55 percent," said Atul Peters, director of the Institute of Minimal Access, Bariatric and Metabolic Surgery at the Primus Super Speciality Hospital.

"Women with high BMI are susceptible to developing uterus or breast cancer by over 50 percent," Peters told IANS.

In both the sexes, being obese increases the risk of cancer of the esophagus, kidney, gallbladder and pancreas, another expert said.

"Fat is considered to be a source of hormones such as estrogens. This hormone is responsible for endometrial and breast cancer," said P.K. Julka, professor at the Clinical Oncology department of the All India Institute of Medical Sciences (AIIMS).

"Excess fat may also lead to out-of-control cell multiplication, which is basically triggered through high insulin-like growth factors. The balance of the immune system is disturbed," he added.

Peters said weight control can reduce cancer-related deaths by nearly 90,000 per year.

Obesity

Link between Obesity, High-Fat Meals and Heart Disease Reinforced by New Study (Science Daily: 18.2.2011)

The effect of a high-fat meal on blood vessel walls can vary among individuals depending on factors such as their waist size and triglyceride levels, suggests new research at UC Davis.

The new research reinforces the link between belly fat, inflammation and thickening of the arterial linings that can lead to heart disease and strokes.

Triglycerides are types of fat molecules, commonly associated with "bad cholesterol," known to increase risk of inflammation of the endothelium, the layer of cells that lines arteries.

"The new study shows that eating a common fast food meal can affect inflammatory responses in the blood vessels," said Anthony Passerini, assistant professor of biomedical engineering at UC Davis, who led the project.

"Our techniques allowed us to measure the inflammatory potential of an individual's lipids outside of the body and to correlate that with easily measured characteristics that could be used to help better understand a person's risk for vascular disease," Passerini said.

Passerini collaborated with Scott Simon, professor of biomedical engineering at UC Davis, to develop cell culture models to mimic the properties of blood vessels. They wanted to learn how triglyceride levels can cause endothelial inflammation, and find a way to assess an individual's inflammatory potential.

They recruited 61 volunteers with high and normal fasting triglyceride levels and a range of waist sizes, then measured levels of triglyceride particles in their blood after they ate a typical fast food breakfast from a major fast food franchise: two breakfast sandwiches, hash browns and orange juice.

Passerini's team found that after eating the high-fat meal, the size of a type of a particle called triglyceride-rich lipoprotein (TGRL) varied directly with the individual's waist size and preexisting blood triglyceride level. These particles can bind to the endothelium, triggering inflammation and an immune response that brings white blood cells to repair the damage. Over time, this leads to atherosclerosis.

The researchers tested whether TGRL particles from the volunteers' blood could cause cultured endothelial cells in the laboratory to express markers for inflammation.

There was a mixed response: individuals with both a waist size over 32 inches (not terribly large by most standards) and high triglyceride levels had large lipoprotein particles that bound easily to the endothelial cells and caused inflammation in response to an immune chemical "trigger."

The TGRLs only caused inflammation when exposed to this immune molecule, which suggests that people with existing low-grade inflammation may be more susceptible to endothelial dysfunction related to triglyceride "spikes" that occur after eating high-fat meals, Passerini said.

In people who are predisposed, repeated episodes of inflammation could lead to atherosclerosis. Passerini's lab is continuing to investigate how abdominal obesity, high triglyceride levels and inflammation can lead to atherosclerosis.

The findings are published online in the American Journal of Physiology -- Heart and Circulatory Physiology. The other authors of the paper, all at the UC Davis Department of Biomedical Engineering, are: graduate student Ying Wang, staff researcher John Schulze, clinical coordinator Nadine Raymond, and undergraduates Tyler Tomita and Kayan Tam. The work was funded by grants from the National Institutes of Health and a fellowship from the Howard Hughes Medical Institute to Wang.

Obesity

Obesity could increase aggressive breast cancer risk (New Kerala: 3.3.2011)

New research has found that obese women who do not exercise are more likely to get one of the most aggressive forms of breast cancers, suggests a study.

The study has confirmed the risk of one of the most aggressive forms of the disease, known as triple negative breast cancer, in obese women who fail to keep active, reports the Daily Express.

However, researchers from the US Women's Health Initiative said their study suggests something other than oestrogen causes the risk.

Around 15 out of every 100 breast cancers are triple negative and are associated with low survival rates.

Amanda Phipps and colleagues assessed body mass index (BMI) and exercise among 307 triple-negative patients and 2,610 with oestrogen receptor-positive breast cancer.

Women with the highest BMI had a 35 per cent increased risk of the triple-negative type and a 39 per cent increased risk of oestrogen receptor-positive breast cancers.

Obesity Epidemic

Life Expectancy Rising in UK and Europe despite Obesity Epidemic (Science Daily: 18.3.2011)

Life expectancy in Europe keeps increasing despite the obesity epidemic, with people in Britain reaching an older age than those living in the US, according to an analysis of trends over the last 40 years.

These striking findings counteract concerns that the rising life expectancy trend in high income countries may be coming to an end in the face of health problems arising from obesity.

Epidemiologist and population health expert Professor David Leon, of the London School of Hygiene & Tropical Medicine, points out that in the last five years most European countries have been going in a positive direction for the first time in decades -- although the gap between East and West remains entrenched.

In an editorial published in the International Journal of Epidemiology, Professor Leon writes: "Despite what many may have assumed, and without being complacent, current trends in European life expectancy are in a positive direction.

"But while the European experience since 1980 underlines the centrality of the social, political and economic determinants of health, many intriguing and important questions remain unanswered about the drivers of these extraordinary trends."

Along with other Western European countries, life expectancy has been rising steadily in the UK. An important contributor to this has been the decline in deaths from cardiovascular disease.

According to Prof Leon, deaths from cardiovascular disease in the UK have seen "some of the largest and most rapid falls of any Western European country, partly due to improvements in treatment as well as reductions in smoking and other risk factors."

Despite spending more per capita on health care than any other country in the world, the US is at the same level as the lowest of any Western European country (Portugal for males and Denmark for females), while the rate for women is increasing at a much slower pace than Western Europe.

In 2007, life expectancy in the US was 78 years compared to 80 in the UK.

"This simple observation once again underlines that GDP and health care expenditure per capita are not good predictors of population health within high income countries," Prof Leon writes.

Within Europe, Prof Leon paints a startling contrast between East and West as the former Communist bloc struggles to catch up with its longer-living neighbours.

The "Iron Curtain" hampered development of strategies to tackle non-communicable diseases in Eastern Europe.

Since the collapse of the Berlin Wall in 1989, life expectancy has been rising in countries of central Europe such as Hungary, Poland and the Czech Republic.

However, since this has been at a similar rate to Western Europe, the two halves of the Continent have been following "parallel trajectories" which makes the East-West gap "very difficult to eliminate."

Trends in Russia and other countries of the former Soviet Union have been less positive, with life expectancy going up and down dramatically over the past 25 years. This has been largely due to changes in hazardous drinking, among men in particular.

Compared with the UK, where in 2008 male life expectancy stood at 77.9 and female life expectancy stood at 82.0, Russian men could expect to live to 61.8 and women to 74.2, data from the World Health Organization and the Human Mortality Database reveals.

Describing it as "shocking" that life expectancy in Russia only returned in 2008 to the level it was 40 years previously, Prof Leon suggests the recent rising trend in life expectancy is down to a reduction in alcohol related deaths rather than by broader health improvements that characterise steadier increases in the rest of Europe.

Obesity

Stigma Attached to Being Fat Is Going Global (Med India: 30.3.2011)

A cross-cultural study of attitudes toward obesity has found that stigma against overweight people is becoming a cultural norm around the world, even in places where larger bodies have traditionally been valued.

Researchers from Arizona State University surveyed people in nine diverse locations around the world and found negative attitudes toward fat bodies in every one.

The results suggest a rapid "globalization of fat stigma" in which overweight people are increasingly viewed as ugly, undesirable, lazy, or lacking in self control, the researchers said.

"Previously, a wide range of ethnographic studies have shown that many human societies preferred larger, plumper bodies," said Alexandra Brewis, a biological anthropologist and one of the study's authors.

"Plump bodies represented success, generosity, fertility, wealth, and beauty."

But those fat-positive values are quickly giving way to a more negative Western way of looking at obesity, such as symbolizing personal failing.

The researchers surveyed people in Mexico, Argentina, Paraguay, the U.S., and the U.K. Also included were American Samoa, Puerto Rico, and Tanzania-cultures that have traditionally been thought of as fat-positive. People were asked if they agreed or disagreed with a series of statements about body size. Some statements were fat-negative ("Fat people are lazy"), others were fat-positive ("A big woman is a beautiful woman").

The responses across these diverse cultures were largely congruent with Western attitudes, the researchers found. What's more, the highest fat stigma scores were not in the U.S. or the U.K., "but rather Mexico, Paraguay, and-perhaps most surprisingly-in American Samoa," the researchers said.

The study will be published in the April issue of Current Anthropology.

Population

Census 2011

Census 2011 will begin on February 9 (The Hindu: 3.2.2011)

Query on SC, ST status included; caste-based enumeration from June to September 2011

FACE OF CENSUS: Home Minister P. Chidambaram unveils the mascot of the census enumerators, in New Delhi on Wednesday. Beside him is Registrar-General and Census Commissioner C. Chandramouli. No name has been given to the symbol of the head count's foot-soldiers, to keep it secular.

NEW DELHI: Census 2011, billed as the largest peacetime mobilisation in the world, will see the massive exercise of population enumeration across the country simultaneously, between February 9 and 28.

Registrar-General and Census Commissioner C. Chandramouli said on Wednesday that the biggest-ever census attempted in the history of mankind to enumerate the country's 1.2-billion population would be conducted across 35 States and Union Territories.

While a column on the Scheduled Castes and the Scheduled Tribes would be there in Census 2011, the government decided to hold caste-based enumeration as a separate exercise from June to September 2011.

In the first phase of house-listing done from April to September last year, some villages in the Maoist-affected districts of West Bengal and Chhattisgarh were left out, so efforts would be made during the enumeration to reach out to them, he said.

All citizens would be counted, according to their gender, religion, occupation and education. For the first time, enumerators would collect such information as ownership of mobile phones, computers and the Internet, having treated or untreated drinking water facility and banking services. They would also seek additional information for the creation of the National Population Register (NPR).

The Rs.2,200-crore exercise would cover all citizens living in 7,742 towns and six lakh villages in 640 districts. With the expenditure of a mere Rs.18.33 for each person, this census is also being considered the most cost-effective.

“To carry out this massive exercise, a workforce of 2.7 million people will be engaged. The fact that many countries in the world do not have a population equal to the number of officials that conduct the Indian census is an indication of the size and scale of this operation,” Dr. Chandramouli said at a function, in which Union Home Minister P. Chidambaram unveiled the mascot of enumerators.

The exercise will mark a milestone as the first ever NPR will also be prepared; all persons above 15 would be photographed and fingerprinted to create a biometric national database. With this, India would probably become the first democratic nation in the world that has its population fingerprinted in a year from now.

Once the NPR's final database was created, it would be sent to the Unique Identification Authority of India for duplication and generation of UID number and for issue of identity smart card.

The population enumeration has already been done in the snow-bound areas of Himachal Pradesh, Jammu and Kashmir and some other parts of the country.

The data of migrant population will be collected on the night of February 28 at airports, railway stations, seaports and bus terminals.

Dr. Chandramouli said Census 2011 would cover all people living in the country, including illegal immigrants from Bangladesh. It would cover anyone living in India, and enumerators would not ask their nationality. “Everybody will be counted even if he has illegally entered [India],” he told journalists. He clarified that the information collected about individuals would be kept confidential

Sex ratio

State worst performer in sex ratio at last birth: Survey (The Tribune: 17.2.2011)

Amid claims that there is a drastic improvement in the sex ratio profile of Punjab, the unpalatable truth is that preference among couples of not having children once they have a son is the highest in the country. This has established that a desire for a son is as desperate as ever.

Although the sex ratio in the age group of 0-6 years is being used as a simplified indicator, there is yet another important scientific indicator, sex ratio at the last birth, which gives inference regarding the preference of couples for male and female children. This indicator establishes that in case of a preference for a male child in any society, sex ratio at the last birth will be low since couples would stop having children once they completed their family with a son.

Punjab is the worst performer in the country if one goes by this indicator. According to the National Family Health Survey-III, the sex ratio at the last birth is 504 in Punjab, which means if 1,000 couples decide not to go in for another child after a son, there will be only 504 couples who decide otherwise after the birth of a girl.

This ratio is worst even than the neighbouring Haryana and Himachal Pradesh where the NFHS-III has registered the ratios at 540 and 572, respectively.

“The very low sex ratio at the last birth in most of the states suggest that son preference is continuing to influence fertility decisions in such states even today,” reads the survey report, which was conducted by the Ministry of Health and Family Welfare with the Indian Institute of Population Sciences, Mumbai, as a nodal agency.

However, Dr JP Singh, Director (Health Services) said this indicator was not enough to decide the trends of male-female child preferences in Punjab. Ironically, the picture was equally grim at the national level. All three surveys, including NFHS-I and II, established that the sex ratio at the last birth was decreasing with every passing year.

“The declining sex ratio at the last birth suggests that if a girl is born, it is unlikely to be the last child for a couple,” the report mentions.

Urban Population

Poor urban facilities likely to halt growth (The Hindustan Times: 21.2.2011)

REPORT India's urban population to grow from 340 m in '08 to 590 m by '30

India's growth story can be marred in the absence of a proper road map on how to overhaul the country's dilapidated urban infrastructure seems to be finally dawning upon the union urban development ministry.

The ministry has, for the first time, prepared a comprehensive blueprint on the challenge faced by Indian cities in light of the growing urbanisation and how it plans to tackle these concerns in the next five years.

A 2010 report by Mc Kinsey & Company, a global consulting firm has projected that India's urban population would grow from 340 million in 2008 to 590 million by 2030.

The strategy plan of ministry of urban development for 2011-2016 lists lack of funds as well as capacity of municipalities to carry out urban reforms, inadequate investment in building urban infrastructure, inadequate level of empowerment of municipalities across the country, a poor monitoring mechanism of schemes that are implemented as some of the key reasons responsible for the existing urban decay.

The vision document talks of a bigger role for private players to invest in developing/ upgrading urban infrastructure. Public-private partnerships (PPP) is a key element of the ministry's overall strategy.

A special purpose fund -PPP urban infrastructure fund -has been envisaged to address the lack of any national level, urban focused institutional mechanism to actively engage in capacity building, project identification, development, structuring and funding bankable PPP projects in the urban infrastructure.

According to Mc Kinsey, India's per capita spending on urban infrastructure is R777, which is just 14% that of China's R5304.

Even, the 11th Five Year Plan of India (2007-2012) had estimated a total fund requirement of R1.29 lakh crore to augment basic urban infrastructure. As against this, the actual investment has been to the tune of just R0.45 lakh crore in the last year of the 11th Plan.

Though a bit late in the day, experts welcome the move to have a five year road map for the urban sector.

BPL Survey - Caste census

Govt Likely to club BPL Survey with caste census (The Indian Express: 11.3.2011)

The move holds significance as the BPL survey holds the key to various targeted welfare programmes of the government

WITH political parties across the spectrum asking the government to conduct a socioeconomic survey of different communities, the government is considering clubbing the below poverty line (BPL) survey with the caste census.

“A recent meeting between the Rural Development Ministry and the Registrar General of India (RGI) explored the possibility of carrying out the BPL survey along with the caste census as an alternative to the community wise socioeconomic survey,” a government functionary told The

Indian Express.

The meeting took place days after MPs across the political parties pressed for conducting a socio-economic survey along with caste enumeration promised by the government last year.

The demand was raised by senior leaders such as Mulayam Singh Yadav, Sharad Yadav, Lalu Prasad and HD Deve Gowda among others in the Lok Sabha a day after Finance Minister Pranab Mukherjee announced while presenting the Budget that the caste census would be conducted between June and September.

"We have got the sense of the House. All the suggestions will be carefully considered and appropriate decisions will be taken," Chidambaram had said in the Lok Sabha.

"I requested Sharad Yadav, Mulayam Singh Yadav and any other who is interested that what ingredients you want to be put in the format for which the caste census will be operated. Kindly prepare it and hand it over to us and we will look into those aspects," Finance Minister Pranab Mukherjee had also assured.

The move holds significance as the BPL survey holds the key to various targeted welfare programmes of the government. In fact, the BPL survey will also hold the key to effective implementation of the proposed food guarantee legislation.

More so, clubbing the BPL survey with the caste census would mean a timely compilation of BPL statistics given that several states have yet not provided full details of the previous survey of 2002.

The issue was also discussed in a high-level meeting of senior ministers -Pranab Mukherjee, P Chidambaram, CP Joshi (Rural Development), Veerappa Moily (Law) and Mallikarjun Kharge (Labour) -called by the Prime Minister during the winter session.

The Prime Minister was learnt to have suggested further consultations on the subject.

Subsequently, Joshi called on Chidambaram for his guidance regarding his ministry's idea of conducting a BPL survey along with a caste census. While the Home Minister did not commit clubbing the two, he had assured all possible assistance for the BPL survey, sources said.

Subsequently, the Rural Development Ministry made a presentation to C Rangarajan, chairman of Prime Minister's Economic Advisory Council.

The Rural Development Ministry had mooted clubbing the BPL survey with the caste census after it realised that it would be difficult for the government to conduct a separate BPL survey as the Right to Education Act barred engaging teachers other than poll and census-related duties.

Pregnancy Obstetrics

Pregnancy

During Pregnancy A Deficiency Of Dietary Omega-3 May Explain Depressive Behaviors (Medical News Today: 3.2.2011)

How maternal essential fatty acid deficiency impact on its progeny is poorly understood. Dietary insufficiency in omega-3 fatty acid has been implicated in many disorders. Researchers from Inserm and INRA and their collaborators in Spain collaboration, have studied mice fed on a diet low in omega-3 fatty acid. They discovered that reduced levels of omega-3 had deleterious consequences on synaptic functions and emotional behaviours. Details of this work are available in the online version of the journal Nature Neuroscience, which can be accessed [here](#).

In industrialized nations, diets have been impoverished in essential fatty acids since the beginning of the 20th century. The dietary ratio between omega-6 polyunsaturated fatty acid and omega-3 polyunsaturated fatty acid omega-3 increased continuously over the course of the 20th century. These fatty acids are "essential" lipids because the body cannot synthesize them from new. They must therefore be provided through food and their dietary balance is essential to maintain optimal brain functions.

Olivier Manzoni (Head of Research Inserm Unit 862, "Neurocentre Magendie", in Bordeaux and Unit 901 "Institut de Neurobiologie de la Méditerranée" in Marseille), and Sophie Layé (Head of Research at INRA Unit 1286, "Nutrition et Neurobiologie Intégrative" in Bordeaux) and their co-workers hypothesized that chronic malnutrition during intra-uterine development, may later influence synaptic activity involved in emotional behaviour (e.g. depression, anxiety) in adulthood.

To verify their hypotheses, the researchers studied mice fed a life-long diet imbalanced in omega-3 and omega-6 fatty acids. They found that omega-3 deficiency disturbed neuronal communication specifically. The researchers observed that only the cannabinoid receptors, which play a strategic role in neurotransmission, suffer a complete loss of function. This neuronal dysfunction was accompanied by depressive behaviours among the malnourished mice.

Among omega-3 deficient mice, the usual effects produced by cannabinoid receptor activation, on both the synaptic and behavioural levels, no longer appear. Thus, the CB1R receptors lose their synaptic activity and the antioxidant effect of the cannabinoids disappears.

Consequently, the researchers discovered that among mice subjected to an omega-3 deficient dietary regime, synaptic plasticity, which is dependent on the CB1R cannabinoid receptors, is disturbed in at least two structures involved with reward, motivation and emotional regulation: the prefrontal cortex and the nucleus accumbens. These parts of the brain contain a large number of CB1R cannabinoid receptors and have important functional connections with each other.

"Our results can now corroborate clinical and epidemiological studies which have revealed associations between an omega-3/omega-6 imbalance and mood disorders", explain Olivier Manzoni and Sophie Layé. "To determine if the omega-3 deficiency is responsible for these neuropsychiatric disorders additional studies are, of course, required".

In conclusion, the authors estimate that their results provide the first biological components of an explanation for the observed correlation between omega-3 poor diets, which are very widespread in the industrialized world, and mood disorders such as depression.

Pregnant Women

12 Pregnant women die in 10 days before jodhpur hospital wakes up, says IV tainted (The Indian Express: 25.2.2011)

UMAID Two fetuses die, 10 survive; first probe finds 'tainted' IV fluid, doctors say need to probe more

IT took 10 days and the death of 12 fullterm pregnant women in Jodhpur in Rajasthan before state health authorities woke up to suspect that all might have died after being administered "infected" intravenous "dextrose and ringer lactose" fluids. Five pregnant women are in a "serious condition," doctors said.

Two fetuses have died in utero (before being born) while the other 10 survived -and these infants are said to be out of danger.

Following confirmation of lab reports in the Women and Child Wing of the state government Umaid Hospital -the largest in the city -that several batches of IV fluids manufactured by the same company were tainted, health officials have recalled all batches of these fluids, lodged an FIR against the manufacturer and issued a statewide alert against its use.

A three-member panel of doctors has been constituted to probe the deaths.

Umaid Hospital Superintendent N G Chaggani told The Indian Express that the first death occurred on February 13.

"All the women died after severe haemorrhaging and, for now, we believe the cause might be an infection after they were administered tainted IV fluids. An FIR has been lodged against Anshul

Pharma, the local company that supplied the fluids," Chaggani said. No one from the company was available for comment tonight.

Chaggani said the fluids were manufactured by Indore-based Parental Surgical India Ltd.

Chaggani added that it was inconclusive whether all the 12 deaths were caused by contaminated IV fluids.

"We are still waiting for some reports but cannot say with authority that infected IV fluids caused all the deaths. However, our lab reports show that several batches of five per cent dextrose and ringer lactose were indeed contaminated with gram negative and positive bacteria," Chaggani said.

When asked why it took so long, Dr R K Asari, principal of S N Medical College, which is attached to the hospital, said: "We held a meeting on February 16 but didn't zero in on the tainted fluids then. We sent some samples for testing and received confirmed reports of contamination on February 22."

Despite 12 casualties, only one post mortem has been conducted. A senior official from Umaid Hospital said: "Though only one post mortem was conducted on February 18, its report so far is inconclusive and we are waiting for the viscera reports."

Chief Minister Ashok Gehlot said today that he had spoken to all officials, including the Health Minister and hospital authorities.

"A probe has been launched into this serious issue and those found guilty will be seriously punished," Gehlot said.

Pregnancy

Cut Your Pregnancy Flab with Simple Lifestyle Intervention (Med India: 3.3.2011)

A lifestyle intervention can help women control their weight gain during and after pregnancy, according to a new study.

It will also help normal-weight, obese and overweight women return to pre-pregnancy weight after delivery.

"This study suggests that a lifestyle intervention can help women manage their weight during pregnancy, prevent health problems during pregnancy, and reduce weight retention after having a baby," said lead author Suzanne Phelan at the Brown University and The Miriam Hospital.

The researchers, who conducted a randomised controlled study of 400 women, found that women whose weight was in a normal range before pregnancy were more likely to stay at a healthy weight if they received the intervention during pregnancy compared to women who received standard care.

The intervention also increased the chance of returning to their pre-pregnancy weight six months after delivery.

However, it did not help women who were obese or overweight before becoming pregnant to stay within the recommended weight gain goals during pregnancy, but it did help them return to their pre-pregnancy weight after delivery.

The team devised an intervention that they hoped would be effective, but also 'low-intensity' so that clinicians and patients could stick with it.

Patients randomly selected to receive the intervention went to an initial, face-to-face meeting with an interventionist and received scales, pedometers and forms for recording what they ate.

The intervention proceeded exclusively via the mail and by phone with weekly reminder postcards and three calls from a dietician to offer encouragement.

Prevalence HIV - pregnant woman

50pc drop in HIV among pregnant woman: Minister (New Kerala: 31.3.2011)

Union Health Minister Ghulam Nabi Azad said the prevalence of HIV among pregnant women during 2002 to 2009 had dropped by 50 per cent.

Delivering the 13th Convocation address of Rajiv Gandhi University of Health Sciences here, he said the country had also witnessed a 32 per cent fall in cases of HIV among adults during the same period.

The number of people living with HIV/AIDS in India has come down to 23.1 lakh from 27.3 lakh during 2002-09, he added.

"It is heartening that the prevalence of HIV among pregnant women has come down from 0.95 per cent to 0.49 per cent in the last five years. The government is also targetting to reduce mortality rate from 125 deaths per thousand live births in 1988-92 to 42 by 2015" he said.

"However, public sector health service is suffering due to lack of human resources as the young doctors are refusing to go to villages. We have given them so many sops like reservation of seats

in Post Graduate sources and grace marks of 10 per cent for each year of village service upto 30 per cent," he said.

Mr Azad said as per the recent data, infant mortality rate had come down to 50 per 1000 live births, which is an improvement over the 58 in 2005.

"However, some states have not performed well and in Madhya Pradesh, Orissa and Uttar Pradesh it is still above 60," he said.

India aims at reducing maternal mortality rate from 437 deaths per 100,000 live births in 1991 to 109 by 2015. Under the infectious diseases control programme, two million deaths were averted on account of TB with scaling up of DOTs programme, he added.

Sleep

Sleep Well

Sleep Well - Your Brain Decides What to Keep and What to Forget During Sleep (Med India: 4.2.2022)

The brain evaluates information during sleep and retains the ones it knows could be useful in the future, suggests a new study.

The study has shed light on how the brain decides what to keep and what to forget.

"Our results show that memory consolidation during sleep indeed involves a basic selection process that determines which of the many pieces of the day's information is sent to long-term storage. Our findings also indicate that information relevant for future demands is selected foremost for storage," said lead author Jan Born, of the University of Lubeck in Germany.

The researchers set up two experiments to test memory retrieval in a total of 191 volunteers. In the first experiment, people were asked to learn 40 pairs of words. Participants in the second experiment played a card game where they matched pictures of animals and objects - similar to the game Concentration - and also practiced sequences of finger taps.

In both groups, half the volunteers were told immediately following the tasks that they would be tested in 10 hours. In fact, all participants were later tested on how well they recalled their tasks.

Some, but not all, of the volunteers were allowed to sleep between the time they learned the tasks and the tests.

They found that people who slept performed better than those who didn't. But more importantly, only the people who slept and knew a test was coming had substantially improved memory recall.

Sleepwalking

Faulty chromosome behind sleepwalking (Times of India: 09/02/2011)

London: In a possible breakthrough which may pave the way for a cure for somnambulism, scientists claim to have identified the “genetic code” which makes some people sleepwalk. An international team has claimed that sufferers share a faulty chromosome which is responsible for their behaviour while asleep; by studying four generations of the same family, the scientists traced the fault to a section of chromosome 20.

Carrying even one copy of the defective DNA is enough to cause sleepwalking and having isolated the defective section of genetic code, they hope to find new treatments for the condition, the Neurology journal reported.

For the study, the team, led by Christina Gurnett of Washington University School of Medicine, sought the help of a large family of sleepwalkers. The family had been referred to them because one of the youngest members, a 12-year-old girl called Hannah, had been experiencing particularly troublesome sleepwalking, which regularly caused her to leave the house during the night.

Using saliva samples, the researchers analysed the family’s DNA to unpick the genetics of the condition. They found the problem stemmed from genetic code in chromosome 20 and this code had been passed down from generation to generation. Someone with the gene has a 50% chance of passing it on to their children.

Gurnett told the BBC: “It is likely that several genes will be involved. What we’ve found is the first genetic locus for sleepwalking. We do not know yet which of the genes in this linkage region of chromosome 20 will be responsible. But discovering these genes could help with identifying and treating the condition.”

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Gurnett told the BBC: “It is likely that several genes will be involved. What we’ve found is the first genetic locus for sleepwalking. We do not know yet which of the genes in this linkage region of chromosome 20 will be responsible. But discovering these genes could help with identifying and treating the condition.”

Sleep Hormone

Sleep Hormone under Study for Treatment of Dementia (Med India: 29.3.2011)

The drug, Circadin, containing the sleep hormone melatonin is being studied in a clinical trial for its ability to reduce the symptoms of dementia.

CPS Research, a medical research company in Glasgow, is responsible for the study that needs 50 volunteers being treated for Alzheimer's, over a period of six months. The most common cause of dementia is Alzheimer's disease and so patients suffering from the disorder can become subjects for the study.

The Melatonin in Alzheimer's Disease Project is the first study made on the positive effects of melatonin on the progression of the disease. Earlier findings had proved that dementia affected the production of melatonin, and patients suffered from disturbed sleep patterns, and interrupted sleep in the nights. In this study, researchers discovered that a slow-release version of the natural compound melatonin helped sufferers to sleep better and function better in the day.

Dr Gordon Crawford, of CPS Research remarks, "It has proven to be remarkably safe and virtually free from side effects. We are exploring whether its use as an add-on treatment for dementia could transform the lives of patients and their carers. With the help of volunteers from Scotland we aim to establish whether adding melatonin to current treatments could provide a major advance in dementia management."

The study was taken up when writer, Sir Terry Pratchett who had been told that he had the early beginnings of the disease, had pleaded for more research to be done. Speaking from his experience he says, "Alzheimer's is a large number of small tragedies usually played out behind closed doors, so in spite of the numbers living with it, the world still doesn't take much notice."

Good night's sleep

Want to shed the kilos? Get a good night's sleep (The Times of India; 31.3.2011)

London: Struggling to shed those extra kilos? If yes, try to have a good night's sleep besides sticking to your diet and daily exercise, scientists suggest.

Researchers have found that those who get between six and eight hours of sleep a night are twice as likely to reduce their desired weight when put on a diet for six months. The study also

found that people trying to lose at least 4.5kg were more likely to reach their goal if they had lower stress levels and slept moderately, the Telegraph reported.

For the study, the researchers from Kaiser Permanente Centre for Health Research — a health care consortium based in Portland, Oregon — recruited nearly 500 obese adults with an average age of 55 years. The participants were asked to attend 22 counselling sessions, reduce their diet by 500 calories a day and increase the amount of exercise they took to at least three hours a week.

They also had to keep a diary of their habits, including their sleep patterns and stress levels.

After six months, 60% of the participants had lost at least 4.5kg. Researchers found that the successful dieters were more likely to report that they had slept between six and eight hours each night.

Almost three quarters of dieters who had both low stress levels and six to eight hours sleep a night were likely to achieve the 10-pounds weight loss target.

They were also twice as likely to be successful as participants who reported the highest stress levels and got six or less hours sleep a night. PTI

SHUT-EYE SOLUTION: Researchers have found that those who get between six and eight hours of sleep a night are twice as likely to reduce their desired weight when put on a diet for six months

Smoking

Smoking

Can't quit smoking? Blame it on faulty brain receptor (New Kerala: 2.1.2011)

Do you know why it is so fiendishly difficult to quit smoking - because of a faulty receptor in the brain.

It can lead to an uncontrollable desire to smoke, thanks to the defect in a receptor protein normally activated by nicotine, which curbs the desire for yet more of the drug.

The team found that when rats were genetically changed to block the protein, they consumed far more nicotine than control animals, the Daily Mail reported quoting the journal Nature.

Professor Paul Kenny of the Scripps Research Institute in Florida, US, said: "These findings point to a promising target for the development of potential anti-smoking therapies."

The study specifically focused on the chemical alpha-5 in a brain pathway known as the habenulo-interpeduncular tract.

Co-researcher Christie Fowler said: "It was unexpected that the habenula, and brain structures into which it projects, play such a profound role in controlling the desire to consume nicotine.

"The habenula appears to be activated by nicotine when consumption of the drug has reached an adverse level. But if the pathway isn't functioning properly, you simply take more."

She said the data could explain why some people are far more vulnerable to the addictive properties of nicotine and more likely to develop smoking-associated diseases such as lung cancer.

Smoking

Brain Scans Predict Likely Success of Smoking Cessation (Medical News Today: 3.2.2011)

Brain scans showing neural reactions to pro-health messages can predict if you'll keep that resolution to quit smoking more accurately than you yourself can. That's according to a new study forthcoming in *Health Psychology*, a peer-reviewed journal.

"We targeted smokers who were already taking action to quit," says Emily Falk, the lead author of the study and director of the Communication Neuroscience Laboratory at the U-M Institute for Social Research (ISR) and Department of Communication Studies. "And we found that neural activity can predict behavior change, above and beyond people's own assessment of how likely they are to succeed.

"These results bring us one step closer to the ability to use functional magnetic resonance imaging (fMRI) to select the messages that are most likely to affect behavior change both at the individual and population levels. It seems that our brain activity may provide information that introspection does not."

For the study, funded by the National Institutes of Health and the National Science Foundation, Falk and colleagues Matthew Lieberman, Elliot Berkman, and Danielle Whalen tested 28 heavy smokers, recruited from an anti-smoking program. Each person completed a questionnaire on their smoking history, degree of nicotine dependence, cravings, and intentions to quit. Each was also tested for exhaled carbon monoxide (CO), a measure of recent smoking.

While participants were in an fMRI scanner, the researchers showed a series of television ads designed to help people quit smoking. The ads were produced by a variety of public health agencies and foundations including the California Department of Public Health and the American Legacy Foundation. After seeing each ad, participants rated how it affected their intention to quit, whether it increased their confidence about quitting, and how much they related to the message. A month after the scan, researchers contacted participants to see how they were doing and to obtain biological verification of how much they were smoking, by assessing their CO levels. Participants reported smoking an average of 5 cigarettes a day, compared with an average of 21 a day at the start of the study, and CO levels were consistent with these self-reports. But there was considerably variability in how successful participants were in achieving the goal.

The researchers compared the smokers' behavior change from the start to the end of the study with neural activity in a particular brain region that the team's previous research had suggested is predictive of behavior change - the medial prefrontal cortex. Neural activity in this region of the brain was significantly linked to reductions in smoking behavior over the month following the scan, predicting how successful people would be in reducing their smoking. "What is exciting," Falk explained, "is that by knowing what is going on in someone's brain during the ads, we can do twice as well at predicting their future behavior, compared to if we only knew their self-reported estimate of how successful they would be, or their intention to quit."

Interestingly, many of the ads that did not seem immediately relevant to participants at the time of the scan emerged as the most highly recalled during the month that people tried to quit smoking. "It is possible that the brain activity we are observing predicts behavior change that is not predicted by people's self-reports, because it is tapping into something that people aren't consciously aware of when they initially see the ads," said Falk.

Smoking

Ban on plastic packaging of tobacco products (The Tribune: 08/02/2011)

While issuing new plastic management and handling rules, the Environment Ministry today completely banned the use of plastic for packaging 'gutkha' and other tobacco products and also provided for the first time a special dispensation for waste pickers.

The apex court had recently refused to grant more time to the Centre for implementing the law to regulate the use of plastic for packaging tobacco products.

The Plastic Waste (Management and Handling) Rules, 2011, also ban the packaging of foodstuff in recycled or compostable plastic. The new rules state that plastic carry bags should be of a minimum thickness of 40 microns, against the previous 20 microns.

Several state governments have stipulated varying minimum thickness. However, it is now expected that 40 microns' norm will be the uniform standard across the country.

The new notification replaces the earlier Recycled Plastics Manufacture and Usage Rules, 1999, with immediate effect and is expected to have considerable financial implications for plastic manufacturers.

Environment Minister Jairam Ramesh agrees that it is impractical and undesirable to impose a blanket ban on the use of plastic all over the country, saying "the real challenge was to improve municipal solid waste management system".

"In addition to the privatisation and mechanisation of the municipal solid waste management system, we must be sensitive to the needs and concerns of lakhs of people involved in the informal sector," he says.

As per the notification, recycled carry bags will have to conform to specific Bureau of Indian Standards (BIS). "Plastic carry bags shall either be white or only with those pigments and colourants which are in conformity with the bar prescribed by the BIS. This shall apply expressly for pigments and colourants to be used in plastic products which come in contact with foodstuff, pharmaceuticals and drinking water," he says.

Besides, no carry bags will be made available free of cost to consumers. The municipal authority may determine the minimum price for plastic carry bags and also direct manufacturers to establish plastic waste collection centres, either collectively or individually.

A major provision under the new rules is the explicit recognition of waste pickers. It requires the municipal authority to constructively engage agencies or groups working in waste management, including waste pickers.

Smoking

New Smoking Ban New York City And World Report (Medical News Today: 24.2.2011)

The popular Mayor Michael Bloomberg achieved another success with the 36-12 New York City Council vote to now ban smoking in 1,700 parks and 14 miles of public beaches plus boardwalks, marinas and pedestrian plazas like the one in the heart of Times Square. This is a passing that keeps in line with the 2003 ban of smoking in NYC bars and restaurants.

Mayor Michael Bloomberg said:

"This summer, New Yorkers who go to our parks and beaches for some fresh air and fun will be able to breathe even cleaner air and sit on a beach not littered with cigarette butts."

Council Speaker Christine Quinn continues:

"The statistics don't lie: Secondhand smoke kills. With this bill, all New Yorkers can now breathe easier and breathe cleaner air."

The expanded smoking ban will give the city's Parks Department the power to slap violators with quality-of-life summonses, which are tickets for minor offenses like panhandling or public urination that typically carry fines of under \$100.

Sheelah Feinberg, executive director of the NYC Coalition for a Smoke-Free City adds:

"Thanks to this policy, public spaces intended for outdoor recreation will now be available for use in the healthy manner they were intended."

Former Commissioner T. Frieden said in 2009:

"As a result of our comprehensive anti-tobacco campaign including increased taxes, smoke-free laws, anti-tobacco advertising, and help quitting, 1,300 fewer New Yorkers were killed by tobacco in 2007 than in 2002. This included 800 fewer fatal heart attacks and strokes, 200 fewer cancer deaths, and 250 fewer deaths from lung disease. Similar progress on a national level would save millions of lives."

So what does legislation look like right now around the world?

A 2006 smoking ban in Buenos Aires prohibits smoking in public areas including bars and restaurants except if the bar is more than 100 m² where it is possible to provide an area for smoking customers. Similar bans in other Argentine cities require bigger establishments to provide a separate, contained area for smoking customers. The rule is not nationwide.

Italy was the fourth country in the world to enact a nationwide smoking ban. Since 2005 it is forbidden to smoke in all public indoor spaces, including bars, cafés, restaurants and discos. However, special smoking rooms are allowed. In such areas food can be served, but they are subjected to strict conditions: they need to be separately ventilated, with high air replacement rates; their air pressure must constantly be lower than the pressure in the surrounding rooms; they must be equipped with automatic sliding doors to prevent smoke from spreading to tobacco-free areas; they may occupy at most 50% of the establishment. Only 1% of all public establishments have opted for setting up a smoking room.

Syrian smoking is banned inside cafes, restaurants and other public spaces by a presidential decree issued late 2009 and came in to force April 2010. Syria was the first Arab country to introduce such a ban. The decree also outlaws smoking in educational institutions, health centers, sports halls, cinemas and theatres and on public transport.

In the holy Vatican City, Pope John Paul II signed a law in 2002 which banned smoking on all places accessible to the public and in all closed places of work within the Vatican City and within all extraterritorial properties of the Holy See. Smoking bans in museums, libraries and churches on Vatican territory were already in force before that date for a long time.

Finally, the Vietnamese government has banned smoking and cigarette sales in offices, production facilities, schools, hospitals, and on public transport nationwide. Smoking was banned in enclosed indoor spaces and public facilities in Ho Chi Minh City in 2005 with the exception of entertainment areas. A ban has also been imposed on all forms of advertisement, trade promotion, and sponsorship by tobacco companies, as well as cigarette sales through vending machines, or over the telephone and on the Internet.

Tobacco Industry

Tobacco Industry Sues FDA On Proposed Menthol Cigarette Ban (Medical News Today: 28.2.2011)

Lorillard Inc and R.J. Reynolds Tobacco Co have filed a lawsuit against the FDA (Food and Drug Administration) saying there were conflicts of interest and bias among members of an advisory panel which may recommend banning menthol cigarettes.

The FDA advisory panel's recommendations are not binding, however the agency usually goes along with its advice. Panel members are expected to put forward their recommendations regarding menthol-flavored cigarettes on 23rd March this year.

Nearly 1 in every 3 cigarettes sold in the USA is mentholated. R. J. Reynolds sells a menthol Camel version as well as the Kool brand, while Lorillard's Newport brand is the number one menthol cigarette seller in the country.

Legislation was passed in 2009 giving the FDA the power to decide over tobacco products, such as cigarettes, pipes and cigars. The agency banned fruit, chocolate and other flavored cigarettes, which were thought to be aimed at getting children to smoke.

The new law asked the FDA to get a panel of outside experts to look into the health and social aspects of menthol cigarettes before deciding on whether to ban them.

Three panel members are accused of having severe financial and appearance conflicts of interest and associated biases, according to the lawsuit.

Pharmaceutical companies have financially rewarded three advisers for consultation work and research - these companies make products that to help people give up smoking, the lawsuit claims.

Two more members of a panel subcommittee have appeared as expert witnesses in suits against cigarette makers, the suit also claims.

Those wanting to prevent children from ever starting to smoke say the lawsuits are frivolous attempts to derail much needed legislation.

In an online communiqué, Matthew Myers president of the Campaign for Tobacco-Free Kids says this latest suit is an act of panic. He accuses the tobacco companies of fearing that the committee will recommend effective actions that either undermine or completely destroy a very lucrative market for menthol cigarettes, "Once again, they are putting profits ahead of lives and health."

Myers says the lawsuit is groundless. The advisory committee was legally set up in accordance with the 2009 legislation. The evidence is compelling that the presence and availability of menthol cigarettes is linked to a higher incidence of smoking among children - the tobacco industry want to keep the evidence secret, Myers said.

Myers wrote:

It is critical to public health that the committee moves forward with issuing its menthol report on March 23, as required by Congress when it enacted the law giving the FDA authority over tobacco products.

A 2009 study by scientists at the University of Medicine and Dentistry of New Jersey found that menthol cigarettes are harder to give up, especially among African-Americans and Latino smokers.

Smoking

Smoking Increases Risk of Breast Cancer in Postmenopausal Women, Study Shows (Science daily: 3.3.2011)

Postmenopausal women who smoke or used to smoke have up to a 16% higher risk of developing breast cancer compared to women who have never smoked, finds research published online in the British Medical Journal.

The study also says that women who have had extensive exposure to passive smoking, either as children or in adulthood, may also have an excess risk of developing breast cancer.

While some previous studies have indicated that smoking increases the risk of breast cancer, the theory that passive smoking is also a risk factor, remains controversial.

The researchers, led by Dr Juhua Luo from West Virginia University and Dr Karen Margolis from the HealthPartners Research Foundation in Minneapolis, decided to carry out a large scale study following participants over a long period of time to investigate the issue further.

The research team used data from the 1993-98 Women's Health Initiative Observational study to determine links between smoking, passive smoking and breast cancer.

They analysed data for almost 80,000 women, aged between 50 and 79 years, across 40 clinical centres in the United States. In total, 3,250 cases of invasive breast cancer were identified by the researchers during ten years of follow-up.

The participants were asked a range of questions about their smoking status, for example whether they had ever smoked or were former or current smokers. Current or former smokers were asked the age at which they started smoking and the number of cigarettes smoked a day. Former smokers were asked the age at which they quit.

Questions on passive smoking related to whether the participants lived in smoking households as children and/or as adults, and whether they had worked in smoking environments.

The results show that smokers have a 16% increased risk of developing breast cancer after the menopause. The increased risk for former smokers is 9%. The highest breast cancer risk was found among women who had smoked for over 50 years or more compared with lifetime non-smokers. Women who started smoking as teenagers were also at particularly high risk. An increased risk of breast cancer continued for up to 20 years after an individual stopped smoking.

The findings also reveal that among non-smoking women, those who had been exposed to extensive passive smoking, for example over 10 years' exposure in childhood; over 20 years' exposure as an adult at home and over 10 years' exposure as an adult at work; had a 32% excess risk of breast cancer.

The authors stress, however, that their analysis of the link between breast cancer and secondhand smoke was restricted to the most extensive passive smoking category and therefore more research is needed to confirm these findings.

"Our findings highlight the need for interventions to prevent initiation of smoking, especially at an early age, and to encourage smoking cessation at all ages," Dr Margolis concludes.

In an accompanying editorial, Professor Paolo Boffetta from the Mount Sinai School of Medicine in New York, says Margolis' study "supports the hypothesis that smoking increases the risk of breast cancer, in particular when the habit starts early in life."

However, Boffetta adds that the data needs to be placed in the context of the overall evidence, some of which found no increase in risk. He also agrees that the evidence on secondhand smoke is not conclusive and further studies are required

Smokers

Smokers Urged to Quit For the Sake of Future Generations (Med India: 11.3.2011)

BMA Scotland has urged smokers to quit the habit and help to ensure a smoke-free Scotland for future generations.

The BMA believes that the UK could be tobacco free by 2035, and by making the decision to kick the habit, smokers could be helping to achieve this target.

Smoking kills over 13,000 people every year in Scotland, which equates to around a quarter of all deaths, and the NHS has to allocate vast resources to treating smoking related illness.

Dr Dean Marshall, Chairman of the BMA's Scottish General Practitioners Committee said:

"Smoking causes lung cancer, heart disease and respiratory problems. It ages skin, makes your breath smell and stains fingers yellow. Every day doctors witness the death and despair caused by smoking. Tobacco is highly addictive and people need support to give up. Most people who smoke tell us they wish they had never started.

"It is essential we break the tobacco trap. Young smokers will become tomorrow's parents who smoke and they will continue the cycle of smoking-related ill-health and premature death. One of the best ways to prevent children starting to smoke is for their parents to quit. By stopping today, smokers are taking the first step to a tobacco free future for their children."

New 'dissolvable tobacco'

New 'dissolvable tobacco' products up mouth disease risk (New Kerala: 18.3.2011)

A new study has suggested that the new genre of 'dissolvable tobacco' products - pop-into-the-mouth replacements for cigarettes - has the potential to cause mouth diseases as well as other problems.

John V. Goodpaster of the Indiana University Purdue University Indianapolis and colleagues analysed the complex ingredients in the products and found that it contained mainly nicotine, along with finely-ground tobacco and a variety of flavouring ingredients, sweeteners and binders.

According to them, the first dissolvable tobacco products in pellet, stick and strip forms went on sale in 2009 in test markets in Indianapolis, Ind., Columbus, Ohio, and Portland, Ore.

These products are advertised as smoke and spit-free, but nicotine is a toxic substance linked to the development of oral cancers and gum disease, said Goodpaster.

Health officials are concerned about whether the products, which dissolve inside the mouth near the lips and gums, are in fact a safer alternative to cigarette smoking.

The researchers, however, said there are possibilities that the nicotine in these products may accidentally poison children.

“The packaging and design of the dissolvables may also appeal to children, and some dissolvables, such as Orbs, may be mistaken for candy,” said Goodpaster.

Other ingredients in dissolvables have the potential to increase the risk of tooth decay and one, coumarin, has been banned as a flavouring agent in food because of its link to a risk of liver damage.

“The results presented here are the first to reveal the complexity of dissolvable tobacco products and may be used to assess potential health effects,” said Goodpaster.

The findings are published in ACS's Journal of Agricultural and Food Chemistry.

Tobacco Control

Government Of Canada To Explore New Options For Tobacco Control (Medical News Today: 29.3.2011)

The Government of Canada has extended the Federal Tobacco Control Strategy (FTCS) for another year, to allow for evaluation of recent initiatives and to explore ongoing approaches for the future of tobacco control in Canada, the Honourable Leona Aglukkaq, Minister of Health, announced.

"Under the Federal Tobacco Control Strategy, federal, provincial and territorial efforts have been successful in reducing smoking in Canada and preventing youth from starting to smoke," said Minister Aglukkaq. "Health Canada is currently examining ways to ensure Canada remains a world leader in tobacco control and that past gains are maintained."

Maintaining funding under the FTCS will allow the government to continue to support smokers in their efforts to quit; continue to address the issue of contraband tobacco, under the leadership of Public Safety Canada; and work towards implementation of recently announced new health warnings on cigarette and little cigar packages.

The FTCS aims to reduce tobacco-attributable disease and death in Canada. Since its inception, the federal government has provided leadership through the FTCS and worked with provincial and territorial governments as well as other stakeholders to create a strong tobacco control environment in Canada.

As a result, Canada has one of the lowest smoking rates in the world. Smoking rates dropped from 22% in 2001 to 18% in 2009, representing about 500,000 fewer smokers. In 2009, the youth smoking rate was 13%, the lowest rate Health Canada has recorded.

Under the FTCS, the Government of Canada dedicates \$15.8 million annually to support a range of tobacco projects across Canada that are aimed at helping people stop smoking, preventing youth from starting to smoke, and protecting Canadians from exposure to second hand smoke.

Smoking

Smoking in Combination with Immunosuppression Poses Greater Risk For Transplant-Related Carcinoma (Medical News today 31.3.2011)

Spanish researchers have found that liver transplant recipients who quit smoking have a lower incidence of smoking-related malignancies (SRM) than patients who keep smoking. In fact, SRMs were identified in 13.5% of deceased patients and smoking was associated with a higher risk of malignancy in this study. Full findings are published in the April issue of Liver Transplantation, a journal of the American Association for the Study of Liver Diseases.

While smoking is a well-known malignancy risk factor both in the general population and in liver transplant recipients, smoking in combination with immunosuppression is presumed to be the main risk factor for transplant-related carcinomas. Several authors have suggested that a longer duration of immunosuppressive treatment or a stronger immunosuppression could be related to a higher risk of malignancy. However, the Spanish researchers failed to find such an

association. Rather, they suggest that smoking after transplant which increases the risk, and smoking cessation following transplant surgery which decreases the risk, are more significant indicators.

"Smoking is related to some of the most frequent causes of post-transplant malignancy," says study leader Dr. J. Ignacio Herrero of the Clínica Universidad de Navarra in Pamplona, Spain. "We investigated whether the risks of developing malignancies was different in patients who ceased smoking than in patients who maintained smoking after transplantation." Risk factors of lung, head and neck, esophagus, kidney and urinary tract (other than prostate) cancers after liver transplantation were examined in the present study.

The research team introduced a screening protocol, according to the risk of neoplasia, related to smoking for every patient in the study. The patient population consisted of 339 liver transplant recipients receiving their first liver transplantation between April of 1990 and December of 2009 who had a post-transplant survival greater than three months. Participants received cyclosporine- or tacrolimus-based immunosuppression. Risk factors for the development of smoking-related neoplasia were also studied in 135 patients who had a history of smoking, in order to explore if smoking withdrawal was associated with a lower risk of malignancy.

SRM risk factors examined were age, sex, alcohol abuse before liver transplantation, hepatitis C virus infection, hepatocellular carcinoma at transplantation, primary immunosuppression (cyclosporine or tacrolimus), history of rejection requiring high doses of steroids or antilymphocytic globulins in the first 3 months, number of immunosuppressive drugs at 3 months, and smoking history. A second analysis of risk factors for the development of SRM was performed only in smokers, focusing on active versus prior smoking history.

After a mean follow-up of 7.5 years, 26 patients were diagnosed with 29 smoking-related malignancies. Five and ten-year actuarial rates were 5% and 13%, respectively. In multivariate analysis, smoking and a higher age were independently associated to a higher risk of malignancy. In the subgroup of smokers, the variables related to a higher risk of malignancy were active smoking and a higher age.

"Smoking withdrawal after liver transplantation may have a protective effect against the development of neoplasia," concluded Dr. Herrero. "As smoking is an important risk factor of malignancy, intervention programs, together with screening programs may help to reduce the rate of cancer-related mortality in liver transplant recipients."

Smokeless Tobacco

Govt calls national meet to regulate smokeless tobacco (The Tribune; 31.3.2011)

Alarmed by the mounting cancer burden attributable to the use of smokeless tobacco in India, the government today decided to hold a national consultation to devise strategies for the regulation

of this most dangerous form of tobacco. India has no regulatory standards on smokeless tobacco as of now.

The decision comes within weeks of The Tribune reporting the Centre for Tobacco Research in India's findings regarding high nicotine and pH levels in several sampled smokeless tobacco products -- including pan masalas, khaini, zarda and gutkha -- being sold in the markets.

The most striking discovery was high nicotine even in pan masalas being marketed as tobacco-free. Rajnigandha was found to have 2.26 gm of nicotine per 100 gm of pan masala. High nicotine was found in all six tested samples of smokeless tobacco. Their pH levels were such as were aiding quick absorption of nicotine in the blood, thus adding to the product's addiction value.

Evidence in hand, the Health Ministry has on April 4 called stakeholders to debate the critical need to ban or regulate smokeless tobacco, considering the Global Adult Tobacco Survey (GATS) India Report findings that 26 per cent Indian adults were consuming these products.

Globally, the highest smokeless tobacco prevalence rate of 53.1 per cent among male consumers has been observed in Yemen. In Bangladesh, the prevalence of use of smokeless tobacco among females (27.9 per cent) exceeds that of males (26.4 per cent).

The Government has finally been constrained to call a consultation on the issue in view of the fact that smokeless tobacco, as per latest evidence, is known to contain over 3,000 chemical compounds; 29 of these are proven carcinogens.

The Indian Council for Medical Research, which is partnering with the Health Ministry and WHO for the consultation, says 50 per cent cancers among men and 25 per cent among women in India are related to tobacco use; 90 per cent oral cancers are related to the use of chewing tobacco.

Importantly, though some state governments had tried banning smokeless tobacco, the industry moved the Supreme Court which asked the Centre to take a call on the regulation of smokeless forms considering COTPA, 2003 (Cigarettes and Other Tobacco Products Regulation Act), a Central Act, is in place to regulate smoking tobacco use.

School-going children at risk

Recent studies have also shown increasing addiction among youth to smokeless forms of tobacco. As many as 12.5 per cent youngsters (16.2 per cent boys and 7.2 per cent girls) used tobacco products other than cigarettes in India. The Youth Tobacco Survey Indian Report confirms that school-going children aged 13-15 years are more likely to use non-cigarette tobacco than smoking cigarettes.

Social Problems

Marital violence

43% of underage married girls suffer marital violence: Survey (Times of India: 9.3.2011)

When Delhi-based researcher Shruti Chaudhry visited a village in Badaun district of Uttar Pradesh to study migration, she stumbled upon two darker secrets of India's family life. Talking to women in Chabutra village, she learned that most women got married when they were 14 to 16 years old. But that was not all.

"A husband of one of the women we talked to later told us that his wife had given wrong information, which he wanted corrected. He added that he had soundly thrashed her for this," said a troubled Shruti.

Adolescent marriage and domestic violence are two widely prevalent but unacknowledged practices. Recent studies on the married life of adolescent girls reveal a chilling link between the two. Anita Raj of Boston University School of Public Health, involved in several such studies said that adolescent marriage appears to be directly correlated with increased violence at home: emotional, physical and sexual, practiced both by the husband and the in-laws. It is unabated even during pregnancy and motherhood. And, most sobering of all, female children born to under-age mothers suffer from higher risks of dying before they reach their fifth birthday.

Raj led a study, published in the International Journal of Gynecology and Obstetrics, of over 10,000 married women aged 20 to 24 years which showed that 43% of under-age married women said they had been subject to marital violence, while 24% of adultmarried women reported such events. Severe, life-threatening violence was experienced by 16% of under-age married women compared to 6% of adult married women.

In another study of young mothers from a low-income locality in Mumbai, Raj found that physical and non-physical abuse by husbands and in-laws continued during pregnancy and while nursing new-borns.

"I get up at 3 or 4 a.m. to get water. After that, I make breakfast and prepare a lunch box for my father-in-law and sister-in-law. I make a separate lunch for my mother-in-law, wash clothes and clean the house. I had to do my work whether I was pregnant or not. No one helped me," said a 16-year-old mother quoted in Raj's study. The study documents hair-raising accounts of denial of food and healthcare, beatings, forced drudgery, by the marital household. It showed that violence by other family members was more likely when husbands were violent towards the wife.

A study by Jay Silverman of Harvard School of Public Health, Anita Raj and others has shown that under-age marriage led to higher infant and child mortality rates of daughters and not sons compared to women who were married in adulthood.

Another study of married women in five Indian states by Delhi's Population Council and Mumbai's International Institute of Population Studies showed that under-age married women got less autonomy and were less likely to express opinions on domestic issues. Importantly, under-age mothers were significantly less likely to have had their first delivery in a health facility.

Although the proportion of girls married off in the 15 to 19 year age group has declined from 56% in 1971 to about 27% in 2006, it still means that over 1.5 crore girls are thus married. And, 16% of the age group, that is about 2.4 lakh women had already become mothers or were pregnant, according to the National Family & Health Survey-3.

Raj says that these issues are compromising the health and development of the country as a whole. But she is optimistic. "Fortunately recent movements in public health in the country have recognized these issues as needing to be addressed," she says.

Stress

Stress

How the body responds to shock or acute stress (New Kerala: 10.2.2011)

Our body's response to stress begins in the brain, and a family of proteins plays a prominent role in regulating this mechanism, suggests a new study.

Alon Chen of the Institute's Neurobiology Department found that one protein in the family - CRF - is known to initiate a chain of events that occurs when we cope with pressure, and scientists have hypothesized that other members of the family are involved in shutting down that chain.

Chen and his team have found, for the first time, sound evidence that three family members known as urocortin 1, 2 and 3 - are responsible for turning off the stress response.

The team created genetically engineered mice that don't produce the three urocortin proteins. Before they were exposed to stress, these mice acted just like the control mice, showing no unusual anxiety. When the scientists stressed the mice, both groups reacted in the same way, showing clear signs of distress.

Differences between the groups only appeared when they were checked 24 hours after the stressful episode: While the control mice had returned to their normal behavior, appearing to have recovered completely from the shock, the engineered mice were still showing the same levels of anxiety the scientists had observed immediately following their exposure to the stress.

To identify the mechanism for the proteins' activity, Chen and his team tested both groups of mice for expression levels of a number of genes known to be involved in the stress response.

They found that gene expression levels remained constant during and after stress in the engineered mice, whereas patterns of gene expression in the control mice had changed quite a bit 24 hours after the fact.

In other words, without the urocortin system, the "return to normal" program couldn't be activated.

"Our findings imply that the urocortin system plays a central role in regulating stress responses, and this may have implications for such diseases as anxiety disorders, depression and anorexia.

The genetically engineered mice we created could be effective research models for these diseases," he said.

The findings appeared in the Proceedings of the National Academy of Sciences.

Anger

Effects of repressed anger (The Times of India; 29.3.2011)

Don't bottle up anger as it can have an adverse impact on your health. It can lead to tense muscles, headaches, fatigue, hypertension and even cause acidity, says Mita Bhan

Wise men tell us for every minute you are angry you lose sixty seconds of happiness. If there is resentment brewing within, it affects your health as well. Repressed anger, one of the most toxic of all energies, can lead to tense muscles, headaches, fatigue, hypertension, acidity, and in later stages, arthritis, among other ailments. Resentment works like a slow poison. Though our anger is directed at others, the illeffects are felt only by us. Anger is like any other emotion we feel, and we need to give vent to our pentup feelings. It is imperative that we let off steam, regain our state of peace and restore harmony. Here are a few techniques recommended by ancient gurus, alternative healing experts and psychologists, which may prove effective in releasing anger:

Physical exercise: A brisk walk or something vigorous like dance or skipping helps in releasing toxins in the body. Martial Arts also allow us to dispel anger.

Yogasanas and breathing exercises under the guidance of a Yoga teacher can help in releasing anger and promote good health. For instance, 'kapalbhati' can help in dispelling anger and tone muscles and internal organs at the same time.

Healing crystals like blue lace agate and howlite can absorb angry energies to some degree. These can be used during a healing session, meditation or carried around in the pocket.

Guided imagery and visualization when combined with colour healing techniques work to release repressed images and memories associated with anger. One should not try these practices alone and they are best done under the guidance of a trained healer or practitioner. A number of other techniques, including mantras, aromatherapy aides and sound therapy, have proven effective for scores of people. The importance of releasing anger cannot be overemphasized.

Lower Stress - Lower Weight

Lower Stress To Lower Weight! (Med India: 30.3.2011)

Lower stress levels and adequate sleep could help increase chances of your losing weight, according to a new Kaiser Permanente study.

Nearly 500 participants from Kaiser Permanente in Oregon and Washington took part in the study, which measured whether sleep, stress, depression, television viewing, and computer screen time were correlated with weight loss. Several previous studies have found an association between these factors and obesity, but few have looked at whether these factors predict weight loss.

“This study suggests that when people are trying to lose weight, they should try to get the right amount of sleep and reduce their stress,” said lead author Charles Elder, MD, MPH, an investigator with the Kaiser Permanente Center for Health Research in Portland, Ore., who also leads Integrative Medicine at Kaiser Permanente Northwest. “Some people may just need to cut back on their schedules and get to bed earlier. Others may find that exercise can reduce stress and help them sleep. For some people, mind/body techniques such as meditation also might be helpful.”

The study involved two phases: during the first phase, participants were asked to lose at least 10 pounds over six months. If they succeeded, they moved to the second year-long phase of the study, which tested a complementary acupressure technique against more traditional weight-maintenance strategies. Findings from phase two are not yet available.

During the study’s first phase, all participants attended weekly meetings at which they were weighed and advised to reduce calorie intake by 500 calories per day, adopt a low-fat, low-sugar diet with lots of fruits and vegetables, increase physical activity to 180 minutes a week, and keep daily food records. People who kept more food records and attended more meetings were more likely to lose weight during this phase of the trial.

Stress-free menses

Stress-free menses (Times of India: 30.3.2011)

Menstruation is less painful for those who avoid caffeine, alcohol and eat healthy. Sanatan Kriya meditation helps control psychological symptoms

In ayurvedic physiology, the doshic imbalance, more commonly of the vata accompanied imbalance of the pitta and the kapha are responsible for menstrual disorders.

Pre-Menstrual Syndrome (PMS)

Pain in the abdomen Tenderness in the breasts Headache Dizziness, diarrhoea Fatigue Mild depression Forgetfulness, lack of concentration Irritability, restlessness Increased craving for a particular taste Other diseases like acidity, gas trouble, migraine and arthritic pains often get aggravated during an episode of PMS. In ayurveda it is believed that women are more sensitive to the cycles of nature. PMS is easier if you: Eat healthy and adopt a lifestyle synchronizing with the cycle of nature Take light but nutritious and easily digestible food Try and avoid caffeine and alcohol Reduce excessive intake of tea, sugar and salt Avoid fried and junk food

Ayurvedic tips

The herb shatavarishould be taken regularly as it nourishes the female reproductive organs and cleanses the blood. Three grams of shatavaripowder can be taken in a cup of warm milk sweetened with raw sugar. It prevents bloating, excess bleeding and mood swings In case of delayed cycles, crush ½ tsp of dill seeds and steep them in a glass of water. Strain out the seeds and drink the water. In case of excessive bleeding, take six grams of coriander seeds and boil them in half a litre water. Add sugar to this decoction and drink it when it's still warm. — dhyan foundation.com.

Vaccines

New measles vaccine

New measles vaccine that can be inhaled shows promise (New Kerala: 3.2.2011)

A research team has developed and successfully tested a dry powder, live-attenuated measles vaccine that can be inhaled.

The team was led by scientists at the Johns Hopkins Bloomberg School of Public Health and the University of Colorado, and the novel vaccine was studied in rhesus macaques.

The current measles vaccine requires two injections to provide full immunity—one given at 9 to 12 months of age and another later in childhood.

Special training for needle and syringe injections is needed to administer the vaccine, which requires refrigeration and is shipped as a powder that must be reconstituted and kept on ice in the field clinic. Such injections increase the risk of exposure to blood borne diseases.

But the new dry powder measles vaccine provided the macaques, complete protection from measles with a single vaccine dose, according to the study.

The vaccine was delivered by aerosol using either one of two dry powder inhalers, the PuffHaler and the BD Solovent. No adverse effects were observed.

"This vaccine can be shipped as powder and does not require reconstitution or special training to administer, which could greatly increase the ease and safety of measles vaccination worldwide," said Diane E. Griffin, senior author of the study.

Human trials for the dry powder measles vaccine are in development in India.

"The tests of inhalable dry powder vaccine at Johns Hopkins provide confidence that it can safely be tested in human volunteers after regulatory permission is given by Indian authorities," said Robert Sievers, professor at the CU Boulder.

Potential Vaccine

Potential Vaccine to Prevent Gastritis, Ulcer Disease, Gastric Cancer (Science Daily: 3.2.2011)

A new study led by researchers at Rhode Island Hospital in collaboration with the University of Rhode Island (URI) and EpiVax, Inc, a privately owned vaccine development company in Providence, RI, has identified a potential vaccine capable of reducing colonization of *Helicobacter pylori* (*H. pylori*) -- a known cause of gastritis, ulcer disease and cancer. Their findings appear online in advance of print in the journal *Vaccine*.

Because the colonization of *H. pylori* has far-reaching health consequences, it represents a significant public health challenge. Current treatments use multiple antibiotics in combination with acid suppression medications to eradicate it. Due to an increase in antibiotic resistance, it is now more difficult to eliminate, and the development of a vaccine as an alternative therapy is of increased interest.

Steven Moss, M.D., is a gastroenterologist at Rhode Island Hospital and lead author of the paper. Moss, who is also a professor of medicine at the Warren Alpert Medical School of Brown University, says, "Normal immune mechanisms fail to eradicate *H.pylori*, but some prophylactic and therapeutic vaccine strategies using a wide variety of *H. pylori* antigens have been reported to be successful. The literature, however, does not define the optimal choice of antigen or the best delivery method."

Through an animal model study, Moss and his colleagues utilized a gene-to-vaccine approach, incorporating multiple epitopes (a part of an antigen that is recognized by the immune system) and administered them both intranasally and intramuscularly. The results of the study suggest that when the vaccine was delivered intranasally it was more effective. Moss says, "We found that the multi-epitope vaccine induced a broad immune response that led to a significant reduction in *H. pylori* colonization."

Anne S. De Groot, M.D., initiated the HelicoVax research program in 2005 in her company, EpiVax, Inc., with funding from a National Institutes of Health small business research award. De Groot comments, "This project illustrates the power of persistence and collaboration between the biotech industry and academe, especially when it comes to emerging infectious disease vaccines."

Moss concludes, "These encouraging, though preliminary, results suggest that further development of an epitope-based mucosal vaccine against *H. pylori* can potentially lead to a novel approach to prevent *H. pylori*-associated diseases such as peptic ulcer disease and gastric cancer in humans. We are now receiving further NIH funding to continue this collaboration with URI and EpiVax and are starting to translate this approach from mice to human subjects."

Other researchers involved in the study with Moss include Dong Soo Lee, Woojin Kim, and Songhua Zhang of Rhode Island Hospital and Alpert Medical School; Anne S. De Groot (University of Rhode Island, EpiVax Inc. and Alpert Medical School), Leonard Moise (University of Rhode Island, and EpiVax Inc.) William Martin, of EpiVax, Inc.; Jinhee Lee of the University of Massachusetts Medical School; and Arlin Rogers of the University of North Carolina, Chapel Hill. EpiVax, Inc. is a privately owned vaccine development company in Providence, RI.

Flu Vaccine

New vaccine to kill all strains of flu (The Hindu: 08/02/2011)

Revolutionary treatment targets proteins common to every type of the virus. Scientists at Oxford University have successfully tested a universal flu vaccine that could work against all known strains of the illness, taking a significant step in the fight against a disease that affects billions of people each year.

The treatment — using a new technique and tested for the first time on humans infected with flu — targets a different part of the flu virus to traditional vaccines, meaning it does not need to be expensively reformulated every year to match the most prevalent virus that is circulating the world.

Developed by a team led by Dr. Sarah Gilbert at Oxford's Jenner Institute, the vaccine targets proteins inside the flu virus that are common across all strains, instead of those that sit on the virus's external coat, which are liable to mutate.

If used widely a universal flu vaccine could prevent pandemics, such as the swine flu outbreaks of recent years, and end the need for a seasonal flu jab.

“The problem with flu is that you’ve got lots of different strains and they keep changing,” said Adrian Hill, director of the Jenner Institute. “Occasionally one comes out of wildfowl or pigs and we’re not immune to it. We need new vaccines and we can’t make the vaccines fast enough.” A universal vaccine would save the time and money now needed to create vaccines to fight whatever particular virus has emerged in any year. In the UK, the government spent an estimated GBP1.2bn in preparing for the swine flu outbreak of last winter.

The process of developing a seasonal vaccine takes at least four months and if the flu strain is highly pathogenic — as in 1918 when millions of people died — the delay means more people get sick and die before the vaccine is ready.

This winter the government was criticised for its handling of the annual winter flu outbreak. Shortages of the seasonal flu vaccine became so acute in some areas that GPs were told to use old stocks of swine flu vaccine instead.

“If we were using the same vaccine year in, year out, it would be more like vaccinating against other diseases like tetanus,” said Gilbert. “It would become a routine vaccination that would be manufactured and used all the time at a steady level. We wouldn’t have these sudden demands or shortages — all that would stop.” While traditional vaccines prompt the body to create antibodies, Gilbert’s vaccine boosts the number of the body’s T—cells, another key part of the immune system. These can identify and destroy body cells that have been infected by a virus.

In her trial, Gilbert vaccinated 11 healthy volunteers and then infected them, along with 11 non—vaccinated volunteers, with the Wisconsin strain of the H3N2 influenza A virus, which was first isolated in 2005. She monitored the volunteers’ symptoms twice a day, including runny noses, coughs and sore throats, and she calculated how much mucus everyone produced by weighing tissues they used.

Though a small study, it was significant in that it was the first vaccine of its type to be tested on people.

Gilbert said: “This is the first time anyone’s tested if you can boost somebody’s T—cell response to flu and, having done that, does it help protect against getting flu. It’s the first time anybody’s done that in people.” Her results showed that the vaccine worked as planned. “Fewer of the people who were vaccinated got flu than the people who weren’t vaccinated,” said Gilbert. “We did get an indication that the vaccine was protecting people, not only from the numbers of people who got flu but also from looking at their T—cells before we gave them flu. The people we vaccinated had T—cells that were more activated. The people we hadn’t vaccinated had T—cells as well but they were in a resting state so they would probably have taken longer to do anything. The volunteers we vaccinated had T—cells that were activated, primed and ready to kill.” Gilbert has now sent her results to a scientific journal.

Hill said: “What we’ll probably do is take the existing flu vaccine and mix in the new virus—vector vaccine, so you get both good antibodies and good T—cells. As well as giving you the antibodies for this season’s strain of flu, we’ll give you some T—cells that will cover this season, next year, next year and thereafter. It may not be 100% effective against all strains, but at least if there were a pandemic coming around, it would cover you for any strain.” It is believed that the vaccine could provide better protection against flu for older people. The Jenner Institute scientists are already testing it on people over 50, a group that does not respond so well to traditional vaccines.

The next step for the T—cell vaccine is to stage a field trial in which several thousand people are given the vaccine and their outcomes are compared with several thousand people who do not get the vaccine. It will take several more years, therefore, before Gilbert’s vaccine can be licensed for use alongside traditional, antibody—inducing vaccines.

Mark Fielder, a medical microbiologist at Kingston University, said: “This study represents some potentially very exciting findings with positive implications not only for influenza but possibly for infectious disease in a wider context. However, I think that a larger trial will be able to confirm these findings and let this technology be taken forward.

HPV Vaccine

Panel finds deficiencies in HPV vaccine project (The Hindu: 08/02/2011)

The three-member committee, set up to probe the alleged irregularities in conducting studies using human papillomavirus (HPV) vaccine by PATH in India, has identified several deficiencies in the planning and implementation of the project leading “to a crisis requiring suspension of the study,” but has fallen short of fixing responsibility on any individual or agency.

The interim report submitted to the Ministry of Health and Family Welfare said that it was true that a lot of negative vibes had been generated against this project due to mishandling of the situation, but the committee had not been able to identify a single event, individual or agency which could be held entirely accountable for it. All the deficiencies were minor in nature, which should serve as a lesson for strengthening clinical research in future rather than starting any punitive or disciplinary proceedings.

It said that considerable time and effort had been invested in getting all the approvals, but the same could not be said for its actual implementation. A collective effort was required to raise the standards of clinical research — first, in the arena of implementation of bioethical guidelines and second, in the monitoring and investigating adverse events following immunisation to raise public confidence.

The ‘Post-licensure observation study of HPV vaccination: demonstration project,’ carried out by PATH in collaboration with the Indian Council of Medical Research (ICMR) in Andhra Pradesh and Gujarat since 2007, was suspended in April last year following reports of deaths and violation of ethics. The project is funded by a grant from the Bill and Melinda Gates Foundation and donation from HPV vaccine manufacturers — GSK and MSD.

While recommending that the third and final phase of the project should be allowed to continue as it would “provide the most useful information and did not involve any further vaccination,” the interim report suggested that other studies which were already under way or planned to be carried out using HPV vaccine be stopped, and resumed only after conducting reviews. It ruled out a blanket ban on or approval of such studies in future.

The report, however, warned that HPV vaccination was not to replace the cervical cancer screening programme, but to supplement it. Since the vaccine was expensive, an element of cost-effectiveness and determination of competing health immunisation priorities should have been addressed by the study. “The fact that the vaccine for the study was provided by the manufacturers free-of-cost does raise the concern about undeclared conflict of interest, since the results of the study may be used to influence the decision by the government.”

S.S. Agarwal, the former Director, Sanjay Gandhi PGI of Medical Sciences; Lucknow; S.P. Agarwal, former Director-General of Health Services; and Suneeta Mittal, All-India Institute of Medical Sciences were members of the committee. The committee wanted a blurring of the distinction between routine, national immunisation programme and the research nature of the HPV vaccination study. “It is important that public-private partnership programmes be extra vigilant and ensure the authority of the State is not misrepresented.”

It said the seven deaths (five in Andhra Pradesh and two in Gujarat) among those administered the vaccine were “most probably” unrelated to it, as there was no characteristic and uniform pattern of illness preceding the deaths, or temporal/spatial clustering, going by the FIR.

Questioning the legality and morality of the circular issued by Andhra Pradesh, authorising hostel wardens and head masters to sign the consent on behalf of the minor girls included in the study, the report said everyone should desist from research on tribal population, except where it benefitted them. It made out a strong case for specific and separate legislation covering all aspects of biomedical and health research that involve human participants, and eliminating overlaps such as definition of clinical trial/clinical research that exist in Schedule Y of Drugs and Cosmetics Act Rules, and the ICMR guidelines.

Leader of the Communist Party of India (Marxist) Brinda Karat said the project itself was flawed, and as such the study could not be given to a non-governmental organisation that could not be held accountable and demanded action against those responsible. Ms. Karat, a member of the Parliamentary Committee on Health and Family Welfare, demanded a copy of the report.

Vaccine

A vaccine for dengue by 2015? Trials on (The Times of India: 10.2.2011)

India To Join Phase-3 Of Tests; Shot Has Shown 90% Efficacy So Far

India could soon be part of a large global trial to test the world's first effective vaccine against dengue.

Drug controller general of India (DCGI) is studying a proposal from French vaccine makers, Sanofi Pasteur, to test their candidate vaccine's effectiveness among Indians. This vaccine is the most advanced candidate, and is undergoing phase III trials — final stage of clinical development — in 10 countries.

Interestingly, the vaccine has shown over 90% safety and efficacy profile during the phase II trials.

DCGI sources told TOI that “we have received a proposal from Sanofi to conduct a registration trial of their CYD tetravalent dengue vaccine in India. The proposal has been referred to our Investigations New Drug (IND) committee. They want to conduct a three-centre trial in the 2-45 age group.”

Speaking to TOI from Lyon in France, Dr Jean Lang, who is associated with Sanofi's endemic new vaccines programme, said the shot is likely to be available by 2015.

He added, “We should have a viable, effective and safe dengue vaccine by 2015. However, results of an efficacy trial ongoing in Thailand on 4,000 children will be a critical milestone in its development. Data from that will be available by the end of 2012.”

According to Dr Lang, the global trial involves 30,000 people.

“In India, the two-year trial will involve 1,000 people. We will first try the three-shot vaccine on the 2-45 age group. After reviewing that result, we will use it on those between 9 months and 65 years. We want to see the immunogenicity response in Indians,” he explained.

There is no vaccine available for dengue fever that is a threat to around three billion people, mostly in Latin America and Asia. This candidate vaccine targets all four virus serotypes circulating in the US, Asia and Latin America. Clinical studies (phase III) among adults and children are now on in Mexico, Colombia, Honduras, Puerto Rico, Peru, the Philippines, Vietnam, Singapore, Australia and Thailand.

“Thailand was selected because of high incidence of dengue. By selecting a country where it is endemic, we maximize the chances to generate statistically significant clinical data in a stringent environment. Hence, we will be able to demonstrate a clinically meaningful efficacy of the vaccine,” he added.

Dengue is a mosquito-borne disease caused by four dengue virus serotypes — 1 to 4). Of the estimated 220 million people infected annually, two million — mostly children — develop dengue hemorrhagic fever (DHF). Globally, the projected number of annual dengue infections is estimated between 50-100 million, with 24,000 deaths, who are mainly children.

Cholera vaccination

Cholera vaccination post-outbreak beneficial (The Hindu: 10.2.2011)

Mass cholera vaccinations can be beneficial in affected areas even after outbreaks of the bacterial disease, according to two studies by researchers from the Seoul-based International Vaccine Institute (IVI).

Results of the studies recently appeared in PLoS Neglected Tropical Diseases.

Experts say the findings are especially significant in light of the outbreak of cholera, known as “the poor man's disease,” in Haiti, which was hit by a massive earthquake in January 2010. Clean water and adequate sanitation are very essential.

But they are yet to become a reality in many countries even after many decades.

Role less clear

According to an Editorial published in the same issue of the journal, the role played by cholera vaccine once an outbreak has started is less clear. Every year, three to five million people are infected with the *Vibrio cholerae* bacterium, the causative agent of cholera. In one of the studies, an oral vaccine containing killed cholera pathogens that was administered during a cholera outbreak in Hanoi three years ago had protective efficacy of 76 per cent.

Reactive use of killed oral cholera vaccines provides protection against the disease and may be a potential tool in times of outbreaks. Further studies must be conducted to confirm these,” the study's authors wrote.

Another study evaluated the potential benefit of reactive cholera vaccination campaigns using existing data from cholera outbreaks to simulate the number of preventable cholera cases.

“Even a delayed response can save a substantial number of cases and deaths in long, drawn-out outbreaks,” the authors of the study wrote.

Vaccines

Desi Cos Eye . 1,500Cr Mkt Which Is Growing At 15% (The Times of India: 17.2.2011)

INJECTING LIFE

Vaccines get a booster shot

Vaccines are back in favour. After being junked by pharma biggies some years back, now almost every drug major is investing in vaccines by acquiring or building on fresh capacities. The evidence lies in pharma biggie Pfizer acquiring Wyeth and domestic major Shantha Biotech being snapped up by Sanofi a couple of years ago.

Presumably, vaccines which were earlier thought as a low-margin, low-growth industry, have emerged as one of the most lucrative segments of the industry, and domestic companies like Serum, Cadila and Wockhardt are trying to corner a piece of the action.

The Rs 1,500-crore domestic vaccine market—which has recorded a growth of 15% in the last fiscal—will continue to grow 15-20% over the years. Some industry players feel the sector can even outpace the pharma sector soon. Experts feel that the demand for vaccines is on the upswing because of the emphasis by the government to vaccinate children under the immunization programme. Combination vaccines like DPT (diphtheria, pertussis, tetanus), Hepatitis B, Hepatitis A, MMR (measles, mumps and rubella) and new generation vaccines like human papilloma are driving growth.

Ganesh Nayak, executive director, Zydus Cadila, said: “Owing to increasing public and private healthcare spending, a very high birth rate and prevalence of both infectious and chronic diseases, the domestic demand for vaccines in India will continue to grow at double-digit rate. With the takeover of Etna Biotech, Zydus has got the necessary assets to become an important player in the vaccine field.”

Of late, governments across the world are following the theory of prevention as healthcare costs are becoming very expensive, feels Sujay Shetty, pharma leader, PwC India. “The perceived value of vaccines has, therefore, gone up,” he says. For example, a Gardasil shot given to girls above 12-13 years to safeguard against cervical cancer costs around \$300, while oncology treatments are exorbitant and cost over \$25,000 a year.

Among the biggies, Sanofi Pasteur—the world’s largest vaccine company—is a separate entity of Sanofi-Aventis devoted entirely to the vaccine business. Pfizer acquired Wyeth mainly due to its vaccine capability, notably the blockbuster vaccine for pneumonia, Prevnar, which has contributed over a billion dollar revenues already to the world’s largest drug maker.

In the domestic market too, companies are increasingly investing in vaccines or ramping up existing facilities. Nayak adds: “Future cooperation with other innovative vaccine companies cannot be ruled out if this will help to be faster on the market with new innovative products. We have also set up a dedicated vaccine development center which is working on research and development of high quality, value-added innovative vaccines.”

Another major player, Pune-based Serum Institute, India, expects growth to be around 10-15% this year. Says the company’s executive director Suresh Jadhav: “The vaccine industry has been growing at 10-15% in India. However, it is much more in the developed countries because of the

introduction of newer vaccines such as pneumococcal conjugate vaccine, rotavirus vaccine and HPV vaccine, which are sold at very high prices that cost almost \$80-150 per dose.”

Worldwide, there is increased focus on research and development in vaccines, which has been spurred by initiatives like the Gates foundation. Last year, the foundation pledged a huge investment of \$10 billion in vaccines alone.

Vaccine

Vaccine targets malaria transfer (The Indian Express: 17.2.2011)

IN A bid to combat malaria with vaccines, Pune-based Gennova Biopharmaceuticals has tied up with Tulane University School of Public Health and Tropical Medicine to produce a vaccine to block transmission of malarial parasite from mosquitoes to humans.

Sanjay Singh, CEO of Gennova Pharmaceuticals, said the project is part of PATH Malaria Vaccine Initiative (MVI), a global programme set up with a grant from the Bill & Melinda Gates Foundation.

Singh said transmission-blocking vaccines, though not yet widely tested on humans, are attracting widespread interest due to their potential to be used in conjunction with traditional drugs and bed nets for gradual elimination and even eradication of malaria.

"We're investing in developing transmission-blocking vaccines to support two long term goals: introducing an 80 per cent efficacious vaccine by 2025 and eventually eradicating malaria," said MVI Director Dr Christian Loucq.

Dr Nirbhay Kumar, professor of tropical medicine at Tulane, is working on a novel approach that targets a specific, but hard-to-synthetically-produce protein that the malaria parasite needs to spawn in the mosquito host.

Using the protein or antigen -known as Pfs48/45 -in a vaccine could potentially induce an immune response capable of slowing or halting disease transmission by preventing the parasite from reinfecting mosquitoes after feeding on an infected person.

HPV vaccine

Panel finds deficiencies in HPV vaccine project, but nails none (The Tribune: 18.2.2011)

The government committee probing last year's deaths of seven tribal girls after they were administered the anti-cervix cancer HPV (human papillomavirus vaccine) has said in its interim report that the deaths were "most probably" unrelated to vaccine administration.

The committee, however, admitted that the project design was inadequate and lacked the preparation to tackle serious adverse effects and deaths on account of the vaccines, something that should have been accounted for. Yet, it doesn't hold anyone responsible for the deaths reported during the project's implementation in Gujarat and Andhra by foreign non-government organisation PATH in association with the Indian Council for Medical Research (ICMR) and the states concerned. The HPV project

PATH, ICMR started a post-licensure study to test anti-cervix cancer HPV vaccine

Project started in Khammam (AP) in July 2009 and in Vadodra in August 2009

Vaccine used was MSD's Gardasil in Gujarat and GSK's Cervarix in Khammam

In Andhra 14,091 girls covered & five deaths reported; in Gujarat, 13,930 covered & two deaths reported

The project, approved for implementation in 2007, was suspended in April 2010 following reports of deaths of children in Gujarat and Andhra Pradesh. This led the Health Ministry to constitute a probe panel to see if these deaths were linked to vaccination and if the ethical guidelines of the ICMR and the Drug Controller General of India (DCGI) were observed in the study, which had girls aged 10-14 as its subjects.

The panel report, available now, is replete with contradictions. While it lists several deficiencies in project implementation, it terms them as "minor" and exonerates everyone associated with the project. "There is no major deficiency for which responsibility could be fixed. A collective effort is required to raise the standards of clinical research," says the panel. It finds vaccines "most probably" unrelated to deaths even though in three cases of mortality, no post-mortem was ever conducted. In the other four, alternate causes of deaths were established.

Now, picture the deficiencies the panel calls "minor". Firstly, it identifies an undeclared conflict of interest in the study where vaccines used were given free of cost by manufacturers GSK and MSD. The committee admits: "Free provision of vaccines raises concerns about undeclared conflict of interest since the results can be used to influence the government to include the vaccines in the national programme." It however holds no one accountable.

Another shocking finding is that PATH insured itself for the study but not the children who received the vaccine. Here, the panel concludes mildly: "Since the HPV vaccine is new, there should have been a provision of insurance cover for the participants. The requirement must be made essential for future studies."

It has been further revealed that the project administrators didn't take informed consent of the children or their parents in Andhra Pradesh's Khammam district where five of the seven deaths were reported. The committee found that the Andhra Government had, in violation of medical ethics, authorised hostel wardens and headmasters to sign consent papers in place of the girls' parents.

Yet, the committee issues a soft admonishment to PATH, saying, "Areas, mainly tribal, where taking informed consent of the subjects was impractical, should have been excluded from the study." No responsibility has been fixed though the panel bars future research on tribals unless of specific benefit to them.

Inquiries also cast doubts on the role of the ICMR and DCGI. The project was a post-licensure study agreed to between PATH and ICMR in 2007. However, the vaccine was being tested one year before the licence was given. Further, though PATH has maintained the project was meant to test the acceptance of the vaccine whose safety was known, the committee report says that four of the study's five expected outcomes related to vaccine safety.

HPV vaccine

Fix responsibility in HPV vaccine study: Brinda (The Tribune: 18.2.2011)

CPM's Politburo member Brinda Karat today questioned the exoneration of defaulters in the HPV vaccine administration project that had led to the deaths of seven tribal girls last year and demanded compensation for those affected.

In a letter to Health Minister Ghulam Nabi Azad today, Brinda sought the suspension of the project and punitive action for those found responsible for the deficiencies, which the government committee's interim report on the subject has now established.

"We want to know what is the nature of this project and is it a clinical trial or a research. Why is the project design not being made public? We want the design scrutinised and we want compensation for the families affected. I have met these families. I know that all the girls who received the HPV vaccine were poor and their informed consent wasn't taken. This is a serious matter and action must be initiated against NGO PATH. The role of ICMR and DCGI also needs questioning. How did a post-licensure study become a pre-licensed one? How was the vaccine being used when the license for it was to be taken a year later?" Brinda asked adding that the ethics committee of the Public Health Foundation of India had earlier refused permission for PATH's HPV vaccine project in India.

The CPM's Rajya Sabha member also wondered why the government panel gave a clean chit to the NGO on grounds that there was no mal-intention. "Are these deficiencies minor? If they are, why should we put up with this farce of the ICMR and DCGI guidelines for medical research?" the MP said.

Similar concerns have also been raised by social organisations like the All-India Democratic Women's Association, All-India People's Science Network, SAMA and the Jan Swasthya Abhiyan.

HPV vaccine

PHFI rejected HPV vaccine project proposal (The Hindu: 18.2.2011)

Said it failed to state ethical aspects involved in the study

Proposal was based on the assumption that vaccine was safe and efficacious: PHFI

Brinda demands compensation for all subjects victimised by vaccine programme

The proposal for conducting the now controversial "Post-licensure observational study of Human Papilloma Virus (HPV) vaccination: Demonstration Project," carried out by a non-governmental organisation PATH for two major pharmaceutical companies, had been turned down by the Public Health Foundation of India (PHFI) as it failed to state the ethical aspects involved in it.

The PHFI had received the proposal for conducting the study from the Indian Institute of Public Health at Gandhi Nagar (Gujarat) but the Institutional Ethics Committee of the Foundation rejected it on the grounds that it was "based on the assumption that no ethical issues arise with regard to undertaking the HPV vaccine demonstration project."

"It was based on an assumption that the vaccine was safe and efficacious," Srinath Reddy, president of the PHFI told The Hindu adding that the ethical aspects of the study were not stated in the proposal.

Addressing a press conference here on Thursday, the Jan Swasthya Abhiyan and the All-India Democratic Women's Association (AIDWA), and SAMA, said the interim report of the three-member committee, constituted by the Centre to look into various aspects of the project that had

been suspended in April following the death of six girls, had let off the hook all those involved in the project by declaring the deficiencies in the project as "minor" and not "wilful or fully anticipatable" and stating that "since there does not appear to be any mal-intention, no responsibility could be fixed."

Dangerous precedent

"Since violations have occurred at all levels of project, we demand that all involved must be considered culpable, and appropriate punitive action taken. To say that responsibility cannot be fixed on any one individual or organisation is a dereliction of duty, and a convenient excuse for irresponsible and unethical conduct, thus setting a dangerous precedent, Sarojini N. of SAMA, said.

Communist Party of India (Marxist) MP Brinda Karat who had raised the issue last year, said the government should take stern action against the wrongdoers. "There must be a further scrutiny of the role of the Drugs Controller General of India and the Indian Council of Medical Research as the primary institutions involved in the project. Appropriate action should also be taken against the NGOs concerned," she said while demanding compensation for all the subjects who were victims to the vaccine programme without their consent.

Ms. Karat has also written to the Union Health and Family Welfare Minister Ghulam Nabi Azad in connection with the interim report pointing out that there was nothing minor about the various deficiencies noted by the committee. These were major violations and exoneration of those responsible would set a dangerous precedent. Indeed the committee members had not done any credit to their reputation by such an "outrageous" recommendation, she said.

Aim to influence government

The committee, perhaps, in spite of itself and the many acts of omission and commission in its report has raised serious issues about the project. "Regardless of the intention there was a conflict of interest and all the deficiencies in the design of the project as well as the conduct of the project could have been precisely because the main aim was to influence government to include the vaccine in the public health programme," she said.

"Despite stating the fact that the vaccine for the study was provided by manufacturers free of cost does raise the concern about undeclared conflict of interest since the results of the study may be used to influence the decision by the government, the committee fails to build upon this significant and alarming aspect," Ms. Karat said.

Quoting from the report that more than a quarter of clinical trials in the world were now being conducted in India, Jan Swasthya Abhiyan said concurrently the Ministry of Health and Family Welfare claimed that there had been a manifold rise in the number of deaths among clinical trial subjects in the past few years.

Justifiable apprehensions

“There are justifiable apprehensions that lax rules and their implementation in India are reasons why more and more unethical trials are being conducted in India. Given this, the slipshod manner in which the inquiry has been conducted raises very serious concerns, and reinforces the view that poor Indian subjects are being used as guinea pigs to test medicines developed outside the country," it said.

Vaccines for HIV, Malaria, Other Diseases

MIT Engineers Design New Nanoparticle That Could Lead to Vaccines for HIV, Malaria, Other Diseases (science daily: 23.2.2011)

MIT engineers have designed a new type of nanoparticle that could safely and effectively deliver vaccines for diseases such as HIV and malaria.

The new particles, described in the Feb. 20 issue of Nature Materials, consist of concentric fatty spheres that can carry synthetic versions of proteins normally produced by viruses. These synthetic particles elicit a strong immune response -- comparable to that produced by live virus vaccines -- but should be much safer, says Darrell Irvine, corresponding author of the paper and an associate professor of materials science and engineering and biological engineering.

Such particles could help scientists develop vaccines against cancer as well as infectious diseases. In collaboration with scientists at the Walter Reed Army Institute of Research, Irvine and his students are now testing the nanoparticles' ability to deliver an experimental malaria vaccine in mice.

Vaccines protect the body by exposing it to an infectious agent that primes the immune system to respond quickly when it encounters the pathogen again. In many cases, such as with the polio and smallpox vaccines, a dead or disabled form of the virus is used. Other vaccines, such as the diphtheria vaccine, consist of a synthetic version of a protein or other molecule normally made by the pathogen.

When designing a vaccine, scientists try to provoke at least one of the human body's two major players in the immune response: T cells, which attack body cells that have been infected with a pathogen; or B cells, which secrete antibodies that target viruses or bacteria present in the blood and other body fluids.

For diseases in which the pathogen tends to stay inside cells, such as HIV, a strong response from a type of T cell known as "killer" T cell is required. The best way to provoke these cells

into action is to use a killed or disabled virus, but that cannot be done with HIV because it's difficult to render the virus harmless.

To get around the danger of using live viruses, scientists are working on synthetic vaccines for HIV and other viral infections such as hepatitis B. However, these vaccines, while safer, do not elicit a very strong T cell response. Recently, scientists have tried encasing the vaccines in fatty droplets called liposomes, which could help promote T cell responses by packaging the protein in a virus-like particle. However, these liposomes have poor stability in blood and body fluids.

Irvine, who is a member of MIT's David H. Koch Institute for Integrative Cancer Research, decided to build on the liposome approach by packaging many of the droplets together in concentric spheres. Once the liposomes are fused together, adjacent liposome walls are chemically "stapled" to each other, making the structure more stable and less likely to break down too quickly following injection. However, once the nanoparticles are absorbed by a cell, they degrade quickly, releasing the vaccine and provoking a T cell response.

In tests with mice, Irvine and his colleagues used the nanoparticles to deliver a protein called ovalbumin, an egg-white protein commonly used in immunology studies because biochemical tools are available to track the immune response to this molecule. They found that three immunizations of low doses of the vaccine produced a strong T cell response -- after immunization, up to 30 percent of all killer T cells in the mice were specific to the vaccine protein.

That is one of the strongest T cell responses generated by a protein vaccine, and comparable to strong viral vaccines, but without the safety concerns of live viruses, says Irvine. Importantly, the particles also elicit a strong antibody response. Niren Murthy, associate professor at Georgia Institute of Technology, says the new particles represent "a fairly large advance," though he says that more experiments are needed to show that they can elicit an immune response against human disease, in human subjects. "There's definitely enough potential to be worth exploring it with more sophisticated and expensive experiments," he says.

In addition to the malaria studies with scientists at Walter Reed, Irvine is also working on developing the nanoparticles to deliver cancer vaccines and HIV vaccines. Translation of this approach to HIV is being done in collaboration with colleagues at the Ragon Institute of MIT, Harvard and Massachusetts General Hospital. The institute, which funded this study along with the Gates Foundation, Department of Defense and National Institutes of Health, was established in 2009 with the goal of developing an HIV vaccine.

Vaccines

After shutting down PSU labs, govt buys vaccines at double cost (The Times of India:23.2.2011)

Shutting down manufacturing of vaccines at the public sector vaccine units is costing the government dear.

Take the example of BCG vaccine against tuberculosis. It used to cost the health ministry Rs 13 per vial in 2007-08 when it was supplied by the public sector BCG Lab in Chennai. Now with vaccine production in the lab shut, due to “supposed non-adherence” with WHO’s good manufacturing practices standards, the ministry is purchasing the vaccine at more than double the cost from private sector.

Union health minister Ghulam Nabi Azad admitted on Tuesday that the rate at which the vaccine was being purchased from the private sector stood at Rs 27.85 per vial in 2009-10 (Rs 14.85 more) and Rs 28.6 in 2010-11 (Rs 15.60 more).

The same is the story with the vaccine against DPT. Pasteur Institute of India (Coonoor) was the major DPT vaccine supplier to the country’s immunization programme. But now, the ministry is purchasing the vaccine from the private sector fearing that the standard of the PSU manufacturer might not be on a par with global standards. Hence, what cost the ministry Rs 11.80 per vial in 2007-08 now costs it Rs 23.49 per vial the following year and Rs 23.53 in 2010-11.

The TT vaccine cost the government Rs 6.20 a vial in 2007-08. Now, health ministry is procuring it from the private sector for Rs 17.69 per vial (Rs 11.49 more) in 2009-10 and Rs 16.45 (Rs 10.25 more) in 2010-11.

Azad said, “Vaccines being procured now are supplied with the vaccine vial monitor, temperature monitoring device and international packaging. However, these features were not included in earlier supplies made by departmental vaccine institutes. Therefore, exact cost comparison can’t be carried out. All procurement costs from departmental vaccine institutes are provisional.”

Flu vaccine

Nasal spray flu vaccine one step closer (The Tribune: 23.2.2011)

A University of Adelaide research has suggested that a universal flu vaccine delivered by a simple nasal spray is a step closer. Darren Miller and colleagues have successfully done the trial of a synthetic flu vaccine in mice. Miller said current flu vaccines relied on the health authorities being able to predict what the forthcoming viral strain would be and reformulating the vaccines each year. “This is extremely time-consuming, labour-intensive and expensive and it’s something that a universal vaccine could overcome,” The Sydney Morning Herald quoted him as saying.

Dengue vaccine

Dengue vaccine developed (The Hindu: 24.2.2011)

Thai scientists have successfully produced the world's first dengue hemorrhagic fever vaccine and will let the private sector improve it for the effective treatment of patients.

The Thailand Ministry of Science and Technology has introduced the world's first live attenuated dengue hemorrhagic fever vaccine developed by Thailand researchers.

Thai Science and Technology Minister Virachai Virameteekul said that the number of dengue hemorrhagic fever patients in Thailand has risen, exceeding 100,000 last year and adding some 1,200 cases in January 2011.

Dr Suthee Yoksarn, a lecturer of Mahidol University, together with his team and Chiang Mai University have jointly developed four stereotypes of the live attenuated vaccine.

This was achieved by combining attenuated DNA with a protein structure that stimulates immunity against the dengue hemorrhagic fever — caused by the present strain of the dengue virus.

The newly developed vaccine is expected to better protect people from the dengue hemorrhagic fever.

HIV vaccine

Dedicated lab for HIV vaccine design (The Hindu: 3.3.2011)

The new laboratory will be responsible for isolation, selection and prioritisation of the immunogens

Cutting edge research: Researchers are working to produce vaccines that have neutralising antibodies capable of neutralising the HIV virus before it can infect the cell.

After conducting a couple of AIDS vaccine trials in India, the New York based International AIDS Vaccine Initiative (IAVI) is shifting its focus to research that will help in finding more efficacious vaccines.

The Department of Biotechnology (DBT) along with IAVI will soon establish and operate a laboratory in Gurgaon, near New Delhi, to meet one of the biggest challenges of designing and developing an efficacious AIDS vaccine — elicitation of antibodies that are capable of neutralising a broad spectrum of HIV variants found in humans.

If the AIDS vaccine trials conducted at the National AIDS Research Institute (NARI), Pune, and the Tuberculosis Research Centre (TRC), Chennai, equipped the researchers and the institutions to take up clinical trials of international standards, the new laboratory may similarly equip our scientists to conduct HIV research and development on par with any developed country.

Location of the lab

According to Dr. Rajat Goyal, Country Director of IAVI, India, the laboratory will come up on the campus of the Translational Health Sciences and Technology Institute (THSTI), an autonomous institute of DBT. The investment over the next five years is about Rs.51 crores, with investments coming from both IAVI and India. IAVI will be investing about Rs.19 crores and the balance by India.

Apart from the director, the laboratory will have three principal investigators, 15 key scientists and several support staff.

Neutralising antibodies

Neutralising antibodies are those that are capable of neutralising the virus causing HIV at the very point of its entry into the cells. An effective HIV vaccine containing neutralising antibodies can thus prevent cells from getting infected by the virus.

Though vaccines were initially designed to kill the cells that are already infected by the virus, researchers are now focussing on finding vaccines that can both neutralise the virus before it infects the cells as well as kill those cells that have been infected.

Starting of the laboratory gains importance as it comes close on the heels of IAVI and few other institutions around the world identifying and isolating 14 broadly neutralising antibodies.

Identifying such antibodies became possible by studying adults in 12 countries who have been infected by the virus for at least three years but have not progressed to a diseased state (becoming AIDS patients) even in the absence of any antiretroviral therapy (ART).

These people apparently have the much sought after broadly neutralising antibodies.

Having identified the antibodies in these people, many organisations are in hot pursuit to find immunogens (substances like proteins that provoke immune response in humans) that will ultimately be used in the vaccines.

Different approach

“Different groups have different approaches to finding the immunogens. We have come up with a different approach. Most research laboratories have a low throughput screening process. Ours will be a high-throughput screening of immunogens,” said Dr. Sudhanshu Vrati, Dean, Translational Health Science and Technology Institute and Senior Scientist at the National Institute of Immunology, New Delhi.

According to Dr. Vrati, the new laboratory will be a dedicated facility to find the best immunogen at a faster pace.

“The new laboratory will be responsible for isolation, selection and prioritisation of the immunogens,” said Dr. Goyal. Identifying the antibodies is the first step. What follows is the designing of the immunogens and finally the isolation and selection of the immunogens. Vaccines containing the immunogens will be ready for pre-clinical evaluation once the process of isolation, selection and prioritisation of the immunogens is completed.

The crucial stage

While the first part — identification of the antibodies — has been completed, the designing of the immunogens is being done in India as well. The new laboratory, along with other centres in other parts of the world, will play a crucial role in the final stage of the vaccine design process.

Designing the immunogens is done through a partnership IAVI has with the Indian Medicinal Chemistry Program (IMCP), where scientists from Indian Institute of Science, Bangalore, and the New Delhi-based International Centre for Genetic Engineering and Biotechnology are involved. IMCP was established in 2007.

Vaccine - HIV

Hi-tech lab in Gurgaon to design vaccine for HIV (The Times of India: 3.3.2011)

Gurgaon will now be home to the country’s first state-of-the-art laboratory that will exclusively work to design an effective vaccine against the deadly human immunodeficiency virus (HIV).

The Translational Health Sciences and Technology Institute (THSTI), an autonomous institute under the department of biotechnology (DBT), and the International AIDS Vaccine Initiative (IAVI), have signed an agreement to jointly establish, operate and fund this HIV vaccine design programme.

The programme will primarily focus on one of the greatest scientific challenges of AIDS vaccine design and development — the search of antibodies capable of neutralizing a broad spectrum of circulating HIV strains.

Bringing hope to the idea of developing an effective vaccine against the deadly virus, scientists have been working on powerful new antibodies that neutralise all major forms of the virus. An antibody is an infection-fighting protein produced by our immune system when it detects harmful substances like viruses and bacteria.

Scientists say these antibodies would ultimately reveal the Achilles heel of the virus. Studies have found that antibodies target a stable portion of the virus that does not frequently mutate — a defence mechanism that has till now helped the virus escape earlier developed experimental vaccines.

Experts in this Indian lab will now look at new antibodies and how they bind to the virus. This will tell scientists which part of the virus to target with vaccines. The idea is to create artificially synthesized mimics of their targets on HIV, to be used in vaccines to elicit similar actions and teach the immune system how to thwart HIV infection.

“With 7,100 people contracting HIV every day, effective tools to prevent infection are indispensable to the fight against HIV and AIDS. A broadly effective AIDS vaccine would be a powerful asset to efforts to arrest the spread of HIV,” said M K Bhan, secretary of DBT.

This collaborative programme will participate in a coordinated, global effort to create replicas of virus targets in the laboratory for use as immunogens, which are the active ingredients of vaccines. The programme will have the task of developing, testing and then implementing strategies to rapidly screen large numbers of immunogens against HIV-1 (dominant strain) and to prioritize them for further evaluation in preclinical studies.

“We are very excited about the launch of this collaboration,” said Seth Berkley, CEO of IAVI.

Other institutions participating in this partnership include the International Centre for Genetic Engineering and Biotechnology in New Delhi and the Indian Institute of Science, Bangalore.

Indians, too, are being screened for such effective HIV slaying antibodies. The country has its share of “late progressors” or “elite controllers” — people infected with HIV who stay healthy for years without requiring life-saving antiretroviral treatment (ART). About one in 300 people with HIV is an elite controller.

Meanwhile, another fascinating community — mainly comprising women — has also got scientists in India excited. Called “exposed sero negative” these are women who have, for years, had sex with HIV-positive, condom-refusing husbands, but never got infected. Many have also had babies who are not HIV-positive. Scientists are studying these elite controllers to see whether they carry special genes, which prevent the virus from multiplying in their bodies. The cure for AIDS may come from members of these two communities, scientists believe.

HIV -Vaccine

New, Rs. 50-crore HIV Vaccine design programme launched (The Indian Express: 3.3.2011)

WITH an estimated 7,100 people getting infected with HIV every day and India home to 2.7 million HIV positive people, the government on Wednesday launched a new HIV vaccine design programme in the country. It was also announced that a new HIV Vaccine Laboratory will now come up in New Delhi.

M K Bhan, Secretary, Department of Biotechnology, said that autonomous institute Translational Health Sciences and Technology Institute (THSTI) and the International AIDS Vaccine Initiative (IAVI) have agreed to jointly establish, operate and fund an HIV vaccine design programme in the country.

The programme will primarily focus on one of the greatest scientific challenges of AIDS vaccine design and development: the elicitation of antibodies capable of neutralising a broad spectrum of circulating HIV variants -a problem that stems in large part from the almost unparalleled mutability of HIV. The programme will cost Rs 50 crore over five years.

Dr Rajat Goyal, director, country and regional programmes, IAVI, told The Indian Express that Rs 19.3 crore will be spent by IAVI on the programme. This is one of the key partnerships with the government to share scientific knowledge that will boost translational research, Goyal said.

THSTI director Dr Dinakar Salunke said there will be exchange of ideas in a mutually beneficial agreement. A global search is underway to appoint scientists and directors.

"There will be three principal investigators and 15 scientists," Goyal added.

Birth Control Vaccine

Will a female birth control vaccine work? (New Kerala: 14.3.2011)

A birth control vaccine will not become a reality in the near future despite the high hopes of the Indian government, predicts a leading researcher at the Indian Institute of Science (IISc) here. But another researcher says a vaccine for women could hold out hope.

Almost a quarter century after the idea was considered and after investment of resources and efforts of several competent teams, we are nowhere near the actual use of the proposed vaccines," says A. Jagannatha Rao, once at the forefront of contraceptive research.

None of the vaccines proposed by scientists actually met the requirements for use as a contraceptive vaccine for human application and "one may conclude that immuno-contraception (birth control vaccine) has no place in fertility control," he said in a report in the journal Current Science.

According to Rao, at least three types of vaccines for women and two for men were being developed and tested in laboratories in India, none of which reached a stage for actual use.

The only promising vaccine for males was one based on Follicle Stimulating Hormone (FSH) which is necessary for production of spermatozoa.

Interfering with the action of FSH appeared to be a feasible method of contraception and pioneering studies at the IISc in the 1990s showed that the FSH vaccine worked in male volunteers by eliciting specific antibodies against the hormone.

However, this vaccine failed to make the grade as the immune response in all subjects was not uniform, Rao said.

The only vaccine that showed promise for use in females that came out of Indian studies was the one based on the 'beta subunit' of the hormone hCG (human chorionic gonadotropin) developed by G.P. Talwar at the All India Institute of Medical Sciences (AIIMS) in the 1980s, he added.

According to Rao, the trials on 162 women showed it to be highly effective in preventing conception but had one major problem: only 119, or 80 percent, of the vaccinated women produced antibodies above the minimum level needed to stop pregnancy and the remaining 20 percent did not produce sufficient antibodies.

Another problem was the need for periodic injections to maintain required level of antibodies, he said.

A birth control vaccine in order to be accepted for the family planning programme must be 100 percent effective in all the subjects, he said.

On this count, he told IANS, none of the vaccines developed in India had fared well.

He said some more candidate vaccines have been suggested "but most of them are at the laboratory stage and we still have a long way to go before any of them see the light of the day", he concluded in his report.

Talwar, 85, however, is hopeful that his vaccine will be in market during his lifetime. "We have now developed the hCG vaccine using recombinant technology and a new adjuvant which demonstrates improved immunogenicity," he told IANS.

"Every mouse given this vaccine makes a high amount of antibodies."

This vaccine, he said, has received the approval of the National Review Committee on Genetic Manipulation and is being produced under GMP conditions for toxicology studies.

"If found safe, it is planned to conduct clinical trials with this vaccine for preventing pregnancy, as well as for its possible therapeutic action on those types of cancers which express hCG."

Rao said the problem is that unlike vaccines for diseases like malaria or tuberculosis that target disease-causing organisms, the birth control vaccine is for use in healthy subjects and should not interfere with normal physiological processes.

A vaccine based on Gonadotropin Releasing Hormone (GnRH) showed promise as a contraceptive vaccine in tests in rodents and monkeys.

However it "suppressed secondary sexual characters and behaviour" and thereby failed "to meet the important requirement to be specific, safe and effective vaccine".

Another contraceptive vaccine for women that was the focus of research at New Delhi's National Institute of Immunology was based on "Zona pellucida (ZP) glycoprotein".

This protein which is present in the female egg (ovum) plays a very important role during fertilisation.

Rao said the prospect of using ZP glycoprotein as a contraceptive vaccine "is not there in the near future as its safety is yet to be established in an unambiguous manner".

In vaccines for the male, efforts over the last 40 years focussed on developing a contraceptive vaccine that does not interfere with levels of testosterone -- the male hormone, inhibition of whose production can affect libido "which is completely unacceptable", Rao said.

Measles vaccine

4 kids die after measles shots drive stopped (The Hindustan Times: 17.3.2011)

IN KUTCH Gujarat has declared a compensation of R1 lakh to each of the bereaved families

Four infants died in western Gujarat's Kutch on Wednesday and about five became critical within 15 minutes of their being administered the measles vaccine as part of a drive launched by the Gujarat government.

The four who died were below one. Of the ones critical, all are below one and one is 16 months old.

The incident has forced the state health department to halt the vaccination drive in the state for a week while samples have been sent for examination to the Central Research Institute, Kasauli, Himachal Pradesh.

Chief minister Narendra Modi has directed the health authorities to conduct an enquiry into the incident.

The state government has declared a compensation of R1 lakh to each of the bereaved families.

“Our preliminary investigation into the incident has revealed that the children who were vaccinated developed reaction and four children have succumbed while a few more are under treatment,” Gujarat health minister Jaynarayan Vyas told Hindustan Times.

“We have withdrawn the vaccination programme after the incident and also sent samples of the vaccine for examination,” Vyas said, adding, “the vaccines were procured by the state health department and the expiry time was April 2012.”

The vaccine was manufactured by Indian Immunologicals Ltd (IIL), a unit of the National Dairy Development Board (NDDB), and it produces shots for rabies, hepatitis B, measles, etc.

“One infant was vaccinated by a nurse in the field while three others were administered vaccine at Rambag Hospital in Adipur town,” a senior health department official in Kutch said.

The post-mortem had been conducted and the reports had been sent to the state health department, he added.

Women Health

Women's Waistline

Women's waistline can affect lifeline (The Tribune: 09/02/2011)

Unable to conceive, exasperated Pooja begs for IVF (assisted fertility) from her gynaecologist. "All you need is to shed 10 kg weight, and within one year you will have the cries of a newborn in your house", the doctor counselled with a smile. It is unbelievable but true! In India, 15-20 per cent of the population is obese. Those affected face an increased risk of problems like infertility besides diabetes, hypertension, heart disease, gallbladder stones, knee joint problems, neck and lower back pain, respiratory ailments and cancer. They also suffer from low self-esteem and lack of confidence, depression and binge eating disorder, miscarriage and difficulties in performing assisted reproduction.

Women-centric problems

Studies have proved that obesity hampers the fulfilment of sex and reproductive life. Such women suffer from an irregular menstrual cycle from early age. It has been observed that a high percentage of babies die during the first month of their birth if they have obese mothers.

Obesity is associated with an increased risk of death in both the baby and the mother. It raises the risk of maternal high blood pressure by 10 times.

Excessive weight in pregnant moms is associated with a higher risk of hypertension, gestational diabetes, urinary infection, Cesarean section delivery and toxemia.

Infants of those women who are obese during pregnancy are more likely to be high birth-weight, which means a higher rate of Cesarean section delivery.

Obesity in pregnancy carries an increased risk of birth defects such as neural tube disorders.

Female obese patients are 13 times more likely to have overdue births, longer labours, induced labour and blood loss.

Obesity-related health problems occurring after childbirth include a higher risk of wound and endometrial infection, and urinary tract infection. Weight loss is effective in improving menstrual regularity, ovulation, hormonal profiles and pregnancy rates.

What is obesity?

Obesity refers to belly fat around the waist, surrounding the internal organs, which is out of proportion to the total body fat. Indians are more susceptible to this type of obesity. Belly fat is a proven independent risk factor for the medical conditions listed above. BMI higher than 30 also puts you in the 'Mottapa' group.

When caloric intake exceeds the calories burned, extra calories get deposited as fat, especially around the waist. A study has revealed that 25 per cent of the children above eight years of age and 19 per cent in the age group of seven years and below are obese. These children will grow into unhealthy adults.

Tips to lose weight and abdominal fat

1. Reduce your daily caloric intake by 500 kilo-calories. Don't overfeed children.
2. Eat frequent, smaller meals but avoid large meals, skipping meals and fasting.
3. Make breakfast one of the most important meals of your day.
4. Avoid ghee, ice cream, chocolates, sweets, deep-fried foods, pizza, burgers, bakery products, biscuits and aerated drinks. Add brown rice, whole wheat, ragi, jowar, bajra, vegetables, oats, sprouts, salads, dals.
5. Foods rich in omega-3 fatty acids help manage sugar and cholesterol levels in blood.
6. Nuts are good in small quantities, so limit their consumption.
7. Eat more fruits and vegetables. Take five servings daily.
8. Drink at least 10 to 12 glasses of water daily.
9. Make exercise an integral part of your weight loss programme. Walking is one of the best, easily accessible and low-cost options.
- 10 Aim for a reduction of about half a kg per week, which is scientific.

Women Health

How women can stay healthy (The Times of India: 9.3.2011)

The underlying principle of healthy living is to know your body and be aware of any changes. Women, in particular, should remain alert and watch out for symptoms of different ailments

For healthy living, know your body, cater to its demands, and be aware of any changes. For women, it is all the more important as their bodies go through many changes during their lifetime. Two most common female cancers are on the rise in India.

Breast Cancer:

Examine yourself and notify any changes to your doctor at the earliest. From 40 years onwards, have mammograms (an x-ray of the breast) once every two years.

Cervical cancer:

It can be detected early by having a PAP smear test. This test can be done once every two years from age 21 to 30 and then once every three years if three consecutive tests are negative. Some women with certain risk factors need more frequent screening. Both these cancers can be detected early through tests and treatment can be effective. Remember, being on the lookout for early signs of cancer is important.

Bone Health

This is a major issue of concern among women, which is commonly ignored. Women are most vulnerable during two phases of their life: during pregnancy and lactation and after menopause. Regular physical activity at all ages, particularly weightbearing activity, is recommended. Take calcium. Milk, green leafy vegetables, etc, should be a part of the daily diet. Exposure to sunlight, which helps in absorption of calcium. Smoking and excessive alcohol reduce BMD and hence should be avoided.

Heart Disease

Cardiovascular disease is the leading killer for women over 45 years. Typical symptoms are often ignored and passed off as acidity, anxiety, spondylosis or menopausal symptoms. Some other risk factors particularly important for women:

Yoga and physical Fitness

Moderate Exercise

Moderate Exercise Improves Memory in Older People (Medical News Today: 2.2.2011)

Just one year of moderate physical exercise in late adulthood can reverse shrinkage of the brain's hippocampus and improve spatial memory, said US researchers in a new study, funded through the National Institute on Aging.

Researchers at the University of Pittsburgh, University of Illinois, Rice University, and Ohio State University, wrote about their project, considered to be the first of its kind, in a Proceedings of the National Academy of Sciences, PNAS paper that was published ahead of print on 31 January.

The hippocampus is a significant part of the brain in humans and other mammals. It belongs to the limbic system and sits deep inside brain tissue in the medial temporal lobe where it plays an important role in long term and other types of memory formation and spatial navigation.

As we enter late adulthood, this part of the brain starts to shrink, leading to loss of memory and increased risk of dementia.

Studies have shown that adults who are fitter tend to have larger medial temporal lobes, and that physical activity increases nutritive blood supply to the hippocampus, but this is the first study to look at the effect of aerobic exercise on the size of the hippocampus in later life.

For the randomized controlled trial, lead author Dr Kirk Erickson, professor of psychology at the University of Pittsburgh, and colleagues, recruited 120 sedentary older adults without dementia and randomized them to one of two groups.

The first group walked around a track for 40 minutes a day for three days a week, and the second group just did stretching and toning exercises.

They did this for a year, during which they also underwent MRI brain scans, spatial memory tests, and gave blood samples, at the beginning, middle and end of the period.

The researchers found that "aerobic exercise training increases the size of the anterior hippocampus, leading to improvements in spatial memory".

More specifically, the results showed that:

Exercise training increased the volume of the hippocampus by 2.12 per cent on the left side and 1.97 per cent on the right side.

This compared to a 1.40 and 1.43 per cent reduction in those same brain regions respectively in the stretching and toning only group (the controls).

Increased hippocampal volume was linked to greater blood levels of brain-derived neurotrophic factor (BDNF), a biomarker for brain health that is involved in learning and memory.

Although hippocampal volume declined in the control group, the decline was less marked among those members whose fitness levels were higher at the start of the study, suggesting that fitness protects against volume loss.

However, the size of the caudate nucleus (also important for memory) and thalamus (important for processing sensory and spatial information) appeared unaffected by the intervention.

The researchers concluded that:

"These theoretically important findings indicate that aerobic exercise training is effective at reversing hippocampal volume loss in late adulthood, which is accompanied by improved memory function."

Erickson said we tend to accept it as inevitable that our hippocampus will shrink later in life:

"But we've shown that even moderate exercise for one year can increase the size of that structure. The brain at that stage remains modifiable," he said in a statement.

Senior author Dr Art Kramer, director of the Beckman Institute at the University of Illinois, said the findings were particularly interesting because they show even modest exercise can make a substantial difference to memory and brain health in sedentary older people:

"Such improvements have important implications for the health of our citizens and the expanding population of older adults worldwide," said Kramer.

Yoga

Orthopedic Surgeons Warn That Yoga can Harm Your Knees (Med India: 4.2.2011)

Orthopedic surgeons have warned regular yoga followers that certain exercises can cause wear and tear of bone joints forcing them to undergo surgeries.

According to Dr. Ashok Rajgopal, chairman of the Bone and Joint Institute in Medanta- The Medcity, extreme stretching exercises can cause severe stress on joints, leading to arthritis. He claims to have performed knee replacement surgery on several leading yoga gurus. His warning is a serious challenge to all the propagators of yoga who believe that yoga can ward off the effects of aging.

Dr. Rajgopal has explained that every time when a person performs deep knee bends he is actually dislocating the knee joints and this puts pressure on them. He has observed this among yogic gurus when they perform 'vajrasana'. Dr. Rajgopal says, "He has witnessed a higher incidence of bone ailments and joint ailments among yoga followers."

Chinese Yoga

Mat race? Qigong slowly but surely catching up with yoga (Times of India: 09/02/2011)

Wellington: Just as yoga became popular when the Beatles came to India, a 5,000-year-old Chinese energy cultivation system is poised to become the new kid on the block among rat racers hungry for a more serene form of fitness.

Sometimes called Chinese yoga, Qigong is a mind-body practice that melds slow graceful movements, mental focus and deep abdominal breathing to boost and balance a person's vital energy, or 'qi'.

"As China becomes more of a player in the world, Chinese practice is becoming more mainstream," Stuff.co.nz quoted Matthew Cohen, creator of the Tai Chi & Qi Gong Basics DVD, as saying. Cohen, an instructor at Sacred Energy Arts in Santa Monica, California, said unlike in India, yoga in the west has come to favour the athletic at the expense of the meditative.

"The world is getting more crowded, cars and computers getting faster," he said. "Qigong is about going slower, so internally you create space," he added. Tom Rogers, president of the Qigong Institute, a non-profit educational organisation, said Qigong is the precursor to all Chinese energy practices. "Tai chi is the most well known moving form of Qigong. Kung fu is also a form of Qigong," Rogers said from his home in Los Altos, California.

The slow, spiral exercises of Qigong, such as rolling the ball or wave hands in the cloud, require no equipment, can be done anywhere, and are easy to learn. "I call it getting an MBA: movement, breathing and awareness," said Rogers. "One is adjusting your posture so energy flow is better; two is slow, deep, abdominal breathing; three is awareness, or trying to get thoughts out of your head," he added.

Jessica Matthews, an exercise physiologist with the American Council on Exercise, said research trials have reported statistically significant decreases in the incidence of stroke, decreased blood pressure, increase in bone density and improved effectiveness of cancer therapy among practitioners.

Life Style

High uric acid? First change your lifestyle (The Tribune: 09/02/2011)

During the normal metabolic functioning of the body, a certain type of natural substances called purine, present in all the body cells and virtually in all foods, get converted into uric acid. It is

healthy and normal for the uric acid to be formed in the body because it serves as an anti-oxidant and helps prevent damage to our blood vessels lining. Under varied conditions when the concentration of uric acid becomes high, resulting in its accumulation in the body, it may lead to many health problems which include gouty arthritis and urinary stones.

Since long time, rise in uric acid has been associated with diet. Many centuries ago, Acharya Charaka had counted the dietary indiscretion, faulty lifestyle and to an extent genetic predisposition among the major reasons for the emergence of 'vata rakta' or the high uric acid-like-conditions in the body. Health scientists today conclusively show that improper metabolism of purine, whether dietary or originating in the process of normal physiological wear and tear, is the basic reason for the formation of high uric acid.

Ancient ayurvedic texts mention the excessive intake of food articles which are acidic, bitter and salty in taste and hot and unctuous in effect among the dietary reasons for the uric acid build-up. Similarly, high intake of non-vegetarian food consisting of red meat and poultry products and in certain cases even vegetarian diet of peas, lentils and beans can lead to this problem. Regularly taking such eatables as are incompatible to each other also do not go well with the body. Regular use of alcohol, especially beer and its accessory diet rich in protein, additionally contribute to raising uric acid levels. That is why it has also been described as a disease occurring among the opulent sections of society.

Men tend to be more susceptible to the rise of uric acid at an earlier age, and studies show that in women it is mostly reported at menopause. Not only this, the symptoms related to high uric acid are more severe and pronounced in men, and a clear understanding of the risk factors which trigger or precipitate an attack of gout gives an insight to manage the problem appropriately. Since in most cases the set-off factor is the wrong diet, for a person suffering from the problem of high uric acid, it becomes imperative to adopt a disciplinary approach towards food as in the long run self-care proves to be more helpful than any other medication. First of all, restrict the intake of non-vegetarian food, especially red meat, fish and eggs. There is a misconception that meat has a monopoly over protein. It is a well-acknowledged fact that plant-based proteins are more body friendly and are better metabolized. Limited intake of tea or coffee is not a problem, but alcohol intake not only interferes with the natural excretion of uric acid but is also accompanied by such food as directly leads to uric acid build-up.

On the vegetarian side, taking low-fat milk products and diminishing the use of cheese help reduce high uric acid. Vegetables with an exception of mushroom, brinjal, spinach, peas and dried beans, and cereals such as brown rice and whole wheat 'atta' are on the recommended list. Lentils are generally high in purine contents and these can be taken only in polished form. Similarly, red beans and black grams also do not find a place in the uric acid lowering diet plan. Adequate water intake activates the kidneys to excrete uric acid. During fasting one should be careful to consume sufficient quantity of liquids before or afterwards. Obesity is also a risk factor for gout, so adequate exercise and following a proper daily schedule is always helpful.

To facilitate the body maintain normal metabolic activity, two gm of the Triphala powder can be taken mixed with honey intermittently two or three times a week. Similarly, taking two gm powder of Giloy, Gorakhmundi and Harad crushed in equal parts everyday lowers the increased

uric acid. Other classical ayurvedic medicines like Kaishore Guggul, Amrutadi Guggul and Brihad Manjishthadi Qwath, too, give very good results in the cases of high uric acid and gout, but these should be used only under the guidance of an expert Physician.

Yoga

Yoga at work (The Times of India: 11.2.2011)

Sitting at your workstation for hours on end means loss of circulation to the lower body. Do these simple yoga stretches to stay active and fresh at work, says yoga guru Surakshit Goswami

A few simple yoga stretches to keep you fresh despite the long working hours

Strengthening legs

Sitting at your workstation for hours on end means loss of circulation to the lower body. Periodically — ideally every two hours — straighten your legs and only move your feet forward and backward. Feel the tension in your calves. Rotate ankles, clockwise and anticlockwise. Flex and stretch your toes too. Benefits: It improves blood circulation in legs, relieves stiffness in calves and ankles and prevents muscle fatigue.

Strengthening arms

Take your fingers off the keyboard every now and then. With your full strength, clench your hands into fists and then unclench. After some time, rotate your fists in both directions. Next, outstretch your arms to shoulder level, palms facing upwards. Keep arms fully flexed and bend them at the elbows to bring them towards your shoulders. Return them to original position with the same strength. After doing this for a while, keep your hands on your shoulders and rotate elbows clockwise and anticlockwise. Benefits: These exercises remove weakness in the arms and also alleviate joint pain. They are very helpful in curing stiff shoulders and necks.

Strengthening neck muscles

If you are the kind to stick your neck out for a cause, well, you better have some strength in that neck of yours! Step 1: Look up, bend your head back. Then, bend your head down and look down. Move only your neck, breathing normally. Do this three to five times. Step 2: Now turn your face as far right as possible, then left. Remember, do not move the shoulders. Repeat this three times. Step 3: Next, bend your neck to the right, such that your ear touches your shoulder. Repeat for the left side. Do this three times. Step 4: Rotate neck in clockwise and anticlockwise directions, alternately. Step 5: Interlock your fingers, place your hands behind your neck with the palms encircling the neck. Exert force with the neck and hands in opposite directions. The hands should force the neck to the front, while the neck should force the hands backwards.

Yoga

Yoga is not just technique, but a lifestyle, says expert (New Kerala; 14.2.2011)

Lamenting that today teaching and practising of yoga has just been confined to techniques, eminent yoga scholar Pranav Pandya today called for disciplining oneself at the mental and spiritual level to benefit from the ancient Indian system.

Dr Pandya, who is also trained in modern system of medicine, wanted more stress on meditation, which he said was a step towards achieving spiritual well being.

"Yoga will be effective when techniques and lifestyle of a yogi--how he talks, how he walks, how he behaves, how and what he eats--are followed," said the Yoga scholar delivering the keynote address at the inaugural function of the National Yoga Week at the Moraji Desai Institute of Yoga here this evening.

Bhagwat Geeta says equilibrium is yoga, which means that there should not be excess of any action, neither too much attachment, nor jealousy, nor too much of physical exertion, he said.

The main obstacle in the way of wellness today was that there was too much of perversion in minds, he said.

"We are smiling today but that is an air hostess's smile, not coming from one's inner self," Dr Pandya said.

The Yoga expert slammed the modern methods of achieving fitness that plays emphasis only on burning calories.

Eating a lot and then burning calories in rigorous workouts was not going to do any good to one's health.

He advocated the middlepath, saying eating in moderation and exercising, restrain in thought and action were the best guarantee against escaping miseries of life.

Earlier, speaking on the occasion, Joint secretary in the Ministry of Health DD Sharma said yoga destresses the stress and eases the disease and brings inner vigour.

He said experts of modern science were also realising the role of yoga in ensuring both mental and physical health, and added that the traditional systems of Indian medicine were earning global recognition for their effectiveness and affordability.

Mr Sharma said his Ministry wanted to bring yoga teaching in the mainstream of medical education, and it was launching a scheme in which yoga centres would be opened in 100 districts.

A large number of yoga experts and scholars across the country were participating in the yoga week that would last till February 19.

Yoga

Yoga can help depression patients (The Hindustan Times: 18.2.2011)

I: An hour of yoga three times a week boosts the mood and immunity of people being treated for depression, shows pathbreaking research at Bangalore's National Institute of Mental Health and Neuro Sciences (NIMHANS).

In India, one in four families has at least one member with a behavioural or mental disorder, which affects one in 15 (6 to 7%) people. About 1-2% of the population suffers from mental illness severe enough to need psychiatric treatment, with 20% of these patients having more than one disorder.

“Preliminary findings of our three-year study show a combination of yoga and meditation lowered depression in patients, as supposed to meditation alone,” said Dr Naveen GH, a psychiatrist and senior research scholar, Advanced Centre for Yoga, NIMHANS. Changes in mood were assessed using the Hamilton Depression Rating Scale, the standard multiple-choice questionnaire psychiatrists use to rate severity of depression.

Apart from the symptoms, the project is also tracking neuroplastic changes in the patients' brain. “MRI (magnetic resonance imaging) and MRS (MR Spectroscopy) are being used to measure volume and chemical changes that improve signaling in the brain in the yoga group,” said Dr Naveen.

A parallel programme has also shown that relaxation techniques and yoga postures (asanas) help caregivers of schizophrenics cope with the stress of looking after a mentally ill patient 24x7. “A two-year study (2007-09) of training caregivers of patients admitted for treating schizophrenia showed that doing yoga for an hour three times a week lowered stress.

Now we have a project for caregivers who live with schizophrenics who are being treated while living at home,” said Sumathi Vidyendaran, senior research fellow leading the study.

Healthy Lifestyle

Better Patient Outcomes With Healthy Lifestyle, Positive Attitude: Research (Med India: 18.2.2011)

Joint replacement patients who improve their lifestyle and maintain a positive mindset before surgery are more likely to have better functional outcomes than those who do not, according to

research presented at the 2011 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS). Multiple studies found that patients who smoke, misuse alcohol, fail to control blood sugar levels or simply have a poor attitude prior to undergoing total hip or knee replacement (THR/TKR) surgery can, in some cases, double their odds of post-operative complications.

Data were presented in three separate studies and one instructional course by researchers from Stanford University, the University of Alabama, the Orthopedic Institute in Miami and the University of Massachusetts.

"Some known risk factors for complications like advanced age and pre-existing heart or lung conditions are difficult or impossible to modify prior to surgery," said Jasvinder Singh, MD, associate professor of medicine at the University of Alabama in Birmingham. "In contrast, smoking, alcohol abuse, blood sugar levels and mental attitude are completely manageable by the patients themselves, which makes them an excellent target for prevention and intervention programs that are likely to improve outcomes."

Smoking (now or ever) raises patient risks (Embargo: February 17) Dr. Singh, who also is a staff physician at the Birmingham VA (Veterans' Affairs) Medical Center, led a team of researchers who examined whether current or prior tobacco use had an effect on post-operative recovery in veterans undergoing elective THR or TKR.

Meditation

For Harmonizing Body and Mind, Meditation Beats Dance (Medical News Today: 28.2.2011)

The body is a dancer's instrument, but is it attuned to the mind? A new study from the University of California, Berkeley, suggests that professional ballet and modern dancers are not as emotionally in sync with their bodies as are people who regularly practice meditation.

UC Berkeley researchers tracked how closely the emotions of seasoned meditators and professional dancers followed bodily changes such as breathing and heart rates.

They found that dancers who devote enormous time and effort to developing awareness of and precise control over their muscles - a theme coincidentally raised in the new ballet movie "Black Swan" - do not have a stronger mind-body connection than do most other people.

By contrast, veteran practitioners of Vipassana or mindfulness meditation - a technique focused on observing breathing, heartbeat, thoughts and feelings without judgment - showed the closest mind-body bond, according to the study recently published in the journal *Emotion*.

"We all talk about our emotions as if they are intimately connected to our bodies - such as the 'heartache of sadness' and 'bursting a blood vessel' in anger," said Robert Levenson, a UC

Berkeley psychology professor and senior author of the study. "We sought to precisely measure how close that connection was, and found it was stronger for meditators."

The results offer new clues in the mystery of the mind-body connection. Previous studies have linked the dissociation of mind and body to various medical and psychiatric diseases.

"Ever have the experience of getting home from work and realizing you have a blistering headache?" said Jocelyn Sze, a doctoral student in clinical science at UC Berkeley and the lead author of the study. "The headache probably built up throughout the day, but you might have been intentionally ignoring it and convincing yourself that you felt fine so that you could get through the demands of the day."

Increasingly, mindfulness meditation is being used to treat physical and psychological problems, researchers point out. "We believe that some of these health benefits derive from meditation's capacity to increase the association between mind and body in emotion," Levenson said.

For the experiment, the researchers recruited volunteers from meditation and dance centers around the San Francisco Bay Area and via Craigslist. The study sample consisted of 21 dancers with at least two years of training in modern dance or ballet and 21 seasoned meditators with at least two years of Vipassana practice. A third "control group" was made up of 21 moderately active adults with no training in dance, meditation, Pilates or professional sports.

Participants, who ranged in age from 18 to 40, were wired with electrodes to measure their bodily responses while they watched emotionally charged scenes from movies and used a rating dial to indicate how they were feeling.

Although all participants reported similar emotional reactions to the film clips, meditators showed stronger correlations between the emotions they reported feeling and the speed of their heartbeats. Surprisingly, the differences between dancers and the control group were minimal.

Researchers theorize that dancers learn to shift focus between time, music, space, and muscles and achieve heightened awareness of their muscle tone, body alignment and posture.

"These are all very helpful for becoming a better dancer, but they do not tighten the links between mind and body in emotion," Levenson said.

By contrast, meditators practice attending to "visceral" body sensations, which makes them more attuned to internal organs such as the heart. "These types of visceral sensations are a primary focus of Vipassana meditation, which is typically done sitting still and paying attention to internal sensations," Sze said.

Laughter

Laughter is the Best Medicine (Med India: 11.3.2011)

Researchers from the University of Leeds School of Healthcare have found that laughter is likely to speed up recovery more quickly than any hi-tech treatment like ultrasound. Laughter increases the blood circulation and helps speed recovery.

In UK about 500,000 people suffer from recurrent leg ulcers. Leg ulcers are common in those with varicose veins or mobility problems. Obesity often aggravates this situation. Studies looked at a 5-year record of patients with leg ulcers and established that a good laugh stimulates the diaphragm which plays a vital role in blood circulation. On the contrary, as suggested by previous studies, expensive ultrasound therapy does not seem to help much. Complicated leg ulcers can take about 6-months or more to heal. Researchers found that ultrasound therapy did not speed up the healing process but added an average of 200pounds to the patient's bill.

The research, published by the British Medical Journal, said, "Forget technology. The best prescription for patients with venous leg ulcers is good quality nursing care and the occasional belly laugh!"

Longevity

Key to Long Life - "The Longevity Project" (Med India: 15.3.2011)

Need a good advice for long life? It's been said for a long time that looking at the positive side of life and not working too hard are the factors that holds the key for longevity, but a recent study has challenged those beliefs. "It's surprising just how often common assumptions - by both scientists and the media - are wrong," said Howard S. Friedman, distinguished professor of psychology who led the 20-year study.

"Probably our most amazing finding was that personality characteristics and social relations from childhood can predict one's risk of dying decades later," Friedman concluded.

Friedman and Leslie R. Martin, a 1996 UCR alumna (Ph.D.) and staff researchers, examined, refined and supplemented data gathered by the late Stanford University psychologist Louis Terman and subsequent researchers on more than 1,500 bright children who were about 10 years old when they were first studied in 1921.

The study followed the children through their lives, collecting information that included family histories and relationships, teacher and parent ratings of personality, hobbies, pet ownership, job success, education levels, military service and numerous other details.

"When we started, we were frustrated with the state of research about individual differences, stress, health and longevity," Friedman recalled. "It was clear that some people were more prone

to disease, took longer to recover, or died sooner, while others of the same age were able to thrive. All sorts of explanations were being proposed - anxiety, lack of exercise, nerve-racking careers, risk-taking, lack of religion, unsociability, disintegrating social groups, pessimism, poor access to medical care, and Type A behavior patterns."

Exercise

Exercise after heart surgery (The Tribune: 16.3.2011)

IN today's day and age heart surgeries are commonly performed as heart ailments have increased manifold due to sedentary lifestyles. Patients undergoing surgery are often in a fix regarding the type of aerobic activity, stretching/ strengthening exercises, progression in physical activity to be undertaken. Lack of counseling, generally bring in fears regarding restriction of day-to-day activities. This results in cutting down physical and social activities making individuals vulnerable to depression. The fact of the matter is that post angioplasty/by-pass surgery blood circulation to heart is back to normal and is even better than an individual who is suffering from high blood pressure, diabetes and cardiovascular disease.

It is a well-known fact that lack of physical activity is an important factor leading to heart disease. Heart surgery does not imply being permanently free from heart disease forever. Physical activity post surgery therefore is very important. By sixth week after surgery most people should return to work, drive, travel and even able to walk two to three miles per hour.

As the chest bone (Sternum) is opened, it takes about 12 weeks to heal. Hence, it is advisable not to lift heavy objects and undertake vigorous activities during this period.

Prolonged bed rest causes weakness/stiffness of muscles of the body. Most individuals usually first walk (which is only an aerobic activity) thus undertaking only a part of mandatory exercise regimen. The other areas of rehabilitation namely stretching to improve flexibility and strengthening to improve power, are neglected because of the fear of reoccurrence of heart problem.

Prior to heart surgery there are significant blockages in the coronary arteries. If preventive measures are not taken, the causes of blockages could recur. In order to reduce the risk factors for coronary artery disease, smoking, high blood pressure, diabetes, high cholesterol and a sedentary lifestyle should be avoided.

The main objective of physical activity after surgery is to enhance cardiac function, reduce stiffness, enhance muscle strength and improve overall well being.

z Initiate exercises for 10 minutes and increase it gradually to 30 minutes five to six days a week. Start by exercising once a day and gradually increase to twice a day.

z For first three months after surgery, undertaking light house work but avoid pushing and lifting heavy objects.

z Stop exercises immediately in case of chest pain or tightness, palpitation, breathlessness, dizziness etc.

Walking is the most important exercise after heart surgery. It improves circulation, muscle tone and strength. On the first day after discharge, one should walk to a comfortable distance. Every day, walking time can be increased from one to two minutes. Once one can safely walk for a mile, then gradually speed can be increased. Do not increase the distance and speed simultaneously. It is important to walk at a speed where one can simultaneously talk. In winters, walking during afternoons and in summer walking during the cool part of the day is recommended.

Patient undergoing coronary surgery requires minimum level of muscular strength to perform activities of daily living but they often lack the confidence or strength. The resistance exercises are similar to exercises for healthy adult except the intensity and progression of training volume is reduced. Strength exercises with stretch band/tube are safe and effective as one can derive the requisite smooth resistance without exerting undue strain on cardiac functions.

EXERCISES

Upper body strengthening

Finger Extension: Place a rubber band around all five fingertips. Spread fingers 25 times. Repeat 3 times. If resistance is not enough, add a second rubber band of greater thickness, which will provide more resistance.

Ball Squeeze: Place rubber ball in palm of hand, squeeze 25 times and repeat three times a day.

Wrist Curls: Grasp a stretch band in hand with palms facing upward. Begin by curling the band up-wards at the wrist and then slowly returning back. Repeat 10 times.

Bicep curls: Loop the band under foot and hold the ends with one hand. Curl the band upwards by bending at the elbow joint. A stretch shall be felt at the bicep muscle. Repeat 10 times.

ROWING: While sitting, loop band around one foot. Hold one end in each hand. Pull the band towards body in a rowing action. Repeat 10 times.

Lower body strengthening

Calf strengthening-While sitting loop a band around sole of the foot and hold one end in each hand. Pull the sole towards the body. A stretch shall be felt at the calf area. Stay for a count of 10 and repeat 10 times.

Seven Chakras

Seven Chakras (The Times of India: 18.3.2011)

The Muladhar Chakra plays an important role in facilitating release of faecal matter and urine, ejaculation and delivery of babies in all living beings, says yoga guru Surakshit Goswami

There are said to be 72,000 naadis (arteries and veins) that carry the life force in our body. Idaa, Pingla and Sushumna are three important naadis, of which Sushumna naadi, or the central micro vessel, is of prime importance. It originates from the kandh sthan (area below the navel) and goes upward from the base of the spinal cord. Idaa and Pingla pass by its left and right side, respectively. Junctions or points where naadis meet are called pran or centre of life force. There are seven chakras in the human body although some people are said to have experienced as many as eight chakras. The seven chakras are Muladhar Svadhisthan Manipoor Anaahat Vishudhha Ajnana Sahasrar. These chakras are like lotus buds that have not blossomed. A yogi can make them blossom, using rigorous Chakra Sadhna. Although a yogi acquires extraordinary powers, he should not be distracted by these achievements. Undeterred, he should continue with his penance till he raises his kundalini power and attains liberation.

Muladhar Chakra:

Known as the lowest chakra of energy or Brahma Chakra It is situated in Sushumna Naadi at the base of the spinal cord where the kundalini lies in the dormant stage. It controls and regulates reproductive organs. This chakra is related to element earth and the Annamaya Kosh. In all living beings, this chakra plays an important role in releasing Apan Vaayu and facilitating release of faecal matter and urine, ejaculation and delivery of babies. Muladhar Chakra is also related to a person's subconscious mind from where the power of kundalini starts its journey towards Sahasrar Chakra. With the regular practice of Chakra Sadhna, you can break open the Muladhar Chakra. When the kundalini shakti awakens, this power moves upwards from Sushumna Marg to Sahasrar Chakra where it interacts with consciousness. This process is called awakening of the kundalini power.

Inner Voice

Lesson from Nature (Hindustan Times: 18.3.2011)

We are told swans can sift water from milk. This may not be true, but the belief is an allusion to the natural phenomenon that birds have innate intuitive knowledge about the art of living together. Here is how and why ?

When swans traverse the sky for going from one place to another, they fly in a formation of >, that is the English alphabet 'V'. Have you ever tried to know as to why do they fly in this orderly configuration?

Ornithologists say when the swan that leads the flock flutters its wing in a bid to fly, it produces a lot of energy.

This energy helps the swan following him and the ones behind, fly with ease sans much effort. In this process, each bird gets energy from the bird ahead of him, and the flight of the whole flock continues for hundreds of miles. When the bird leading the flock gets tired, he comes at the rear, and another swan takes over the charge to lead the aerial navigation. And this process continues.

What do we learn from this natural phenomenon? A unique example of co-existence, one hardly sees among human beings. We learn that there are wonderful things in nature which man needs to understand and imbibe. We learn that animals live and move in herds, that birds of a feather flock together, that there is bonding among the animals and birds of the same species, that there exists a fraternity in the wild which teaches us the art of living together.

Lord Krishna propounds the philosophy of “loksamgraha“ that stands for the unity of the world. If the world is not to sink into a condition of physical misery and moral degradation, moral ethics must control social action.

Only then one can hope to live happily and successfully.

Workout

Continue to Work if you wish to be Healthy (Med India: 31.3.2011)

Physicians from Australia and New Zealand recommend that if one wishes to remain healthy, they should continue to work and be employed.

A long break from work due to unemployment or disability was found to have a bad influence on health. Contributing professionally brought a sense of purpose to people's lives, which is important in promoting physical and mental well-being.

Experts are also of the opinion that unemployment makes people socially isolated, which is not good for emotional well-being.