

## **Adolescent Health**

### **Adolescent BMI**

#### **Adolescent BMI may predict later obesity-related disease (New Kerala: 8.4.2011)**

Researchers have found that an elevated body mass index (BMI) at age 17, even one within what is considered normal, may be predictive of coronary heart disease in adulthood.

A large cohort study, led by Amir Tirosh (Sheba Tel-Hashomer Hospital's Talpiot program and Brigham and Women's Hospital and Harvard Medical School) and Iris Shai and Assaf Rudich from Ben-Gurion University of the Negev, followed 37,000 teenagers for 17 years and found that an elevated, yet normal range Body Mass Index (BMI) constitutes a substantial risk factor for obesity-related disorders in young adults (age 30-40).

The study showed that elevated BMI in adolescence has distinctive relationships with type 2 diabetes and coronary heart disease in young adulthood.

Researchers showed that diabetes is influenced mainly by recent BMI and weight gain. However, for coronary heart disease, both elevated BMI in adolescence and recent BMI are independent risk factors.

The natural progression of coronary heart disease is probably the consequence of gradually increasing atherosclerosis during adolescence and early adulthood.

The study has been published in the New England Journal of Medicine.

## **Aging**

### **Aging**

#### **Age-related problems develop faster in middle age adults with diabetes (New Kerala: 1.4.2011)**

A new study has found that patients in their 50s with diabetes have nearly double the risk for developing "geriatric" ailment.

According to experts from the University of Michigan Health System and VA Ann Arbor Healthcare System, middle-aged adults with diabetes are much more likely to develop age-related conditions than their counterparts who don't have diabetes.

They found that adults between 51 and 70 with diabetes developed age-related ailments like cognitive impairment, incontinence, falls, dizziness, vision impairment and pain at a faster rate than those without diabetes.

"Our findings suggest that middle age adults with diabetes start to accumulate these age-related problems," said lead author Christine Cigolle.

"Because diabetes affects multiple organ systems, it has the potential to contribute significantly to the development of a number of issues that we associate with aging," she added.

The research was based on nationally representative data from the University of Michigan Health and Retirement Study.

The study has been published in the March issue of the Journal of General Internal Medicine.

## **Elderly lonely**

### **Elderly lonely & neglected: Study (The Times of India: 13.4.2011)**

#### **Lack of joint family system main reason**

New Delhi: The breakdown of the joint family system is not only making the elderly in the capital lonely but is also emerging as one of the prime reasons for violation of their basic human rights. Nearly 78% of the elderly reportedly living in inhuman conditions were either living alone or in nuclear or small families. This was revealed by a study on human rights of older persons in the capital and NCR by Agewell Foundation.

The survey carried out on 7,700 elderly persons, including 4,200 women and 3,500 men from Delhi and the NCR, is part of a nationwide study by the NGO, which takes into account a sample size of 50,000 people.

The chapter on Delhi talks about how the breakdown of joint families has affected the elderly. Emergence of nuclear families was found to be the main reason for violation of human rights of older persons. According to the study, 78.1% of the elderly persons reportedly living in abysmal conditions were either staying alone or in nuclear or small families.

“Lack of awareness about human rights among the aged is one of the major reasons for the ever-increasing cases of violation of the rights of the elderly. The study reveals that in the NCR about three-fourth of the respondents had never heard of human rights of the elderly. Only 24.3% of the elderly persons were aware of their basic human rights,” the report says. Violation of human rights is seen more among older men than women. About 69% of the older persons — 78.8% of the men and 60.8% of the women — agreed that they went through a critical phase in their lives and had to dwell in abject conditions due to old age.

Nearly 885 out of the 7700 respondents said they were not getting proper food in old age, while about 18% were not getting medicines and did not have access to proper healthcare.

Two-thirds of the elderly persons said they were not getting due respect from their family. Only 34.2% of those surveyed said they were respected by their families. Among the respondents, 72.1% said they were discriminated against because of their age. About 75.6% of the men and 69.1% of the women accepted that they were humiliated because of old age.

“Popularity of nuclear family, lack of intergenerational interaction, less social interaction of older persons, age discrimination and non-existence of inclusive social security system in the country are among the most important reasons for the miserable condition of older persons in the NCR,” the study says. It observes that elderly persons in the age group of 60-70 years are more aggressive about protection of their human rights. Himanshu Rath from Agewell Foundation says the problem is compounded by the fact that preparation for old age is an alien concept in most families. “Inculcating awareness about the needs and rights of the elderly through curriculum of schoolchildren is the need of the hour. There is an urgent need to have a relook at all the policies for the elderly,” Rath added.

## THE UNCARED FOR

## COUNTRY

50,000 elderly persons, including 29,000 from rural and 21,000 from urban areas interviewed across 300 districts of 25 states and UTs. Of this, 23,100 were men and 26,900 women

75.5% living in inhuman conditions or going through some crisis live alone or in small or nuclear families

22,250 said they would like to live in a joint family

74.16% in urban areas live in nuclear or small families. In rural areas, nearly half (51.46%) living in joint families

12.9% said they were not getting proper food

15,588 said getting medicines and healthcare facilities big concern. URBAN: 33.09% said access to healthcare difficult RURAL: 26.6% complained about this

53.4% men and 41.4% women said they faced discrimination in employment, family matters, family functions and social-cultural activities 48.6% said they were not getting due respect or good treatment from family members and society (FINDINGS OF NATIONWIDE SURVEY ON HUMAN RIGHTS & ELDERLY)

## NCR

Over 7,700 elderly persons, including 4200 women, surveyed

Nuclear families main factor leading to abuse 78.1% of elderly living in inhuman conditions either alone or in nuclear/small families. Older men suffer more in comparison to older women

69% respondents — 78.8% men & 60.8% women — agreed they faced a crisis or lived in abject conditions due to age 885 out of 7,700 respondents said they did not get proper food Around 18% elderly did not get proper medicine and healthcare 66% said they did not get respect from family 72.1% said they were discriminated against because of age

## **Old Age Fitness**

### **OLD AGE FITNESS (the Tribune: 19.5.2011)**

The improvement of medical facilities in the last decade has ensured that there are lot more older adults in our society today than at any other time in our country's history. A look at India's demographic profile indicates that there will be an increase in the senior citizen population in the years to come. The increased longevity of our population will certainly drive the need for older adults to remain physically independent, which, in turn will allow them to extend their professional career and retain their financial independence. Parallel to this is the desire of seniors to maintain an active, high-quality lifestyle so that they can enjoy everything from recreational activities to necessary daily tasks. More and more senior members of our society are taking their fitness regime seriously and achieving alarming levels of personal fitness levels.

### **Too old to exercise?**

Once, a senior person asked Arnold Schwarzenegger: "Am I too old to exercise?" He turned around and remarked: " You are too old not too!".

How old is old?

In 1900, people were considered old in their 40s; just 40 years ago people seemed old in their 60s, but today thanks to the miracle of modern preventive medicine, many people feel sprightly and youthful at 80. My father is 75 and he plays three rounds of golf every week with his friend who is 84!

I like to tell my senior clients to ask themselves the question: 'How old would you think you were if you did not know how old you were?' In most cases, the disparity between the reality and the imagined age will give the answer about your fitness level. So, if you are only 50 and feel like you are 60, then you have work to do, old boy! On the other hand, I can give examples of many in my camp who can quite regularly out-run or out-row their children. Their fitness index is higher than their kids.

What are the changes that accompany the ageing process?

- \* Loss of muscle mass (sarcopenia).

- \* Deterioration of bone density (Osteopenia).

- \* Increase in basal metabolic rate (BMR) —the rate at which your body burns the calories that you consume in the form of food. The ageing process slows it down.

- \* Loss of flexibility or the ability to generate movement about a joint.

- \* Poor sense of stability and balance.

- \* The cardiovascular functions also slow down which means that the lungs and heart (extraction and delivery system) has to work harder and harder each year to pump blood and other nutrients to the muscles.

The good news is that all these processes can be arrested and even reversed. Let me warm your senior hearts by giving alongside some of the timings of Master athletes for a 100 metre dash.

### **Take care of the ticker**

The risk factors for coronary-artery disease increase as people get older but you can buck that trend by taking part in any cardiovascular exercise of your choice like cycling, walking, swimming or rowing for 30-45 minutes, 3-4 times a week. Just ensure that the pace of the activity is frenetic enough to bring about a mild breathlessness or elevated pulse rate. If you would like to rate running away from a grizzly as a (difficulty) level 10 activity, ensure that you are training at level 7, consistently.

Keep the bone density- pick up the weight!

Loss of bone density or osteopenia is a big curse of 21st century sedentary urban existence and this gets accentuated with old age. The best way to simulate the formation of bone tissue is to participate in resistance training. It is believed that one-tenth of the force that causes a fracture actually helps to develop bone density. Choose exercises that direct the force vectors through the hip and spine. The best exercises for developing bone density are squats, lunges and step-ups for the lower body and shoulder press or military press for the upper body. Choose weights that you can safely lift for 15 times without tiring and rest 1-2 minutes between sets.

Stretch that muscle

Muscles tend to get tight with age. This tightness affects our posture, which accounts for why some old people tend to exhibit poor postural forms. Vladimir Janda, a Czech rehabilitation specialist, describes a group of muscles in the body that universally show a tendency towards tightness with age. Some of these include the hamstrings, quadriceps, groin, calf and hips. Some typically common age-related symptoms of low back pain, neck pain and knee pain can easily be avoided with regular stretching and strengthening.

Do muscles shrink with age?

Yes, they do. For example, if one of your muscles consisted of 100 fibres when you were 30, the muscle would probably still contain 90-95 fibres 20 years later, but the fibre count would plummet to 50-55 when you become an octogenarian.

So what can you do about it?

Fortunately, there is a positive side to the story. People who participate in resistance training can arrest or even reverse the tendencies of their muscle fibres from shrinking. As an additional lolly, resistance training in older individuals seems to increase the number of small blood vessels around muscles by up to 15%, potentially increasing endurance capacity. Since the overall process of muscle loss picks up pace after the age of 50, strength training for people above the age of 50 is especially critical. Fortunately, it's never too late. Research demonstrates that even individuals over the age of 80 can fortify their muscles by participating in regular strength training workouts.

Prescription for senior fitness

- \* Stretch muscles 4-5 times a week. Yoga is a great stretching protocol.
- \* Participate in an aerobic intensive sport or alternately, aerobic activity three times a week. Swimming is the best form of exercise for the senior population.
- \* Train with resistance bands or weights 2-3 times a week.
- \* Drink lots of water before, during and after exercise.



- \* Allow yourself lots of rest between sets while training with weights.
- \* Warm up and cool down thoroughly. Older muscles need a longer warm-up period.
- \* Give yourself 1-2 days of complete rest in a week to aid recovery.

## THE 5 BEST SUPPLEMENTS TO PROTECT YOUR JOINTS FROM AGE-RELATED DEGENERATION

**Vitamin C:** Is vital for the formation of collagen, which is a protein forming the basis for connective tissue, such as tendons and intervertebral discs.

**Omega- 3 Oils:** Helps to inhibit the action of series 2 prostaglandins which cause joint and tissue inflammation and pain.

**Antioxidants:** There are a number of antioxidant nutrients that afford protection from free radical damage in the body, but Vitamin E and Selenium appear to be especially important

**Zinc:** Activates numerous enzyme systems in the body that process amino acids and is also required for collagen formation.

**Glucosamine sulphate and Chondroitin sulphate:** Glucosamine sulphate appears to promote the formation and repair of cartilage, while Chondroitin seems to promote cartilage water retention and elasticity.

## DO THE YOUNG RESPOND MORE EFFECTIVELY TO AEROBIC TRAINING? THAT'S JUST NOT TRUE!

In a study carried out in the University Of Florida, 10 sedentary old (aged 67) males and females and 11 sedentary young (aged 30) males and females completed a 16- week exercise programme. All subjects worked out three times per week on a treadmill and/or stair-climbing machine for around 20 to 40 minutes at approximately 60-80% of maximal heart rate.

At the end of 16 weeks, the young athletes had increased their maximal aerobic capacity by 12%. The oldies? Hold your breath: they enhanced their capacity by 14%.

## WHAT THE SCIENTISTS SAY

Recent research from scientific, medical and sports journals looks at the problems and prospects of senior fitness.

Fitness protects the ageing brain.....

The human brain gradually loses tissue from the third decade onwards leading to decline in cognitive (intellectual) performance. However, recent research has shown that aerobic fitness can arrest age-related deterioration in tissue densities in the brain. More importantly, the findings tend to indicate that the greatest benefits of aerobic conditioning accrue to the tissues that play a central role in causing clinical syndromes like Alzheimer's disease and schizophrenia.

.....and improves memory in mid-life.

A recent study in Britain established quite conclusively that 'uptake of physical exercise in young to middle adulthood benefits memory, an aspect of cognitive function likely to be important for conduct of activities of daily living during ageing and abandonment of this activity appears to result in its loss' - Social Science & Medicine 56(2003).

The writer, a Certified Strength and Conditional Specialist from the National Strength and Conditioning Association of America (CSCS), trained the Indian cricket team in 2003-4 and the Indian golf team in 2010

## **Alcohol Dependence**

### **Heavy drinking**

#### **Heavy drinking linked to lower coronary heart disease risk (New Kerala: 29.4.2011)**

A moderate or even a hazardous consumption of alcohol was associated with lower risk of coronary heart disease, according to a new study.

The study analysed the 12-month prevalence of coronary heart disease (CHD) in individuals according to their category of alcohol use.

The study used the 2001 National Epidemiologic Survey on Alcohol and Related Conditions study, which identified 16,147 abstinent individuals, 15,884 moderate consumers, 9,578 hazardous drinkers - defined as exceeding sex-specific weekly limits established by the World Health Organization, and 1,484 alcohol-dependent subjects

Diagnoses were generated using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV version.

After controlling for socio-demographic, psychiatric, and addictive risk factors, the study found that both moderate and hazardous drinking was associated with decreased odds of CHD when compared with abstinence, whereas odds of CHD were not significantly different between alcohol-dependent and abstinent participants.

Our study shows that alcohol may have cardio-protective effects not only in moderate drinkers, but also in individuals with patterns of use traditionally considered as hazardous, said the authors.

## **Alcohol**

### **Any amount of alcohol can give you cancer! (The Tribune: 4.5.2011)**

In a shocking new revelation, a new report from the Cancer Council has warned that any amount of alcohol could give you cancer, regardless of your drinking levels. According to the Cancer Council, alcoholic drinks and ethanol are carcinogenic to humans and there's no evidence that there's a safe consumption threshold to avoid cancer, reports news.com.au. There's convincing evidence that alcohol is a cause for cancer of the mouth, pharynx, larynx, oesophagus, bowel (in men) and breast (in women), the council said in a position statement. It's bad news for those justifying the occasional drink as a preventer of coronary heart disease. "The previously reported role of alcohol in reducing heart disease risk in light-to- moderate drinkers appears to have been overestimated," the council said.

## **Red wine**

### **Red wine and chocolate sharpen your mind: (The Asian Age 9.5.2011)**

Red wine and chocolate make for a deadly combination to keep your mind sharp and alert, a study suggests.

Polyphenols, plant chemicals abundant in dark chocolate and wines, dilate blood vessels, speeding the supply of blood to the brain.

This provides it with a rush of oxygen and sugars, making complex calculations easier and quicker.

Besides polyphenols are more effective in combination than alone, the Daily Mail reports.

The theory follows two Northumbria University studies into the effects of polyphenols on the mind. In the first, healthy adults were set a series of tests after taking a capsule packed with resveratrol, the "wonder ingredient" in red wine.

Scans showed a marked increase in blood flow to their brains after taking the supplement. Greater improvements may be seen in the elderly, said doctoral researcher Emma Wightman from Northumbria, because blood flow to the brain naturally decreases with age.

Unfortunately for wine lovers, the quantities of resveratrol used in the study would equate to drinking crates of the stuff.

But it is easy to get the same amounts from supplements sold in health food stores.

And with resveratrol credited with abilities from extending life to burning off junk food, Wightman says there is nothing to stop people from stocking up.

Between the ages of two and four, kids' lies are usually told to avoid punishment. Very young kids tend not to be good at lying.

Then, at around the age of four something changes, the book says.

## **Alcoholic drink**

**One alcoholic drink a day keeps dementia at bay (New Kerala: 24.5.2011)**

A study has found that older people who continue to drink a glass of alcohol everyday are less likely to develop dementia.

Scientists found that pensioners, 75 or over who like a pint of beer, glass of wine or a reviving tot, are helping to stave off senility.

They are 30 percent less likely to develop dementia and 40 percent less likely to suffer Alzheimer's than those who don't drink.

Some 3,200 older Germans attending GPs and free of dementia, were studied and checked 18 months and three years later.

"Some 217 met criteria for dementia during follow-up," the Daily Express quoted a research group spokesman as saying.

The beneficial statistics of drinking alcohol then emerged. It suggests light to moderate consumption is inversely related to dementia incidence.

"Elderly folk handle alcohol more responsibly than the young and may derive greater health benefits from moderate drinking," Dr Harvey Finkel, of Boston University, said about the findings.

"Age is not a reason for abstinence," he stated.

## **Alcohol**

**Most dieters unaware of alcohol containing as many calories as pure fat (world Newspapers: 24.5.2011)**

Dieters stick to salad instead of dessert to control their weight but barely resist themselves from a glass of alcohol that contains as many calories as pure fat, according to a new study.

The study conducted by UK alcohol awareness charity Drinkaware revealed that many dieters are unwittingly undoing all their good work by accompanying their meal with a favourite drink, reported the Daily Mail.

A glass of champagne contains 95 calories, the same as a slice of treacle tart. A glass of wine is the equivalent of a choc ice at 134 calories, and two Yorkshire puddings could take the place of two gin and tonics, claimed the study.

Drinkaware said almost half of consumers are trying to lose weight, yet they have no plans to reduce their drinking.

The charity, which surveyed 2,000 UK adults, found one in three intends to monitor their calorie intake over the next month. But only one in 10 is thinking about tracking the alcohol they drink.

Less than a third of adults realised there are 134 calories in a 175ml glass of wine, but nearly half know there are 337 calories in a cheeseburger.

One pint of four percent beer is equal to a sugar-coated doughnut at 193 calories, and three pints of five per cent lager are a match for an all day breakfast, according to the research.

It suggested a link between drinking especially binge drinking, or five or more drinks a session and abdominal obesity, which can contribute to heart disease and diabetes.

Chris Sorek, chief executive of the charity, said many dieters did not realise a few drinks could make them pile on the pounds.



“While they might make healthy lifestyle choices in other areas of their life, they might not know that sharing a bottle of wine with their partner exceeds the daily unit guidelines and is the equivalent of eating a slice of cheesecake,” he added.

## **Arthritis**

### **Back pain**

**Back pain? Ozone jab offers relief (The Times of India : 18.5.2011)**

#### **Ozone-Oxygen Mix Treats Slipped Disc By Shrinking Tissue**

London:Ozone gas, which acts as a shield against harmful ultraviolet rays from the sun, could soon be used to treat your sore back, as scientists have found that an ozone-oxygen gas mix can shrink tissue and reduce pain.

Researchers at the Negrin University Hospital in Spain developed a liquid form of the gas combined with oxygen and are now testing it as a way to treat slipped or herniated disc pain.

In a trial underway at the hospital, the gas mix injection has been given to patients with slipped discs who will be compared with a control group who receive a placebo treatment of just oxygen.

The treatments for slipped disc include physiotherapy and painkillers, but if the pain continues for longer than six weeks, surgery may be considered.

Around one in ten cases of a slipped disc will require surgery, where the piece of disc that is bulging is cut away. But, with the new treatment, the patient is first anaesthetised. Then, doctors use tiny cameras to guide a needle to the damaged disc, where the gas mixture is injected.

In a recent study of 60 patients in Rome, published in the journal *Spine*, those who were given the ozone therapy were twice as likely to be pain free than those in a control group.

“Ozone-oxygen injections, which are minimally invasive, seem to safely and effectively relieve pain, as well as reducing both disability and the intake of pain-relieving drugs,” said the researchers from the Physical Medicine and Rehabilitation Unit in Rome.

It’s suggested the ozone treatment works by reducing levels of prostaglandins — compounds in the body that trigger inflammation and pain. This helps shrink the disc tissue so that it no longer presses on surrounding nerves.

Commenting on the research, Jane Tadman of Arthritis Research UK said: “There have been 20 studies on ozone/oxygen treatment and though many show positive results in terms of reducing pain, it has not been accepted as a mainstream treatment for degenerative disc disease.”

“Perhaps further studies will provide proof that this therapy can offer relief for the pain of slipped disc without surgery.

## **Proper foot care**

### **Proper foot care prevents disability (The Tribune: 18.5.2011)**

Foot pain is an extremely common symptom experienced by most individuals at some stage in one’s life. The main function of the foot is to absorb the shock of the body’s weight

landing on it. Walking exerts pressure around one and a half time the body weight whereas running increases this pressure around three to four times the body weight.

On an average, on a day-to-day basis, a person spends several hours on his/her feet and takes several thousand steps. Most of the problems afflicting the foot are not because of walking but due to ill-fitting shoes. Our foot is an important weight-bearing part of the body but widely neglected.

Foot pain affects both men and women but women suffer more commonly due to their light bone structure and wearing narrow-toe-high-heel shoes. Feet are designed to provide balance and strength during walking/ running even over uneven surfaces. When high heels are worn there is alteration in bio-mechanics of the lower limbs obstructing normal function.

Wearing high heels makes the dainty ladies look elegant and tall, but its round-the-clock use has its drawbacks. Wearing high heels in the 20's and the 30's is easy to carry off but in age groups 50's and onwards various problems start due to the loss of fat in the sole of the foot, osteoporosis of bones, etc.

The problems commonly confronted are the following:

Pain under the heel occurring early in the morning while getting out of bed or after prolonged rest can be due to plantar fasciitis.

The heel is attached to the foot by a strong ligament — plantar fascia. In individuals suffering from plantar fasciitis, there is inflammation of this fascia causing pain. It is caused due to obesity, lack of flexibility in calf muscles, wearing worn-out shoes, flat/high arch feet and a sudden increase in training intensity.

Achilles tendonitis is also a painful and debilitating condition in which agonising pain is experienced on the back of the heel in the morning or post-exercise. Achilles tendon connects the calf muscles to the heel bone.

Narrow toes/ tight shoes increase pressure especially on the ball of the foot causing pain — metatarsalgia. Using high heels causes pressure on the constricting area manifold.

Bunion is a common deformity wherein the great toe tilts towards the other toes causing a lump on the inner side. Bunion can be due to hereditary, inward motion of the foot, particularly in people having a short big toe, owing to frequent use of high heels and wearing narrow-toe shoes by the fair sex and people suffering from rheumatoid osteoarthritis.

The symptoms are redness, swelling or pain at the great toe. The foot becomes so broad that it is difficult to get wide enough shoes.

The shape of the foot is the most important aspect which should be watched in the early stages of life. Ignorance regarding minor deformities like flat feet, knock knees/bowleg, etc, compounds the problem of early detection and treatment. These deformities can lead to diminution in optimal performance and later leading to many injuries, gait problem, etc. When one's foot is flat, then the strip (middle part of the foot) is of the same width as the front of the foot. Flat foot causes more wearing out on the inside of the sole and the outer part of heel.

Early detection and treatment of mechanical defects in one's feet are mandatory; otherwise one can face problems while running.

Wearing heels more than three inches high are likely to cause sore toes, calf pain, knee pain and even backache. To prevent foot discomfort and deformity, it is best to avoid wearing high-heeled, narrow-toed shoes. Be more comfortable than fashionable.

Too tight shoes squeeze the foot while loose ones slide and rub against the foot causing friction/corns. Shoes should fit well; have a firm heel counter, with a flexible sole at the front with good shock absorption.

Wide and deep toe box shoes with low heels reduce weight on the forefoot, thereby preventing foot deformity.

Exercises improve flexibility and strengthen our feet:

1 Foot roll: Rolling a golf ball or rolling a pin back and forth under the foot while applying pressure directly with body weight brings immediate relief for people with heel pain, arch strain or foot cramps.

1 Towel curls: Place a wet towel on the floor and curl it towards you, using only toes. This is useful for toe cramps, hammer toes, etc.

1 Object pick-up: Place a handkerchief on the floor. Pick up and drop down several times.

1 Toe pulls: Put a rubber band around the toes and then spread them. It is useful for people with hammertoes, bunions and toe cramps.

Proper foot care and footwear should be given top priority so that one does not have to live with pain and disability.

The writer is a former doctor/physiotherapist, Indian cricket team.

## **Arthritis and COPD**

### **Study Confirms Link Between Rheumatoid Arthritis and COPD (Science Daily: 27.5.2011)**

Patients with rheumatoid arthritis are two times more likely to have concurrent chronic obstructive pulmonary disease (COPD) than healthy controls -- an association which was sustained even when variables such as age, gender, smoking and obesity were controlled for, according to a study presented at the EULAR 2011 Annual Congress.

The study of 15,766 patients with RA and 15,340 controls found that the prevalence of COPD was significantly higher in RA patients than healthy controls (8.9% vs 4.4%,  $p < 0.001$ ). Interestingly, the link was still significant ( $p < 0.001$ ) after risk factors common in both RA and COPD patients, such as smoking, obesity and socioeconomic status, were controlled for.

"We know that similar changes in core physiological processes cause symptoms in RA and COPD and we hope that the results of our study prompts new research into potential links between altered genetic and autoimmune processes in the two conditions" said Dr. Amital of the Sheba Medical Centre, Israel.

The large, population-based case-control study was performed using the patient database of Israel's largest healthcare provider, Clalit Health Services. The prevalence of COPD was compared between RA patients over 20 years of age and a sample of age- and gender-matched patients without RA (the control group). Group matching was performed and data on health-related lifestyles and other co-morbidities was collected. Multivariate logistic regression models were used to compare study groups and to control for the confounders of age, gender, socioeconomic status, smoking and obesity.

## **Bio-Medical Research**

### **Blood component**

#### **Blood component exchange idea mooted in Tripura (New Kerala: 1.4.2011)**

The Opposition has proposed the state government to explore the possibility of blood components exchange programme with the neighbouring states.

Referring to the success of Tripura in voluntary blood donation, Congress legislator Sudip Roy Barman in the budget session of the Assembly said that Tripura has ranked first in the country in voluntary blood donation in 2009 and the state retained the success even this year.

"Tripura has high demand of red blood cell and two other components--blood plasma and platelets--are used very little in the state so far but since the state do not have sufficient blood cell separation mechanism, plasma and platelets are going into a waste," Mr Roybarman maintained.

He suggested to forge a tie-up with hospitals outside the state to ensure that the blood plasma and platelets extracted from blood in the state can be sent in need and RBC can be pulled in during necessity from other states through a well-knit exchange procedure.

Mr Roybarman also demanded to set up a blood separation machine in each blood bank of the state to ensure the best use of blood components.

Responding to the proposal, Health Minister Tapan Chakraborty said that the state government was actively considering the prospects of the project so that one single unit of blood could be used to save three patients while assuring that blood banks would be set up in every sub-division by 2013.

He also stated that according to NACO statistics five states - Tripura (95.3 percent), Tamil Nadu (91.9 percent), West Bengal (85.1 percent), Punjab (84.9 percent) and Maharashtra (84.8 percent- have the distinction of the total collection being above 80 per cent as against a national average of 55 to 60 per cent in 2009 but Tripura could not ensure the rational use of blood because of a lack of infrastructure.



"The collected blood has to be used within 35 days and since private nursing homes do not have blood banks we are also supplying bloods to them also and once the blood component separation mechanism is developed we can help our neighbours as well as get support from them," Mr Chakraborty pointed out.

## **Immune Therapy**

### **Immune Therapy Can Control Fertility in Mammals: Technique Could Prevent Pregnancy in Pets, Human Use Is Also Envisioned (Science Daily: 1.4.2011)**

Researchers at Weill Cornell Medical College have shown that it is possible to immunize mammals to control fertility. They say their technique could possibly be used on other mammals -- including humans -- because fertility hormones and their receptors are species-non-specific and are similar in both females and males. For pets, the technique could be an alternative to castration and adverse effects of hormone administration.

In the Feb. 24 online issue of Genetic Engineering and Biotechnology Journal, the researchers say their newly synthesized novel chimeric genes produce bi-functional recombinant proteins that are antigenic. The antibodies can tamp down production of progesterone in females and testosterone in males. The most immediate use of this technique might be to control fertility in dogs and cats or other mammals in need of population control, says the study's lead investigator, Dr. Brij B. Saxena, the Harold and Percy Uris Professor of Reproductive Biology at Weill Cornell Medical College.

After extensive preclinical testing for the efficacy, safety and reversibility in animals, the immune therapy might be possible in humans as a treatment for androgen excess syndromes as well as an immunological method to control fertility, adds Dr. Saxena.

The new chimeric gene was engineered by Dr. Saxena and his Weill Cornell colleagues, Dr. Meirong Hao and Dr. Premila Rathnam, and then inserted into insect cells to produce recombinant bi-functional protein. Immunity against fertility can be provided by the production of a bi-functional antibody by active or passive immunization using the recombinant protein.

This new gene contains DNA sequences from two natural genes that are integral to fertility in mammals. One portion is the extracellular domain (ECD) of the ligand (hormone) binding region of the human lutropin/human chorionic gonadotropin receptor (ECD-hLH-R), which is present in the ovaries and testes. The other component is the unique C-terminal peptide of the human chorionic gonadotropin  $\beta$ -subunit (hCG  $\beta$ -CTP).

Key to development of this new chimeric gene and recombinant protein is the researchers' finding that the hLH-R and hCG- $\beta$ -CTP recombinant proteins are antigenic -- meaning that they can produce an immune response in the body, and produce bifunctional antibodies with dual effect. The antibodies are able to block the hormone binding to the receptor and thus suppress the signal to produce ovarian hormones, specifically progesterone. The second component of the antibody specific to hCG  $\beta$ -CTP would neutralize the hCG-like material produced by the fertilized egg prior to or at the time of implantation. This would lead to lack of stimulation to promote progesterone production by the corpus luteum, resulting in the lack of proliferation of endometrial growth that is vital for the implantation of the fertilized egg -- thus preventing pregnancy.

The scientists are now working on methods to upscale the production of recombinant chimeric protein to be tested as antigens in dogs and cats.

### **Protein Aggregation**

#### **Protein Aggregation Contributes Significantly to Cancer Development (Med India: 1.4.2011)**

A new study has found that protein aggregation, which is generally associated with Alzheimer's and mad cow disease, plays a significant role in cancer development.

Frederic Rousseau and Joost Schymkowitz of VIB, K.U.Leuven and Vrije Universiteit Brussel describe that certain mutations of p53, an important tumour suppressor, cause the protein to misfold in a way that the proteins start to aggregate.

This not only disrupts the protective function of normal p53, but of other related proteins as well.

In the study, the focus was on the p53 protein, which plays a key role in protecting the body against cancer. If p53 works normally, it controls cell division.

If p53 control ceases - e.g. when there is a mutation in the protein - the cells start to divide in an uncontrolled manner and this may result in a tumour.

Mutations in p53 are observed in about half of cancer cases, making the protein an important target in the development of new cancer therapies.

"We have revealed a new mechanism for the action of mutant p53," Joost Schymkowitz and Frederic Rousseau of VIB, Vrije Universiteit Brussel and K.U. Leuven said.

"Mutations in p53 cause the protein to lose its protective function. The proteins change in shape, hook into each other and begin to aggregate.

"The active p53 disappears from the cell and can no longer carry out its control function properly," they stated.

## **Vitamin D**

### **Vitamin D deficiency linked to stiff arteries (New Kerala: 4.4.2011)**

Vitamin D deficiency in people could result in stiffer arteries, says a study.

The results add to evidence that lack of vitamin D can lead to impaired vascular health, contributing to high blood pressure and cardiovascular disease, Xinhua reported quoting a study from the Georgia Tech Predictive Health Institute.

Participants in the study who took high levels of vitamin D were able to improve vascular health and lower their blood pressure. Some 550 employees of the institute took part.

The data was presented Sunday by Ibhar Al Mheid, a cardiovascular researcher, at the annual American College of Cardiology meeting in New Orleans.

## **Magnesium Deficiency**

### **Magnesium Deficiency: Not Always a Nutritional Problem (Science Daily: 4.4.2011)**

Researchers and scientists of the Charité -- Universitätsmedizin Berlin, in cooperation with the Max Delbrück Center for Molecular Medicine, and colleagues from the Netherlands, Belgium, Switzerland and the Czech Republic have succeeded in identifying a genetic cause of magnesium deficiency.

The study from Dr. Dominik Müller of the Department of Pediatric Nephrology, ascertained changes in a gene which is involved in the regulation of magnesium processes. This research, which is published in the current issue of the American Journal of Human Genetics, opens the way for possible future medicinal treatment of genetically caused magnesium deficiencies.

A magnesium deficiency, with symptoms ranging from fatigue and muscle weakness to severe seizures and heart rhythm disturbances, may also be associated with diabetes and high blood pressure. Up until now it has been mostly explained by dietary insufficiencies.

Dr. Müller and his team have now shown that an altered gene may be the cause for this deficiency. Changes in a gene (Cnnm2), entail changes in the human blueprint and thus in the structure and function of protein sequence. In this case, the change affects a protein that is anchored in the membrane of kidney cells and intestinal cells and is responsible for the absorption of magnesium in the blood stream. Since this process no longer works in the defective protein, the magnesium is not put into the blood stream but excreted through the intestine and the urine, and therefore forfeited.

Dr. Mueller commented on his research results as follows: "Our results provide us with a number of new insights into magnesium metabolism in the body. In the end, following further research and development, we see the possibility to deal with such deficiencies medically."

## **Brain**

### **Research: Brain can Rotate Letters and Words Reflected in the Mirror (Med India: 4.4.2011)**

Human brain can mentally rotate words reflected in a mirror around and understand them automatically and unconsciously, at least for a few instants, a team of scientists from the Basque Centre on Cognition, Brain and Language (BCBL) has shown.

The finding could pave way to better understand dyslexia.

"At a very early processing stage, between 150 and 250 milliseconds, the visual system completely rotates the words reflected in the mirror and recognises them, although the brain then immediately detects that this is not the correct order and 'remembers' that it should not process them in this way," said lead author Jon Andoni Dunabeitia.

Dunabeitia and his team used electrodes to monitor the brain activity of 27 participants while carrying out two experiments in front of a computer screen.

In the first, the participants were shown words with some of the letters and other information rotated for 50 milliseconds (an imperceptible flash, which is processed by the brain); while in the second case the entire word in the mirror was rotated (for example HTUOM instead of MOUTH).

The results of the encephalogram showed in both cases that, at between 150 and 250 milliseconds, the brain's response upon seeing the words as reflected in the mirror was the same as when they are read normally.

"These results open a new avenue for studying the effects of involuntary rotation of letters and words in individuals with reading difficulties (dyslexia) and writing problems (dysgrafia)," said Dunabeitia.

## **Nanoparticles**

### **Nanoparticles Offer Hope For Common Skin Allergy (Medical News Today; 4.4.2011)**

Tiny particles only billionths of a meter in diameter-about two thousand would fit across the width of a human hair-could offer big hope in a small package to the many millions of people who are allergic to the nickel in everything from jewelry to coins and cell phones, say scientists at Brigham and Women's Hospital (BWH).

In the April 3 online issue of Nature Nanotechnology, the team will report a new approach to preventing the common skin allergy.

Approximately ten to fifteen percent of the US population, or over 30 to 45 million people, plus many more worldwide, are allergic to the nickel found in many everyday objects. For these people the metal causes a red, itchy rash when it comes into contact with their skin. You can see many examples through a quick google search for nickel-induced dermatitis.

However, even though some countries regulate the amount of the metal in certain products to limit exposure, there is no good solution to the problem. "There have been approaches to developing creams with agents that bind the nickel before it can penetrate the skin, but these are not effective in most patients and can even be toxic when the agents themselves penetrate the skin, as most do," says Jeffrey Karp, leader of the work and co-director of the Center for Regenerative Therapeutics at BWH. He adds, "People also sometimes coat their jewelry with nail polish to create a barrier between the skin and nickel ions, but this won't prevent all exposures, such as handling coins or wearing a watch."

Karp, who also holds appointments through Harvard Medical School, Harvard Stem Cell Institute (HSCI), and the Harvard-MIT Division of Health Sciences and Technology (HST), is himself allergic to nickel.

Now he and colleagues including R. Rox Anderson, a dermatologist at Harvard Medical School and Massachusetts General Hospital, have found that nanoparticles containing calcium could offer a safe solution to the problem. When applied to the skin in a cream, the nanoparticles efficiently capture the nickel, preventing it from making its way into the body. Further, the nanoparticles themselves were designed so that they cannot penetrate the skin. The cream with its nickel can then be easily washed off with water.

Says Anderson, "Despite barrier creams, anti-inflammatory drugs, and attempts to avoid nickel, this [metal] is still the most common cause of allergic skin reactions. Nanoparticles that bind to [the nickel] allergens but do not penetrate the skin offer a new strategy. Big hope in a small package!"

"We expect that a person could simply apply the cream just as they would hand cream," says Praveen Kumar Vemula of BWH, HMS, HSCI, and HST. Vemula is first author of the paper.

### Toward a Solution

The idea for tackling the problem began when Karp, a specialist on nanoparticles, met Anderson at a dinner. Afterward, Karp sat at his computer thinking about how he could potentially work with the accomplished dermatologist to tackle medical problems. As he pondered, he looked at his hands, which were red and itchy from his nickel allergy. Could he and Anderson find a nontoxic, practical way to prevent nickel from penetrating the skin using nanoparticles?

Reduce Diabetes Costs - Get involved with Changing Diabetes Barometer to decrease diabetes cost - [www.changingdiabetesbarometer.com](http://www.changingdiabetesbarometer.com)

Use Olay Total Effects - Fight the 7 Signs of Ageing Today Order Your Free Sample Online Now! - [www.Olay.in/SkinCare](http://www.Olay.in/SkinCare)

Homeopathic Treatment - Effective, safe and time-tested Homeopathic Treatment ! - [www.drBatras.com/Homeopathic](http://www.drBatras.com/Homeopathic)

The team began by focusing on compounds containing calcium, which are known to sequester nickel (some are used in the treatment of water). Next, they explored whether these compounds were available as nanoparticles. Karp knew that the tiny particles could potentially allow very efficient nickel capture thanks to their very high surface area.

The team limited their search to nanoparticles within a certain size range. "We wanted them to be large enough so they could not penetrate the skin, yet small enough to present a very large surface area for capturing nickel," Vemula says. (They ultimately decided on particles between 70 and 500 nanometers.) Finally, to cut the time involved in bringing a new technology to market, the team only explored nanoparticles already designated by the Food and Drug Administration as being generally recognized as safe (GRAS) for use in humans.

They found two compounds that met these criteria (calcium carbonate and calcium phosphate), added them to a common emollient to create a cream, and tested them under a variety of experimental conditions. For example, they applied the cream to samples of animal skin and to living animals, and tested it in the presence of artificial sweat (sweat is known to exacerbate the allergy, accelerating the release of nickel). Further, they conducted the tests with concentrations of nickel much higher than would be found in everyday situations.

"We were able to demonstrate that the particles could indeed capture nickel with high efficiency and prevent inflammation in nickel-sensitized animals," Karp says. Further, "we needed 11-fold less nanoparticles to get the same effect" as another common nickel-capture agent. (A significant drawback of the latter: it can penetrate the skin, and even small amounts can cause local and systemic toxicity.)

All results "suggest that nanoparticles can effectively prevent the penetration of nickel into the skin, and may therefore abrogate nickel-induced contact dermatitis," the team concluded in the Nature Nanotechnology paper.

The team has a patent on the work, which was funded by Brigham and Women's Hospital. Vemula is a recipient of an entrepreneur postdoctoral fellowship from the Ewing Marion Kauffman Foundation.

## **Stem Cells**

### **Patient's Own Cells May Hold Therapeutic Promise After Reprogramming, Gene Correction (Science Daily: 5.4.2011)**

Scientists from the Morgridge Institute for Research, the University of Wisconsin-Madison, the University of California and the WiCell Research Institute moved gene therapy one step closer to clinical reality by determining that the process of correcting a genetic defect does not substantially increase the number of potentially cancer-causing mutations in induced pluripotent stem cells.

Their work, scheduled for publication the week of April 4 in the online edition of the journal Proceedings of the National Academy of Sciences and funded by a Wynn-Gund Translational Award from the Foundation Fighting Blindness, suggests that human induced pluripotent stem cells altered to correct a genetic defect may be cultured into subsequent generations of cells that remain free of the initial disease. However, although the gene correction itself does not increase the instability or the number of observed mutations in the cells, the study reinforced other recent findings that induced pluripotent stem cells themselves carry a significant number of genetic mutations.

"This study showed that the process of gene correction is compatible with therapeutic use," says Sara Howden, primary author of the study, who serves as a postdoctoral research associate in James Thomson's lab at the Morgridge Institute for Research. "It also was the first to demonstrate that correction of a defective gene in patient-derived cells via homologous recombination is possible."

Like human embryonic stem cells, induced pluripotent stem cells can become any of the 220 mature cell types in the human body. Induced pluripotent stem cells are created when skin or other mature cells are reprogrammed to a pluripotent state through exposure to select combinations of genes or proteins.

Since they can be derived from a patient's own cells, induced pluripotent stem cells may offer some clinical advantages over human embryonic stem cells by avoiding problems with rejection. However, scientists are still working to understand subtle differences between human embryonic and induced pluripotent stem cells, including a higher rate of genetic mutations among the induced pluripotent cells and evidence that the cells may retain some "memory" of their previous lineage.



Gene therapy using induced pluripotent stem cells holds promise for treating many inherited and acquired diseases such as Huntington's disease, degenerative retinal disease or diabetes. The patient in this study suffers from a degenerative eye disease known as gyrate atrophy, which is characterized by progressive loss of visual acuity and night vision leading to eventual blindness.

While diseases such as genetic retinal disorders and diabetes offer attractive targets for induced pluripotent stem cell-based transplant therapies, concerns have been raised over the commonly occurring mutations in the cells and their potential to become cancerous.

Howden says that because gene targeting to correct specific genetic defects typically requires an extended culture period beyond initial induced pluripotent stem cell generation, researchers have been interested to learn whether the process would increase the number of mutations in the cells. The team set out to determine if it was possible to correct defects without introducing a level of mutations that would be incompatible with clinical applications.

In the study, the researchers used a technique called episomal reprogramming to generate the induced pluripotent stem cells. In contrast to techniques that use retroviruses, episomal reprogramming doesn't involve inserting DNA into the genome. This technique allowed them to produce cells that were free of potentially harmful transgene sequences.

The scientists then corrected the actual retinal disease-causing gene defect using a technique called homologous recombination. The stem cells were extensively "characterized" or studied before and after the process to assess whether they developed significant additional mutations or variations. The results showed that the culture conditions required to correct a genetic defect did not substantially increase the number of mutations.

"By showing that the process of correcting a genetic defect in patient-derived induced pluripotent cells is compatible with therapeutic use, we eliminated one barrier to gene therapy based on these cells," Howden says. "There is still much work to be done."

David Gamm, an author of the study and an assistant professor with the Department of Ophthalmology and the Waisman Center Stem Cell Research Program, says the ability to correct gene defects in a patient's own induced pluripotent stem cells should increase the appeal of stem cell technology to researchers striving to improve vision in patients with inherited blinding disorders.

"Although further development certainly is needed before such techniques may reach the clinical trial stage, our findings offer reason for continued hope," Gamm says. "Dr. Howden and our collaborative group have overcome an important hurdle which, when

considered in the context of other recent developments, may lead to personalized stem cell therapies that benefit people with genetic visual disorders."

In addition to primary author Howden, who holds joint appointments with the Morgridge Institute for Research, the Department of Cell and Regenerative Biology and the Genome Center of Wisconsin, co-authors of the study included: Thomson, who in addition holds an appointment with the Department of Molecular, Cellular & Developmental Biology, University of California-Santa Barbara; Gamm, who holds joint appointments with the UW-Madison School of Medicine and Public Health's Department of Ophthalmology and Visual Sciences and the Waisman Center Stem Cell Research Program; Jeff Nie, Goukai Chen, Brian McIntosh, Daniel Gulbranson, Nicole Diol and David Vereide with the Morgridge Institute for Research; Athurva Gore, Zhe Li, Ho-Lim Fung and Kun Zhang, of the Department of Bioengineering at the University of California-San Diego; and Benjamin Nisler, Seth Taapken and Karen Dyer Montgomery of WiCell Research Institute.

## **DNA Stretching**

### **DNA Stretching: New Technique to Detect Illnesses (Science Daily: 7.4.2011)**

Scientists are making DNA sequences being passed through nanochannels a thousand times thinner than a human hair to the point that they take on the form of diminutive spaghetti. This is an innovative technique, known as DNA stretching, and is one of the lines of research in which CIC microGUNE is working, and about which they have already published two scientific articles and are shortly to apply for a patent. The technique basically consists of the analysis of a single molecule of DNA, after stretching it, measuring its length and analysing its sequence.

This novel technology could become a simpler and more effective alternative than current methods to analysing DNA and, in this manner, apply it in order to know the predisposition for suffering certain illnesses, diagnosing them or establishing the best therapy once its development is known. The method will also enable other applications, such as the identification of bacteria and viruses, carrying out forensic diagnoses or providing systems for the advancement of therapies for chronic diseases.

In order to stretch DNA molecules, it is necessary to make them pass through channels of tiny dimensions. The Micro- and Nano-engineering Unit at CIC microGUNE, basing itself on known technology such as nanoprinting lithography, has manufactured devices that contain sealed channels of 50 nanometres.

The elements manufactured by CIC microGUNE form part of specific lab-on-a-chip series of devices known as single molecule devices, which enable carrying out a multitude of tasks using a tiny quantity of DNA -- practically the content of a single cell.

"This technology enables determining DNA sequences, detecting genetic alterations that determine specific genes associated with the early detection of illnesses," explained Mr Santos Merino, researcher at CIC microGUNE. This same detection can predict the susceptibility of certain populations of individuals to certain medication (what is known as Pharmacogenetics). The design of these kinds of chips will provide fast, cheap and in-situ (health centre walk-in or out-patient) detection.

## **Brain**

### **Brain Development Switch Could Affect Schizophrenia, Other Conditions(New Kerala: 7.6.2011)**

An international team of scientists lead by researchers from Duke University and Johns Hopkins University have discovered a key "switch" in the brain that allows neurons to stop dividing so that these cells can migrate toward their final destinations in the brain.

The finding may be relevant to making early identification of people who go on to develop schizophrenia and other brain disorders.

"This work sheds light on what has been a big black box in neuroscience," said Nicholas Katsanis, Ph.D., co-senior author of the work and Jean and George Brumley Jr., MD, Professor of Developmental Biology, Professor of Pediatrics and Cell Biology. "It helps answer the question of what happens when neurons stop dividing and start moving along to populate the brain."

The study was published by Nature journal on April 6 in its advance online publication.

Katsanis predicts that, for perhaps 10 percent of psychiatric illness, the illness is primarily driven by defects in this switch system. "So we now have ways to interpret variation in humans, in a context that is relevant to their particular cases, to their physiology -- that is where medicine will move next," Katsanis said.

Katsanis, who directs the Duke Center for Human Disease Modeling, and Akira Sawa, M.D., Ph.D., a Professor in the Department of Psychiatry at Johns Hopkins, were introduced to each other by a clinical colleague who thought that Bardet-Biedl syndrome (BBS) proteins that are involved in transport duties within cells might have a role in schizophrenia. Katsanis is an expert in using BBS genetic mutations and proteins to learn more about other diseases. BBS is a complex genetic disease with autism-like symptoms,

cognitive defects and depression. Sawa is an expert on DISC1, the protein named Disrupted in Schizophrenia 1, known to be a major susceptibility factor for schizophrenia and related disorders.

Together, they discovered that these proteins are involved in a key switch for neurons that is necessary for brain development. When DISC1 gains a phosphate group at a specific site, it recruits BBS1. When BBS1 is missing in this system, the team could observe defective neuron migration, while a model with no DISC1 at all leads to defects in both cell proliferation and migration.

We can now appreciate that some fraction of schizophrenia is truly developmentally regulated, Katsanis said.

"Even though the disease manifests itself after pubescence, scientists have suspected that the underpinnings are prenatal," he said. "We can greet this news with sadness or see it as an opportunity: we may have 20 years to help before a person starts experiencing symptoms, if we can develop techniques to use early enough."

The study also provides another example of how BBS proteins fit into neuroscience and provide another instance in which understanding of a rare phenotype (BBS) informs complex traits, like schizophrenia, profoundly, Katsanis said. "The trend in recent years has been to focus heavily on common disorders and to disregard disorders that might impact fewer people. Yet rare disorders continue to provide such important insights both into basic biological processes and complex disease."

"With these findings, we have tools for interpretation in some schizophrenia cases," Katsanis said. About one in 100 children born go on to develop schizophrenia in early adulthood.

Now the scientists are engaged in medical re-sequencing of patients with psychiatric illness with a specific focus on the groups of proteins involved in the switch process. "We will be able to ask focused questions about the amount of variation that this particular system contributes to the complex landscape of genetic disease," Katsanis said.

Other authors include Edwin C. Oh and John F Robinson of the Center for Human Disease Modeling and Departments of Cell Biology and Pediatrics at Duke; and researchers from the Departments of Psychiatry and Behavioral Sciences and Neuroscience at Johns Hopkins University in Baltimore; the Departments of Physiology and Anatomy at Keio University School of Medicine in Tokyo; and the Molecular Pharmacology Group, Institute of Neuroscience and Psychology at the University of Glasgow.

The study was supported by U.S. Public Health Service grants, from the Silvio O. Conte Center; grants from Stanley and RUSK foundations and from Maryland Stem Cell Research Fund; grants from NARSAD and S-R foundations; grants from the Macular Vision Research Foundation and the Foundation for Fighting Blindness; the Distinguished George W. Brumley Professorship; a grant from Health Labor Sciences; grants from Strategic Research Program for Brain; the Fight for Sight Postdoctoral Fellowship; and a grant from the Medical Research Council, UK.

## **Healthy Cells**

### **New Type of Polymers Seek Out and Destroy MRSA Superbug and Leave Healthy Cells Alone (Med India; 7.4.2011)**

New types of polymers are able to seek out and destroy antibiotic-resistant bacteria, including MRSA (Methicillin-resistant *Staphylococcus aureus*) in what scientists from IBM and the Institute of Bioengineering and Nanotechnology describe as a "nanomedicine breakthrough". They published their report in Nature Chemistry

Nanomedicine is the medical application of nanotechnology. Nanotechnology, also known as nanotech, is the study of manipulating matter on a molecular or atomic scale. A polymer is any of many natural and synthetic compounds of abnormally high molecular weight - they consist of up to millions of repeated linked units, each a fairly light and simple molecule.

The scientists explain that these nanostructures are attracted to infected cells like a magnet. They home-in on resistant bacteria and destroy them without harming healthy cells - they are selective. The nanostructures break through the cell wall and membrane of the bacterium, something most traditional antibiotics do not do. This breakthrough was achieved by applying principles utilized in semiconductor manufacturing.

The term MRSA (Methicillin-resistant *Staphylococcus aureus*) is used to describe some strains of the bacteria, *Staphylococcus aureus*, that are resistant to several antibiotics, including methicillin. *Staphylococcus aureus* lives on the surface of human skin and inside the nose. Usually, it is harmless, and most carriers have no idea that they have it. It spreads easily from person-to-person with contact.

*Staphylococcus aureus* becomes a problem if it enters the body through a cut or wound. Most healthy individual's immune systems fight off a *Staphylococcus aureus* infection and at the most have mild symptoms. However, those with weakened immune systems can develop more serious complications - they can develop boils, abscesses, impetigo,

septic-wounds, heart-valve problems and toxic shock syndrome. For those with weakened immune systems, such infections can be life-threatening. The problem with MRSA is that it is resistant to most antibiotics that are normally used effectively to treat *Staphylococcus aureus* infections.

According to the National Institutes of Health (NIH), USA, MRSA caused nearly 95,000 infections in the USA in 2005 - it was linked to nearly 19,000 hospital stay-related deaths.

MRSA poses two challenges:

Drug resistance - the microorganism can evolve to resist antibiotics effectively; current treatments do not damage the cell wall and membrane of the bacterium.

Dosage - in order to kill such infections with traditional antibiotics, the dose has to be so high that healthy red blood cells are also destroyed.

Dr. James Hedrick, Advanced Organic Materials Scientist, IBM Research - Almaden, said:

Polymers - Order premium quality products from the Speciality Chemicals Company - [www.lanxess.in](http://www.lanxess.in)

Stem Cell Therapy - Next generation anti-age treatments from Biocell Ultravital Switzerland - [www.biocellultravital.com](http://www.biocellultravital.com)

CordLife India-stem cells - Owned by CordLife Group (Singapore) Asia's largest premium cells bank - [www.cordlifeindia.com/cordblood](http://www.cordlifeindia.com/cordblood)

"The number of bacteria in the palm of a hand outnumbers the entire human population. With this discovery we've been able to leverage decades of materials development traditionally used for semiconductor technologies to create an entirely new drug delivery mechanism that could make them more specific and effective."

These biodegradable nanostructures could be administered either by injection or topically (onto the skin). They could be applied to consumer products that touch the skin, such as soaps, hand sanitizers, and deodorants. They could be used to heal wounds, treat TB (tuberculosis) and other lung infections, the authors explain.

Dr. Yiyang Yang, Group Leader, Institute of Bioengineering and Nanotechnology, Singapore, said:

"Using our novel nanostructures, we can offer a viable therapeutic solution for the treatment of MRSA and other infectious diseases. This exciting discovery effectively integrates our capabilities in biomedical sciences and materials research to address key issues in conventional drug delivery."

How do these polymers work?

Our immune system is designed to fight off harmful substances. However, for a number of reasons, several conventional antibiotics currently available are either rejected by the body or have poor results against drug-resistant bacteria.

IBM Research and the Institute of Bioengineering and Nanotechnology developed antimicrobial agents that are designed to specifically target an infected area, this allows for the drug to be delivered straight into the bloodstream (systemically).

As soon as the polymers touch water or the human body, they self-assemble into a new polymer structure designed to specifically target the membranes of bacteria based on electrostatic interaction - they break through the cell membrane and walls, making it impossible for the bacteria to develop resistant to these nanoparticles.

The new polymer structures only destroy infected areas, leaving healthy ones, especially red blood cells, alone. Red blood cells transport vital oxygen around the body.

These substances are biodegradable, they do not build up in body organs, rather they are eliminated from the body.

"Biodegradable nanostructures with selective lysis of microbial membranes"

## **Heart surgery**

### **New world record: Heart surgery on 100-year-old man (New Kerala: 8.4.2011)**

Italy has set a new world record in the field of medical science with an open-heart surgery on a 100-year-old man, a media report said.

Medical experts from Florence city's Careggi Hospital carried out the surgery using the implantation of an artery-widening balloon and three stents or expandable tubes.

The unnamed patient - a former doctor - was saved with a procedure never used before on a person of his age, Xinhua reported citing the country's ANSA news agency.

The patient, an ex-urologist born in February 1911, was said to be "doing well".

## **Fish Oil Boosts**

### **Fish Oil Boosts Responses to Breast Cancer Drug Tamoxifen, Researchers Find (Science Daily: 8.4.2011)**

Breast cancer is the second most common cancer among women, with more than 200,000 women diagnosed each year. Being exposed to estrogen over a long period of time is one factor that can increase a woman's risk of developing the disease. One way a woman can combat this risk factor is by taking the breast cancer drug tamoxifen, which interferes with the activity of estrogen. Now, researchers at Fox Chase Cancer Center have found that omega-3 fatty acids -- abundant in fish -- could be a safe and beneficial booster for tamoxifen therapy.

. Jose Russo, MD, director of the Breast Cancer Research Laboratory at Fox Chase, is presenting the new findings at the AACR 102nd Annual Meeting 2011 on April 6.

To investigate how fish oil intensifies the effects of tamoxifen, Russo, in collaboration with a team led by Andrea Manni, MD, from Pennsylvania State University, induced mammary tumors in rats and then divided the animals into four groups. They fed the groups either a 17 percent fish oil diet, with or without tamoxifen, or a 20 percent corn oil diet, with or without tamoxifen, for eight weeks. They then analyzed gene expression patterns in the tumors. Omega-3 fatty acids produced a greater expression of genes related to cellular specialization, or differentiation -- a sign of lower cancer severity -- compared to corn oil. The combination of fish oil and tamoxifen reduced the expression of genes linked to tumor growth and spreading.

"If a tumor was being treated with tamoxifen, the addition of an omega-3 fatty acid diet seemed to make the tumor, at least at the molecular level, more benign and less aggressive and responsive to tamoxifen," says Russo.

The fish oil diet also boosted the expression of genes related to immune defenses against tumors, more so than did the corn oil diet. But omega-3 fatty acids simultaneously increased the expression of genes that trigger counterproductive immune responses, such as inflammation and allergic reactions, which curtail the ability of cells to fight cancer and can even promote the migration of tumor cells.



More studies are needed to fully understand the effects of fish oil on the immune system, Russo says. Meanwhile, his team is examining whether omega-3 fatty acids can prevent breast cancer in animals and testing the influence of diet on breast cancer risk in women.

## **Tangerines**

### **Tangerines Can Protect from Heart Disease, Diabetes and Obesity: Research (Med India: 8.4.2011)**

Researchers at the University of Western Ontario have found that a substance in tangerines prevents obesity, offers protection against type 2 diabetes, and even atherosclerosis, the underlying disease responsible for most heart attacks and strokes.

Murray Huff, a vascular biology scientist at the Schulich School of Medicine and Dentistry, along with Erin Mulvihill, studied the effects of a flavonoid in tangerines called Nobiletin.

In a model of metabolic syndrome developed by the Huff laboratory at the Robarts Research Institute, mice were fed a "western" diet high in fats and simple sugars. One group became obese and showed all the signs associated with metabolic syndrome: elevated cholesterol and triglycerides, high blood levels of insulin and glucose, and a fatty liver. These metabolic abnormalities greatly increase the risk of cardiovascular disease and type 2 diabetes.

The second group of mice, fed the exact same diet but with Nobiletin added, experienced no elevation in their levels of cholesterol, triglycerides, insulin or glucose, and gained weight normally. Mice became much more sensitive to the effects of insulin. Nobiletin was shown to prevent the buildup of fat in the liver by stimulating the expression of genes involved in burning excess fat, and inhibiting the genes responsible for manufacturing fat.

"The Nobiletin-treated mice were basically protected from obesity," said Huff, the Director of the Vascular Biology Research Group at Robarts.

"And in longer-term studies, Nobiletin also protected these animals from atherosclerosis, the buildup of plaque in arteries, which can lead to a heart attack or stroke. This study really paves the way for future studies to see if this is a suitable treatment for metabolic syndrome and related conditions in people," added Huff.

The research has been published in the journal Diabetes.

## **Radiation risk**

### **Changed DNA: Radiation risk higher for children (The Times of India: 13.4.2011)**

With the level of severity of Japan's nuclear disaster being upped to the level of Chernobyl, people have started to panic about the health threat from the radiation exposure.

The amount and duration of radiation exposure determines the severity or type of health effect. Increased levels of exposure increase chances of health effects. Most people associate cancer as the most dreaded effect of radiation. However, other than cancer, the long-term health effects are the mutations or changes that happen to cell DNA because of radiation which affects its ability to carry out cell repair and cell replacement. Even small changes to DNA can lead to irreparable cell damage which could cause cancer and birth defects. It could even cause genetic mutations that are passed on to the offspring.

All human beings are constantly exposed to radiation from all kinds of sources such as air, food, cosmic rays and even when getting an x-ray done but the levels are too low to cause harm. Moderate levels of exposure can result in radiation sickness, which can cause nausea and vomiting within hours of the exposure followed by diarrhoea, headaches and fever. After the initial symptoms there might be a brief period of no illness but this could be followed by more serious symptoms. If a person is exposed to much higher levels of radiations the symptoms could start immediately, and could cause internal damage to organs which could even lead to death.

Last April, there were scrap shop workers in Mayapuri scrap market in Delhi who were hospitalized after being exposed to very high levels of radiation. The first of them was hospitalized with blackened skin, withering nails and falling hair which were recognised as symptoms of acute radiation syndrome. They had been exposed to high levels of radiation when taking apart a gamma irradiator auctioned off for scrap. Eight people were hospitalised and one person died. This is typical of very high levels of radiation exposure which results in radiation sickness, symptoms of which include burns, vomiting, diarrhoea and destruction of the immune system. This often leads to death within a few weeks.

Radiation around the Chernobyl plant caused a jump in thyroid cancer and leukaemia. Children were especially affected being at greater risk of radiation as they are at a stage when more cells are dividing providing a greater opportunity for radiation to disrupt the process. However, the Japanese have been assured that their levels of exposure being much lesser would only lead to a minimal increase in their risk of getting cancer.

<b>What Happens When Radiation Impacts Human Body?</b>		
<b>Exposure (rem)</b>	<b>Health Effect</b>	<b>Time to Onset (without treatment)</b>
<b>5-10</b>	Changes in blood chemistry	Within hours
<b>50</b>	Nausea	Within hours
<b>55</b>	Fatigue	Within hours
<b>70</b>	Vomiting	Within hours
<b>75</b>	Hair loss	2-3 weeks
<b>90</b>	Diarrhoea	
<b>100</b>	Haemorrhage	
<b>400</b>	Possible death	Within 2 months
<b>1,000</b>	Destruction of intestinal lining internal bleeding and death	1-2 weeks
<b>2,000</b>	Damage to central nervous system loss of consciousness; and death	Minutes Hours to days

Source: US EPA

## Vitamin D

### High Vitamin D levels 'may prevent age-related vision loss'(New Kerala: 13.4.2011)

A University at Buffalo study has found that women under the age of 75 with high vitamin D status were less likely to have early age-related macular degeneration (AMD), the leading cause of irreversible vision loss in adults.

Vitamin D status was assessed using the blood measure of 25-hydroxyvitamin D or 25 (OH) D. The 25 (OH) D level is generally considered the means by which nutritional vitamin D status is defined.

"In women younger than 75, those who had 25-hydroxyvitamin D concentrations lower than 38 nanomoles per liter were more likely to have age-related macular degeneration than women with concentrations greater than 38 nanomoles per liter," said Amy E. Millen, assistant professor in the UB School of Public Health and Health Professions and lead author.

"Blood concentrations above 38 nanomoles per liter were associated with at least a 44 percent decreased odds of having AMD."

She noted that the Institute of Medicine considers an adult with a blood 25 hydroxyvitamin D concentration of lower than 30 nanomoles per liter to be at increased risk of vitamin D deficiency and a person with a concentration of less than 50 nanomoles per liter to be at increased risk for vitamin D inadequacy.

"The take- home message from this study is that having very low vitamin D status (25-hydroxyvitamin D blood concentrations lower than 38 nanomoles per liter) may be associated with increasing your odds of developing age-related macular degeneration," said Millen.

"But based on these study findings, being at a higher vitamin D level than 38 nanomoles per liter does not appear to be more protective," she cautioned.

## **Bigger Brains**

### **How Bigger Brains Provide Complex Cognition Demonstrated by Social Wasps (Med India: 13.4.2011)**

Research has demonstrated that across many groups of animals, species with bigger brains often have better cognitive abilities, but it's been unclear whether overall brain size or the size of specific brain areas is the key.

New findings by neurobiologists at the University of Washington suggest that both patterns are important. The researchers found that bigger-bodied social wasps had larger brains and devoted up to three times more of their brain tissue to regions that coordinate social interactions, learning, memory and other complex behaviors.

Within a species, queens had larger central processing areas – the brain regions that manage complex behaviors – than did worker wasps.

"As the brain gets larger, there's disproportionately greater investment in the size of brain tissue for higher-order cognitive abilities," said Sean O'Donnell, lead author and UW psychology professor. "As larger wasp brains evolve, natural selection favors investing most heavily in the brain regions involved in learning and memory."

For smaller-brained species, cognitive power may be limited by their inability to invest in central brain regions. "In many kinds of animals, it's only with a larger brain – which is determined by body size – that more complex and flexible behaviors are achieved," O'Donnell said.

The results appear in the April 11 online edition of the Proceedings of the National Academy of Sciences.

## **Brain shrinks**

**Brain shrinks a decade before Alzheimer's onset, scans show (The Times of India: 15.4.2011)**

### **US Research Offers Hope Of Early Detection, Improved Treatment**

Chicago: Brain scans of healthy people showed signs that the brain was shrinking in Alzheimer's-affected areas nearly a decade before the disease was diagnosed, US researchers said on Wednesday.

The finding, published in the journal *Neurology*, may offer a new way to detect the disease early, an advance that could help in the development of effective treatments for Alzheimer's, a brainwasting disease that affects up to 26 million people globally.

"The magnetic resonance measurements could be very important indicators to help identify who may be at risk of developing Alzheimer's dementia," Leyla deToledo-Morrell of Rush University Medical Center in Chicago, who worked on the study, said in a statement. "If a drug therapy or treatment is developed in the future, those who are still

without symptoms but at great risk would benefit the most from treatment,” deToledo-Morrell said.

The study involved two groups of healthy people in their 70s who had brain scans at Rush University in Chicago and at Massachusetts General Hospital/Harvard Medical School in Boston and were followed for an average of nine years.

During the study, 50 participants remained cognitively normal and 15 developed Alzheimer’s disease. At the end of the study, people who had the highest amount of shrinkage in specific areas of the cerebral cortex were three times more likely to develop the disease.

“We also found that those who express this MRI marker of the Alzheimer’s disease in the brain were three times more likely to develop dementia over the following 10 years than those with higher measurements,” Dr. Brad Dickerson of Massachusetts General, who led the study, said in a statement.

“These are preliminary results that are not ready to be applied outside of research studies right now, but we are optimistic that this marker will be useful in the future,” he said.

Researchers in the study used magnetic resonance imaging or MRI, equipment that is already in wide use in most hospitals.

Eli Lilly and Co, General Electric and other companies are developing special imaging agents that can detect proteins in the brain that signal the presence of Alzheimer’s disease-related proteins. But these tests currently are being developed to rule out Alzheimer’s in patients who already have symptoms of the disease. REUTERS

## **Healthy breast cells**

### **Normal healthy breast cells can help kill cancer cells (New Kerala: 15.4.2011)**

A study has found that normal healthy cells can be a second line of defence against cancer.

Researchers at the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) have shown that the body can fight against breast cancer cells with healthy cells.

The new study shows that normal mammary epithelial cells, as they are developing, secrete interleukin 25, a protein known for its role in the immune system's response to inflammation, for the express purpose of killing nearby breast cancer cells.

"We found that normal breast cells provide an innate defense mechanism against cancer by producing interleukin 25 (IL25) to actively and specifically kill breast cancer cells," breast cancer authority Mina Bissell, of Berkeley Lab's Life Sciences Division, who led this research, said.

"This suggests that IL25 receptor signalling may provide a new therapeutic target for the treatment of breast cancer," she said.

Co-authoring the paper with Bissell were Saori Furuta, Yung-Ming Jeng, Longen Zhou, Lan Huang, Irene Kuhn and Wen-Hwa Lee, of the University of California, Irvine, who along with Bissell is a corresponding author.

It is not as if mutant cells are not being generated, Furuta, lead author of the Science Translational Medicine paper and a Berkeley Lab colleague of Bissell's, explained.

"Even healthy individuals produce genetically impaired cells at the rate of up to 1,000 aberrant cells per day, however, as a part of homeostatic regulations, these cancer-prone cells are efficiently eradicated by the so- called tumour surveillance system of our body," Furuta said.

"A number of tumour surveillance mechanisms have been described in the past, including the classic molecular tumour suppressors, immune surveillance, and suppression by the extracellular matrix and other microenvironmental factors.

"We are now adding a new type of tumour suppression to this list, IL25 and other proteins secreted by normal breast cells that kill or subdue their mutated neighbours," she revealed.

In their study, Furuta, Bissell, Lee and their colleagues found that whereas IL25 was highly toxic to breast cancer cells, it did not harm normal breast cells.

The selectivity, they discovered, is due to the presence of an abundance of exposed IL25 receptors on breast cancer cells. These IL25 receptors were absent on normal breast cells.

"Since IL25 is produced by healthy breast tissue as a natural defense mechanism against cancer during the cell differentiation process, we should be able to utilize IL25/IL25 receptor signalling as an organic approach to breast cancer therapy," Furuta said.

Normal epithelial cells, in cooperation with the microenvironment that surrounds them, actively help maintain the health and integrity of tissue.

They do this in part by regulating the secretion of cell signalling factors - both autocrine and paracrine - that promote the development of healthy organs and prevent the aberrant growth of neighbouring cells.

In previous studies, Furuta and collaborators have shown that conditioned-medium, taken from normal mammary epithelial cells while in the process of forming acini in a 3D lamin-rich extracellular matrix culture, can "revert" the malignant phenotype of breast cancer cells so that they behave as if they were normal breast cells.

Similar results were also achieved with certain cell signalling inhibitors.

"These observation suggested that acinus-forming nonmalignant mammary epithelial cells secrete factors that can suppress the phenotype of breast cancer cells growing in 3D cultures," Bissell said.

"We hypothesized that such a complex phenotypical reversion is likely the result of multiple signalling factors that in combination allow cancer cells to form quiescent acinar-like structures.

"We sought to identify and characterize these factors using solubility and size-fractionation of the conditioned medium from normal mammary epithelial cells, along with functional assays to identify the active molecules," she stated.

The findings have been reported in the journal Science Translational Medicine in a paper titled "IL25 Causes Apoptosis of IL25R-expressing Breast Cancer Cells Without Toxicity to Nonmalignant Cells".

## **Chronic brain**

### **Chronic brain inflammation 'linked to memory loss in older adults'(New Kerala: 15.4.2011)**

Chronic brain inflammation has been linked to some elements of memory decline in otherwise cognitively normal older adults, according to a new study.

Inflammation is part of the body's natural immune response to tissue damage. However, chronic inflammation is associated with many diseases.

In the brain, it is thought to play a role in aging and neurodegenerative diseases, such as Parkinson's and Alzheimer's.



Studies in animals have shown that prolonged brain inflammation impairs function of the hippocampus, a region of the brain involved in storing and generating memory. It does so by disrupting the establishment of memories, a process known as long term potentiation.

Now, the scientists in the new study hypothesized that the presence of C-reactive protein (CRP), a marker of chronic low grade inflammation in the brain, would be associated with poorer memory creation and smaller medial-temporal lobes, which include the hippocampus.

They examined 76 women and men (mean age 71.8) with detectible levels of CRP in their blood, and 65 people (mean age 70.8) with undetectable levels.

All participants were given a 16-word list learning task to measure verbal recall, and underwent magnetic resonance imaging, MRI, to measure volumes of regions of the medial temporal lobes, specifically the hippocampus, entorhinal cortex and parahippocampal cortex.

The results showed that adults with measurable levels of C reactive protein recalled fewer words and had smaller medial temporal lobes.

Scientists don't know if the inflammation indicated by the C reactive protein is the cause of the memory loss, if it reflects a response to some other disease process or if the two factors are unrelated.

But if inflammation causes the cognitive decline, relatively simple treatments could help, said Joel H. Kramer, UCSF clinical professor of neuropsychology and the director of the neuropsychology program at the UCSF Memory and Aging Center.

The study was reported in a poster session at the American Academy of Neurology annual meeting on April 13, 2011.

## **Genes**

### **Genes That Control 'Aging' Steroid Identified (Science Daily; 15.4.2011)**

Eight genes which control levels of the main steroid produced by the adrenal gland, believed to play a role in aging and longevity, have been uncovered by an international consortium of scientists, co-led by King's College London.

Crucially, some of these eight genetic regions are also associated with important diseases of aging, including type 2 diabetes and lymphoma. Researchers say that these findings, published in the journal PLoS Genetics on April 14, provide the first genetic evidence for the aging role of the steroid, and therefore highlights it as a marker of biological aging.

It was already known that the concentration of the steroid dehydroepiandrosterone sulphate (DHEAS), declines rapidly with age -- it diminishes by 95 per cent by the age of 85. This has led to speculation that a relative DHEAS deficiency may contribute to common age-related diseases or diminished longevity.

To explore the mechanisms behind declining levels of the steroid, the researchers carried out an analysis of DHEAS levels and 2.5 million genetic variants in 14,846 people from Europe and USA. They found eight common genes that control the blood concentration of DHEAS, and importantly some of these genes are associated with aging and common age-related diseases such as type 2 diabetes and lymphoma.

Lead author, Dr Guangju Zhai from King's College London, said: 'This is the first large-scale study to unlock the mystery that has always surrounded DHEAS. We have identified specific genes that control its concentration levels, and shown that some of these are also involved in the aging process and age-related diseases.'

'The findings provide us with the basis for future studies to look into potential mechanisms of exactly how the DHEAS is involved in aging. The next important question to try and answer is whether sustained high levels of DHEAS can in fact delay the aging process and prevent age-related diseases.'

'Professor Tim Spector, senior co-author from King's, said: 'This study shows the power of collaborative genetic studies to uncover mechanisms of how the body works. For 50 years we have observed the most abundant circulating steroid in the body, DHEAS, with no clue as to its role. Now its genes have shown us its importance in many parts of the aging process.'

### **Anti-depressants boost brain cells**

#### **Anti-depressants boost brain cells after injury (New Kerala: 20.4.2011)**

Anti-depressants may help spur the creation and survival of new brain cells after brain injury, researchers say.

Jason Huang and colleagues at the University of Rochester Medical Centre undertook the study after noticing that patients with brain injuries, who were prescribed anti-depressants, did better in unexpected ways than their other counterparts.

"We saw these patients improving in multiple ways - their depression was improved, but so were their memory and cognitive functioning," said Huang, the Journal of Neurotrauma reports.

"We wanted to look at the issue more, so we went back to the laboratory to investigate it further," said Huang, associate professor of neurosurgery at Highland Hospital, a Rochester affiliate.

Huang said many patients who have a traumatic brain injury also experience depression. By some estimates, half of such patients are depressed, according to a Rochester statement quoted in the journal.

Doctors are not sure whether the depression is a byproduct of the sudden, unfortunate change in circumstances that patients find themselves in, or whether it is a direct consequence of brain damage.

Previous research by other groups indicated that anti-depressants help generate new brain cells and keep them healthy in healthy animals.

That, together with the experience of his patients, led Huang to study the effects of the anti-depressant imipramine (Tofranil) on mice that had injuries to their brains.

Scientists found that imipramine boosted the number of neurons in the hippocampus, the part of the brain primarily responsible for memory.

By one measure, mice treated with imipramine had approximately 70 percent more neurons after four weeks than mice that did not receive the medication.

The team found that mice that had been treated with imipramine also had a better memory.

## **Cell of Origin**

**Cell of Origin for Squamous Cell Carcinoma Discovered (Science Daily: 2.4.2011)**

Squamous cell cancers, which can occur in multiple organs in the body, can originate from hair follicle stem cells, a finding that could result in new strategies to treat and potentially prevent the disease, according to a study by researchers with UCLA's Jonsson Comprehensive Cancer Center and the Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research at UCLA.

Researchers also found that the progeny of those cells, although just a few divisions away from the mother hair follicle stem cells, were not capable of forming squamous cell cancers. Further studying why those progeny, called transit amplifying cells, can't develop cancer could provide vital clues to how squamous cell cancers originate, said William Lowry, an assistant professor of molecular, cell and developmental biology in Life Sciences and senior author of the study.

The study, conducted in mouse models, appears the week of April 18 in the early online edition in the peer-reviewed journal the Proceedings of the National Academy of Sciences (PNAS).

It had been suggested in the literature that squamous cell cancers could arise from the hair follicle, but it was not clear what cell type within the follicle was responsible. This is the first time two distinct cell types in the skin have been compared and contrasted for their ability to develop squamous cell cancers, said Lowry, who is a Jonsson Cancer Center and Broad Stem Cell Research Center scientist.

"It was surprising that the progeny of these stem cells, which are developmentally more restricted, could not develop cancers when the mother stem cells could," said Lowry. "There is something fundamentally different between the two, and it's important that we figure out why one type of cell was able to develop cancer and the other was not. The insights we gain will tell us how these cancers arise in the first place, and could provide us with a wealth of novel targets we could go after to prevent the cancer before it starts."

A type of non-melanoma skin cancer, these cancers form in squamous cells, thin, flat cells found on the surface of the skin, the lining of the hollow organs of the body and the passages of the respiratory and digestive tracts. Squamous cell cancers occur in the skin, lips, mouth, esophagus, bladder, prostate, lungs, vagina, anus and cervix. Despite the common name, these cancers are unique malignancies with significant differences in manifestation and prognosis.

In this study, Lowry and his team sought to determine which cells of the epidermis, or skin, could give rise to squamous cell cancer. They wanted to find out if skin stem cells had properties that made them more prone to develop tumors than non-stem cells, said Andrew White, a post-doctoral fellow in Lowry's lab and first author of the study.

"Adult stem cells are long-lived and can acquire mutations that can cause cancer, but they also have intrinsic properties for self-renewal that are similar to cancer that could make them more tumor prone," White said.

Lowry and his team delivered genetic hits -- adding an oncogene that is known to cause cancer and removing a tumor suppressor gene -- to the hair follicle stem cells and the transit amplifying cells in two groups of mice and waited to see which developed cancer. Only the mice that received the genetic hits in the hair follicle stem cell population developed squamous cell cancer.

Going forward, White will molecularly profile the hair follicle stem cells and the transit amplifying cells to determine what string of biologic events occur when the cancer-causing genes are delivered. The differences between the two will be illuminating, Lowry said.

"We hope that this will lead to much more specific therapies that target cancer initiation rather than treating the disease once it's established," Lowry said. "If we're lucky, a drug may already exist that will hit a target we identify."

The four-year study was funded by the Jonsson Cancer Center Foundation, a training grant from the California Institute for Regenerative Medicine, the National Institutes of Health, the American Cancer Society, the University of California Cancer Research Coordinating Committee and the Maria Rowena Ross Chair in Cell Biology and Biochemistry.

A Belgium-based team also came to similar conclusions using slightly different methods, confirming the UCLA results. That study is published alongside Lowry's in PNAS.

## **Chemo radiation**

### **Minimizing Side Effects In Chemoradiation Could Improve Patient Survival (Med India: 20.4.2011)**

Minimizing side effects in chemoradiation could improve patient survival, a new study suggests.

Researchers at the Kimmel Cancer Center at Jefferson found that the occurrence of early side effects, such as fatigue and loss of short-term memory, that manifest during or soon after treatment is significantly associated with both late side effects (after 90 days) and overall survival in patients who suffer from malignant brain tumors, such as glioblastoma.

High-grade glioma patients who did not experience neurological side effects during chemoradiation for the brain cancer were found to have lived 4 months longer compared to those who did experience such effects.

The findings suggest the importance of normal tissue damage in determining long-term survival and how minimizing side effects could end in more positive outcomes.

The team reports their findings from a retrospective analysis of high-grade glioma patients from the Radiation Therapy Oncology Group (RTOG) database.

“As survival in glioblastoma multiforme increases, the prevention of treatment related side-effects becomes more important,” said Yaacov Richard Lawrence, MRCP, an Assistant Professor in the Department of Radiation Oncology at Thomas Jefferson University and director of the Center for Translational Research in Radiation Oncology at Sheba Medical Center in Israel.

“It is generally considered that the only way to improve survival in malignant brain tumors is to more effectively attack the tumor,” Dr. Lawrence said. “Fascinatingly, our research suggests that damage to surrounding normal tissue may also play a role in determining a patient’s long term outcome.”

## **Cyber bullying**

### **Protect you child from cyber bullying (The Asian Age; 25.4.2011)**

The internet has changed the way we live from the way we work and play, to how we interact and share with friends and family. Sometimes, it is hard to remember how we got along without the web. Today's generation of children, especially, have no idea what life was like before the internet.

Unfortunately, this also means that most parents particularly in India are not clued-in on their children's digital lives.

Children are particularly vulnerable to dangers on the internet. According to the Norton Online Family Report 2010, 8 out of 10 Indian children have experienced a negative situation online, yet only 50 percent of parents were aware of this. And one of the most

common negative experiences that can have a profound impact on a child is cyberbullying.

Cyberbullying is cruel, anti-social behavior carried out by children, teens (and sometimes adults) through any number of digital channels. The experience of being bullied, that was once limited to the schoolyard or playground, increases multifold when inflicted online, since it can take several dangerous forms. These include dispersion of false rumors, transmission of threatening messages and posting of embarrassing pictures.

Cyberbullies send text messages, e-mails, instant messages, social networking messages; they post content on blogs, Web pages or online game platforms to harass, embarrass, or intimidate others. They leverage technology to rapidly and widely spread messages and content.

Cyberbullying is often anonymous and repetitive and can be the work of a single perpetrator or an online group.

For the most part cyberbullying occurs for the same reasons as traditional schoolyard bullying: to demonstrate power, to seek revenge, or to compensate for perceived injuries. The irony is that a victim/target can find their efforts to defend themselves online viewed as cyberbullying as well.

Cyberbullying has a troubling emotional impact on children. While 41 per cent of Indian children felt angry when bullied online, 40 per cent said that it made them upset. These are emotions that children shouldn't have to experience at such a sensitive age.

In this context, the role of parents becomes crucial in securing their child's internet experience. However, parents cannot do this until and unless they know that their children have been bullied. Today's parents are the first generation of parents who have to cope with keeping their children safe not just in the real world, but in the ever expanding virtual world, as well.

As the amount of time children spend online continues to increase, parents need to be in the loop. It is vital that they get involved with their children's online lives from an early stage in order to better educate them about the dangers that exist online. Parents should be attentive and aware of their children's online activity. While cyberbullying is a danger that Indian parents are concerned about 1 in 4 are worried that their child has been bullied online it is important to recognize the signs of cyberbullying. Indicators to look out for include: frustration or depression, especially following cell phone or computer usage; withdrawal from friends or everyday leisure activities; a decline in grades or dissatisfaction with school or a specific class.

To protect your child against cyberbullies, follow these four essential S.T.A.R tips: S is for Software: Security software needs to be updated regularly and constantly assessed to suit the changing level of online interactions. Let technology work to your advantage and not at the expense of online safety. o T is for Talk: It is a parent's responsibility to keep their children safe online by connecting with them through regular conversations (not interrogations).

Let your kids know what are the dos and don'ts: A is for Awareness of REAL online risks i.e.

Internet predators, cyberbullying, etc. Stay in tune with kids' online activities and learn about social networking sites, which are very popular amongst teens.

R is for Rules: set online safety rules for your family and be consistent. Gaurav Kanwal is country sales manager, India, Consumer Products & Solutions, Symantec.

### **Combination Therapy**

#### **Combination Therapy Provides Hope for Cure of Dangerous Infections of Cystic Fibrosis Patients (Science Daily: 25.4.2011)**

An over-the-counter drug used to treat diarrhea combined with minocycline, an antibiotic used to treat bacterial infections, could one day change the lives of those living with cystic fibrosis.

Researchers at McMaster University have discovered this creative approach to tackle antibiotic resistance to bacterial infections, a frequent complication of those with cystic fibrosis. Cystic fibrosis is the most common, fatal genetic disease affecting Canadian children and young adults.

"Antibiotic resistance is having a profound effect on known drugs that are used to treat illness and disease," says researcher Eric Brown, professor and chair of McMaster's Department of Biochemistry and Biomedical Sciences and member of the Michael G. DeGroote Institute for Infectious Disease Research (IIDR).



"Previous advances in treating cystic fibrosis have been in managing infection, but since infectious organisms are increasingly developing resistance to antibiotics, the importance of providing new treatments is more important than ever."

Brown, who made the discovery in collaboration with McMaster researchers Gerry Wright and Brian Coombes, found that the combination of these two drugs inhibits the growth of bacteria after screening a collection of previously approved non-antibiotic drugs within McMaster's Centre for Microbial Chemical Biology.

Their screening revealed that this particular combination using the anti-diarrhea drug loperamide increases the efficacy of the antibiotic minocycline against multidrug resistant *P. aeruginosa*.

"Typically it takes 13 to 15 years to develop a drug," says Brown. "We think that this approach could cut drug development time in half."

"These exciting research findings hold promise that a new, safer method for treating devastating lung infections in people with cystic fibrosis may be just around the corner," says Maureen Adamson, CEO, Cystic Fibrosis Canada, a charity that partnered with the Canadian Institutes of Health Research to fund the project. "These findings could impact healthcare worldwide as antibiotic resistance is a tremendous threat to many populations."

Wright, scientific director of the IIDR, adds that McMaster is one of the only universities to look at the combination of antibiotic and non-antibiotic drugs in combating bacterial resistance. But he believes this marks the beginning of using combination therapy as a more effective way to treat disease.

"This finding has opened doors to discovering the abilities of drugs when combined," he says. "Not only has antibiotic resistance become a growing threat to managing illness and disease, the use of combination therapy has added benefits. These combinations might be a way to selectively target bacteria and combat disease and leave so-called "good bacteria" intact to do other things. In effect you use fewer antibiotics to get the same effect."

## **Biotechnology**

**How Biotechnology Can Help in Inclusive Development (The Economic Times: 25.4.2011)**

The government needs to support the fledgling sector with forward-looking policies that will unleash investment in biotech and lead to affordable healthcare for all, more jobs and better-skilled workforce

Ensuring inclusive growth for all Indians requires the adoption of an innovative, metrics-driven approach in areas such as agricultural productivity, healthcare, education, clean energy, science and technology and tribal upliftment. Instead of taking hesitant steps in the direction of inclusive growth, the government — in partnership with all stakeholders — needs to take meaningful action.

It must work ceaselessly, undeterred by any other compulsion. It must create an enabling regulatory environment for biotechnology to ensure innovation that boosts agricultural productivity and pays dividends in affordable, novel therapies. Moreover, the government must concentrate on expanding and augmenting the healthcare system and providing basic health insurance to all.

The only way to bridge the chasm in India's growth path is by making inclusive growth our guiding principle for development. As the country's growth gathers pace, we must deploy innovative solutions to ensure that the aam aadmi has unconditional access to nutritious food, quality education, affordable healthcare and sustainable employment. Individual and national development can move forward only on these four wheels. India, however, has been dragging itself along on flat tyres for far too long, keeping Indians from fulfilling their potential and the country from holistic economic and social advancement. While I commend the government for making certain admirable decisions as part of its inclusive growth agenda, I have reservations regarding its approach and would like to raise a few pertinent questions. For all its statements on the centrality of inclusive growth in policy-making and its efforts to realise basic necessities for the aam aadmi, I believe the government is wanting in conviction, determination and imagination. Why else is the government taking ad-hoc decisions, moving two steps forward and one step back — and sometimes not advancing at all? Why is it that when Budgets and policies are announced, they do not go as far as they need to for ensuring inclusive growth? While allocation for the social sector was increased in this Budget, the quantum of the hike in some areas was insignificant. Healthcare was barely addressed. Why are we moving so slowly in vital areas that decide life and death, determine progress and poverty, and define the human condition?

There seems to be a lot of thought and talk in decision-making bodies but not enough action. We cogitate and collaborate but do not execute on our decisions. Worse, our decisions fall way short of what is required for inclusive growth. We talk about funding inclusive growth, but the funds are not created. When we do create funds, we do not have the framework to allocate and distribute funds, and, most importantly, we are unable to ensure transparency in execution and make sure that people are accountable for the funds

they access. Unless we start taking concrete steps instead of just talking, our idea of inclusive growth is, at best, a myth. At its worst, it is hypocrisy.

## PROPOSED PATH AHEAD

Our idea of the aam aadmi needs to move beyond taking a few, disjointed steps to empowering each citizen of the country to attain a decent quality of life with dignity. We must formulate innovative policies that focus on helping our people emerge from an existence of perpetual disadvantage. A decent quality of life requires:

- Food security, not food handouts.
- Good education, not broken-down schools with no teachers.
- Affordable and accessible healthcare, not barely functioning primary health centres.
- Meaningful jobs, and not seasonal and short-term employment opportunities that produce nothing.

To ensure this, we need to adopt a focused, metrics-driven approach, offering self-empowerment opportunities to the disadvantaged so that they can participate in growth and partake in its dividends, lifting themselves out of poverty.

This inclusive economic development strategy must be based on carefully-calibrated metrics in areas such as agricultural productivity, healthcare, education, clean energy, technology and tribal uplift. Let me place what I have stated in the context of biotechnology and healthcare.

## BIOTECHNOLOGY & ECONOMIC DEVELOPMENT

In biotechnology, the country has a vibrant industry that will not only spur economic growth but also alleviate suffering and overcome grave threats to our future — from reducing pollution to providing cures for diseases and boosting agricultural productivity. Innovation is the engine of its growth.

## IMPEDIMENTS TO INNOVATION

Even as we talk about the importance of innovation for clean energy, energy independence, novel medicines and food security, the government's regulations are throttling innovation. Companies invest millions of dollars in high-end innovation in biotechnology. Instead of providing a regulatory impetus, the government puts in place regulatory roadblocks. Thus, a government suddenly decides Bt Brinjal is not acceptable. Or it delays or even disallows clinical trials, negating our competitive advantage in global R&D. The result? Not only are the time, effort and money invested lost, but future innovation is grounded, and, with it, the hope of a cure for a debilitating disease or a seed that ensures a high-yielding grain.

Why must companies invest in innovation when there is every chance that their investment will come to naught owing to regulatory obstacles? Instead of adhering to a clearly-articulated regulatory policy that can help strengthen the pillars of inclusive growth by providing food security or cheaper drugs, the government takes ad-hoc decisions buckling under political and external compulsions. The only compulsion that must guide us is inclusive growth.

## ENABLERS

Why cannot the government incentivise R&D in biotechnology by providing a five-year tax holiday on products developed indigenously, tax breaks for venture funding, zero duty on R&D equipment, and a longer sunset date for biotech SEZs? BRIC economies such as Brazil and China are investing heavily in biotechnology, both agricultural and biopharma. Their levels of patenting are higher, as is their investment in R&D as a percentage of their GDP. Unless we encourage innovation by streamlining our regulatory framework and work towards inclusive growth with the courage of conviction, we will fail the aam aadmi.

## WRONG SIGNALS

Nowhere is the idea of innovation for inclusive growth more important than in healthcare. The committee agrees that affordable healthcare and innovation to ensure the same is critical for the aam aadmi.

Despite this, Budget 2011 has let down the healthcare sector, which has not seen anything concrete beyond the increase in allocation and the extension of health insurance to NREGA workers. Instead of taking important measures such as extending health insurance to all and augmenting the healthcare infrastructure and expanding an integrated

healthcare system to ensure affordable and accessible healthcare, the government opts to bring services in air-conditioned hospitals into the tax net.

While the proposal has been rolled back owing to protests, the step indicates a disturbing mindset. It appears to suggest that the common Indian must be excluded from any improvement in her life. The government must bear in mind that air-conditioning in hospitals is a necessity and not a luxury: it is required for a functioning operation theatre, it is needed for quality diagnostics. By its decision, the government seems to be condemning the aam aadmi to go to a hospital with substandard infrastructure. Instead, the government can focus on creating a health insurance policy that can help the aam aadmi afford a good quality private hospital — one that is air-conditioned.

## BIOTECH SECTOR & JOBS

The healthcare sector can be one the largest job creators: a healthcare set-up requires not only doctors and nurses but also paramedics, technicians, healthcare workers and providers of ancillary services. All these are sustainable jobs, which are essential for individual and societal progress. Agriculture is the very core of our economy. Agricultural productivity through technological interventions is key to development. The proposed agri-parks can be set up in tribal areas, for these too will create sustainable jobs across a wide spectrum of skills and locations, giving the tribals a chance to upgrade their skills.

## SKILLS

Upgradation of skills needs to be one of the focal points of our educational system. Even as we boost primary education, we must foster a culture of innovation in our higher education. Despite the presence of quality research institutions, we still do not have a substantial pool of well-trained manpower to realise the scientific potential. It is important to fill this gap in skills. A systematic exchange of knowledge between academics and industry can help.

## CONCLUSION

We all agree that inclusive growth for the aam aadmi is the end-goal of all our policies and decisions. To make the promise of inclusive growth a reality, we must adopt a metrics-driven approach and not be deterred by any compulsion, political or otherwise.

The solution lies in political will and robust leadership at all levels of the government. Realisation of the end-goal is what matters.

(The author is chairman and managing director of Biocon)

## **Normal and cancerous cells**

### **New clues on how normal and cancerous cells migrate within the body (New Kerala: 26.4.2011)**

Understanding how brain cells migrate during normal development may offer insight on how cancer cells spread, according to a new study.

The findings by Jonathan Cooper, member and director of the Hutchinson Center's Basic Sciences Division, and Yves Jossin, a research fellow in Cooper's laboratory, could lead to a better understanding of neurological development and, possibly, cancer metastasis.

During normal development cells divide, arrange themselves in appropriate patterns, and specialize to form discrete tissues and organs. For the body to develop properly, cells must coordinate their migratory patterns and the process by which they differentiate, or evolve from less-specialized cells into more-specialized cell types.

A lack of such coordination leads to disordered development and, in some cases, cancer.

Jossin and Cooper set out to analyze how cells migrate in the cerebral cortex of the developing brain.

The cerebral cortex is composed of horizontal layers of nerve cells, or neurons, which are specialized for different functions and connected vertically into circuits.

If some neurons are in the wrong layers, the wiring can be defective and may result in neurological disorders including epilepsy, autism and schizophrenia.

Jossin and Cooper discovered the signals that control a particular stage in a cortical neuron's journey.

New neurons initially move in a straight line, from the inside to the outside, until they reach a layer called the intermediate zone. This zone contains relatively few neurons but many connecting fibers, or axons.

When new neurons reach this layer, they lose their way and start wandering - up, down, left and right, frequently changing direction.

When, seemingly by chance, they emerge from the intermediate zone, they realign with their original direction of movement and speed ahead through layers of differentiated neurons towards the outer surface of the cortex.

The researchers aimed to determine how neurons get back on track after they emerge from the chaos of the intermediate zone.

They identified a signaling protein, called Reelin, which is made by cells in the outermost layer of the cortex.

It has been known for years that mutations in the Reelin gene cause profound cortical layering abnormalities in rodents and people, but it has been unclear which stage of neuron migration goes awry when Reelin is absent.

The new study shows that new neurons respond to Reelin as they emerge from the intermediate zone.

The researchers show that a membrane protein called N-cadherin increases on the surface of neurons when the neurons encounter Reelin.

The surface increase in N-cadherin allows the cell to choose the appropriate direction for its next stage of migration.

"This represents a new and surprising function for N-cadherin because normally this protein acts as a cellular stabilizer and not as an orchestrator of migration," said Jossin

"The new role for N-cadherin in orienting migrating cells is quite unexpected and suggests that cadherins on the surface of other types of normal or cancer cells may also be involved in helping them move rather than stay in place," he said.

"This finding could provide new clues to how normal and cancerous cells migrate within the body," he added.

## **Brain bypass**

### **Brain bypass regenerates lost brain tissue (New Kerala: 26.4.2011)**

Neurosurgeons have successfully regenerated lost brain tissue through brain bypass surgery in patients whose blood flow to the organ was impaired by strokes.

This loss of tissue, which comprises brain's grey matter, leads to decreased neurocognitive functions -- perception, memory, awareness, capacity for judgement -- and may hasten the onset of dementia.

Approximately 11 months after patients underwent bypass, aimed at restoring blood flow to the brain, researchers observed a 5.1 percent increase in brain tissue thickness on MRI scans, reports the journal Stroke.

"We were pretty astounded when we saw the results because they were quite unexpected," said Michael Tymianski, neurosurgeon at the Krembil Neuroscience Centre, specializing in neurovascular diseases, according to a University Health Network statement.

"Our goal with the surgery was to halt further loss of brain tissue due to strokes, so it was remarkable to see the loss was actually reversed," added Tymianski.

This is the first surgical treatment which has been shown to restore lost brain tissue. The average age of the patients in the study was 41 years.

"The re-growth of brain tissue has only been observed in an extremely limited number of circumstances," said Tymianski.

"We consider this so important because one of the most important health issues facing our population is chronic cerebrovascular (stroke related) disease, which leads to neurocognitive impairment and reduces quality of life."

## **Combination therapy**

### **Combination therapy shows promise in treating devastating cystic fibrosis (New Kerala: 26.4.2011)**



A new study has suggested that an over-the-counter drug used to treat diarrhea combined with minocycline, an antibiotic used to treat bacterial infections, could one day change the lives of those living with cystic fibrosis.

Researchers at McMaster University have discovered this creative approach to tackle antibiotic resistance to bacterial infections, a frequent complication of those with cystic fibrosis

"Antibiotic resistance is having a profound effect on known drugs that are used to treat illness and disease," says researcher Eric Brown, professor and chair of McMaster's Department of Biochemistry and Biomedical Sciences and member of the Michael G. DeGroote Institute for Infectious Disease Research (IIDR).

Brown, who made the discovery in collaboration with McMaster researchers Gerry Wright and Brian Coombes, found that the combination of these two drugs inhibits the growth of bacteria after screening a collection of previously approved non-antibiotic drugs within McMaster's Centre for Microbial Chemical Biology.

Their screening revealed that this particular combination using the anti-diarrhea drug loperamide increases the efficacy of the antibiotic minocycline against multidrug resistant *P. aeruginosa*.

"Typically it takes 13 to 15 years to develop a drug," said Brown.

"We think that this approach could cut drug development time in half," he added.

## **Human Heart**

### **Human Heart Health Secrets may lie in Frog Embryos (Med India: 26.4.2011)**

The process of tissue formation in the human heart has been unraveled in research on frog embryos. This can help understand cardiac diseases like DiGeorge syndrome.

The study mapped the embryonic region that becomes the part of the heart that separates the outgoing blood in *Xenopus*, a genus of frog.

Jean-Pierre Saint-Jeannet, a developmental biologist at Penn's School of Veterinary Medicine, along with Young-Hoon Lee of South Korea's Chonbuk National University were behind the finding.

"In the frog, we were expecting to find something that was in between fish and higher vertebrates, but that's not the case at all," said Saint-Jeannet.

"It turns out that cardiac neural crest cells do not contribute to the outflow tract septum, they stop their migration before entering the outflow tract. The blood separation comes from an entirely different part of the embryo, known as the 'second heart field'," he said.

Knowing these paths, and the biological signals that govern them, could have implications for human health.

"There are a number of pathologies in humans that have been associated with abnormal deployment of the cardiac neural crest, such as DiGeorge Syndrome," said Saint-Jeannet.

"Among other developmental problems, these patients have an incomplete blood separation at the level of the outflow tract, because the cardiac neural crest does not migrate and differentiate at the proper location.

"Xenopus could be a great model to study the signals that cause those cells to migrate into the outflow tract of the heart.

## **Synthetic brain cell**

### **Synthetic brain cell developed (The Asian Age: 26.4.2011)**

Researchers have for the first time created a synthetic synapse circuit whose behaviour duplicates the function of a brain cell.

A synapse is a junction that permits a neuron to pass an electrical or chemical signal to another nerve or brain cell.

The team, led by professors Alice Parker and Chongwu Zhou at the University of Southern California Viterbi School of Engineering, combined circuit design with nanotechnology to address the complex problem of capturing brain function.

Carbon nanotubes are molecular carbon structures a million times smaller than a pencil point. These nanotubes can be used in electronic circuits, acting as metallic conductors or semiconductors, according to a California statement.

"This is a necessary first step in the process," said Prof. Parker, who began looking at the possibility of developing a synthetic brain in 2006.

### **Brain gain**

#### **Brain gain: To keep mind sharp, meet friends, attend parties (The Times of India: 27.4.2011)**

An easy way to keep your brain healthy and sharp is to meet friends, attend parties or just play bingo! Frequent social activities may help prevent or delay cognitive decline in old age, says a research conducted by the Rush University Medical Centre.

"It's logical to think that when someone's cognitive abilities break down, they are less likely to go out and meet friends, enjoy a camping trip, or participate in community clubs," says Bryan James, who led the study, reports the Journal of the International Neuropsychological Society.

"If memory and thinking capabilities fail, socialising becomes difficult," added James, post-doctoral fellow at Rush Alzheimer's Disease Centre. "But our findings suggest that social inactivity itself leads to cognitive impairments."

In the study, participants who had the highest levels of social activity experienced only one quarter of the rate of cognitive decline experienced by the least socially active individuals, the Journal reports.

### **Immune Systems**

#### **Men's and Women's Immune Systems Respond Differently to PTSD (Science Daily: 27.4.2011)**

Men and women had starkly different immune system responses to chronic post-traumatic stress disorder, with men showing no response and women showing a strong response, in two studies by researchers at the San Francisco VA Medical Center and the University of California, San Francisco.

While a robust immune response protects the body from foreign invaders, such as bacteria and viruses, an over-activated response causes inflammation, which can lead to such conditions as cardiovascular disease and arthritis.

In a study published in the March, 2011 issue of *Brain, Behavior, and Immunity*, the authors took blood samples from 49 men (24 with PTSD and 25 controls) and 18 women (10 with PTSD and 8 controls). They then used gene microarray technology to determine which genes were activated in the subjects' monocytes, which are immune cells that regularly cross the barrier between the bloodstream and the brain, and thus give a broad picture of immune reaction in both the body and brain.

"We were looking for evidence of inflammation caused by immune activation," explained lead author Thomas Neylan, MD, director of the PTSD program at SFVAMC and a professor in residence of psychiatry at UCSF. "We know that people with PTSD have higher rates of cardiovascular disease and arthritis, which are diseases associated chronic inflammation. We also hoped that seeing which genes were expressed in PTSD might show us potential therapeutic approaches that we hadn't thought of."

The researchers found no evidence of increased immune activation among the men with PTSD compared to those without PTSD. In contrast, the women with PTSD showed significant evidence of immune activation compared to women without PTSD.

"Previous gene microarray studies on PTSD grouped men and women together, which gave inconclusive results," said senior investigator Lynn Pulliam, MS, PhD, chief of microbiology at SFVAMC and professor of laboratory medicine and medicine at UCSF. "This is the first time that it's been shown that men and women respond differently to PTSD on a very basic biological level."

Neylan characterized the finding as "unexpected."

The researchers do not know why there seems to be such a marked difference between men and women, said Neylan. However, in a study published in the January, 2011 issue (posted in April, 2011) of the journal *Disease Markers*, they analyzed data collected from the same subjects to explore one possible explanation: gender differences in cell signaling pathways.

"We know that gene expression patterns are determined by hormones and proteins that are circulating in the body, and we know that some of those hormones and proteins are produced in response to signals from the brain or central nervous system," explained lead author Aoife O'Donovan, PhD, a researcher in psychiatry at SFVAMC and UCSF. "These signaling pathways are used by the brain and central nervous system to communicate with the immune system and tell immune cells what to do."

The researchers used sophisticated bioinformatics software to look at three different signaling pathways associated with inflammation: NF-kappa B, glucocorticoid receptor (GR), and CREB/ATF.

In the NF-kappa B and GR pathways in both men and women with PTSD, they found evidence of signaling that could promote inflammation.

In the CREB/ATF pathway, however, they found what O'Donovan called "totally contrasting" effects: men with PTSD had increased signaling, which in turn could possibly lead to less inflammation, while women with PTSD had decreased signaling, which could lead to more inflammation.

"This particular pathway might be a clue to the gender difference in monocyte gene expression in PTSD," said Pulliam.

"It's still very early," cautioned O'Donovan, "but these bioinformatics results are telling us something about how PTSD could increase the risk for autoimmune disorders like arthritis as well as cardiovascular disease, cancer, and other diseases of aging. They also point us in the direction of some potential treatment targets, telling us where future investigative energy might be well spent."

Neylan emphasized that because of the small sample size, particularly among the women, the results of the two studies are suggestive rather than conclusive. "The next step is to look at larger groups of men and women, and we are working on that," he said.

Co-authors of the Brain, Behavior, and Immunity study are Bing Sun, MD, PhD, and Hans Rempel, PhD, of SFVAMC; Jessica Ross, MD, MS, of SFVAMC and UCSF; and Maryann Lenoci, MA, of SFVAMC.

Co-authors of the Disease Markers study are Bing Sun, MD, PhD; Steve Cole, PhD, of UCLA; Hans Rempel, PhD; and Maryann Lenoci, MA.

Both studies were supported by grants from the Department of Defense and the Department of Veterans Affairs Sierra Pacific Mental Illness Research & Education Clinical Center. Some of the funds were administered by the Northern California Institute for Research and Education.

## **Colonoscopy**

### **A Less Painful Colonoscopy (Science Daily: 28.4.2011)**

Colonoscopy is regarded as the most thorough way to screen for colon cancer but the potentially life-saving procedure can also be painful. Scientists and engineers are continually researching new methods of screening to reduce patient discomfort while also ensuring the accuracy of the exam. Researchers at Tufts University's School of Engineering led by Associate Professor of Mechanical Engineering Caroline G.L. Cao, Ph.D., have developed a device that could potentially do both.

Tufts endoscopic fiber optic shape tracker (EFOST) technology is a possible solution to the problem that occurs when the endoscope is inserted into the colon during routine screening. As an endoscopist navigates the scope through the bends and turns in the colon, its tip can impinge against the colon wall.

When this happens, the tip becomes stationary and is unable to move forward. As the physician applies more pressure, a loop can form in the length of scope behind the tip. Because the traditional endoscope provides only a frontal view during the procedure, the doctor cannot see the loop, much less easily maneuver the scope to remove it. Not surprisingly, looping can be a major source of pain during a colonoscopy.

But by outfitting an endoscope with fiber optic bend sensors and digital electronics that display its position and shape on a video monitor, the Tufts engineers have built a system that could serve as a visual navigation tool, says Cao

"Doctors will have a way to see in real-time how the scope is moving inside the patient's body," says Cao. "If the scope begins to loop, they will see it instantaneously and then be able to make adjustments to straighten it out."

#### **Bend Sensors to Create a Visual Image**

Cao and Mechanical Engineering Research Associate Professor Peter Y. Wong, Ph.D., described their concept in the journal *Optical Engineering*.

Using a prototype, the Tufts engineers embedded quantum dots -- nano-sized crystals of semiconductor material -- circumferentially at intervals along the length of an optical fiber. The researchers stretched the fiber around a metal cylinder to create a bending effect. They then injected a laser light beam into the fiber's inner core from one end.

The fiber's core released light as it is bent. This activated the quantum dots. Instantly, the dots reemitted light signals of varying intensity to a spectrometer. With this data, the researchers were able to measure the degree of curvature in the fiber. From the position of the activated dots, the researchers were also able to calculate the direction of the bend. "The greater the bend, the more intense the light emissions," says Cao.

In a separate experiment, the team used an inanimate model colon made of polyurethane foam.. They inserted the modified fiber inside an endoscope and then threaded the device into the model. The researchers were able to produce a video image by sending the data through a digital processor which created a real-time image of the scope in the model colon.

Cao notes, "Physicians can use the image on the monitor to guide them. They'll know exactly where the end of the point is, as well as the shape of the scope inside the colon."

Colorectal cancer is the third leading cause of cancer-related deaths in the United States, with 102,900 new cases diagnosed in 2010, according to most recent estimates from the American Cancer Society.

Colon cancer has a high cure rate provided it is detected early. Most men and women are advised to undergo periodic colonoscopies beginning at age 50.

The commercialization of EFOST is being managed by Tufts University's Office for Technology Licensing and Industrial Collaboration. There are currently patents s pending in the USA, Canada, Europe, Japan and Australia. The next step, Cao says, is to acquire funding to launch a start-up company and then move on to further development of the technology, including eventual clinical trials.

This work was supported by a Broad Medical Research Grant from the Eli and Edythe L. Broad Foundation. The pending patents are jointly owned by Tufts University, University of Toronto and University Health Network Toronto.

### **Astronomy technique**

**Astronomy technique can help detect deadly melanoma (New Kerala: 29.4.2011)**

Using a technique that astronomers use to parse starlight, a University of Wisconsin-Madison professor of astronomy has developed a telescope that can possibly assess the skin blots that may become cancerous.

The idea struck Andy Sheinis, who was at high risk for melanoma, about 10 years ago, during a visit to the dermatologist.

The technology used in his giant Keck Telescope is a low-cost and speedy way to sample the spectrum of light in every pixel of an image and build a three-dimensional “data cube.”

It is used in astronomy to tease information about the size and composition of celestial objects millions or billions of light years from Earth.

The technology, Sheinis noted, can be compressed into a device the size of a camera and is now being integrated into a microscope at UW-Madison’s Laboratory for Optical and Computational Instrumentation (LOCI).

In the context of assessing moles for their potential to become cancerous, the method, in a single snapshot, captures a three dimensional image in anywhere from 90 to several hundred wavelengths of light. It is quick, noninvasive, inexpensive and holds clinical promise not only for identifying worrisome moles but also for accurately mapping their extent, which is critical information when it comes to surgically excising them.

But the skin cancer assessment potential of the technology is just now being assessed using cancerous tissue, mounted on microscope slides, from about 50 patients as a first critical test. By comparing the data from the hyperspectral imager to the histology or microscopic anatomy of the mole, the gold standard for diagnosing melanoma, Sheinis, Xu and their colleagues will be able to test the accuracy of the method before trying the technology in a clinical setting.

“The idea is to take this device from astronomy and apply it to melanoma,” said Kevin Eliceiri, a professor of molecular biology and biomedical engineering and director of LOCI.

“This is very new stuff. We don’t know if it’s going to work, but that’s why we want to try it,” added Eliceiri.



## **Bariatric surgery**

### **Bariatric surgery is better at controlling glucose levels than dieting(New Kerala: 29.4.2011)**

A study has found a new clue as to why bariatric surgery is more effective than dietary remedies alone at controlling glucose levels.

Researchers at Duke University Medical Center and St. Luke's and Roosevelt Hospital Center, Columbia University, made the discovery.

The current study showed that obese people with Type 2 diabetes undergoing GBP surgery have much lower levels of circulating branched-chain amino acids (BCAA) and the aromatic amino acids phenylalanine (Phe) and tyrosine (Tyr), compared to a matched group of obese patients with diabetes who lost an equal amount of weight by following a diet.

This enhanced reduction in BCAA and aromatic amino acids Phe and Tyr was linked to better improvement in glycemic (blood sugar) control in the GBP group.

Lead author Blandine LaFerrere, M.D., of the New York Obesity Nutrition Research Center (NYONRC) at St. Luke's and Roosevelt Hospital Center, provided one group of patients for comparison and Duke University provided a group of obese patients without diabetes, matched also into GBP and diet groups for evaluation.

Both sets of results showed the preferential reduction in amino acids in the GBP subjects, correlated with better glucose control.

"The most intriguing finding from the current study is that amino acids, particularly the branched-chain amino acids, decreased more significantly after gastric bypass surgery than after the same weight loss through a diet intervention," LaFerrere said.

"The next step will be to characterize the pathways involved in these metabolic changes so we can understand how the specific metabolic signature of gastric bypass surgery is related to changes in hormones and hormone action, including gut hormones, that occur after surgery," LaFerrere explained.

Senior author Christopher B. Newgard, Ph.D., and colleagues at the Sarah W. Stedman Nutrition and Metabolism Center at Duke University, evaluated specimens at the Center's metabolic profiling ("metabolomics") laboratory.

The Center's laboratory uses mass spectrometry to measure hundreds of metabolic intermediates simultaneously in simple blood samples.

"The evidence is mounting that BCAA and related metabolites are linked with insulin resistance and diabetes, and that they can cause metabolic dysfunction," Newgard said.

"The current study shows that these metabolites are also highly responsive to a very efficacious diabetes intervention, gastric bypass surgery.

"Moving forward, we will need to design studies in the general population to completely demonstrate the value of the amino acid signature in models of risk and to come up with clinically valuable algorithms.

"We also need to understand how BCAA and related metabolites become elevated in patients at risk for diabetes-is this genetics, diet, gut bacteria, or some combination of these factors?" he added.

The results were published in Science Translational Medicine on April 27.

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## **Gene**

**Gene behind major depression identified (New Kerala: 29.4.2011)**

Scientists have identified a novel gene associated with major depression.

The finding may guide future therapeutic strategies for this debilitating mood disorder.

Major depression is a psychiatric disorder that is responsible for a substantial loss in work productivity and can even lead to suicide in some individuals.

"Current treatments for major depression are indispensable but their clinical efficacy is still unsatisfactory, as reflected by high rates of treatment resistance and side effects," said study author Martin A. Kohli from the Max Planck Institute of Psychiatry in Munich, Germany.

"Identification of mechanisms causing depression is pertinent for discovery of better antidepressants," he said.

Kohli and colleagues performed a stringent genome-wide association study of patients diagnosed with major depression and matched control subjects with no history of psychiatric illness.

They identified SLC6A15, a gene that codes for a neuronal amino acid transporter protein, as a novel susceptibility gene for major depression.

The finding was confirmed in an expanded study examining over 15,000 individuals.

The finding is published in the current issue of the journal Neuron.

## **Robotic surgery**

### **Robotic surgery removes hard-to-reach throat cancer (New Kerala: 2.5.2011)**

**Robotic surgery has become a mainstream tool for removing an ever-increasing variety of head and neck tumors.**

Now, a team of surgeons from Mayo Clinic has found robotic surgery can treat cancer in narrow, hard-to-reach areas beyond the tongue at the top of the voice box. Some patients were able to avoid further treatment with chemotherapy or radiation, and most could resume normal eating and speaking.

"We've known it's useful for tongue base and tonsil cancers, but we wanted to assess its effectiveness in the larynx," says Kerry Olsen, otolaryngologist and study co-author at Mayo.

The investigation of trans-oral robotic surgery (TORS) followed a group of patients for up to three years following removal of tumours affecting the area of the larynx above the

vocal cords. Most of the patients had advanced-stage disease, according to a Mayo statement.

The results showed TORS effectively removed cancer, with "clean," disease-free margins, and was easier to perform than the approach of trans-oral laser microsurgery via a laryngoscope.

The patients also underwent the surgical removal of their adjacent neck nodes at the same operation.

"We were pleased with the cancer outcomes," Olsen says. "We also found patients had minimal trouble after surgery, in most cases resuming normal eating, swallowing and speaking."

With TORS, the robotic arms that enter the mouth include a thin camera, an arm with a cautery or laser, and an arm with a gripping tool to retract and grasp tissue.

The surgeon sits at a console, controlling the instruments and viewing the three-dimensional surgical field on a screen. "The camera improves visibility," Olsen says.

"We also gain the ability to manoeuvre and see around corners and into tight spaces, and we believe we'll now be able to take out more throat tumours than with traditional approaches of the past."

These findings were presented at the Combined Otolaryngological Spring Meetings in Chicago.

## **System in Brain**

### **System in Brain -- Target of Class of Diabetes Drugs -- Linked to Weight Gain (Science Daily: 2.5.2011)**

University of Cincinnati (UC) researchers have determined why a certain class of diabetes drugs leads to weight gain and have found that the molecular system involved (PPAR- $\gamma$  found in the brain) is also triggered by consumption of high-fat foods.

The study could lead to the modification of existing diabetes therapies and even dietary recommendations to limit the action of this nuclear receptor in the brain.

The research, led by Randy Seeley, PhD, UC professor and Donald C. Harrison Endowed Chair in Medicine, appears as an advanced online publication May 1, 2011, in the journal Nature Medicine.

PPAR- $\gamma$  is found in white adipose (fat) tissue where it regulates the production of fat cells. This new research describes an important role for PPAR- $\gamma$  in the brain.

PPAR- $\gamma$  is the target of a class of diabetes drugs called TZDs (thiazolidinediones). This class of drugs reduces blood glucose levels but also causes considerable weight gain. That weight gain, Seeley says, makes many patients reluctant to use these therapies particularly since many are already trying to lose weight to improve their diabetes.

Seeley and his team set out to determine whether or not the brain's PPAR- $\gamma$  system was responsible for the weight gain associated with TZDs. The team also wanted to learn if this system in the brain was activated by a high-fat diet.

To do so, they used animal models to test how the class of drugs interacted with the brain PPAR- $\gamma$  system. They found that by giving TZD drugs in the same manner that people take them, rats gained weight. This was because the drugs activated PPAR- $\gamma$  in the brain. Thus, weight gain associated with this class of drugs may not be a result of action of PPAR- $\gamma$  in fat as had been previously thought, but rather a result of a change in activity in parts of the brain known to regulate appetite.

Seeley's team went on to also show that high-fat diets result in activation of the brain PPAR- $\gamma$  system. Experiments in which the activity of the brain PPAR- $\gamma$  system was limited resulted in less weight gain when animals were exposed to a high-fat diet similar to diets of many Americans.

"If you artificially turn on PPAR- $\gamma$ , you can increase food intake in rats," says Seeley. "If you block these receptors in animals on high-fat diets that make animals obese, animals gain less weight."

In the past, says Seeley, people thought that the production of more fat cells in response to TZD drugs was the cause of the resulting weight gain, but he adds, "Just having more fat cells is not enough to make animals or people fatter. Rather you have to eat more calories than you burn and that is exactly what happens when you turn on the brain PPAR- $\gamma$  system."

"This work helps us understand the complex relationship between our fat, our appetites and type 2 diabetes."

Fat cells are actually quite protective and act as safe repositories for excess nutrients that cause damage when stored in other tissues like the liver and muscle, says Seeley. "It's

when nutrients are stored in these cells that individuals are at increased risk for metabolic diseases such as type 2 diabetes."

This, he says, is why TZDs are effective at lowering glucose. The extra fat cells produced become the storage containers for nutrients that would otherwise be harmful if they are stored in other areas of the body.

"You can think of your fat tissue like a bathtub," Seeley says. "A bathtub is designed to hold water. It's a good place to store it. If you turned on the faucet but didn't have a bathtub, the water would go to other parts of your house and cause water damage."

The same is true for nutrients, says Seeley. "It is better to store them in your fat tissue "bathtub" than to have them go to other parts of your body where they can do more harm."

Seeley says PPAR- $\gamma$  is a system designed at all levels to help you prepare to eat more and gain weight opening up the possibility that food we eat that can activate PPAR- $\gamma$  might contribute to increasing rates of obesity.

"It tells your brain to eat more and it tells your fat tissue to add new fat cells to serve as repositories to store those extra calories."

He says the next steps would be to find ways to redesign TZDs so that they retain their important glucose-lowering function but with less access to the brain, thereby limiting weight gain.

In the longer term, Seeley says, it's important to better understand the interaction between the brain's PPAR- $\gamma$  system and the specific micronutrients we consume from fat, protein and sugar.

"We know that one way to activate PPAR- $\gamma$  is by exposing cells to fatty acids. If we know which ones activate PPAR- $\gamma$ , we could find ways to alter diets so as to limit their ability to turn on this system that drives increased food intake, making it easier for people to avoid weight gain."

The study was funded by the National Institute of Diabetes and Digestive and Kidney Diseases.

## Enzymes

### How enzymes help us in keeping fit (The Tribune: 4.5.2011)

Proteins are critically important to life and the human body. They are also among the most complex molecules in nature, and there is much we still don't know or understand about them. Enzymes are molecules that can trigger specific chemical reactions. Enzymes are proteins that catalyze (increase or decrease the rates of) chemical reactions. In enzymatic reactions, the molecules at the beginning of the process are called substrates, and they are converted into different molecules, called the products. Almost all processes in a biological cell need enzymes to occur at significant rates.

Since enzymes are selective for their substrates and speed up only a few reactions from among many possibilities, the set of enzymes made in a cell determines which metabolic pathways occur in that cell. Like all catalysts, enzymes work by lowering the activation energy ( $E_a$ ) for a reaction, thus dramatically increasing the rate of the reaction. As a result, products are formed faster and reactions reach their equilibrium state more rapidly.

Most enzyme reaction rates are millions of times faster than those of comparable uncatalyzed reactions. As with all catalysts, enzymes are not consumed by the reactions they catalyze, nor do they alter the equilibrium of these reactions. However, enzymes do differ from most other catalysts by being much more specific.

Enzymes are known to catalyze about 4,000 biochemical reactions. Since the tight control of enzyme activity is essential for homeostasis, any malfunction (mutation, overproduction, underproduction or deletion) of a single critical enzyme can lead to a genetic disease. The importance of enzymes is shown by the fact that a lethal illness can be caused by the malfunction of just one type of enzyme out of the thousands of types present in our body.

One example is the most common type of phenylketonuria. A mutation of a single amino acid in the enzyme phenylalanine hydroxylase, which catalyzes the first step in the degradation of phenylalanine, results in the build-up of phenylalanine and related products. This can lead to mental retardation if the disease is untreated. Enzymes are responsible for the taste of beer, the effectiveness of detergents and the digestion of food in our guts.

One key challenge is the stability of enzymes, a particular type of protein that speeds up, or catalyzes, chemical reactions. Taken out of their natural environment in the cell or



body, enzymes can quickly lose their shape and denature. Everyday examples of enzymes denaturing include milk going sour, or eggs turning solid when boiled.

Rensselaer Polytechnic Institute Professor Marc-Olivier Coppens has developed a new technique for boosting the stability of enzymes, making them useful under a much broader range of conditions. Coppens confined lysozyme and other enzymes inside carefully engineered nano-scale holes or nanopores. Instead of denaturing, these embedded enzymes mostly retained their 3-D structure and exhibited a significant increase in activity.

The discovery raises many questions and opens up entirely new possibilities related to biology, chemistry, medicine and nanoengineering, Coppens said. He envisions this technology could be adapted to better control the nanoscale environment as well as increase the activity and selectivity of different enzymes. Looking forward, Coppens and colleagues will employ molecular simulations, multiscale modelling methods, and physical experiments to better understand the fundamental mechanics of confining enzymes inside nanopores.

The writer teaches chemistry at MCM DAV College for Women, Chandigarh.

## **Nerve cells**

### **Some nerve cells that make us itch also make us feel pain, finds study (New Kerala: 4.5.2011)**

A new study has found growing evidence that nerve cells that make us itch can also make us feel pain.

Itch and pain researcher Diana Bautista, an assistant professor of molecular and cell biology at the University of California, Berkeley, said that the interactions between itch and pain are only partly understood.

The skin contains some nerve cells that respond only to itch and others that respond only to pain. Others, however, respond to both, and some substances cause both itching and pain.

Bautista's new research shows that two specific irritants induce itching by way of the wasabi receptor, a pain receptor familiar to sushi lovers.

Other recent studies have shown that some itch inducers, called pruritogens, lead to activation of the capsaicin receptor, a pain receptor named for the incendiary chemical in chili peppers.

"It's starting to look like many pain receptors are linked to the itch system. Both itch and pain use some of the same molecules to send signals to the brain," she said.

Bautista has genetically altered mice so that they don't produce the wasabi receptor, and hopes that the mouse strain will help lead to a better understanding of forms of itch that do not respond to antihistamines.

Five years ago, Bautista showed that allyl isothiocyanate, the sinus-clearing ingredient in wasabi, hot mustard and garlic, causes pain solely by activating a receptor called TRPA1 on sensory nerves.

The receptor is one of a group of transient receptor potential (TRP) ion channels in sensory nerves under the skin, including the mouth and mucus membranes, which detect temperature, mechanical abrasion and irritating chemicals.

The capsaicin and heat receptor, dubbed TRPV1, is another such ion channel, as is TRPM8, a cold-activated channel targeted by menthol and other cooling agents.

When these receptors are activated, they open up and depolarise the nerve cell, which transmits an attention-grabbing pain signal through the spinal cord to the brain.

Bautista's colleague Xinzhong Dong in the Solomon H. Snyder Department of Neuroscience at Johns Hopkins University School of Medicine in Baltimore recently identified two new itch receptors, both of them Mas-related G protein-coupled receptors.

One, MrgprA3, is stimulated by chloroquine, while the second, MrgprC11, is stimulated by BAM8-22, a peptide released by immune cells, including mast cells, during inflammation.

If sensory nerves contain pain receptors like TRPA1 and TRPV1, and itch receptors like MrgprA3 and MrgprC11, how does the cell distinguish between itch and pain? Bautista asked.

Bautista tested both chloroquine and the mast cell chemical BAM8-22 on cultured mouse cells and found that both activate the wasabi receptor, TRPA1, causing a depolarisation of nerve cells.

In addition, knock-out mice that lack the receptor do not respond to either chemical, while a chemical that blocks the receptor also stops the itch.

Her interpretation of the results is that in sensory nerves with both the chloroquine itch receptor and the wasabi pain receptor, when chloroquine binds to its receptor, it subsequently opens the wasabi receptor, which depolarises the nerve cell and sends an itch signal to the brain.

Similarly, in the cells that have both a BAM8-22 itch receptor and a wasabi receptor, BAM8-22 triggers opening of the wasabi receptor. Both itch inducers trigger the pain receptors through G protein couplings inside the cell.

"These experiments provide a wonderful demonstration that chloroquine and BAM8-22 cause itch only through the wasabi receptor," she said.

"If both pathways converge on the same ion channel, perhaps other molecules that cause itch also use this channel," she added.

The findings have been published in this week's print edition of the journal *Nature Neuroscience*.

## **Human**

### **Human are born liars, claims book (The Asian Age: 9.5.2011)**

Between the ages of two and four, kids' lies are usually told to avoid punishment. Very young kids tend not to be good at lying.

If your child lies at three, be delighted, if they lie at seven, be very afraid but please don't fret about telling fibs — it's what that makes us human, says a new book. According to the book, *Born Liars*, penned by Ian Leslie, people are "all born liars".

Between the ages of two and four, children's lies are usually told to avoid punishment. Very young children

tend not to be good at lying.

Then, at around the age of four something changes, it says.

The book claims that somewhere between the ages of three-and-a-half and four-and-a-half, children learn how to lie with much greater skill and enthusiasm.

According to the book, lying is hard and children who lie well must be able to recognise the truth, conceive of an alternative, false but coherent story and juggle those two versions in their mind, while selling the alternative reality to someone else — all the time bearing in mind what the other person is likely to be thinking and feeling.

It is wondrous that a child of four should be able to do this — if you catch your three-year-old in a well-told lie, be impressed — but

don't congratulate them, it says. However, the number of lies told by children tends to spike among those aged four as they exercise their amazing new powers, but it usually declines during their first school years, as the child receives social feedback. Kids learn that the benefits of lying (selfdefence or getting something they want) come at a hefty price.

## **12 mn Brazilians**

### **12 mn Brazilians vaccinated for flu (New Kerala: 9.5.2011)**

Over 12 million Brazilians have been vaccinated for flu during the ongoing nationwide campaign, according to an official report.

The campaign that began April 25 ends May 13, Prensa Latina said.

The health ministry's latest report, which contains data from across the country till May 6, said 50 percent of the 24 million Brazilians targeted for vaccination have received their shots.

The 24-million plan accounts for 80 percent of all citizens included in the "at-risk" groups, including people over 60, pregnant women, indigenous people, children aged seven months to two years, and health workers.

The vaccine administered this year not only protects against three main flu viruses circulating in the southern hemisphere, but also against A(H1N1) influenza.

Health Minister Alexander Padilha asked people to go to one of the 65,000 medical centres designated for the campaign.

The health ministry has acquired 33 million doses of vaccine, he added.

## **Cancer-driving enzyme**

### **Scientists unlock secrets of cancer-driving enzyme (New Delhi: 9.5.2011)**

Researchers are helping unlock the cellular-level function of the telomerase enzyme which drives cancer growth, thus paving the way for improved cancer-fighting therapies.

The number of times a cell divides is determined by telomeres, protective caps on the ends of chromosomes (genes) that indicate cell age. Every time a cell divides, the telomeres shorten, the journal *Molecular Cell* reports.

When telomeres shrink to a certain length, the cell either dies or stops dividing. In cancer cells, the enzyme telomerase keeps rebuilding the telomeres, so the cell never receives the cue to stop dividing.

"It's a significant advance in our understanding of how telomerase works," said Woodring Wright, professor of cell biology and senior study author at University of Texas Southwestern Medical Centre, according to a Texas statement.

Although telomerase was discovered in 1985, exactly how this enzyme repairs telomeres was largely unknown.

One drug that blocks telomerase, Imetelstat or GRN163L, was developed by the biotechnology company Geron with help from Wright and Jerry Shay, professor of cell biology.

That drug, tested at Southwestern, is currently in clinical trials for treatment of several types of cancer.

## **Molecular mechanisms**

### **Study reveals new insight into molecular mechanisms of aging (New Kerala: 9.5.2011)**

Scientists have identified the mutation that underlies a rare, inherited accelerated-aging disease and provides key insight into normal human aging.

The study highlights the importance of a cellular structure called the "nuclear envelope" in the process of aging.

"Aging is a very complex process which affects most biological functions of an organism but whose molecular basis remains largely unknown," says Dr. Carlos LÃ³pez-OtÃ¡n from the University of Oviedo in Spain.

"Over the last few years, our knowledge of the molecular mechanisms underlying human aging has benefited from studies of premature-aging syndromes, such as Hutchinson-Gilford Progeria syndrome, that cause the early development of characteristics normally associated with advanced age," he added.

The research has been published by Cell Press online in the American Journal of Human Genetics.

## **Stem-Cell Technology**

### **Key Innovations in Stem-Cell Technology (Science Daily: 9.5.2011)**

A scientist at the Gladstone Institutes has made two significant stem-cell discoveries that advance medicine and human health by creating powerful new approaches for using stem cells and stem-cell-like technology.

In two papers being published on April 25 in the Proceedings of the National Academy of Sciences, Sheng Ding, PhD, reveals novel and safer methods not only for transforming embryonic stem cells into large numbers of brain cells with multiple uses, but also for transforming adult skin cells into so-called neural stem cells -- cells that are just beginning to become brain cells. Dr. Ding last month joined Gladstone, a leading and independent biomedical-research organization, where he is expected to make a significant contribution to the institute's exemplary stem-cell research.

"This work is an example of what we're expecting from Dr. Ding, one of the world's top chemical biologists in stem-cell science," said Deepak Srivastava, MD, who directs cardiovascular and stem-cell research at Gladstone. "Dr. Ding's perspective as a chemist brings a new approach to our stem-cell work here at Gladstone."

Embryonic stem cells -- "pluripotent" cells that can develop into any type of cell in the human body -- hold tremendous promise for regenerative medicine, in which damaged organs and tissues can be replaced or repaired. Many in the science community consider the use of stem cells to be key to the future treatment and eradication of a number of

diseases, including some on which Gladstone research focuses, such as heart disease, diabetes and Parkinson's disease.

In the first of the two papers, Dr. Ding describes new methods to use embryonic stem cells to develop large numbers of neural stem cells, which are early-stage cells that can later develop into a variety of types of brain cells. With traditional stem-cell development techniques, neural stem cells remain at this early stage for only a short time -- and so cannot produce enough new cells to be practical for biomedical use.

But Dr. Ding's new method uses a cocktail of chemicals, first to induce embryonic stem cells to become neural stem cells and then later to arrest the cells from further development. This ability to hold neural stem cells in an intermediate state has enormous implications for cell therapy and for basic biomedical research. Such tissue-specific cells -- which have already begun to develop into brain or muscle cells, for example -- are limited in number, life span and an ability to develop into any of a variety of cell types that might be required for therapy or research.

In his second paper, Dr. Ding builds on the induced pluripotent stem (iPS) cell technology discovered by Gladstone senior investigator Dr. Shinya Yamanaka, in order to overcome some of the other challenges of working with embryonic stem cells. Because iPS cells are generated from a patient's own skin cells to act like stem cells, they offer a variety of benefits over embryonic stem cells. For example, iPS cells can be ideal for a personalized approach to drug discovery and for rejection-free transplantation, while they wholly avoid the ethical concerns of embryonic stem cells.

In this groundbreaking cellular-reprogramming research, Dr. Ding focuses on reprogramming skin cells into neural stem cells using the existing iPS technology -- but with a twist. Dr. Ding never lets the cells enter the pluripotent state of iPS cells, in which they could develop into any type of cell. Instead he uses yet another cocktail of factors to transform the skin cells directly into neural stem cells. Avoiding the pluripotent state is important because it avoids the potential danger that "rogue" iPS cells could develop into a tumor if used to replace or repair damaged organs or tissue. And as with Dr. Ding's embryonic stem-cell research, this cell-reprogramming work also makes it possible to create a far greater number of cells for research or regenerative purposes.

"These cells are not ready yet for transplantation," Dr. Ding said. "But this work removes some of the major technical hurdles to using embryonic stem cells and iPS cells to create transplant-ready cells for a host of diseases."

Dr. Ding is a senior investigator at the Gladstone Institute of Cardiovascular Disease and a professor in the department of Pharmaceutical Chemistry at the University of California San Francisco. He has pioneered the development and application of innovative chemical approaches to stem cell biology and regeneration. Dr. Ding earned a bachelor's degree in

chemistry with honors from the California Institute of Technology in 1999 and a PhD in chemistry from The Scripps Research Institute four years later. Dr. Ding performed the work described in the two papers at The Scripps Research Institute.

About the Gladstone Institutes Gladstone is an independent and nonprofit biomedical-research organization dedicated to accelerating the pace of scientific discovery and biomedical innovation to prevent illness and cure patients suffering from cardiovascular disease, neurodegenerative disease, or viral infections. Gladstone is affiliated with the University of California, San Francisco.

## **Body Temperature**

### **Body Temperature and Its Impact on Immune Response (Med India: 9.5.2011)**

An Indian-origin researcher has identified that when a temperature-sensing protein within the immune cells trips, it allows the calcium to pour in and activates an immune response.

This process can occur as temperature rises, such as during a fever, or when it falls-such as when immune cells are "called" from the body's warm interior to a site of injury on cooler skin.

The study is the first to find such a sensor in immune cells-specifically, in the T lymphocytes that play a central role in activation of killer immune cells.

The protein, STIM1, previously known as an endoplasmic reticulum (ER) calcium sensor, had been thought to be important in immune function, and now the scientists show it is also a temperature sensor.

## **Open-Access Colonoscopy**

### **Open-Access Colonoscopy Is Safe, Study Finds (Science Daily: 11.5.2011)**



Nurse-driven, open-access colonoscopy programs are as effective and safe as colonoscopy following a consultation with a gastroenterologist, according to researchers at Henry Ford Hospital.

Our results showed no significant differences in safety outcomes related to perforation rate, emergent surgery, post-polypectomy bleed, overall lower gastrointestinal bleed, or death," says Gregory Olds, M.D., chief of interventional gastroenterology and director of endoscopy at Henry Ford Hospital and co-author of the study.

With a nurse-driven open access program, a routine colonoscopy screening is scheduled without a pre-procedure examination by a gastroenterologist but nurses review patient history via electronic medical records and determine if they meet health requirements before scheduling procedures.

Study results were presented this week at Digestive Diseases Week in Chicago.

"Referral for colonoscopy without prior gastroenterologist consultation is becoming routine in the United States, but current literature regarding overall safety is limited so our aim was to compare the safety outcomes of patients enrolled in a large, nurse-driven, open-access protocol to outcomes of patients who were seen first by a gastroenterologist," says Dr. Olds.

The Henry Ford researchers looked at 15,901 patients who were enrolled in open-access colonoscopy from 2006 to 2010 and compared outcomes to 6,861 patients, from 1995 to 2002, who received outpatient gastroenterology consultation prior to screening.

Referrals for patients who went through the open-access program were made from primary care providers for average-risk colon cancer screening, a personal or familial history of colon polyps or cancer, blood in the stool, hematochezia, and radiographic testing suggestive of colon polyps.

Data was collected for post colonoscopy bleeding (overall and post-polypectomy), hospitalization, emergency room visits, repeat colonoscopy within two months, perforation, death, and time-to-colonoscopy.

The study found that outcomes for patients undergoing colonoscopy through an open-access program were similar to those who underwent a consultation before colonoscopy - in fact, they had fewer emergency room visits (1.6% vs. 1.16%) and inpatient stays (1.02% vs. 0.62%).

"The results of this study, using such a large cohort of patients, suggest that open-access programs can be utilized cost-effectively to make this important screening procedure more easily accessible to patients," says Dr. Olds.

According to the National Cancer Institute, in 2009, more than 146,000 new cases of colon and rectal cancer were diagnosed and nearly 50,000 people died from the disease. However, colon cancer is one of the most preventable forms of cancer because if it is found early through a colonoscopy screening test, it can be treated before it has spread.

Henry Ford Hospital funded this study

### **New Combo Therapy**

#### **New combo therapy eradicates prostate cancer in vivo (New Kerala: 12.5.2011)**

Cancer researchers have gone one step ahead in finding a cure for advanced prostate cancer through a microbubble-delivered combination therapy.

They combed an anti-cancer drug with a viral gene therapy in vivo using novel ultrasound-targeted microbubble-destruction (UTMD) technology to create an antidote for the potent tumour.

Studies previously showed that the gene, mda-7/IL-24 increases apoptosis in tumour cells, preventing tumour growth and blood vessel formation. It synergizes with other cancer treatments and also regulates cellular immune responses while having no ill effects on normal, healthy cells.

"Successful execution of viral gene therapy is typically limited by the body's natural defenses, such as trapping the virus in the liver and attacking the virus with its natural immune system response," said Paul B. Fisher, professor and chair of the Department of Human and Molecular Genetics in the VCU School of Medicine.

"This study not only identifies a potential new therapy for prostate cancer, it also provides a new way of using therapeutic viruses that could transform the way we deliver viral gene therapy," he added.

In this study, a weakened adenovirus (a virus that is typically associated with respiratory infections) engineered to deliver the tumor-suppressing gene mda-7/IL-24 was joined to the microbubbles and delivered through the blood stream directly into the prostate.

Scientists claim that UTMD's ability to systematically target a disease site could revolutionize gene therapy.

The study has been published in the journal Proceedings of the National Academy of Sciences.

## **New Therapeutic**

### **New Therapeutic Target for Lung Cancer (Science Daily: 12.5.2011)**

A new therapeutic target for lung cancer has been discovered by researchers at Seoul National University. It was found that a variant of the protein AIMP2 is highly expressed in lung cancer cells and also that patients demonstrating high expression of this variant show lower survival.

The study is published on March 31 in the open-access journal PLoS Genetics.

Lung cancer is one of the world's most common cancers and a leading cause of death resulting from cancer. Despite treatment with a combination of surgery, radiation and drugs, the survival rate for patients has not drastically improved over the past few decades. It had previously been shown that the protein AIMP2 acted as a tumor-suppressor by interacting with another oncosuppressor, p53. However, whether AIMP2 was indeed pathologically linked to human cancer had not been definitively proved. This investigation discovered that a variant of AIMP2 is highly expressed in human lung cancer cells. AIMP2-DX2 compromises the tumor-suppressing activity of AIMP2 by competitively binding to p53. It was also shown that suppression of AIMP2-DX2 slowed tumor growth, suggesting that this could be an exciting new therapeutic target.

New innovative therapies are important not only because of the high mortality rate associated with lung cancer, but because the majority of the drugs are cytotoxic, causing many adverse effects. These findings could create an opportunity to develop new innovative cancer drugs, as well as presenting a new target that could also be applied to other cancers.

## **IVF**

### **15 the magic number for IVF Success? (The Asian Age: 16.5.2011)**

There is no need to standardise the number of oocytes to be retrieved.

There are lots of other factors to consider like female age, BMI, how effective stimulation is and also male factors,' said Dr Alastair Sutcliff, senior clinical lecturer at University College London

IVF PRACTITIONERS should retrieve around 15 egg cells in a single cycle from hopeful mothers to attain optimum likelihood of live birth, according to a collaborative study by British scientists.

Their statistical analysis was based on data from 400,000 IVF cycles sourced from UK's fertility treatment regulator HFEA. In its paper published in the journal Human Reproduction, the study revealed that the "best chance of live birth was associated with the number of eggs of around 15 and showed a decline with more than 20 eggs." The researchers are suggesting a "strong relationship" between live birth rate and number of cells

retrieved in a single cycle.

Experts have also warned that this should not indicate that doctors should try and get more and more egg cells.

In one menstrual cycle, an average woman produces one single egg from her ovaries. In technology assisted reproduction like IVF (in-vitro fertilisation) women are injected with certain hormones that stimulate the ovaries to produce multiple oocytes (eggs).

These cells are then retrieved and then subjected to fertilisation in the lab (invitro) and successful embryos are planted back into the mother's uterus or surrogate. Over stimulating at the previous step can cause a dangerous condition called OHSS (Ovarian

Hyperstimulation Syndrome) that can turn fatal.

"Risking OHSS is considered to be reckless. It can lead to death in its worse form. Poor eggs can arise in overstimulation-also not helpful.

Paradoxically, severe OHSS occurs mainly in pregnant patients, so this can lead to miscarriage,” said Samuel Lee, acclaimed

clinical embryologist, consultant and academic in London.

Based on IVF outcomes between 2006 and 2007, the predicted live birth rate for women aged 18 to 34 with 15 eggs retrieved was 40pc.

For women aged 35 to 37 having the same number of eggs removed, the birth rate figure dropped to 36pc. It further fell to 27pc for those aged 38 to 39, and 16pc for

women over 40.

Instead of focusing on how many cells are to be retrieved, getting good quality oocytes without harming the mother is more important, seems to be the general consensus among IVF experts.

"Quality can be more important than quantity and each case should be reviewed individually," said Dr. Martyn Blayney, embryologist at Bourn Hall, one of the leading fertility clinics in the market. Fertility treatment centres are popping up on a daily basis, the market for IVF is growing steadily; Bourn Hall itself opened shop in India recently. There is some caution in the air filled with concern that statistical evidence is not dictated into a medical breakthrough by the new crop of fertility practitioners.

Dr Alastair Sutcliff, senior clinical lecturer at University College London said: “There is no need to standardise the number of oocytes to be retrieved.

There are lots of other factors to consider like female age, BMI, how effective stimulation is and also male factors.” The authors of this study came to their conclusions by creating a predictive model and then charting out a mathematical graph called the nomogram. This nomogram shows the relationship between women’s age, the numbers of eggs retrieved and the predicted live birth rate. Tools like this could be combined with current methods to measure a woman’s ovarian reserve and make decisions about how much the ovary needs to be stimulated. This can help in “prediction of success”, added Dr Sutcliff.

## **Mobile phones**

### **Mobile phones harmful to human health' (The Times of India: 16.5.2011)**

Mobile phones and computers with wireless internet connections pose a risk to human health and should be immediately banned in schools, a powerful European body has ruled. A Council of Europe committee examined evidence that the technologies have “potentially harmful” effects on humans, and concluded that immediate action was required to protect children, the Daily Telegraph reported.

In its report, the committee said it was crucial to avoid repeating the mistakes made when health officials were slow to recognise the dangers of asbestos, smoking, and lead in petrol.

The report also highlighted the potential health risks of cordless telephones and baby monitors, which rely on similar technology and are widely used. Fears have been raised that electromagnetic radiation emitted by the wireless devices can cause cancers and harm developing brains.

Experts are divided on the issue. Les Barclay, the vice-chairman of the Mobile Telecommunications and Health Research Programme, said: “There is very little evidence for harmful effects. The powers that mobile phones emit are getting less and less.”

Paul Elliot of Imperial College London, who is leading a study on the effects of mobile phone use, said: “There are questions about whether mobile phones might have cognitive effects and affect sleep.”

## **Genes**

### **Gene harms brain decades before Alzheimer's outbreak (New Kerala: 16.5.2011)**

A gene that you carry may begin to damage your brain a full 50 years before Alzheimer's disease shows up, scientists say.

In 1993, researchers discovered a gene known as ApoE4 -- carried by about a quarter of us -- that triples the risk for getting Alzheimer's.

In 2009, three more risky genes were discovered, and one of them, called clusterin or CLU, was found to up the risk of getting Alzheimer's by 16 percent.

Now, University of California Los Angeles researchers say that CLU begins to damage your brain a full 50 years before Alzheimer's shows up, the Journal of Neuroscience reports.

Paul Thompson, professor of neurology and his colleagues at California report that the C-allele of the CLU gene (one of two or more forms of a gene), impairs the development of myelin, the protective covering around the neuron's (brain cell) axons, making it more vulnerable to the onset of Alzheimer's much later in life.

Researchers scanned the brains of 398 healthy adults ranging from 20 to 30 years using a newer type of MRI that maps the brain's connections, according to a California statement.

They compared those carrying a C-allele variant of the CLU gene with those who had a different variant.

They found that young, healthy carriers of the CLU-C gene risk variant showed a distinct profile of a kind of white matter that may increase susceptibility to developing the Alzheimer's disease later in life.

## **Music Therapy**

### **Palliative Care Patients Benefit from Unique Music Therapy Project (Science Daily: 16.5.2011)**

As people face a terminal illness and are confined to a hospital bed or hospice room, music can provide a great source of solace. North American healthcare professionals have increasingly recognized the benefits of music therapy in palliative care, since end-of-life treatment is designed to meet the psychosocial, physical and spiritual needs of patients.

Sandi Curtis, a music therapy professor in the Concordia University Department of Creative Arts Therapies, has published a new study on the topic in the journal Music and Medicine. Her findings are based on a unique collaboration she orchestrated between university music therapy students, musicians from a professional symphony orchestra and a hospital palliative care ward.

"This project combined the talents and interests of violinists, violists and cellists with those of advanced student music therapists," she explains, noting her project has since been reprised in two Australian pediatric wards. "Our study showed how music therapy was effective in enhancing pain relief, comfort, relaxation, mood, confidence, resilience, life quality and well-being in patients."

Curtis, who is vice-president elect of the American Music Therapy Association, says her investigation benefitted everyone who took part. "Student music therapists had an invaluable opportunity to make music with professional-calibre musicians," she says. "Symphony musicians had an opportunity to experience the transformative powers of music in a nonperformance setting and palliative care patients had access to music therapy services."

As part of the study, which spanned three years, Curtis divided undergraduates and musicians into pairs supervised by an accredited music therapist. As for the 371 participants, they were male and female palliative care patients between 18 and 101 years old. All patients had a terminal illness and most with a diagnosis of cancer.

Participants were seen for a single music therapy session, which lasted from 15 to 60 minutes. Interventions were designed to address four areas -- pain relief, relaxation, mood and quality of life. Three palliative care patients were so comforted by the experience that their families requested music therapy teams return to play soft music as they died. "On two other occasions, because of the strong relationship established in prior music therapy sessions, the music therapy team was asked to perform at the patients' funerals," Curtis notes.

Curtis is currently studying how music therapy can help women and children who are survivors of violence.

## **New X-Ray Method**

### **Detailed Brain Cell Images Possible With New X-Ray Method (Med India: 16.5.2011)**

Researchers have developed a new method called SAXS-CT for making detailed X-ray images of brain cells.

The newer and more advanced technology can map the myelin sheaths of nerve cells, which are important for conditions such as multiple sclerosis and Alzheimer's disease.



Researchers say that "we have combined two well-known medical examination methods: SAXS (Small-Angle X-ray Scattering) and CT-scanning (computed tomography scanning).

Combined with a specially developed programme for data processing, we have been able to examine the variations of the myelin sheaths in a rat brain all the way down to the molecular level without surgery", explains Torben Haugaard Jensen, Niels Bohr Institute at the University of Copenhagen.

The method is called 'Molecular X-ray CT', because you use X-ray CT to study myelin at the molecular level.

## **Gene**

### **Gene variation linked to infertility in women (New Kerala: 18.5.2011)**

Variation in a gene involved in regulating cholesterol has been linked to infertility in women, a study shows.

According to researchers at Johns Hopkins University, variation in a gene involved in regulating cholesterol in the bloodstream, which affects progesterone production in women, is linked to infertility in some women.

The researchers have developed a simple blood test to measure the variation in the gene but emphasized that there was no approved therapy yet to address the problem of infertility, Xinhua reported.

"Infertility is fairly common and a lot of the reasons for it are still unknown. Right now, the benefit of this research is in knowing that there might be a genetic reason for why some women have difficulty getting pregnant.

"In the future, we hope this knowledge can be translated into a cure for this type of infertility," said Annabelle Rodriguez, an associate professor of medicine at the Johns Hopkins University School of Medicine.

## **Biomarker**

### **Now, biomarker to predict breast cancer relapse New Kerala; 18.5.2011)**

In a major medical breakthrough, researchers have found new biomarker related to the body's immune system that predicts breast cancer relapse.

They collected tissue samples from breast cancer patients to validate the findings.

"We studied data from 17 patients. Of these patients, we had eight that relapsed within five years and nine that have remained cancer-free up to seven years," said Masoud Manjili, assistant professor of microbiology and immunology at Virginia Commonwealth University Massey Cancer Center.

The five-gene signature was found to predict relapse in these patients with over 85 percent accuracy.

Currently, there are two main tests used to predict the risk of relapse in breast cancer patients, the Oncotype DX panel and the MammaPrint panel.

Both of these tests focus on genes that are mainly expressed by tumour cells.

"We know that the body initiates an immune response when it detects cancer, and immune system cells are usually present at the site of the tumour," said Manjili.

"Our test differs from currently-used tests by looking for a biological response to the presence of cancer, and not relying on genes expressed by the actual cancer cells," he added.

The study is published in the journal Breast Cancer Research and Treatment.

## **New cell**

### **New cell that attacks dengue virus identified (World Newspapers: 18.5.2011)**

An Indian-origin researcher at Duke-NUS Graduate Medical School in Singapore and his colleagues have found that mast cells, which can help the body respond to bacteria and pathogens, also apparently sound the alarm around viruses delivered by a mosquito bite.

"It appears the mast cells are activated and call immune system cells to the skin where they clear infection, which limits the spread of infection in the host," said lead researcher Ashley St. John, a Research Fellow with Duke-NUS in the Programme in Emerging Infectious Diseases, and the Duke Department of Pathology in Durham, N.C.

Studying dengue virus in mice, the research team found that mast cells could sense and recognize viruses, and in turn release signalling chemicals to create an immune response.

The scientists chose to study dengue virus, which is common in Singapore, because mosquitoes inject the virus through the skin, and skin is rich in mast cells.

They found that mice lacking mast cells had more of the virus in their lymph nodes and increased infection after measured injection with a small dose of dengue virus, compared to mice with normal levels of mast cells. The mast cells produce chemokines, which in turn help to bring some special killer cells into the infected skin to fight and contain the virus.

"It was an important discovery for the field to learn that mast cells could be activated by pathogens like bacteria or parasites," said St John.

"We were excited to learn that mast cells also respond to and promote the clearance of a viral infection," added St. John.

"The finding is important because to date there are no vaccines or effective therapies for dengue fever," said senior author Soman Abraham, professor of Pathology and mast-cell expert, also in the Programme In Emerging Infectious Diseases.

## **Stem cell therapy**

### **Stem cell therapy may cure damaged tissues (New Kerala: 19.5.2011)**

Scientists claim that stem cell therapy might pave the way to treating age-related muscle wasting.

They have identified a mechanism, which causes stem cells in the embryo to differentiate into specialised cells that form the skeletal muscles of animals' bodies.

The finding by developmental biologist Prof. Christophe Marcelle has the potential to revolutionise medicine by delivering therapies to regenerate tissue damaged by disease or injury.

Marcelle's team analysed the differentiation of muscle stem cells in chicken embryos, which share an identical mechanism as that in mammals.

They investigated the effect of a known signalling pathway called NOTCH on muscle differentiation, and found that differentiation of stem cells to muscle was initiated when NOTCH signalling proteins touched some of the cells.

These proteins were carried by passing cells migrating from a different tissue, the neural crest- the progenitor tissue of sensory nerve cells.

Muscle formation in the target stem cells occurred only when the NOTCH pathway was triggered briefly by the migrating neural crest cells.

"This kiss-and-run activation of a pathway is a completely novel mechanism of stem cell specification which explains why only some stem cells adopt a muscle cell fate," said Ms Rios, a team member.

The study appears in the current issue of British journal Nature.

### **Immunity Boosting Cells**

#### **New Way to Duplicate Immunity Boosting Cells to Unprecedented Levels<sup>9</sup>Science Daily: 19.5.2011)**

University of Minnesota Medical School researchers have discovered a method to quickly and exponentially grow regulatory T-cells -- also known as "suppressor cells." The new process enables replication of the cells by tens of millions in several weeks, a dramatic increase over previous duplication methods. Historically, regulatory T-cells have been difficult to replicate.

The new technique will give patients a better chance of having a successful bone marrow or organ transplant, and will have profound implications for patients with autoimmune diseases such as lupus, type 1 diabetes, Crohn's disease and multiple sclerosis.

The use of the new replication technique has already shown promising effects in the treatment of acute graft-versus-host disease; a post-transplant condition in which T-cells from the donor's bone marrow recognizes a recipient's body as foreign, and tries to attack.

"When regulatory T-cells don't respond to inflammation quickly enough to suppress an immune system response, the patient's own immune response can do considerable harm after a transplant, injuring organs, joints and other tissues of the body," said Dr. Bruce Blazar, senior author of the study and Director of the Clinical and Translational Science Institute at the U of M.

Compounding the challenge is that humans have a limited supply of regulatory T-cells, Blazar said. So even if the immune system's cells respond appropriately, there may not be enough suppressor cells to stop errant reactions in time before the immune response causes widespread tissue damage.

Researchers felt that by developing a way to replicate the cells -- which have been historically challenging to coax into high rates of duplication -- they could increase transplantation success rates.

Between 30-40 percent of all related bone marrow transplant patients experience graft-versus-host disease, and between 10-30 percent of kidney transplants and 60-80 percent of liver transplant recipients experience acute rejection, according to the National Institutes of Health.

#### About the New Method

The immunology team, led by Blazar, developed a method to extract regulatory T-cells from blood and subsequently deliver the right combination of signals to make the cells replicate up to 50 million fold. Previous methods to duplicate these cells led to only 70-fold expansion at best.

The findings are published in the May 18 edition of Science Translational Medicine.

"The ability to deliver such large quantities of these cells to patients before they undergo transplantation significantly reduces the chances of graft versus host disease and rejection of a transplanted organ," Blazar said.

In animal models and in human clinical trials (where smaller doses of regulatory T cells were given to patients), Blazar's hypothesis came to fruition: Animals and patients became less likely to develop severe immune reactions that caused tissue damage.

The next step in Blazar's work is phase 1 human clinical testing headed by the U of M's Dr. John Wagner, a world renowned researcher who has been a leader in the field of blood and marrow transplantation. Wagner plans to lead a team of doctors who will administer increasing doses of regulatory T-cells before bone marrow transplants using Blazar's new expansion method.

"This is truly exciting and a major, major breakthrough with profound implications in the treatment of our patients," Wagner said. "If we can super charge patients' immune systems before we do a transplant, we hope to eliminate the chance of graft-versus-host disease or rejection of the transplanted organ. Furthermore, we hope to move these trials

ahead quickly to treat autoimmune diseases which affect hundreds of thousands of people worldwide."

Alongside Drs. Blazar and Wagner, U of M assistant professor Dr. Keli Hippen, the lead investigator of the study, pushed this new technology forward.

Collaborators from the University of Pennsylvania provided the key cell lines that made the research possible. Penn scientists engineered artificial Antigen Presenting Cells (aAPCs) which massively expanded regulatory T-cells. The process by which they were replicated could be used to generate a master cell bank that could be used to treat a large number of patients, making therapy much more feasible and cost effective.

The study was funded by National Institutes of Health, the Leukemia and Lymphoma Society and the Childrens' Cancer Research Fund.

## **Molecules - Live Cells**

### **New Tools to Spy on Molecules in Live Cells (The Asian age: 23.5.2011)**

The new technique could potentially provide a tool for diagnosing and developing a treatment for hard-to-cure diseases such as cancer

The ability to peer at single biological molecules in a living cell is something that has long been a dream of researchers.

However, a novel technique, using the structure of diamond, may well be able to do this and potentially provide a tool for diagnosing and developing a treatment for hard-to-cure diseases such as cancer.

Researchers at the Texas A&M University have developed a technique, exploiting a specific defect

in the lattice structure of diamond, to externally detect the spins of individual molecules, reports the New Journal of Physics.

Magnetic Resonance Imaging (MRI) has already taken advantage of a molecule's spin to give clear snapshots of organs and tissue within the human body.

However, to get a more detailed insight into the workings of the disease, the imaging scale must be brought down to individual bio-molecules and captured whilst the cells are still alive.

Co-lead author Phillip Hemmer, professor of electrical and computer engineering at Texas A&M Uni

versity, said: “Many conditions, such as cancer and ageing, have their roots at the molecular scale,” according to a university statement.

“Therefore, if we could somehow develop a tool that would allow us to do magnetic resonance imaging of individual biomolecules in a living cell then we would have a powerful new tool for diagnosing and eventually developing cures for such stubborn diseases,” Hemmer pointed out.

### **Technique - old blood from new**

#### **New Technique can tell old blood from new (The Asian Age: 23.5.2011)**

British scientists claim to have developed a new technique that can tell whether the blood used for transfusions is old or new, thus providing a cheap and an effective way to monitor the quality of blood supplies. Even with preservatives, blood stored in banks ages, resulting in biomaterials leaking from the red blood cells and subsequent changes to cell properties and function.

Currently, blood stored in a special medium can be used

for transfusion for up to 42 days, but monitoring of the blood varies. Now, a team at University of Cambridge has developed the new method which can determine the significant differences between new and old red blood cells used for transfusions, the Journal of Cellular and Molecular Medicine reported.

“Recent trials on cardiac surgery patients involving over 40,000 patients showed that transfused blood which was older than 14 days pro

duced serious side effects.

The side effects of transfusing old blood are thought to result in acute lung injury and adverse effects of the immune system. “In severe trauma patients, transfusion

of blood stored for more than 28 days doubled the incidence of deep vein thrombosis and increased death secondary to multiple organ failure.

“Our research will hopefully highlight the significant differences between old and new blood used in transfusions as well as the possibility of using our technique to quickly and cheaply monitor blood supply quality,” Jay Mehrishi, who led the team, said. According to the scientists, the electrical properties of red blood cells have previously been used to distinguish between foetal and adult haemoglobin, and the mutated form of haemoglobin found in sickle cells from normal haemoglobin. Now, using the unique electrical properties of red blood cells, the scientists used fluorescence from positively charged quantum dots which had been bound to electrical charges on negatively charged cells to discriminate between old cells and young cells.

## **Protein**

### **Study Identifies Novel Role for a Protein That Could Lead to New Treatments for Rheumatoid Arthritis (Science Daily: 23.5.2011)**

A new study by rheumatologists at Hospital for Special Surgery in New York has shown that a powerful pro-inflammatory protein, tumor necrosis factor (TNF), can also suppress aspects of inflammation. The researchers say the identification of the mechanism of how this occurs could potentially lead to new treatments for diseases such as rheumatoid arthritis. The study was published May 22 online in advance of publication in the journal *Nature Immunology*.

Prior to this study, TNF has long been known as a potent pro-inflammatory cytokine, but if you look carefully through the literature, there are hints that it also has some suppressive functions, but nothing was known about the mechanisms," said Lionel Ivashkiv, M.D., associate chief scientific officer and physician in the Arthritis and Tissue Degeneration Program at Hospital for Special Surgery who led the study. "This is really the first mechanism showing how TNF can turn inflammation down."

Because many proteins have homeostatic functions, both driving and suppressing certain actions so a cell can maintain internal equilibrium, researchers thought TNF might not be an exception. "Most strong activators in the immune system trigger a feedback response to restrain the amount of inflammation," Dr. Ivashkiv said.

To find out, researchers designed experiments stimulating macrophages with lipopolysaccharide (LPS), a prototypical inflammatory factor that stimulates receptors important in inflammation. In test tube studies, the researchers treated human monocytes and macrophages, cells that have a key role in inflammatory diseases, with TNF and then challenged these cells with LPS. They found that the TNF suppressed the inflammatory



response of the macrophages and monocytes. They then gave mice low doses of TNF followed by high doses of LPS and found that the mice were protected from the effects of high dose LPS, which is usually lethal. They discovered that the mechanism by which TNF suppressed the inflammatory response involved a protein known as GSK3 (glycogen synthase kinase 3-alpha) and a gene known as TNFAIP3 that encodes the A20 protein. Experiments with a drug that can inhibit GSK3 as well as experiments with RNA interference of A20, which can block A20 gene function, helped identify the roles of this protein and gene.

The researchers say the findings could be used to develop potential therapies for diseases, such as rheumatoid arthritis. "We think it is relevant to rheumatoid arthritis, not only because the cells we are studying (the macrophages) are exactly the same cells that migrate into joints and make the inflammatory cytokines involved in rheumatoid arthritis, but because A20 is involved. TNFAIP3 is one of the best linked genes to rheumatoid arthritis," Dr. Ivashkiv said. "There are polymorphisms in the A20 gene that have been linked to RA pathogenesis."

The researchers hypothesize that patients who make less A20 are more susceptible to inflammation and thus rheumatoid arthritis. One approach to treating RA could be to increase A20 levels in patients who naturally make less A20 by manipulating GSK-3, since this study showed that GSK-3 influences A20. "The study sort of opens a line of investigation to understanding how A20 levels can be manipulated in patients with various diseases," Dr. Ivashkiv said.

The findings could be applied to other diseases besides arthritis. In conditions such as rheumatoid arthritis, you may want to boost A20, but in other settings such as cancer, where the macrophages are suppressed, you may want to inhibit A20 expression.

"What the study shows that is new is that TNF has suppressive functions in addition to its well-known activating functions," Dr. Ivashkiv said. "Before this study, people thought it might suppress adaptive immunity, but surprisingly we found that it actually suppresses a cell of the innate immune system, the macrophage, which is the same cell that makes it and, by doing that, it regulates its own production."

## **Artificial Disc Replacement**

**Artificial Disc Replacement May Be Better Treatment Than Spinal Fusion Surgery(Med India: 23.5.2011)**

When physical therapy and drugs fail to relieve back or neck pain, patients often turn to spinal fusion surgery as a last resort.

But now, a new study has suggested that replacing the two worn out, unmanageable pain causing adjacent discs in the low back with artificial ones can be a viable alternative to standard fusion surgery.

The results have come after a two-year analysis of post-surgery data from a randomized, multicenter trial.

The study compared overall results from a disc replacement patient group with those of a fusion group. Those comparisons found the two therapies comparable in terms of outcomes deemed favorable, but Rick B. Delamarter, vice chair for Spine Services in the Department of Surgery, said individual patient outcomes suggest the disc replacement operation may have advantages.

### **Holmium laser therapy**

#### **Holmium laser therapy new standard for treating BHP(World Newspapers: 23.5.2011)**

A new research has suggested that holmium laser therapy is a safe and durable treatment option for Benign Prostatic Hyperplasia (BPH) - an enlargement of the prostate that affects most men as they age.

The study, conducted by researchers from the McGill University Health Centre (MUHC), is the longest comprehensive assessment of this technology to date, and researchers suggested that it may now safely be considered the new, size independent, gold standard for treatment of BPH.

The study, which looked at the durability of outcomes of Holmium Laser Enucleation of the Prostate (HoLEP) in nearly 1,000 patients over 10 years, demonstrated that complication rates are minimal and the need for further treatment, even up to a decade later, is less than 1%, compared to 10-16% with TURP.

"Patients treated with HoLEP also have reduced pain and shorter hospital stays than those who undergo an open surgery," said Dr. Mostafa Elhilali, Stephen Jarislowsky Chair of Urology at McGill University, urologist at the MUHC and lead author of the new study.

"They are often able to resume normal activities within a week and have few to no sexual side effects," added Elhilal.

The researchers point out that HoLEP is more effective at adequately treating all sizes of prostatic enlargement, whereas other laser techniques, such as Green Light Laser, is effective on small to moderate size prostates, similar but not better than TURP and lacks the same long-term durability.

### **Pre-eclampsia**

#### **Pre-eclampsia Risk Significantly Reduced with L-arginine And Antioxidant Vitamin Dietary Supplement (Medical News Today: 23.5.2011)**

Pre-eclampsia, which affects approximately 1 in every 20 first time pregnancies, could be prevented if high risk pregnant women started taking a dietary supplement containing L-arginine and antioxidant vitamins during their 20th week of pregnancy, researchers from La Universidad Nacional Autonoma de Mexico, Mexico City, reported in the BMJ (British Medical Journal).

Pre-eclampsia, also written preeclampsia is a condition that can develop during pregnancy. There is an abrupt rise in blood pressure (hypertension), large amounts of the protein albumin leaks into the urine (albuminuria), plus there is swelling of the face, hands and feet. It is the most common complication of pregnancy and occurs during the third trimester. It occurs most commonly in first pregnancies. Women who have diabetes or those carrying twins have a higher risk of developing the condition. Some susceptible women develop pre-eclampsia with every pregnancy. The disease tends to run in families, with daughters of mothers who had the condition more likely to develop it themselves.

A pregnant woman with pre-eclampsia needs to stay in bed, sometimes they are prescribed medication. If they do not respond well to treatment the doctor may induce labor or perform a C-section. After the baby is born the problem goes away.

Preeclampsia could be a sign that the placenta is detaching from the uterus. If untreated it can progress to eclampsia, which is a life-threatening condition for both mother and fetus.

The authors explained that pre-eclampsia is believed to be associated with L-arginine deficiency. L-arginine is an amino acid, it helps maintain good blood flow during pregnancy. Many experts believe antioxidant vitamins may provide added protection against pre-eclampsia.

Scientists from Mexico and the USA wanted to determine whether a L-arginine plus antioxidant supplement could help reduce pre-eclampsia rates in high risk women.

Their study took place in a Mexico City hospital involving 667 high risk pregnant women. They were randomly selected to receive:

Food bars containing L-arginine plus antioxidant vitamins - 228 patients

Food bars containing only vitamins - 222 patients

Placebo food bars (no vitamins and no L-arginine) - 222 patients

They started eating the food bars during their 20th week of pregnancy, and continued taking them until they gave birth. Their L-arginine levels plus blood pressure were measured every three to four weeks at the hospital.

The scientist reported the following pre-eclampsia rates in each group:

L-arginine group - 12.7%

Vitamin only group - 22.5%

Placebo group - 30.1%

The study clearly showed that participants in the L-arginine plus antioxidant vitamin group had a considerably lower risk of developing pre-eclampsia compared to those in the placebo group.

The women in the L-arginine plus vitamin group were also found to have a significantly lower risk of having a premature birth compared to those in the placebo group.

The authors concluded:

"This relatively simple and low cost intervention may have value in reducing the risk of pre-eclampsia and associated preterm birth."

The authors say that a larger study is required to confirm these results, and also to determine whether protection from pre-eclampsia comes from just L-arginine or L-arginine plus vitamins.

"Effect of supplementation during pregnancy with L-arginine and antioxidant vitamins in medical food on pre-eclampsia in high risk population: randomised controlled trial"

Felipe Vadillo-Ortega, Otilia Perichart-Perera, Salvador Espino, Marco Antonio Avila-Vergara, Isabel Ibarra, Roberto Ahued, Myrna Godines, Samuel Parry, George Macones, Jerome F Strauss.

## **Medical wizard**

### **Dr Watson? Supercomp turns medical wizard (Times of India: 23.5.2011)**

Winner Of TV Quiz Show 'Jeopardy' Groomed To Help Diagnose Diseases And Suggest Treatments

Yorktown: Some guy in his pajamas, home sick with bronchitis and complaining online about it, could soon be contributing to a digital collection of medical information designed to help speed diagnoses and treatments. A doctor who is helping to prepare IBM's Watson computer system for work as a medical tool says such blog entries may be included in Watson's database.

Watson is best known for handily defeating the world's best "Jeopardy!" players on TV earlier this year. IBM says Watson, with its ability to understand plain language, can digest questions about a person's symptoms and medical history and quickly suggest diagnoses and treatments.

The company is still perhaps two years from marketing a medical Watson, and it says no prices have been established. But it envisions several uses, including a doctor simply speaking into a handheld device to get answers at a patient's bedside. Watson won't be the first such product on the medical market, however.

At a recent demonstration, Watson was gradually given information about a fictional patient with an eye problem. As more clues were unveiled — blurred vision, family history of arthritis, Connecticut residence — Watson's suggested diagnoses evolved from uveitis to Behcet's disease to Lyme disease. It gave the final diagnosis a 73% confidence rating.

"You do get eye problems in Lyme disease but it's not common," Herbert Chase, a doctor, said. "You can't fool Watson."

For "Jeopardy!" Watson was fed encyclopedias, dictionaries, books, news, and movie scripts. For health care, it's on a diet of medical textbooks and journals. It could also link to the electronic health records that the federal government wants hospitals to maintain. Medical students are peppering it with sample questions to help train it.

Chase, a Columbia University medical school professor, says anecdotal information — such as personal blogs from medical websites — may also be included. “What people say about their treatment... it’s not to be ignored just because it’s anecdotal,” Chase said. “We certainly listen when our patients talk to us, and that’s anecdotal.”

Chase and other experts say cramming Watson with the latest medical information will help with a major problem in modern health care: information overload.

“For at least 30 years it’s been clear that it’s not possible for us to know everything,” he said. “Every day, doctors have questions they can’t find the answers to. Even if you sit down at a search engine, it’s so labor intensive and it takes so long to find answers.”

Michael Yuan, chief scientist at Ringful Health, a medical consulting company in Austin, Texas, that has worked with IBM, cited a 1999 study of 103 doctors that found they fielded more than 1,100 questions a day, of which 64% were never answered. “That’s a huge potential for people to make mistakes,” he said. “Watson is the type of solution that can really reduce that.” AP

## **Genes to treat Parkinson’s**

### **Singal Jab of genes to treat Parkinson’s (the Asian Age: 24.5.2011)**

A team at Oxford BioMedica firm has developed the new injection which contains three genes which are key to the manufacture of dopamine

London: In a key breakthrough, British scientists have developed what they claim is a single jab of genes which can substantially reduce symptoms of Parkinson’s disease when injected directly into the brain. Parkinson’s disease’s symptoms include tremors and stiffness. It’s caused by death of brain cells that produce a chemical called dopamine which is essential for coordination. Treatments include a drug called L-dopa, which boosts dopamine but can cause muscle problems.

“Now, a team at Oxford BioMedica firm has developed the new injection which contains three genes which are key to the manufacture of dopamine. Injected into the brain under anaesthetic it sets up a replacement dopamine “factory”, the Daily Mail reported. Just one jab may be enough to treat the disease for life, say the scientists who have based their findings on an analysis of an experiment on dementia

patients. In their experiment, the scientists gave nine patients the injection.

The findings revealed that there was an average reduction in shaking and stiffness of nearly 43 per cent in all the subjects. The treatment improved walking and dexterity by up to 61 per cent in one patient. Others were able to take the bus or complete a round of golf for the first time in years; there were no serious side-effects, the findings revealed.

However, more trials are planned, and the drug is at least six years away from sale, say the scientists who presented their findings at the American Society of Gene and Cell Therapy's conference.

### **New Genetic Testing Technology for IVF**

#### **New Genetic Testing Technology for IVF Embryos(Science Daily: 24.5.2011)**

Researchers at the Johns Hopkins University School of Medicine have devised a new technique, which helps couples that are affected by or are carriers of genetic diseases have in vitro fertilized babies free of both the disease in question and other chromosomal abnormalities.

The results were reported in the April issue of Fertility and Sterility.

Because embryos are so small and cells contain too little DNA to do extensive testing, researchers have in the past had to limit genetic testing of IVF embryos to either looking for a specific gene mutation that is known to exist in either parent or for other types of chromosomal abnormalities such as the existence of too many or too few chromosomes (aneuploidy) or other structural chromosomal aberrations. By a method of trial and error that lasted approximately one year, Paul Brezina, M.D., M.B.A., a clinical fellow in obstetrics and gynecology and William G. Kearns, Ph.D., associate professor of obstetrics and gynecology optimized a technique they call "modified multiple displacement amplification" that allows them to amplify or make carbon copies of the DNA they obtain from an embryo obtained by in vitro fertilization, enough to do multiple tests.

"We were able to amplify the genomic DNA accurately to the point where both single-gene testing and aneuploidy screening could be done. Up till now it has only been one or the other," says Brezina.

Couples often first learn that they are carriers of a genetic disease, such as Cystic Fibrosis or Tay-Sachs, from having a previous child who is affected by the disease. Planning to have another baby, who may also be at risk for having the same disease, can be quite a daunting experience, says Brezina.

As a result, such couples have been turning to in vitro fertilization (IVF) coupled with preimplantation genetic diagnosis (PGD), genetic testing prior to implanting the embryos into the mother's uterus, to become pregnant. In PGD, which is also called single-gene testing, doctors remove either one cell from an IVF-conceived three-day old embryo, which contains only eight cells total, or a few cells from a five-day old embryo, which contains about 150 cells total. Removing more cells from the embryo is also an unviable option as it can compromise its health and development. They then test the DNA from these cells for the disease-causing genetic alteration. They then implant back into the mother only those embryos that will give rise to a baby free of the disease.

However, as much of a boon as PGD is, babies conceived in this manner are still exposed to other genetic risks, says Brezina, the most common being the gain or loss of chromosomes, a condition called aneuploidy. Aneuploidy can cause several diseases, the most commonly known of which is Down syndrome.

Brezina and Kearns applied their new modified multiple displacement technique to screen embryos from a couple where both parents were carriers for GM1 gangliosidosis, a potentially lethal disease that can cause seizures, bone malformations and mental disabilities; the couple already had one child with the disease and the mother was older and had a prior history of miscarriage. Brezina and Kearns amplified the DNA from the couple's embryos and sent some of the amplified DNA to their collaborators at the Reproductive Genetics Institute in Chicago for PGD testing for GM1 gangliosidosis. They had enough DNA leftover to test it for aneuploidy using a test called 23-chromosome microarray on embryos, a test developed by Kearns.

Of the ten IVF embryos that they tested, they found that although only two were affected by GM1 gangliosidosis, an additional three were also aneuploid, leaving them with only five healthy embryos available for transfer into the uterus. One of the healthy embryos was transferred back into the mother, who subsequently became pregnant. "The strength of this technique lies not only in its ability to detect two different kinds of genetic alterations while causing minimal harm to the embryo, but also in the speed with which it can be completed," says Kearns. "This allows the embryo to be transferred back into the mother in a timely manner."

Since the online publication of this study in December 2010, Kearns, who also directs the Shady Grove Center for Preimplantation Genetics in Rockville, MD, has offered combined PGD and aneuploidy testing to seven more couples. Five of these seven couples have achieved pregnancy with this technique and one couple is scheduled to transfer an embryo in the near future. Speaking of one of the couples, he says, "I am really happy for this couple. She is a 39-year-old woman who is a carrier for Fragile X syndrome (a genetic disease that causes mental disabilities) and had two first trimester



miscarriages. We did the same methodology on her and now she is pregnant. It is spectacular."

And they aren't stopping there. Kearns and Brezina are trying to further improve existing technologies so that they can more accurately identify genetic abnormalities in IVF embryos. "IVF is only going to become more relevant as time goes on and as it gets better and better," says Brezina. He adds "The ability to know detailed information about the embryos you are putting back in, it is a powerful thing."

Authors on the paper are Paul Brezina and William Kearns of Johns Hopkins; Andrew Benner of the Shady Grove Center of Preimplantation Genetics of Rockville, Md.; and Svetlana Rechitsky, AnverKuliev, Ekaterina Pomerantseva and Dana Pauling of Reproductive Genetics Institute of Chicago, Ill.

## **Protein Cell**

### **Change in one protein cell may trigger cardiac failure (The Tribune: 25.5.2011)**

Washington: Pointing to a direction study of drug development, a research study by the Peter Munk Cardiac Centre has found that switching of a protein can be a cause of 'a cascade of events' leading to heart failure. "Our research suggests that PINK1 is an important switch that sets off a cascade of events affecting heart cell metabolism. This could be one of the inciting events in the development of heart failure," said Dr. Phyllis Billia, principal author, clinician-scientist and heart failure specialist at the Peter Munk Cardiac Centre. The findings show that the absence of a certain protein, PINK1, causes some heart cells to die, forcing the remaining cells to work harder to keep the heart going. In response to this stress, the heart muscle cells thicken, a condition known as hypertrophy.

## **'Survival protein'**

### **'Survival protein' can help treat neuro-disorders (New Kerala: 25.5.2011)**

A newly discovered "survival protein" protects the brain against the effects of stroke by interfering with a particular kind of brain cell death that is often found in cases of Parkinson's disease and heart attack.

Scientists from Johns Hopkins University in the US say they exploited the fact that when brain tissue is subjected to a stressful but not lethal effect, a defence response occurs that protects cells from subsequent effects.

The scientists dissected this preconditioning pathway to identify the most critical molecular players, one of which is the newly identified protein protector called Iduna, reports the journal Nature Medicine.

Named for a mythological Norwegian goddess who guards a tree full of golden apples used in restoring health to sick and injured gods, the Iduna protein increased three-to four-fold in preconditioned mouse brain tissue, according to the scientists.

"Apparently, what doesn't kill you makes you stronger," says Valina Dawson, professor of neurology and neuroscience at the Johns Hopkins Institute of Cell Engineering.

"This protective response was broad in its defence of neurons and glia and blood vessels - the entire brain. It's not just a delay of death, but real protection that lasts for about 72 hours," adds Dawson, according to a Johns Hopkins statement.

The team noted that Iduna works by interrupting a cascade of molecular events that result in a common and widespread type of brain cell death called parthanatos often found in cases of stroke, Parkinson's disease, diabetes and heart attack.

By binding with a molecule known as PAR polymer, Iduna prevents the movement of cell-death-inducing factor (AIF) into a cell's nucleus.

In some of the experiments, Dawson and her team exposed mouse brain cells to short bursts of a toxic chemical, and then screened these "preconditioned" cells for genes that turned on as a result.

Focusing on Iduna, the researchers turned up the gene's activity in the cells during exposure to the toxic chemical that induced preconditioning.

Cells deficient in Iduna did not survive, but those with more Iduna did.

## **New Protein**

### **New Protein Linked to Alzheimer's Disease (Science Daily: 25.5.2011)**

After decades of studying the pathological process that wipes out large volumes of memory, scientists at The Feinstein Institute for Medical Research discovered a molecule called c-Abl that has a known role in leukemia also has a hand in Alzheimer's disease.

The finding, reported in the June 14th issue of the Journal of Alzheimer's Disease, offers a new target for drug development that could stave off the pathological disease process.

Peter Davies, PhD, head of the Feinstein Institute's Litwin-Zucker Center for Research in Alzheimer's Disease, became interested in c-Abl when he found that the protein was part of the plaques and tangles that crowd the brains of Alzheimer's patients. The protein c-Abl is a tyrosine kinase involved in cell differentiation, cell division and cell adhesion. In patients with chronic myeloid leukemia (CML), c-Abl is turned up in B cells. Inhibiting c-Abl with the cancer drug Gleevec prevents cell division. There was quite a lot known about c-Abl when Dr. Davies began thinking about its possible role in Alzheimer's. He was looking at kinases that phosphorylate tau, the protein that accumulates inside of the neurons during the disease process.

Dr. Davies questioned whether activated c-Abl turned on the cell cycle and could kill adult cells. He designed the study to test this idea and found that turning on the cell cycle in adult brain damages the cells. In their current study, the investigators devised a clever way to activate c-Abl in neurons of normal adult mice. They turned on human c-Abl genes in two different regions -- the hippocampus and the neocortex -- in adult mice and discovered abundant cell death, especially in the hippocampus. "You don't even need to count, you can just look and see holes in the cell layers of the hippocampus," said Dr. Davies. "It is stunning. Even before the neurons die, there is florid inflammation."

He said that the animal model is ideal for testing the benefit of drugs that turn off c-Abl. While Gleevec works in CML, it does not cross the blood-brain barrier so it would not be useful. Dr. Davies and his colleagues are looking for other drugs that inhibit c-Abl and can get into the brain. "We have a great model to test compounds for Alzheimer's disease. Will regulating c-Abl make a difference for patients? We won't know unless we try it in double blind clinical trials."

The researchers are now working to understand the mechanism of cell death. They are also investigating why males die considerably sooner than females -- 12 to 15 weeks compared to 24 to 26 weeks. "It is an incredibly interesting model," said Dr. Davies. "If c-Abl is important we can learn how it works."

## **Injection Therapy**

**Injection Therapy for Sudden Hearing Loss Disorder May Be Suitable Alternative to Oral Steroids (Science Daily: 25.5.2011)**

Treating idiopathic sudden sensorineural hearing loss with injections of steroids directly into the ear appears to result in recovery of hearing that is not less than recovery obtained with the standard therapy of oral corticosteroids and may be a preferable treatment for some patients to avoid the potential adverse effects of oral steroids, according to a study in the May 25 issue of JAMA.

Idiopathic (unknown cause) sudden sensorineural (involving the sensory nerves) hearing loss, a hearing loss with onset in less than 72 hours, has an estimated incidence between 5 and 20 per 100,000 persons per year, although this is likely to be an underestimate because many who recover quickly never seek medical attention. The current standard treatment for idiopathic hearing loss has been a course of oral corticosteroid (prednisone or methylprednisolone), according to background information in the article.

In recent years, intratympanic (within the drum of the ear) corticosteroid treatment by direct injection into the middle ear has gained wide popularity. One theoretical advantage of intratympanic treatment is an increased drug concentration in the targeted area, with reduced systemic steroid exposure and associated systemic adverse effects that may accompany oral steroids. "However, no adequately powered prospective randomized controlled trial has compared oral and intratympanic steroid treatments to demonstrate that increased local drug concentration leads to improved hearing outcome," the authors write.

Steven D. Rauch, M.D., of Harvard Medical School, Boston, and colleagues conducted a multicenter, randomized, noninferiority (outcome not worse than treatment compared to) trial comparing the efficacy of oral prednisone to intratympanic methylprednisolone for primary treatment of idiopathic hearing loss. Noninferiority was defined as less than a 10-dB difference in hearing outcome between treatments. The study included 250 patients with unilateral sensorineural hearing loss who presented for care within 14 days of onset of hearing loss of 50 dB or higher of pure tone average hearing threshold. Pure tone average (PTA) was calculated as the arithmetic average of the hearing thresholds at 500, 1000, 2000, and 4000 Hz in the affected ear. The study was conducted from December 2004 through October 2009 at 16 academic community-based otology practices. Participants were followed up for 6 months. One hundred twenty-one patients received 60 mg/d of oral prednisone for 14 days with a 5-day taper and 129 patients received 4 doses over 14 days of 40 mg/mL of methylprednisolone injected into the middle ear.

The researchers found that improvement in PTA at 2 months in the intratympanic methylprednisolone group was not inferior to PTA improvement in the oral prednisone group. "In the oral prednisone group, PTA improved 30.7 dB compared with 28.7 dB in

the intratympanic group. Pure tone average at 2 months averaged 56.0 dB for the oral group and 57.6 dB for the intratympanic group. The point estimate of the difference between the oral and intratympanic groups in the [average] change in PTA from baseline to 2 months after randomization is 2.0 dB," the researchers write.

Further comparison of hearing recovery in the oral and intratympanic treatment groups also showed that the 2 treatments were comparable at 2 and 6 months. The frequency of hearing recovery to normal was 20.7 percent; to hearing aid range, 66.9 percent in the oral treatment group vs. 24.8 percent and 62.0 percent in the intratympanic group, respectively.

"Overall, intratympanic methylprednisolone was shown to be not inferior to oral prednisone for treatment of idiopathic sudden sensorineural hearing loss. Noninferiority was also indicated for certain subgroups. Both oral and intratympanic treatments are safe but can cause unpleasant adverse effects. The comfort, cost, and convenience of oral prednisone are better than intratympanic treatment. Intratympanic treatment is a suitable alternative if there are medical contraindications to oral prednisone," the authors write.

The researchers add that there are a number of hearing loss treatment questions that remain unanswered by this study. "In future analyses, we hope to explore our data for possible predictors of treatment outcome. Although we observed similar efficacy of oral and intratympanic treatments overall, our subgroup analyses suggested that certain subgroups might achieve greater benefit from one treatment than the other."

#### Editorial: Steroids for Idiopathic Sudden Sensorineural Hearing Loss -- Some Questions Answered, Others Remain

The findings of this study provide a new therapeutic option for patients with sudden hearing loss for whom oral steroids are contraindicated, writes Jay F. Piccirillo, M.D., of the Washington University School of Medicine, St. Louis, in an accompanying editorial.

"The use of intratympanic steroids is moderately uncomfortable, inconvenient, and more costly than oral steroids and is associated with several relatively minor adverse effects. Nevertheless, for patients with sudden hearing loss who are thought to be at too high a risk for systemic steroid usage, this study suggests a reasonable alternative in the setting of rapid specialty referral. Additional research should focus on identifying subgroups of patients for whom steroid treatment seems especially helpful and whether combination oral and intratympanic is better than single modality alone. However, the study by Rauch et al did not answer the lingering question of whether there is any benefit of steroids for the patient with sudden sensorineural hearing loss. A better understanding of the pathophysiology of hearing loss, identification of unique prognostic subgroups, and adherence to rigorous clinical research methods are required for the proper assessment of

the therapeutic benefits of existing treatments and discovery of new treatments for this disorder.

### **Anticholinergic Inhaler**

#### **Anticholinergic Inhaler Medicines Risky for COPD Patients (Med India: 25.5.2011)**

Opting for anticholinergic inhaler medicines could prove to be risky for patients with Chronic Obstructive Pulmonary Disease (COPD) with a new study suggesting that the medicines increase the risk of the patients suffering from emergency situations.

Currently two types of treatments are used for COPD, a daily dose of Spiriva prescription medication and salmeterol HFA-MDI inhaler though the later is not approved in the United States.

According to the study, which has been published in the Archives of Internal Medicines; using anticholinergic medicines such as Atrovent and Spiriva increase the risk of acute urinary retention by almost 40 percent.

“The thing is that often people don't associate (the inhaled drugs) with a problem peeing. Not only does the patient not necessarily make that connection, but I think clinicians don't make the connection because there's a belief, not necessarily rightly, that the drugs aren't systemically absorbed”, lead researcher Anne Stephenson said.

### **Genetic disorders**

#### **Test early for genetic disorders (The Tribune: 26.5.2011)**

**In India approximately 30,000 Down syndrome babies are born annually. Prenatal screening for chromosomal abnormalities is highly essential for socio-economic growth...**

#### **THE PRESENT NEED**

##### **FOR MOTHERS-TO-BE**

n Ask your doctor about availability of prenatal screening tests for chromosomal aneuploidies and neural tube defects and the right time to get them done.  
n Or, on the recommendation of your doctor, you can get enrolled under the ongoing prenatal screening programme at

Genetic Centre, GMCH.

### **FOR HEALTH PROFESSIONALS**

n Prenatal Screening tests for chromosomal aneuploidies and neural tube defects are as important as any other examination during pregnancy. Be informed about the importance and the significance of these tests, their availability in your area and the right timings of these tests.

n Explain the need of getting these tests done to your patients and get these tests done at the appropriate time keeping in consideration the period of legal medical termination of pregnancy in India.

n Prenatal screening is not mere biomarker testing but is a complete programme encompassing testing, correct interpretation of results, ultrasound evaluation, confirmatory tests and counselling to patient at all levels of testing.

n Different sets of soft-markers are evaluated in first and second trimester of pregnancy.

n Update yourself with latest soft-markers associated with a risk of carrying a fetus with chromosomal aneuploidies.

### **FOR FAMILIES WITH PREVIOUS DOWN'S BABY**

n Having one baby affected with DS does not mean that other pregnancies would also be affected. For further pregnancies, go for prenatal screening for chromosomal aneuploidies.

n Get in touch with societies working for the betterment of DS children. Genetic Centre at Government Medical College and Hospital, Chandigarh, along with Genetic Unit, All India Institute of Medical Sciences (AIIMS) and Genetic Unit, Maulana Azad Medical College, is very soon going to launch a society for Down Syndrome for the betterment of DS children.

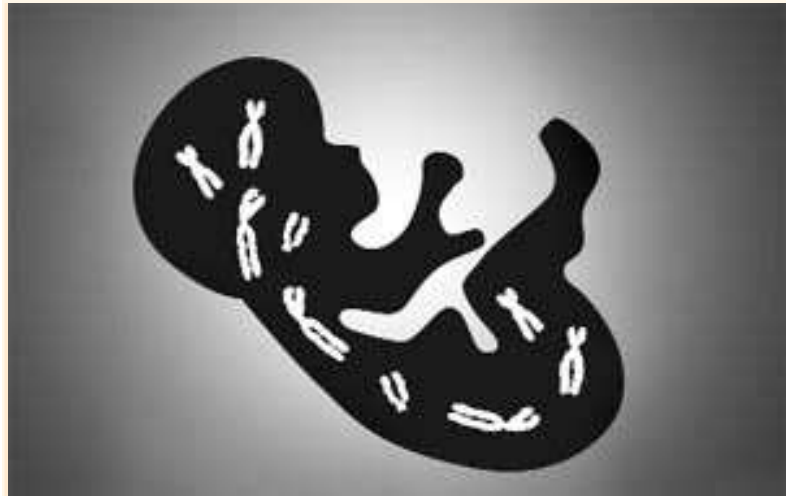
### **FOR GOVERNMENT**

n Recognise the significance of prevention-based screening and bring it into focus of maternal and child health care.

n Introduce prenatal screening facilities as pilot studies at different centres in India.

n Institute programmes promoting awareness among general public and in the long run make such preventive screening programmes mandatory for all.

**MENTAL** retardation, the commonest form of developmental disability, is a condition in which there is delay or deficiency in all aspects of development, i.e. there is global and noticeable deficiency in the development of motor, cognitive, social, and language functions. It affects about 1-3 per cent of the population. There are many causes of mental retardation, but doctors are able to find a specific reason in only 25 per cent of cases. Ignorance about the causes of mental retardation and social stigma and discrimination generally observed among people add to the suffering attached with it.



Mental retardation, the commonest form of developmental disability, is a condition in which there is delay or deficiency in all aspects of development, i.e. there is global and noticeable deficiency in the development of motor, cognitive, social, and language functions. It affects about 1-3 per cent of the population. There are many causes of mental retardation, but doctors are able to find a specific reason in only 25 per cent of cases. Ignorance about the causes of mental retardation and social stigma and discrimination generally observed among people add to the suffering attached with it.

With the support of Chandigarh Administration, at Genetic Centre, Government Medical College and Hospital, Sector 32, Chandigarh, prenatal screening tests are available under the Prenatal Screening Programme to all pregnant women at nominal rates. Any pregnant women can get herself enrolled and screened for these fetal aneuploidies at Genetic Centre, GMCH with the recommendation and referral from her obstetrician. The American College of Obstetricians and Gynecologists (ACOG) recommends that DS screening test must be offered to all pregnant women regardless of age or prior history.

Chromosomal abnormalities are one of the leading cause of mental retardation and physical handicap. Most chromosomal abnormalities are due to an extra copy of a particular chromosome. Other causes may be chromosome breakage or arrangement in a wrong order. Abnormal chromosomes are caused by defective development of sperm or egg cells. It is difficult to pinpoint the exact nature of the cause but one thing is for sure. There is no cure for chromosomal abnormalities and for those suffering from such disorders life-long management is required.

### **Abnormalities**



About 70 per cent miscarriages in early pregnancy are thought to be the results of chromosomal abnormalities. In some chromosomal abnormalities, the fetus survives and grows up as an individual. Down's syndrome (DS), the most common cause of birth defects, is one such abnormality in which the fetus survives during pregnancy. It is a genetic condition in which a person has 47 chromosomes instead of 46. The presence of extra chromosome is referred to as trisomy. In about 95 per cent of cases of Down's syndrome there is an extra copy of chromosome 21 and hence, Down syndrome is often known as Trisomy 21. This extra chromosome causes problems with the way the body and brain develop. Trisomy 21 presents with a wide range of mental retardation. Several other effects associated with DS include mild to severe developmental delay, heart defects, epilepsy, respiratory problems, susceptibility to infection, celiac diseases, Alzheimer's etc.

Throughout the world the overall prevalence of DS is 10 per 10,000 live births. DS symptoms vary from person to person and can range from mild to severe. However, children with DS have widely recognised characteristic appearance i.e. head smaller than normal, inner cornea of eye may be rounded, small mouth, wide short hands with short fingers. Physical, mental and social development may also be delayed in children.

Advancing maternal age, having had one child with DS and being carriers of the genetic translocation for DS are some risk factors which increase the risk of having a DS baby. With the advancement of science and technology it is possible to detect these birth defects during the development of fetus i.e. during pregnancy. This is done worldwide through Prenatal Screening Programme.

### **Biomarkers**

During the development of fetus there are certain biomarkers produced in the fetus which pass through the placenta and enter into the mother's blood stream. Biomarkers are proteins or hormones secreted by growing fetal parts which pass via amniotic fluid and placenta and enter into the maternal circulation. These include AFP (alpha-fetoprotein), HCG (human chorionic gonadotropin), UE3 (Unconjugated estriol) and PAPP-A (Pregnancy Associated Plasma Protein A). These biomarkers can be measured in the mother's blood during the development of the fetus. Under normal conditions there is a specific pattern of increase or decrease of these biomarkers with the gestational age. Any deviation from this specific pattern helps to recognise pregnancies at higher risk of certain abnormalities.

These biomarkers are tested twice during pregnancy i.e. between 9th and 13th week (first trimester) and between 15th and 19th week (second trimester). The test for first trimester is called Dual test and for second trimester is called Triple test. The objective of screening is to segregate the test population into a low-risk group and a high-risk group.

Once the baby with DS is born then throughout life the child has to be managed. There is no treatment for total cure or eliminating DS, as it is a birth defect. which means that the

basic unit i.e. the cells of the body have abnormal number of chromosomes, which cannot be changed.

Through prenatal screening we can detect such birth defects during development of the fetus and through genetic counselling we can help the parents understand the disorder and its life-long management. The parents can further decide whether they want to continue the pregnancy or opt for medical termination. One important issue which I would like to highlight is that as per Indian law the medical termination is possible only before the 20th week of pregnancy. Hence, screening and confirmatory tests should be carried out as early as possible and before the 20th week of pregnancy, so that the parents can make an informed choice.

### **Various factors**

Prenatal screening test and calculations depends upon various factors like:-

Sensitivity of test    Cut-off        values        for        the        population        being        tested  
Period of Gestation

It should be remembered that screening test is different from a confirmatory test. In a screening test we divide the population into low-risk group and a high-risk group, whereas a confirmed diagnosis is obtained in case of a confirmatory test. Low-risk means that chance of the occurrence of a disease is low, while high risk commands further testing to be sure that the fetus is normal. Further testing includes advanced ultrasonography, invasive testing like chorionic villus sampling or amniocentesis. In an advanced ultrasound we look for various softmarkers which are associated with congenital abnormalities and through invasive testing chromosomal number and structure are examined. It is important to note that all the testing procedures under prenatal screening must be completed within 20 weeks of pregnancy since, as per Indian law, medical termination cannot be carried out after this period.

### **Counselling**

Counselling to patients called Genetic counselling is another integral part of prenatal screening programmes. It is a continuous process where counselling is provided to all enrolled couples prior to their enrollment into the screening programme and at all stages of progress of prenatal screening to facilitate thorough understanding of the objective and process of screening procedure and the necessity of carrying out any additional testing. All tests are voluntary and informed consent is taken prior to testing.

There is an urgent need of our doctors to be aware of prenatal screening programme, its importance and necessity in today's time. It should be known that prenatal screening is not just one single test. It is a complete programme where testing, interpretation of results, ultrasound evaluation, confirmatory tests and genetic counselling must be provided.

Maternal and child health forms the backbone of the concept of healthy family and an essential part of the reproductive health package. Prenatal screening already forms an integral part of healthcare in all developed countries. Owing to their prevention-based approach, the mass screening programmes gain significantly over traditional treatment-based management. However, screening-for-all has shown little development in India except in very few selected centres in metropolitan cities and chiefly as private setups. India has a high birth rate and hence a very large number of infants with genetic disorders are born every year.

The available data point out that in India approximately 30,000 Down syndrome babies are born annually. Once a child with DS is born, then only management is available. The responsibility of the child throughout life rests with the family of the child. There are no insurance policies in India to take care of the medical needs of the child and provide financial support.

Parents often have to take the child to hospital from time to time for treatment of various defects associated with it. A handicapped child is not only a drain on the financial resources of the family but it is also extremely emotionally exhausting for the family members. Thus, physical and mental handicap in a member of the family exerts pressure on the limited resources of the family, society and the country and overall presents itself as a socio-economic burden.

However, preventive screening which is an integral part of health care throughout the world offers early information about genetic disorders in the fetus. Prenatal Screening for chromosomal disorders is available since 20th century in developed countries but, unfortunately, Indian health care policymakers have not yet even considered introducing an existing preventive health care facility in our country. The magnitude of numbers and the suffering, social stigma and economic burden that these disorders exert should shake us from our deep slumber of insensitivity and inspire health policy makers to bring into focus preventive health care facilities in our country along with the existing health care programmes.

Public health authorities need to organise genetic services in a comprehensive and integrated manner and promote awareness and availability of facilities so as to improve the standard of antenatal care. The success encountered by the government of India in its efforts to control communicable diseases, especially Pulse Polio Immunisation Programme can be easily replicated in case of genetic disorders if the government brings prevention-based screening into its direct focus for improving maternal and child health care.

### **IVF embryos - new genetic testing technology**

**IVF embryos: new genetic testing technology (The Hindu: 26.5.2011)**

The technique allows making of carbon copies of DNA from an embryo obtained by in vitro fertilization, enough to do multiple tests

A new technique, which helps couples that are affected by or are carriers of genetic diseases have in vitro fertilized babies free of both the disease in question and other chromosomal abnormalities has been devised by researchers at the Johns Hopkins University School of Medicine. The results were reported in *Fertility and Sterility*.

Because embryos are so small and cells contain too little DNA to do extensive testing, researchers have in the past had to limit genetic testing of IVF embryos to either looking for a specific gene mutation that is known to exist in either parent or for other types of chromosomal abnormalities such as the existence of too many or too few chromosomes (aneuploidy) or other structural chromosomal aberrations.

Trial and error

Paul Brezina, M.D., M.B.A., a clinical fellow in obstetrics and gynecology and William G. Kearns, Ph.D., associate professor of obstetrics and gynecology, by a method of trial and error that lasted approximately one year, optimized a technique they call “modified multiple displacement amplification” that allows them to amplify or make carbon copies of the DNA they obtain from an embryo obtained by in vitro fertilization, enough to do multiple tests.

Couples often first learn that they are carriers of a genetic disease, such as Cystic Fibrosis or Tay-Sachs, from having a previous child who is affected by the disease.

Planning to have another baby, who may also be at risk for having the same disease, can be quite a daunting experience, says Brezina.

As a result, such couples have been turning to in vitro fertilization (IVF) coupled with preimplantation genetic diagnosis (PGD), genetic testing prior to implanting the embryos into the mother's uterus, to become pregnant.

“We were able to amplify the genomic DNA accurately to the point where both single-gene testing and aneuploidy screening could be done. Up till now it has only been one or the other,” says Brezina.

In PGD, which is also called single-gene testing, doctors remove either one cell from an IVF-conceived three-day old embryo, which contains only eight cells total, or a few cells from a five-day old embryo, which contains about 150 cells total.

Removing more cells from the embryo is also an unviable option as it can compromise its health and development. They then test the DNA from these cells for the disease-causing

genetic alteration. They then implant back into the mother only those embryos that will give rise to a baby free of the disease.

However, as much of a boon as PGD is, babies conceived in this manner are still exposed to other genetic risks, says Brezina, the most common being the gain or loss of chromosomes, a condition called aneuploidy.

Aneuploidy can cause several diseases, the most commonly known of which is Down syndrome.

Brezina and Kearns applied their new modified multiple displacement technique to screen embryos from a couple where both parents were carriers for GM1 gangliosidosis, a potentially lethal disease that can cause seizures, bone malformations and mental disabilities; the couple already had one child with the disease and the mother was older and had a prior history of miscarriage.

Brezina and Kearns amplified the DNA from the couple's embryos and sent some of the amplified DNA to their collaborators at the Reproductive Genetics Institute in Chicago for PGD testing for GM1 gangliosidosis.

They had enough DNA leftover to test it for aneuploidy using a test called 23-chromosome microarray on embryos, a test developed by Kearns, according to a Johns Hopkins University press release.

Of the ten IVF embryos that they tested, they found that although only two were affected by GM1 gangliosidosis, an additional three were also aneuploid, leaving them with only five healthy embryos available for transfer into the uterus.

One of the healthy embryos was transferred back into the mother, who subsequently became pregnant. "The strength of this technique lies not only in its ability to detect two different kinds of genetic alterations while causing minimal harm to the embryo, but also in the speed with which it can be completed," says Kearns. "This allows the embryo to be transferred back into the mother in a timely manner."

Since the online publication of this study in December 2010, Kearns, who also directs the Shady Grove Center for Preimplantation Genetics in Rockville, MD, has offered combined PGD and aneuploidy testing to seven more couples. Five of these seven couples have achieved pregnancy with this technique and one couple is scheduled to transfer an embryo in the near future.

Really happy

Speaking of one of the couples, he says, "I am really happy for this couple. She is a 39-year-old woman who is a carrier for Fragile X syndrome (a genetic disease that causes mental disabilities) and had two first trimester miscarriages. We did the same methodology on her and now she is pregnant. It is spectacular." And they aren't stopping there. Kearns and Brezina are trying to further improve existing technologies so that they can more accurately identify genetic abnormalities in IVF embryos.

"IVF is only going to become more relevant as time goes on and as it gets better and better," says Brezina. He adds: "The ability to know detailed information about the embryos you are putting back in, it is a powerful thing." — Our Bureau

## **Immune System**

### **Immune System Release Valve (Science Daily: 26.5.2011)**

The molecular machines that defend our body against infection don't huff and puff, but some of them apparently operate on the same principle as a steam engine. Weizmann Institute scientists have discovered a mechanism that controls inflammation similarly to a steam-engine valve: Just when the inflammatory mechanism that protects cells against viruses reaches its peak of activity, the molecular "steam-release valve" interferes, restoring this mechanism to its resting state, ready for re-activation. This finding might shed new light on such inflammatory disorders as rheumatoid arthritis or inflammatory bowel disease, and point the way to developing effective therapies.

How does the cellular "steam-release valve" work? The scientists have discovered that its crucial component is the enzyme called caspase-8. When the cell is invaded by a virus, caspase-8 joins a large molecular complex that forms in order to send out an inflammatory signal. However, this same signal, once triggered, makes sure that the inflammatory response will eventually be shut down. The mechanism can be likened to the peak of the steam cycle when the valve opens, releasing steam and restoring the engine to its initial position. In the case of the cell, the inflammatory signal prompts caspase-8 to destroy a protein called RIP1 -- a crucial signal amplifier -- after RIP1 has reached a state in which it can produce maximal amplification. The inflammatory cycle is thus completed: The signaling mechanism, precisely after reaching its peak activity level, returns to its neutral state, ready to enter yet another inflammatory cycle in case the cell is still under viral attack.

Until recently, caspase-8, discovered by study leader Prof. David Wallach of Weizmann's Biological Chemistry Department some 15 years ago, was known to prevent inflammation in only one way -- by causing damaged cells to self-destruct in a process called apoptosis. In the course of this process, the contents of the dying cells are prevented from spreading around and triggering inflammation. The present study, reported recently in *Immunity*, reveals an entirely new mechanism by which caspase-8 can control inflammation more directly. The research was performed in Wallach's lab by Dr. Akhil Rajput, Dr. Andrew Kovalenko, Dr. Konstantin Bogdanov, Seung-Hoon Yang, Dr. Tae-Bong Kang, Dr. Jin-Chul Kim and Dr. Jianfang Du.

The study results might be relevant for various types of inflammation -- not only that caused by viruses -- and can thus provide important insights into inflammatory disorders. Since such disorders may occur when the inflammatory response fails to be shut down properly, it's possible that caspase-8 malfunction and the resulting excessive activity of the RIP1 "signal amplifier" might be involved. And if this is indeed the case, a new treatment approach could aim at blocking RIP1, thereby fighting inflammation in a precise and selective manner.

Prof. David Wallach's research is supported by the M.D. Moross Institute for Cancer Research; and the Leona M. and Harry B. Helmsley Charitable Trust. Prof. Wallach is the incumbent of the Joseph and Bessie Feinberg Professorial Chair.

## **Sonar'**

### **'Blind can develop bat-like sonar': (The Times of India; 27.5.2011)**

In a ray of hope for the blind, a research has found that visually challenged people can develop "sonar", that is, learning to navigate like bats by "seeing" objects from sounds reflected off them. Intriguingly, the team did so by using a part of the brain normally involved in processing visual images. They discovered this by carrying out brain scans on two male volunteers, aged 43 and 27, who had both been blind since childhood.

## **Autistic brains'**

### **Autistic brains' genes are different: (The Times of India: 27.5.2011)**

In what may pave the way for new and effective treatments for autism, scientists claim to have found evidence that the brains of people with the disorder are chemically different to those in healthy ones. A new study, published in the *Nature* journal, has shown that the unique characters of the frontal and temporal lobes disappeared in brains of people with

autism. Different genes should be active in each region, but autistic brains had the same pattern of gene expression.

### **Innate Immune System Proteins**

#### **Innate Immune System Proteins Attack Bacteria by Triggering Bacterial Suicide Mechanisms(Science Daily: 27.5.2011)**

A group of proteins that act as the body's built-in line of defense against invading bacteria use a molecular trick to induce bacteria to destroy themselves, researchers at the Indiana University School of Medicine have determined. The research could point the way toward new anti-bacterial treatments that could take on bacteria that are resistant to antibiotics.

The proteins, called Peptidoglycan Recognition Proteins (PGRPs), are able to detect and target bacteria because bacteria are unique in having peptidoglycan polymers in their cellular walls. However, the mechanism by which PGRPs are able to kill bacteria had not been determined.

A research team led by Roman Dziarski, Ph.D., professor of microbiology and immunology at Indiana University School of Medicine -- Northwest, reported May 22 in the advance online edition of the journal *Nature Medicine* that the PGRPs are able to induce a suicide response in the targeted bacteria.

The PGRPs accomplish the mission by binding to specific sites in bacterial cell walls in ways that exploit a bacterial defense mechanism known as protein-sensing two-component systems. These systems, which normally enable the bacteria to detect and eject malformed proteins, interpret the PGRPs as just such malformed proteins. Unable to dislodge the PGRPs, the bacteria then activate a suicide response, the researchers said.

This approach is different than those employed by other anti-bacterial mechanisms, such as the immune system's white blood cells, said Dziarski.

"This could be a target to develop new anti-bacterial applications," Dziarski said.

Dziarski and colleague Dipika Gupta, Ph.D., associate professor of biochemistry and molecular biology at Indiana University School of Medicine -- Northwest, first cloned the PGRP genes in 2001. The PGRP genes, which are found in species ranging from insects to mammals, are part of the body's innate immune system, in contrast to the mechanisms that learn and develop new immune responses to infections over time.



The PGRP proteins are normally expressed in phagocytic cells in blood and on body surface areas such as skin, mouth, intestine and other tissues that have direct or indirect contact with the external world, Dziarski noted. In some tissues it appears that the PGRPs help maintain a healthy relationship between the body and certain beneficial bacteria. Some studies have indicated that the loss of the PGRP proteins may lead to inflammatory bowel disease, suggesting that the research reported on May 22 could point the way to new approaches to target such problems, Dziarski said.

In addition to Dziarski and Gupta, authors of the paper include first author Des Raj Kashyap, Minhui Wang and Li-Hui Liu of IUSM-Northwest and Geert-Jan Boons of the University of Georgia.

The research was supported by Public Health Service grants from the National Institutes of Health.

### **Robotic mobility**

#### **Robotic mobility aid to alert blind people about obstacles in their paths(World Newspapers: 27.5.2011)**

A group of University of Southern California engineering researchers, including an Indian-origin scientist, have developed a robot vision-based mobility aid for visually impaired people that will alert them about objects in their paths.

The new device would help visually handicapped people who still rely on a very rudimentary technology — a simple cane — to better navigate the busy streets.

"There are many limitations to canes for the visually impaired, from low hanging branches to large objects. We wanted to build an effective system that would provide new opportunities for them," according to Gerard Medioni, a professor in the Institute for Robotics and Intelligent Systems at USC Viterbi.

Medioni and his colleagues, including James Weiland, a Viterbi School associate professor of biomedical engineering and Vivek Pradeep, a recent Viterbi PhD, have developed a software that "sees" the world, and linked it to a system that provides tactile messages to alert users about objects in their paths.

The system uses cameras worn on the head connected to PCs that use Simultaneous Localisation and Mapping (SLAM) software to build maps of the environment and identify a safe path through obstacles.

This route information is conveyed to the user through a guide vest that includes four micro motors located on an individual's shoulder and waist that vibrate like cell phones.

The prototype of the system was presented at the 2011 meeting of Association for Research in Vision and Ophthalmology May 1.

# **Cancer**

## **Cancer care**

### **Soon, tailor-made cancer care (The Times of India: 20.4.2011)**

#### **Whole-Genome Sequencing Maps Patient's DNA, Spots Tumours**

Washington: In what could soon improve cancer survival rates, scientists have achieved success in whole-genome sequencing, a high-tech process which has opened the way for personalised treatments for patients.

According to two new studies, published in the Journal of the American Medical Association, the first clinical applications of whole-genome sequencing in cancer patients showed that customised treatments can help the sufferers fight the disease significantly, compared to the standard therapies used for all.

Whole-genome sequencing, which maps a person's DNA and analyses it for mutations, enables "us to screen a much larger number of tumours and correlate them with the outcome of the patient", said Boris Pasche, deputy director of the University of Alabama at Birmingham (UAB).

"So it is very likely that

our targeted therapy is going to be exploding in the next decade," he said. "In patients with breast cancer, colon cancer and gastric cancer, we have specific approaches for tumours that exhibit certain genetic abnormalities."

In one study, Pasche said, a patient with leukaemia had a poor prognosis, but through sequencing, this patient was found to have a gene that showed they would react favourably with a different therapy than originally recommended. "If patients have certain genes, they may not respond to certain treatments. But whole-genome sequencing gives a full picture of the genetic make-up of the tumour and the patient, and it may allow the physician to target a new treatment."

Pasche said the unbiased picture of the sequenced DNA enables physicians to look at tumours in a way not possible previously. Even when the technology finally was available, it was too expensive.

Now, the cost to sequence a patient's entire genome and the genome of their tumour is down by more than 100 fold, but still ranges from \$30,000 to \$40,000. "Prices are dropping rapidly; in 10 years, it will cost less than \$10,000, and it will be more affordable in the next five years," said Pasche.

### **Dynamic Scientific Approach launched - fight cancer**

#### **Dynamic Scientific Approach launched to fight cancer (New Kerala: 27.4.2011)**

A city-based expert in homeopathy has rolled out a holistic approach to prevent and manage cancer.

Speaking to reporters here, Dr Shaji V Kudiyat, President and Chief Research Scientist at St George Cancer Care and Research Centre said the "Dynamic Science Approach" mainly focuses on the reason behind the development and mutation of cancer relating to breast, uterus and ovaries.

It also educates people to live healthy through means like yoga, prayer and meditation, which are helpful in curing the deadliest disease.

Giving more information about the new concept, he said the concept explains the inter-connection between the 'vital force', 'body' and 'soul'. By the application of inductive logical analysis, this approach explicitly discloses many facts, which the present science fails, he claimed.

"With the help of Homeopathy medication, even the deadliest disease can be cured. Proper food intake and thoughts in one's mind are important. The thoughts of the human mind widely affect the body. So it is necessary to always think positive," he said.

### **Cancer Research**

#### **Cancer Research Investment Not Proportionate To Disease Burden (Med India: 11.5.2011)**

Investment across the world does not seem proportionate to the actual disease burden. Several cancers with a high burden of disease are not receiving the clinical trial investment they require, according to a University of Sydney study published in the Medical Journal of Australia.

"Four of the five cancers that result in the greatest burden of disease had relatively few clinical trials: lung, colorectal, prostate and pancreatic cancers," said Dr Rachel Dear, a medical oncologist and PhD candidate at the University of Sydney.

Disease burden is the impact of a health problem in an area measured by financial cost, mortality, morbidity, or other indicators. It is often quantified in terms of quality-adjusted life years (QALYs) or disability-adjusted life years (DALYs), which combine the burden due to both death and morbidity into one index. This allows for the comparison of the disease burden due to various risk factors or diseases. It also makes it possible to predict the possible impact of health interventions.

Dr Dear and her coauthors explored the association between cancer clinical trial activity, burden of disease and sponsorship sources.

"We found that the number of trials for each cancer type did not always match the burden of disease caused by that cancer, thereby identifying gaps in cancer trials research," Dr Dear said.

Of 386 interventional cancer trials open to recruitment in Australia, breast cancer accounted for 62 trials. Yet only 24 trials were being conducted on lung cancer, despite it being responsible for the greatest burden of disease.

Dr Dear found that industry sponsorship is more likely for randomised controlled trials that investigate systemic therapies (drugs or biological agents) for patients with advanced cancers.

"Clinical trial registries are a largely untapped resource to describe the clinical research landscape and guide future trial activity," she said.

In an accompanying editorial, Professor Ian Olver of the Cancer Council Australia, said the study reflected the international situation, where investment in trials for specific cancer types does not correlate with the disease burden caused by those cancers.

Data from clinical trial registries have many applications. Clinicians and patients can search for trial options for specific conditions when standard treatments have been exhausted, or where no effective treatment exists, Professor Olver said.

"Data from clinical trial registries should be used to monitor the progress of such efforts to ensure Australia has a robust clinical trial capability."

## **Childhood Cancer**

### **Childhood cancer survivors at higher risk of gastrointestinal complications (New Kerala: 24.5.2011)**

A study has found that people, who were treated for cancer during childhood, have a significantly higher risk of developing gastrointestinal (GI) complications later on in life.

The findings by the University of California, San Francisco (UCSF), underscore the need for childhood cancer survivors and their physicians to be aware of these risk factors to ensure patients' ongoing health care needs are met.

"We have, in a relatively short period of time, made remarkable progress in treating paediatric cancer, which has resulted in a growing population of childhood cancer survivors," lead author Robert Goldsby, MD, a paediatric cancer specialist at UCSF Benioff Children's Hospital and director of the UCSF Survivors of Childhood Cancer Program, said.

"While we know that many cancer therapies can cause gastrointestinal problems in patients at the time of treatment, this is the first major study to examine long-term GI complications in childhood cancer survivors," he stated.

About one in 500 young adults in the United States is a survivor of childhood cancer.

Using data from the multicentre Childhood Cancer Survivor Study, the researchers evaluated the frequency of self-reported GI problems in 14,358 patients who had been treated for different types of cancer - leukaemia, brain tumours, lymphoma, Wilms tumour, neuroblastoma, sarcomas or bone tumours - and survived at least five years following treatment.

Study participants were diagnosed and treated between 1970 and 1986 at one of 26 collaborating institutions in the United States and Canada, with most patients younger than 10 years old at the time of diagnosis.

Overall, more than 40 percent of the cancer survivors reported experiencing some type of GI complication within 20 years after treatment.

Additionally, the study indicated that patients who were diagnosed at an older age and who had undergone more intensive therapy, including radiation, chemotherapy and surgery, were more likely to develop long-term GI problems.

The researchers also compared the prevalence of GI disorders in the cancer survivors to a randomly selected group of the patients' siblings and found that the survivors had a significantly higher risk of developing upper GI complications such as ulcers,

oesophageal disease, and indigestion; lower GI issues such as intestinal polyps, chronic diarrhoea and colitis; and liver conditions such as cirrhosis, gallstones, and jaundice.

"While physicians continue to learn about the long-term consequences of paediatric cancer and its therapy, it is essential that we provide comprehensive follow-up care that appropriately addresses the complications cancer survivors may experience," Goldsby said.

"These are serious issues that can have a real impact on a person's quality of life," he stated.

Goldsby added that because the risks of late GI complications may change as therapy for childhood and adolescent cancer continues to evolve, studies of more recently treated patients will be needed.

The study appears in the May 2011 issue of *Gastroenterology*, the official journal of the American Gastroenterological Association Institute. It is currently available online.

## **Bowel cancer**

### **Bowel cancer**

#### **Desk job can double bowel cancer risk (New Kerala: 20.4.2011)**

People who have decided to carry on with a desk job for the rest of their life may need to revisit their big decision -- a study suggests that spending ten years or more in a sedentary job almost doubles the risk of some types of bowel cancer.

Worse, researchers have found even workers who regularly keep fit or go to the gym are still twice as likely to get a tumour.

The findings, published in the American Journal of Epidemiology, highlight the dangers of modern working patterns, where large numbers of employees are desk-bound for hours at a time, Daily Mail reports.

The research also supports earlier studies which showed men, who sit down most of the day at their jobs, are 30 percent more likely to be diagnosed with prostate cancer than those with very active occupations.

More than 37,500 people a year in Britain are diagnosed with bowel cancer.

The latest study, by a team of experts at the University of Western Australia, show long periods of physical inactivity during the day could also be a major risk - even among those who do a lot of exercise in their free time.

The Australian researchers spoke to 918 bowel cancer victims and compared their working patterns with 1,021 cancer-free volunteers. They were quizzed on their job history, lifestyles and levels of physical activity.

The results showed employees who spent more than a decade in sedentary jobs were 94 percent more likely to suffer a tumour in an area of the bowel known as the distal colon.

Researchers also found sedentary working patterns increased the chances of cancer of the rectum by 44 percent over a ten-year period.



The researchers said their findings suggest no amount of leisure time activity can offset the harm done from long periods of sitting down on the job.

Bowel cancer symptoms include thin stools, stomach cramping, bright red blood on your poop, unexplained weight loss, fatigue, and feeling like you have to "go" when you don't.

## **Breast cancer**

### **Breast cancer**

#### **Breast cancer risk 'can be assessed by examining breast milk' (New Kerala: 5.4.2011)**

A new study suggests that breast cancer risk can be assessed by examining the epithelial cells found in breast milk.

This screening method has the potential to provide a personalized assessment of breast cancer risk, said lead researcher Kathleen F. Arcaro, associate professor of [veterinary](#) and animal sciences at the University of Massachusetts Amherst.

Arcaro and colleagues collected breast milk samples from about 250 women who were scheduled for or who had a breast biopsy. The women submitted fresh samples, which were processed within 24 hours of expression; they provided samples from both breasts.

Once researchers received the samples, they isolated the epithelial cells (the potentially cancerous cells) in the breast milk. Then they isolated the DNA to look for epigenetic signals (attachment of methyl groups to DNA), which are the signals that tell the body those genes that should be expressed. These signals were then compared with breast cancer risk assessed using the biopsy results.

Arcaro and colleagues analyzed three genes: RASSF1, GSTP1 and SFRP1. "More than 35 genes have been shown to be methylated in breast [cancer](#)," she said.

Of the 104 women with a non-proliferative (low-risk) lesion, results showed no difference in the average epithelial DNA methylation of their biopsied breast vs. non-biopsied breast for RASSF1 and GSTP1. For SFRP1, however, the average methylation was higher in the biopsied breast. Importantly, among the women whose biopsies revealed cancer, there was a significant increase in average RASSF1 methylation in the biopsied breast vs. non-biopsied breast. Although the sample size in this study is small, "it's sufficient to tell us that we can use the cells in breast milk to assess breast cancer risk,"

The findings were presented at the AACR 102nd Annual Meeting 2011, held April 2-6.

## **Breast Cancer Surgery**

### **Breast Cancer Surgery Outcomes Improved by Margin Probe System (Med India: 2.5. 2011)**

The landmark, 664-patient pivotal trial evaluating the MarginProbe System met its primary endpoints, Dune Medical Devices, Inc. has announced.

The MarginProbe System provides surgeons with a real time, intraoperative technology to detect microscopically positive margins on excised tissues.

Results showed that, when using MarginProbe in addition to standard of care techniques, there was greater than a three-fold increase in surgeons' ability to identify and immediately resect all positive lumpectomy margins, compared to standard of care techniques alone.

This improvement led to a 57 percent reduction in patients who were candidates for re-excision (additional surgery) due to positive margins left un-resected on the lumpectomy specimen.

A successful lumpectomy requires cancer-free margins at the edges of excised tissue. However, intraoperative methods currently available to surgeons are limited in their ability to identify microscopically positive margins.

Because of this, patients frequently require re-excision when positive margins are found during pathological examination, normally occurring 2-4 days following lumpectomy. Re-excision rates for positive margins are reported as high as 30 percent.

## **Breast Cancers**

### **Breast Cancers Found Between Mammograms More Likely to Be Aggressive (Science Daily: 4.5.2011)**

Breast cancers that are first detectable in the interval between screening mammograms are more likely to be aggressive, fast-growing tumors according to a study published online May 3rd in the Journal of the National Cancer Institute.

Other studies have shown that cancers diagnosed between mammograms, known as interval cancers, tend to have a worse prognosis than those detected during routine screening. This study examined the difference between "true" interval cancers -- those not detectable on the previous mammogram -- and "missed" interval cancers -- those not detected on the previous mammogram due to technical errors or misinterpretation.

The authors, Anna M. Chiarelli, Ph.D., of Cancer Care Ontario, and colleagues, analyzed data from the Ontario Breast Screening Program for 288 women with true interval cancers and 87 women with missed interval cancers. Both kinds of interval tumors were compared to screen-detected tumors in 450 women who were similar in terms of age, location of the screening center, and length of time since their last mammogram. Their research was supported by a grant from the Canadian Breast Cancer Research Alliance.

As expected, the true and missed interval cancers were of higher stage and grade than screen-detected cancers. However, true interval cancers were also more likely to be estrogen receptor-negative and progesterone receptor-negative; to have a high mitotic index (a measure of how rapidly the tumor cells were dividing); and to have a less common histology (type of cancer and arrangement of cells).

The authors conclude that the findings suggest "a need for further advancement in imaging technologies to detect certain types of breast carcinomas and different approaches for early detection of fast-growing tumors."

## **Breast Cancer**

### **Genetic Information May Help Predict Likelihood of Survival Following Chemotherapy for Breast Cancer (Science Daily: 11.5.2011)**

Development of a predictive test that included genomic signatures that indicated chemoresistance, chemosensitivity and endocrine sensitivity for women with newly diagnosed breast cancer identified patients with a high probability of survival following chemotherapy, according to a study in the May 11 issue of JAMA.

Identification of patients with high likelihood of survival following a standard chemotherapy regimen (and then endocrine therapy, if estrogen receptor [ER]-positive) would reaffirm a treatment decision regarding the use of chemotherapy. "Conversely, identification of those with significant risk of relapse despite standard chemotherapy

could be used to advise participation in an appropriate clinical trial of potentially more effective treatment," according to background information in the article.

Christos Hatzis, Ph.D., of Nuvera Biosciences Inc., Woburn, Mass., and colleagues conducted a study, from June 2000 to March 2010, to develop a predictor of response and survival from chemotherapy for patients with invasive breast cancer. Patients were those with newly diagnosed ERBB2 (HER2 or HER2/neu)-negative breast cancer treated with chemotherapy containing sequential taxane and anthracycline-based regimens (then endocrine therapy if estrogen receptor-positive). Different predictive signatures for resistance and response to preoperative chemotherapy were developed from gene expression microarrays (special type of testing) of newly diagnosed breast cancer (n = 310 patients). Breast cancer treatment sensitivity was predicted using the combination of signatures for sensitivity to endocrine therapy, chemoresistance, and chemosensitivity, with independent validation (198 patients) and comparison with other reported genomic predictors of chemotherapy response.

The researchers found that the chemopredictive test algorithm had a positive predictive value (PPV) of 56 percent for prediction of pathologic response after excluding patients with predicted endocrine sensitivity. In 28 percent of patients predicted to be treatment sensitive, the 3-year distant relapse-free survival (DRFS) was 92 percent, and there was an absolute risk reduction (ARR) of 18 percent. Patients predicted to be treatment sensitive had a 5-fold reduction in the risk of distant relapse. "Overall, there was a significant association between predicted sensitivity to treatment and improved DRFS," the authors write.

Treatment sensitivity was predicted in 37 of 123 patients (30 percent) in the ER-positive phenotypic subgroup and in 19 of 74 (26 percent) in the ER-negative subgroup. In the ER-positive subgroup, these patients had a DRFS of 97 percent and a significant ARR of 11 percent at 3 years of follow-up. Patients with ER-negative cancer predicted to be treatment sensitive had significantly improved 3-year DRFS of 83 percent, an ARR of 26 percent and a positive predictive value for pathologic response of 83 percent.

The researchers note that other genomic predictors showed paradoxically worse survival for patients predicted to be responsive to chemotherapy.

"Any test based on predicted sensitivity, resistance, or both to guide the selection of a standard adjuvant treatment regimen should predict a high probability of survival for patients predicted to be treatment sensitive (negative predictive value, no relapse if predicted to be treatment sensitive) and a clinically meaningful survival difference between patients predicted to be treatment sensitive and insensitive (ARR) as well as improve on predictions using existing clinical-pathological information. The performance

of our predictive test meets these criteria in an independent validation cohort," the authors write.

The researchers add that a predictive test with this performance could potentially assist medical decision-making as it could identify patients with stage II-III, ER-positive and ERBB2-negative breast cancer with excellent 3-year and 5-year DRFS (97 percent) following a standard adjuvant treatment.

The authors conclude that it is "imperative to continue to evaluate the predictive accuracy of this test in additional validation studies."

## **Breast cancer**

### **How breast cancer cells adapt to environmental stress (New Kerala: 16.5.2011)**

A team of cancer scientists has discovered a new aspect of 'metabolic transformation', the process whereby tumour cells adapt and survive under conditions that would kill normal cells.

Their findings show how breast cancer cells can thrive when deprived of their usual diet of glucose (sugar) and oxygen by turning to fatty acids for energy generation.

"Our results demonstrate that a protein not previously associated with breast cancer is involved in helping these cells to adapt to starvation conditions and to continue their uncontrolled growth," said Tak Mak, principal investigator and Director, The Campbell Family Institute for Breast Cancer Research at Princess Margaret Hospital.

The researchers used an anticancer drug called rapamycin to block a molecular signalling pathway within breast cancer cells that stimulates sugar metabolism. However, instead of dying of starvation, the cells continued to multiply.

The team also observed an increase in these cells of carnitine palmitoyltransferase 1C (CPT1C), a protein usually found only in the brains of healthy individuals. Moreover, cells engineered to produce high levels of CPT1C were also able to adapt their metabolism as a survival technique.

"In other words, the cancer cells acted like cheaters on a diet and found a new food source in fatty acids," said Mak.

"The fact that CPT1C becomes expressed under conditions of metabolic stress highlights the resilience of cancer cells. They are able to adapt to environmental challenges and find alternative sources of food in order to flourish where healthy cells would not survive."

"Our discovery that deprivation of either sugar or oxygen spurs CPT1C expression in tumour cells marks this protein as a potential target for new drug development," Mak added.

The study was recently published in *Genes and Development*.

## **Breast cancer**

### **New avenue for treating breast cancer identified (New Ketralla: 19.5.2011)**

Researchers at the CHUM Research Centre (CRCHUM) and the Peter MacCallum Cancer Centre in Australia have nailed a new technique of treating breast cancer.

Statistics reveal that the over-expression of a particular protein (human epidermal growth factor-2) is the main cause of proliferation of cancer cells in 20 to 30 percent of breast cancer patients.

For years, the standard treatment for this kind of cancer has been Herceptin. While it is known to block the activity of this protein, the exact mechanism of action has remained a mystery.

Researchers have discovered that in addition to blocking cell proliferation, Herceptin also stimulates the production of interferons, which in turn activate immune cells called lymphocytes.

The new study supports the view that the presence of lymphocytes in tumours enhances treatment success.

In addition to revealing the precise workings of Herceptin, it also shows that combining Herceptin with a therapy that stimulates lymphocytes greatly increases its efficacy in animals.

"These findings open another avenue for breast cancer treatment for nearly a third of all women who are affected," said Stagg, who is affiliated with the Faculty of Pharmacy at the University of Montreal.

## **Lung Cancer**

### **Lung Cancer**

#### **New Target for Lung Cancer Identified (Med India: 7.4.2011)**

Researchers have discovered a mutation in DDR2 gene that helps to identify which patients with squamous cell lung cancer will respond to a leukemia drug called dasatinib.

According to lead researcher Matthew Meyerson, professor of pathology at the Dana Farber Cancer Institute, there are currently no targeted therapies for squamous cell lung cancer.

Using standard genetic sequencing techniques, Meyerson and colleagues identified mutations in the DDR2 kinase gene in about 3 percent of squamous cell lung cancers and cell lines.

Furthermore, they found that tumor cells with these DDR2 mutations responded to treatment with dasatinib.

A patient whose cancer carried a DDR2 mutation also showed a clinical response to dasatinib.

"Dasatinib is an existing therapy for chronic myelogenous leukemia with a long history and a strong safety profile," said Meyerson.

"The results of this study clearly encourage a clinical trial to test dasatinib in the setting of squamous cell lung cancer," he added.

The findings are published in Cancer Discovery.

### **Lung cancer**

#### **Lung cancer detection through the nose (The Times of India: 19.5.2011)**



Researchers at the Boston University Medical Centre say they have developed a “minimally-invasive” technique to detect lung cancer early by using cells from a patient's nose. Epithelial cells sampled from the inside of a person's nose share the same genetic markers that show up in people with lung cancer, the researchers said.

## **Ovarian Cancer**

### **Ovarian Cancer**

#### **Women with BRCA2 Mutations More Likely to Survive Ovarian Cancer (Med India: 7.5.2011)**

Women with ovarian cancer who have the BRCA2 gene mutation are more likely to survive the malignancy than women with the BRCA1 mutation, or women without either mutation.

In results presented at the AACR 102nd Annual Meeting 2011, held April 2-6, Kelly Bolton, a fellow at the National Cancer Institute, said the findings describe the effect of these mutations in ovarian cancer survival. "There was some previous evidence that women with ovarian cancer who have mutations in the BRCA genes show improved survival compared to non-mutation carriers," said Bolton. "Our study clearly shows that this survival difference is real. We also provide the first solid evidence that BRCA1 and BRCA2 mutations don't have the same impact on ovarian cancer survival." "Previous studies have been somewhat conflicting because of their small size and methodological limitations," she added.

Bolton and colleagues evaluated 3,531 cases of epithelial ovarian cancer, including 1,178 women with BRCA1 mutations, 367 with BRCA2 mutations, and 1,986 with neither mutation. Overall, women with either the BRCA1 or BRCA2 mutation had better survival compared to patients who carried the wild-type for both genes. After adjusting for baseline characteristics, the five-year survival of women without mutations was 36 percent. Survival for BRCA1 or BRCA2 mutation carriers was 46 percent and 61 percent, respectively.

Bolton said further study is needed to explain why women with BRCA2 mutations had better survival than BRCA1 carriers, or those without either mutation. She hypothesized the mutations may affect a patient's response to chemotherapy.

## **Ovarian Cancer**

### **Blood Test Identifies Ovarian Cancer (Med India: 28.4.2011)**

A simple blood test that could help in the early diagnosis of ovarian cancer saving thousands of life should be used by doctors, state new guidelines.

The test that identified the CA-125 cancer protein in the bloodstream was in use only in hospitals, but that proved to be too late for most cancer patients. Hence, the National Institute for Health and Clinical Excellence (Nice) has issued guidelines that require GPs to use the test for an early diagnosis to ensure higher survival rates.

Early administration of the test is important as the symptoms of the cancer are often mistaken for those of irritable bowel syndrome. Persistent abdominal pain or bloating, a feeling of fullness when eating, or the need to use the toilet frequently are symptoms that need to be tested.

## **Ovarian Cancer**

### **Offer Women Ovarian Cancer Blood Test, New Advice to GPs (Medical News Today: 28.4.2011)**

GPs and other primary health care professionals in the UK should offer more blood tests to women with possible symptoms of ovarian cancer, according to new guidelines from National Institute for Health and Clinical Excellence (NICE), the body that recommends medicines and procedures to the National Health Service (NHS).

The new NICE guidance, the first for this disease, aims to improve the detection of ovarian cancer, the fifth most common cancer among women in the UK, where around 6,800 women are diagnosed with the disease every year.

Although chemotherapy and surgery can be effective, women are twice as likely to survive the disease if it is diagnosed early.

GPs should offer the blood test to women, particularly those over 50, who report possible signs and symptoms of ovarian cancer, which include regular bloating, feeling full quite quickly during a meal, a need to urinate urgently or frequently, and pain in the lower abdomen.

The blood test measures a protein called CA (cancer antigen) 125. If the test suggests the CA125 level is a concern (35 IU/ml or greater) then patients should then be offered an ultrasound scan of their abdomen and pelvis, and be referred to a specialist within two weeks should the scan suggest signs of ovarian cancer.

NICE says doctors should also give the test to women over 50 who during the previous year have had symptoms suggestive of irritable bowel syndrome (IBS). The reason is IBS rarely develops for the first time in women of this age group, whereas ovarian cancer, which has similar symptoms, tends to develop at this age.

NICE says by investigating symptoms earlier in this way, the greater the chances of improving survival should women subsequently be diagnosed with the disease.

However, they add a note of caution: it is possible for women with a low CA125 level to still have ovarian cancer, and, for women with high CA125 levels to have ultrasound scans that don't show cancer.

So, NICE also advises GPs, if there is no other apparent cause of the symptoms, to tell their patients to keep monitoring them and come back if their symptoms persist or become more frequent.

Vigilance can save a woman's life where ovarian cancer is concerned. One of the reasons the disease is called the "silent killer" is because it can be confused with other conditions like irritable bowel. Another important factor is not to delay seeing the GP.

Linda Facey, who helps develop NICE guidelines, has personal experience of ovarian cancer and stresses the importance of seeking an early diagnosis. She said in a press statement that:

"I found that I was eating much less as I felt full very quickly during meals, but instead of losing weight, I constantly felt bloated and in pain."

Pharmatest Services - Fast and reliable preclinical pharmacodynamic research services. - [www.pharmatest.com](http://www.pharmatest.com)

Siemens answers: - Early detection & prevention: Healthcare IT. - [www.siemens.com/answers](http://www.siemens.com/answers)

Grow Your Hair 3X Faster - With Parachute Advansed. Now Proven Scientifically!  
Know More - [Parachuteadvansed.com](http://Parachuteadvansed.com)

"It's very easy for women to put their bodies on a backburner as they deal with busy family and working lives, but they should never ignore the possible symptoms," said Facey, who urges women to go their GP and ask for the blood test if the symptoms have been present for some time.

"This will either help identify the cause early on, or give women the reassurance they may need," she added.

Although overall survival has improved over the last 35 years, long term rates are still low, according to the latest figures from Cancer Research UK.

For women diagnosed in England during 2003-2007, the five year survival rate is 41% compared to 21% for women diagnosed in England and Wales during 1971-1975. Estimates for Scotland are similar.

The main reason for the still low rate of survival is that the majority (60%) of women with ovarian cancer in the UK are diagnosed with stage III or stage IV, and only around 30% are diagnosed at the earliest stage.

Figures for 2004-2008 show that the five-year survival for patients diagnosed with stage I ovarian cancer is now over 90%.

Fergus Macbeth, director of NICE's Centre for Clinical Practice, said that the confusion of the somewhat vague symptoms of ovarian cancer with other conditions can result in many women being directed toward the wrong care, or being diagnosed too late, once the cancer is in an advanced stage.

"The stage of the disease at diagnosis is the most important factor in predicting survival," said Macbeth, who also explained that persistent symptoms are an "important indicator" of ovarian cancer.

He said the CA125 test was "a useful early way of determining if the disease is likely to be present", and that by "offering it sooner and in primary care, we hope it will lead to earlier diagnoses and treatment".

The test is already available on the NHS.

The Royal College of Obstetricians and Gynaecologists welcomes the new NICE guidance. Their president Tony Falconer said earlier diagnosis of ovarian cancer was a "fundamental issue" for health practitioners.

"We support the NICE recommendation for GPs to offer the blood test (CA125) to women with suspected symptoms with the follow-up of an ultrasound scan," he said in a statement.

"This approach will help detect problems at the earlier stages with more rapid referral to gynaecological oncologists. Early therapeutic intervention with surgery and chemotherapy should improve the prognosis for women," said Falconer.

Clare Gerada, Chair of the Royal College of General Practitioners (RCGP), said that offering the blood test would not create more work for GPs but would help them create the best possible outcome for their women patients.

Cancer Research UK's ovarian cancer expert, Professor Jonathan Lederman, also endorsed the initiative:

"It's encouraging to see the early diagnosis of ovarian cancer being taken so seriously and we welcome any steps to help doctors diagnose women at the earliest stage," said Lederman.

A separate evaluation paralleling the guideline development concluded that the test, which costs about £20, would not be a significant drain on health resources.

The chair of the guideline development panel, Sean Duffy, who is Medical Director of Yorkshire Cancer Network, told the press that by offering this test as part of earlier investigation instead of waiting for hospitals to do them, GPs and other primary care professionals "can play a key role in facilitating earlier diagnoses".

Another guidance panel member, Charles Redman, a Consultant Gynaecological Oncologist, agrees. He said because women present with symptoms too late, coupled with the general lack of awareness about symptoms, it means far too many women end up being referred after the cancer has progressed to an advanced stage:

"This is frustrating as the stage of the disease at its diagnosis is crucial in determining which treatments can then be offered," said Redman.

Cancer Research UK is co-sponsoring a trial to develop a screening programme for ovarian cancer based on the CA125 blood test together with ultrasound scans.

NICE offers tools to help healthcare professionals put the new guidance into practice. These include podcasts, clinical case scenarios and a set of presentation slides

# **Prostate Cancer**

## **Slow-Growing Prostate Cancer**

### **Slow-Growing Prostate Cancer: "Active Surveillance" May Be Better Option than Treatment for Older Men (Medical News Today: 13.4.2011)**

Active surveillance", involving annual biopsy, may be a better treatment option than tumor removal through surgery or radiation therapy for older men with slow-growing prostate cancer that does not dramatically worsen over time, said US researchers.

The Johns Hopkins study of 769 men across the US found that close monitoring with biopsy did not raise risk of death and discouraged overtreatment in this group of older men with low-risk, very non-aggressive form of prostate cancer.

You can read how senior author Dr H. Ballentine Carter, a urologist at The Johns Hopkins Hospital and a professor at the Johns Hopkins University School of Medicine and its Brady Urological Institute, and colleagues, came to their conclusions in a paper published online this week in the Journal of Clinical Oncology.

Every year in the US about 217,000 men find out they have prostate cancer. Most of them are in their mid-60s or older and have a low risk of dying from the disease if they defer treatment. But more than 90% with low-risk cancer, including 80% of those aged 75 and over, opt for treatment rather than surveillance.

Carter told the press that their study showed the "most conclusive evidence" so far that active surveillance may work better for most older men diagnosed with a very low grade or small prostate cancer tumor.

"Our findings really underscore the need to address excessive treatment of this milder stage of the disease in older men, especially seniors," said Carter.

"These are men with a favorable risk disease profile to begin with," he added.

Although he acknowledges that some men just can't bear the thought of living with prostate cancer and just want it removed, Carter said active surveillance may be a better option for the vast majority of older men with this type of prostate cancer because it avoids the risks and complications of surgery and radiation, which can include incontinence, and other problems with bowel, urinary and sexual function.

However, he also cautioned that active surveillance is more suited to men who can be relied on to keep to their surveillance schedule and turn up for appointments. They make the best candidates for active surveillance, he said.

The prospective study started in 1995, when most of the recruited men were already past their 65th birthday, and followed them for a median period of 2.7 years (ranging up to 15 years, through to 2010). The surveillance comprised checkups every 6 months and biopsy every year.

The study is thought to be the largest and longest running study of men with slow growing non-aggressive prostate cancer.

Slow-growing, non-aggressive prostate cancer means the patient has a small chance of dying from the disease.

Endeavor Stent - Significant risk reduction in TVF and MACE. View clinical data. - [www.medtronicstents.com](http://www.medtronicstents.com)

Siemens answers: - Early detection & prevention: Molecular Medicine. - [www.siemens.com/answers](http://www.siemens.com/answers)

Research brain tumour - Phase III study for anaplastic astrocytoma accepts patients. - [www.anticancer.de/astrocytoma-study](http://www.anticancer.de/astrocytoma-study)

To take part in the study, the participants (90% white and 6% black) had to have very low risk cancers with a tumor at clinical stage T1c.

All of them met the key criteria that the cancer had to have a Gleason severity score of 6 or less (a score of 7 to 10 means the cancer is more aggressive and probably needs treatment).

80% of the participants involved in the latest analysis also met at least one of the other criteria for small-volume tumors. These included having a PSA density under 0.15 ng/mL, and biopsy findings with up to only two biopsy cores with cancer, and disease present in only up to 50% of any core.

The results showed that:

The median period of treatment-free survival after diagnosis was 6.5 years (range was 0.0 to 15.0 years).

The proportion of men who did not have treatment after 2 years was 81%, after 5 years it was 59% and after 10 years it was 41%.



255 men (33.2% of the total participants) had treatment at a median of 2.2 years (range was 0.6 to 10.2 years) after diagnosis.

Of these 255 men, 188 (73.7%) had treatment because of reclassification of the tumor after biopsy.

The proportions of men that had curative treatment or biopsy reclassification were significantly lower in those who met the full enrollment criteria than those who did not.

The men who met the full enrollment criteria were 30% less likely to be reclassified to a high-risk category during surveillance and thus require treatment compared to the men who did not meet them.

None of the participants died from prostate cancer.

Carter and colleagues concluded that:

"For carefully selected men, active surveillance with curative intent appears to be a safe alternative to immediate intervention."

"Limiting surveillance to very-low-risk patients may reduce the frequency of adverse outcomes," they added.

The researchers are now planning to expand the surveillance to include other medical centers, such as the Cedars Sinai Medical Center in Los Angeles.

Current guidelines, endorsed by the National Comprehensive Cancer Network, already suggest active surveillance as a preferred option for many older men, said Carter.

To help men newly diagnosed with prostate cancer to find out more about active surveillance as an option, the study sponsors, the Prostate Cancer Foundation, and the team at Johns Hopkins are going to publish a web-based education program, and they also hope to develop improved screening tests to identify prostate cancer patients who would be best suited to active surveillance.

### **Omega-3s - Prostate Cancer**

**Omega-3s Linked To Higher Risk Of Aggressive Prostate Cancer (Medical News Today: 27.4.2011)**

US researchers were stunned to discover that higher blood levels of omega-3 fatty acids, normally promoted as good for the heart, were linked to higher risk of aggressive prostate cancer, and conversely, raised levels of trans-fats, considered bad for the heart, were linked to a lower risk.

However, neither of the fats was found to be linked to risk of low-grade prostate cancer.

These were the findings of the largest study ever to look at links between dietary fats and prostate cancer risk.

Lead and corresponding author Theodore M. Brasky, of the Fred Hutchinson Cancer Research Center in Seattle, Washington, told the press:

"We were stunned to see these results and we spent a lot of time making sure the analyses were correct."

He and colleagues in the Hutchinson Center's Public Health Sciences Division, and also from the University of Texas Health Science Center at San Antonio and the National Cancer Institute, analyzed a subset of data on more than 3,4000 men taking part in the Prostate Cancer Prevention Trial, a large nationwide randomized clinical trial, involving more than 19,000 men aged 55 and over, that tested the performance of the drug finasteride in preventing prostate cancer.

Their paper was published this week in the American Journal of Epidemiology. Brasky, a postdoctoral research fellow in the Hutchinson Center's Cancer Prevention Program, said:

"Our findings turn what we know - or rather what we think we know - about diet, inflammation and the development of prostate cancer on its head and shine a light on the complexity of studying the association between nutrition and the risk of various chronic diseases."

Brasky and colleagues found that men with the highest blood levels of docosahexaenoic acid, or DHA, an omega-3 fatty acid that lowers inflammation and is common in fatty fish, had 2.5 times the risk of developing aggressive, high-grade prostate cancer compared to men with the lowest blood levels of DHA.

They also found that men with the highest blood percentages of trans-fatty acids, which have been linked to inflammation and heart disease, and are common in processed foods made with partially hydrogenated vegetable oils, had a 50% reduced risk of developing high-grade prostate cancer.

In contrast, they found neither of the two types of fatty acids was linked to raised risk of low-grade prostate cancer.

They also found that omega-6 fatty acid, common in most vegetable oils, and which has been linked to inflammation and heart disease, was not linked to raised risk of either high-grade or low-grade prostate cancer.

The results stunned the researchers, whose prime motive was to test the idea that concentrations of these various types of fatty acids in the blood would show some relationship with prostate cancer risk, in a similar pattern to their various links with inflammation and heart disease risk.

DDS Probiotics - Clinically tested probiotics Nondairy, gluten free, lactose free - [www.uaslabs.com](http://www.uaslabs.com)

Siemens answers: - Early detection & prevention: Healthcare IT. - [www.siemens.com/answers](http://www.siemens.com/answers)

Research brain tumour - Phase III study for anaplastic astrocytoma accepts patients. - [www.anticancer.de/astrocytoma-study](http://www.anticancer.de/astrocytoma-study)

"Specifically, we thought that omega-3 fatty acids would reduce and omega-6 and trans-fatty acids would increase prostate cancer risk," said Brasky.

Why omega-3s should be linked to raised risk of high-grade prostate cancer is a mystery to the researchers.

Brasky said they need to do more research on it, but speculated that perhaps omega-3s affect biological mechanisms other than inflammation, and these have a bigger effect on the development of some prostate cancers.

Although many nutritionists and doctors recommend 450 mg daily dose of omega-3 DHA as part of a healthy diet, there are currently no official guidelines in the US on recommended daily allowance.

Half of the participants in the nationwide trial developed prostate cancer during the course of the study, and half did not. The trial is considered unique because all participants underwent biopsy to confirm the presence or absence of prostate cancer.

Few of the participants took fish oil supplements, the most common non-dietary source of omega-3 fatty acids, which are known to prevent heart disease and other diseases caused by inflammation. Most of the participants got their omega-3s from consuming fish.

Brasky and colleagues don't think that these findings should discourage men from continuing to get their omega-3s from oily fish or food supplements.

"Overall, the beneficial effects of eating fish to prevent heart disease outweigh any harm related to prostate cancer risk," said Brasky, stressing that the study highlights the complexity of nutrition and its links with disease risk, and we need to study them much more rigorously before jumping to conclusions.

Funds from the National Cancer Institute helped pay for the study.

"Serum Phospholipid Fatty Acids and Prostate Cancer Risk: Results From the Prostate Cancer Prevention Trial."

Theodore M. Brasky, Cathee Till, Emily White, Marian L. Neuhouser, Xiaoling Song, Phyllis Goodman, Ian M. Thompson, Irena B. King, Demetrius Albanes, and Alan R. Kristal.

## **Prostate Cancer**

### **Prostate Cancer Spread may be prevented by Drug for Rare Childhood Cancer (Med India: 2.5.2011)**

A drug developed to treat Ewing's Sarcoma, a rare childhood cancer, may also help prevent human prostate cancer from spreading, says a new study.

Researchers at Georgetown Lombardi Comprehensive Cancer Center have said that if the drug continues to work well - as they found in their lab- in further laboratory and pre-clinical studies, it may be the first prostate cancer drug specifically designed to stop cancer spread, or metastasis.

"This agent does not kill prostate cancer cells, but limits their ability to spread, which could be hugely beneficial in patients," said the study's lead investigator, Aykut Uren, an associate professor at Georgetown Lombardi.

The agent, YK-4 279, was designed in the GUMC Drug Discovery Program, directed by Milton Brown, a co-author on the paper.

## **Prostate Tumor**

### **Prostate Tumor Battle Gets New Boost With 'Turkey Tail' Mushroom(Med India: 27.5.2011)**

A new research from New Queensland University of Technology (QUT) has shown that a mushroom used in Asia turned out to be completely successful in suppressing prostate tumour development in mice during its early trials.

A compound, (PSP), which is extracted from the 'turkey tail' mushroom, was found to suppress tumour formation in mice, according to an article by Dr Patrick Ling, from the Australian Prostate Cancer Research Centre-Queensland and Institute for Biomedical Health and Innovation (IHBI).

During the research trial, which was done in collaboration with The University of Hong Kong and Provital Pty Ltd, transgenic mice that developed prostate tumours were fed polysaccharopeptide (PSP), which was extracted from the turkey mushroom, for 20 weeks.

# **Tumors**

## **Tumors Cancer**

### **Scientists Discover a Way to Kill Off Tumors in Cancer Treatment Breakthrough (Science Daily: 5.4.2011)**

Scientists from the School of Pharmacy at Queen's University Belfast and Almac Discovery Ltd have developed a new treatment for cancer which rather than attacking tumours directly, prevents the growth of new blood vessels in tumours, starving them of oxygen and nutrients, thereby preventing their growth.

Targeting tumour blood vessels is not a new concept, however, this drug attacks the blood vessels using an entirely different pathway and therefore could be useful for treating tumours which don't respond to or which are resistant to current therapies of this type.

Professor Tracy Robson and her research team at Queen's, in collaboration with researchers at Almac Discovery, developed a new drug to disrupt the tumour blood supply. They have demonstrated that this leads to highly effective inhibition of tumour growth in a number of models as reported this month in *Clinical Cancer Research*, a journal of the American Association for Cancer Research. Almac Discovery is developing the drug candidate and expects to start clinical trials within the next year.

Professor Tracy Robson from the School of Pharmacy at Queen's explains: "By understanding the anti-angiogenic potential of the natural protein, FKBPL, we have been able to develop small peptide-based drugs that could be delivered to prevent tumour growth by cutting off their blood supply. This is highly effective in models of prostate and breast cancer.

"However, this also has the potential for the treatment of any solid tumour and we're excited about continuing to work with Almac Discovery as this drug enters clinical trials."

Dr Stephen Barr, President and Managing Director of Almac Discovery said: "This is a first class example of a collaboration between a university and industry to produce a novel approach to cancer therapy that has a real chance of helping patients."

The Almac Discovery / Queen's University drug is currently undergoing preclinical development and may provide a first-in-class therapy for targeting tumour angiogenesis by an entirely different pathway to those agents currently approved.

# **Depression**

## **Depression, Anxiety**

### **Mexican Immigrants To The U.S. At Higher Risk Of Depression, Anxiety (Medical News Today: 8.4.2011)**

Moving can be stressful, and millions of Mexican residents decide to migrate north each year. It can be a stressful change for anyone trying to acculturate and assimilate to new surroundings, but a new study finds that Mexicans have a sizable higher risk of becoming clinically depressed and develop anxiety than their Mexican counterparts.

The number of Mexican immigrants to the United States each year is highly debated, but the study's authors write:

"About 12 million people living in the United States in 2007 were born in Mexico, constituting approximately 30 percent of the U.S. foreign-born population, 25 percent of the U.S. Hispanic population, and 10 percent of the Mexican-born population on both sides of the Mexico-U.S. border. Mental health researchers have hypothesized that adverse social experiences inherent in the migration process have a negative effect on mental health in this population."

Researchers compared a sample of Mexican-born migrants after their arrival in the U.S. with a sample of non-migrants in Mexico their risk for first onset of a depressive or anxiety disorder. Depressive disorders included major depression and dysthymia (a less severe type of depression with long-term, chronic symptoms that are not disabling). Anxiety disorders included social phobia, panic disorder, post-traumatic stress disorder, and generalized anxiety disorder (GAD).

The study continues:

"The finding that migrants are at higher risk for onset of depressive and anxiety disorders after migration compared with family members of migrants who remained in Mexico provides the first direct evidence that experiences as a migrant might lead to the onset of clinically significant mental health problems in this population. In particular, migrants were at higher risk for depressive disorders, inclusive of major depression and dysthymia, GAD, and social phobia. After arrival in the United States, migrants had a significantly



higher risk for first onset of any depressive or anxiety disorder than did non-migrant family members of migrants in Mexico."

The strongest association between migration and first onset of a depressive or anxiety disorder was found in those ages 18 to 25 years.

The United States is viewed worldwide as a highly desirable destination by would-be migrants. International polls by the Gallup organization have found that more than 165 million adults in 148 foreign countries would, if they could, move to the US, which is the most desired destination for migrants.

As a significant percentage of employers are willing to hire illegal immigrants for higher pay than they would typically receive in their former country, illegal immigrants have prime motivation to cross borders.

In 2003, then-President of Mexico, Vicente Fox stated that remittances "are our biggest source of foreign income, bigger than oil, tourism or foreign investment" and that "the money transfers grew after Mexican consulates started giving identity cards to their citizens in the United States."

He also stated that money sent from Mexican workers in the United States to their families back home reached a record \$12 billion. Two years later, in 2005, the World Bank stated that Mexico was receiving \$18.1 billion in remittances and that it ranked third (behind only India and China) among the countries receiving the greatest amount of remittances.

The authors conclude:

"The finding that elevation in risk for depressive and anxiety disorders occurs among recent birth cohorts of Mexican migrants may help guide future research by locating the effect of migration within the particular experiences of this subpopulation."

## **Depression**

### **Successful depression treatments of moms help their kids as well (New Kerala: 11.5.2011)**

A new study involving an Indian origin researcher has suggested that children whose mothers are successfully treated for depression show progressive and marked improvement in their own behaviors even a year after their moms discontinue treatment.

And if the mothers don't get better, these kids' problems often become worse, it shows.

"If you treat the mother when she is depressed and don't even go through the process of treating the children of these mothers, they still get better as their mothers get better," said Madhukar Trivedi, professor of psychiatry at UT Southwestern and a co-author of the study.

"While the effect in the short term is clearly robust, the bigger issue is that this effect is long-lasting," he said.

"One year after their mothers' remissions, these children continued to show further improvement. This is almost unbelievable."

Moms and their children were followed as part of the nation's largest multisite clinical trial on treatments for depression, begun in fall 1999.

The latest findings also showed that children's improvement, in terms of both depressive symptoms and social functioning, was related to the time it took their mothers to get better.

Children whose mothers remitted – or recovered from all depressive symptoms – early within the first three months of treatment continued to show improvements in both symptoms and social functioning more than a year later.

If their mothers' remission took longer than three months, children a year later showed improvement in depressive symptoms, but not as much in social functioning.

## **Depression**

### **Depression Treatment of Mothers' Improves Child Behavior (Med India: 12.5.2011)**

Treatment of maternal depression enhances their kids behavior and if the mothers don't get better, these kids' problems also worsens, says study.

"If you treat the mother when she is depressed and don't even go through the process of treating the children of these mothers, they still get better as their mothers get better," said Madhukar Trivedi, professor of psychiatry at UT Southwestern and a co-author of the study.

"While the effect in the short term is clearly robust, the bigger issue is that this effect is long-lasting," he said.

"One year after their mothers' remissions, these children continued to show further improvement. This is almost unbelievable."

Moms and their children were followed as part of the nation's largest multisite clinical trial on treatments for depression, begun in fall 1999.

## **Depression**

### **Researchers Identify DNA Region Linked to Depression (Science Daily: 16.5.2011)**

Researchers at Washington University School of Medicine in St. Louis and King's College London have independently identified DNA on chromosome 3 that appears to be related to depression.

Major depression affects approximately 20 percent of people at some point during their lives, and family studies have long suggested that depression risk is influenced by genetics. The new studies identify a DNA region containing up to 90 genes. Both are published May 16 in the American Journal of Psychiatry.

"What's remarkable is that both groups found exactly the same region in two separate studies," says senior investigator Pamela A. F. Madden, PhD, professor of psychiatry at Washington University. "We were working independently and not collaborating on any level, but as we looked for ways to replicate our findings, the group in London contacted us to say, 'We have the same linkage peak, and it's significant.'"

Madden and the other researchers believe it is likely that many genes are involved in depression. While the new findings won't benefit patients immediately, the discovery is an important step toward understanding what may be happening at the genetic and molecular levels, she says.

The group at King's College London followed more than 800 families in the United Kingdom affected by recurrent depression. The Washington University group gathered data from 91 families in Australia and another 25 families in Finland. At least two siblings in each family had a history of depression, but the Australian and Finnish participants were studied originally because they were heavy smokers.

"Major depression is more common in smokers, with lifetime reports as high as 60 percent in smokers seeking treatment," says lead author Michele L. Pergadia, PhD, research assistant professor of psychiatry at Washington University. "Smokers with depression tend to experience more nicotine withdrawal and may be more likely to relapse when trying to quit. Previous studies suggest that smoking and depression run together in families. In our study, we detected a region of the genome that travels with depression in families of smokers."

Meanwhile, the group in England was concerned primarily with recurrent depression. Although some of the families in the King's College London survey may have included heavy smokers, the researchers were primarily interested in people who were depressed.

"These findings are truly exciting," says Gerome Breen, PhD, lead author of the King's College London study. "For the first time, we have found a genetic region associated with depression, and what makes the findings striking is the similarity of the results between our studies."

From two different data sets, gathered for different purposes and studied in different ways, the research teams found what is known as a linkage peak on chromosome 3. That means that the depressed siblings in the families in both studies carried many of the same genetic variations in that particular DNA region.

Unlike many genetic findings, this particular DNA region has genome-wide significance. Often when researchers correct statistically for looking across the entire genome, what appeared originally to be significant becomes much less so. That was not the case with these studies.

Although neither team has isolated a gene, or genes, that may contribute to depression risk, the linkage peak is located on a part of the chromosome known to house the metabotropic glutamate receptor 7 gene (GRM7). Some other investigators have found suggestive associations between parts of GRM7 and major depression.

"Our linkage findings highlight a broad area," Pergadia says. "I think we're just beginning to make our way through the maze of influences on depression. The U.K. samples came from families known to be affected by depression. Our samples came from heavy smokers, so one thing we might do as we move forward is try to better characterize these families, to learn more about their smoking and depression histories, in addition to all of their genetic information in this area."

Pergadia says it may be worthwhile to start by combining the data sets from the two studies to see whether this region of chromosome 3 continues to exert a significant effect.

Although there is still work to do, the new studies are a very important step on the road to understanding how genes influence depression, according to Peter McGuffin, MB, PhD, director of the Medical Research Council Social, Genetic and Developmental Psychiatry Centre at King's College London.

"The findings are groundbreaking," says McGuffin, senior author of that study. "However, they still only account for a small proportion of the genetic risk for depression. More and larger studies will be required to find the other parts of the genome involved."

This work was supported by grants from the National Institutes of Health (NIH); the National Institute for Health and Welfare, Helsinki, Finland; the Institute for Molecular Medicine, Finland; the Queensland Institute of Medical Research, Brisbane, Australia.

## **Depression**

### **Hope for depression sufferers as study links illness to genes (The Tribune: 18.5.2011)**

Scientists have for the first time established a genetic cause for depression narrowing it down to a specific chromosome. The discovery was made by an international team of researchers led by King's College, London, who studied 800 families where two or more members had severe depression. They found clear evidence that chromosome 3p25-26 was strongly linked to the disorder. The paper is published in The American Journal of Psychiatry.

"This is a first step but it's a big step," said Professor Lefkos Middleton, one of the researchers. The next step will be to find the gene or genes responsible, understand their role and function and whether drugs can be used to correct it, he said.

Gerome Breen, lead author of the study and lecturer at King's College, London, the Institute of Psychiatry, said: "These findings are truly exciting as for the first time we have found a genetic locus for depression."

It was likely that the chromosomal region identified contributed only "a couple of per cent" to the risk of developing depression. But the discovery was significant because it was likely to lead to further genetic regions which could unlock the secrets of depression, which is forecast to become the disorder with the highest disease burden in the world by 2020. — The Independent

## **Diseases**

### **Autoimmune diseases and allergies**

#### **Major advance in fight against autoimmune diseases and allergies (New Kerala: 25.4.2011)**

In a major advance in the treatment of autoimmune diseases and allergies, scientists at the RIKEN Research Center for Allergy and Immunology (RCAI) have identified the mechanism governing differentiation of B cells into antibody-producing plasma cells.

They found a role for the extracellular signal-regulated kinase (ERK) signaling pathway in B cell differentiation, a key step toward the development of B cell-targeted drugs for treatment of autoimmune diseases and allergies.

As the only cells in the body that produce antibodies, B cells play an essential role in the immune system's defense against bacteria and viruses.

For the finding, the research group focused on the signaling of the extracellular signal-regulated kinases (ERK), intracellular signaling molecules known to play an important role in the cell cycle and survival of immune cells.

The researchers generated mice deficient in two different ERKs, ERK1 and ERK2, and studied the effect of this deficiency on the fate of B cells.

The result confirmed that ERKs are in fact essential to B cell differentiation: B cells in mice without these key molecules were unable to form plasma cells.

### **Autoimmune Diseases**

#### **Researchers Report Major Advance in Fight against Autoimmune Diseases and Allergies(Med India: 26.4.2011)**

Scientists at the RIKEN Research Center for Allergy and Immunology (RCAI) have identified the mechanism governing differentiation of B cells into antibody-producing plasma cells in what is a major advance in the treatment of autoimmune diseases and allergies.

They found a role for the extracellular signal-regulated kinase (ERK) signaling pathway in B cell differentiation, a key step toward the development of B cell-targeted drugs for treatment of autoimmune diseases and allergies.

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The result confirmed that ERKs are in fact essential to B cell differentiation: B cells in mice without these key molecules were unable to form plasma cells.

The study was published in Science Signaling Journal.

## **Valve disease**

### **Changing a heart valve without the help of machine (The Tribune: 4.5.2011)**

Aortic stenosis is a kind 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 valve becomes tight, making the heart work harder to push oxygen-rich blood into the body. This puts a severe strain on the heart while at the same time depriving the body of oxygen. If untreated it can be fatal.

The best and standard solution is valve-replacement via open-heart surgery, which involves opening up the patient's chest, putting the heart on a bypass machine and replacing the aortic valve. While the results of this procedure are excellent — in some high risk groups — the elderly or those with severe lung disorders — the risk may be high. There is now a one-hour keyhole operation to replace the heart valve, a breakthrough which offers hope to cardiac patients too sick to undergo an open-heart surgery.

The procedure called TAVI (TransCatheter Aortic Valve Implantation) is an exciting new method of minimally invasive surgery where an aortic valve is replaced over a wire either via the groin or a small chest incision without a cardiopulmonary bypass. It is at present used only in high risk cases. There is a growing group of cardiac surgeons who have excelled in the new speciality of endovascular surgery — a surgeon has the best knowledge of the anatomy to be able to change a valve without looking at it directly and can convert immediately to an open procedure in the case of complications.

TAVI is usually performed in a hybrid operative suite designed and equipped to accommodate tools and personnel required for performing both open surgical and interventional procedures. TAVI procedures are best performed by a multi-disciplinary team headed by a cardio-vascular surgeon, a cardiologist and a cardiac anaesthesiologist. Other team members include a perfusionist, a surgical scrub nurse trained in transcatheter procedures, a circulating nurse, a radiology or catheterization laboratory technician and a surgical assistant. At least one member of the team must be trained in preparation and loading of the valve device, which is performed on the back table at the time of the procedure using a proprietary crimping device.

In 2002, the first transcatheter aortic valve implantation was done in a human being. Since then the technique has undergone much refinement and modifications, and has emerged as a technique with great clinical significance. In future, the trained cardiovascular surgeon with endovascular skills will be a unique physician with the versatility to perform the full gamut of treatment options for aortic stenosis: open versus transcatheter aortic valve implantation (via either the transfemoral or transapical approaches).

Some experts believe that in the future up to 40 per cent of aortic valve intervention may be performed utilising catheter-based techniques.

At present, only two types of transcatheter aortic valve systems are available in the United States as part of clinical trials — Medtronic CoreValve Revalving device (Medtronic Inc, Minneapolis, Minnesota), and the Edwards Sapien valve (Edwards Lifesciences Inc, Irvine, California). Both systems have been well studied in human trials and are available in Europe as CE Mark approved products. The second generation Edwards Sapien platform (Sapien XT) has been introduced and it is only available in Canada and Europe at this time. In a trial — PARTNER (Placement of Aortic Transcatheter Valves) — it was concluded that TAVI should be considered as the new treatment for patients who are of too high risk for open-heart surgery.



Opponents of this technique, however, argue that this is a new technique which has yet to stand the test of time. In the skilled hands of a well experienced team, the results of open surgery even in the high risk group are excellent. However, one major drawback is the exorbitant cost (about 10 times the cost of a standard surgery).

In properly selected cases — where we do not have the option of open heart surgery — the procedure carries great promise for the well being of a patient who might not survive otherwise. A typical patient is usually either bed-ridden or severely short of breath and unable to do even simple household chores even on full medical therapy. The quality of life — even in an elderly patient — improves dramatically after such a successful operation.

Hopefully, we will have this valve in India soon, and Punjab may be the first in Asia to use it for the benefit of patients.

The writer is Head, Cardio-Vascular Endovascular & Thoracic Surgery, Christian Medical College and Hospital, Ludhiana, and is a pioneer in minimally invasive and beating heart surgery. Email: drhsbedicmc@gmail.com

## **Human Disease**

### **Research Involving Indian-origin Scientist Shows How Seawater Offers Clues To Human Disease (Med India: 9.5.2011)**

Seawater could shed light on human disease, a study involving an Indian-origin researcher has demonstrated.

By analyzing genomes of a tiny, single-celled marine animal, they have demonstrated a possible way to address diverse questions such as how diseased cells differ from neighboring healthy cells.

Debashish Bhattacharya, professor of ecology, evolution and natural resources in Rutgers' School of Environmental and Biological Sciences, and Ramunas Stepanauskas and Hwan Su Yoon of the Bigelow Laboratory of Ocean Sciences, used sophisticated new technologies to sequence the genomes of individual picobilophytes, tiny microbes first discovered in 2007.

"If we can peer inside the genome of a single cell and reconstruct its history, we can do that for many cells and figure out their interactions with other cells in the environment," Bhattacharya said.

"For example, why do different cancer cells from the same tumor grow at different rates? Their genomes might contain the answer, and the answer might lead to more effective treatment strategies," he added.

The study has been published in the journal Science.

### **Gastroenteritis cases**

#### **Bangalore doctors report 30% increase in gastroenteritis cases (World Newspaper: 19.5.2011)**

The heat, the rain and the annoying weather in the city over the last few days have already started taking toll on the health of Bangaloreans. City doctors have reported a 30% increase in the number of gastroenteritis cases in the city, both among adult and pediatric population, has been reported during the last two weeks.

"Cases of gastroenteritis, food poisoning, vomiting and loose motion have become common among children in the last couple of weeks. Pediatric gastro cases have increased by 50%. And with monsoon setting in, there is a likelihood that more cases of water contamination will be reported," said Dr Preethi Galagali, consultant pediatrician, Chord Road Hospital. Children from one year of age up to adolescence are getting affected this season, she said.

The complaints are not stopping with mild dehydration. Younger children are becoming victims of severe food poisoning, requiring immediate hospitalisation. They tend to get dehydrated quickly and require to be put in IVF, said Dr Preethi.

Adults too are getting increasingly afflicted by gastroenteritis.

"Eating outside is one of the most prominent causes for gastro this season. Due to the excessive heat, food gets stale easily and micro-organisms grow on the food. It is advisable to have only freshly cooked food this season," said Dr Aravind Jagadish, consultant, Suguna Hospital.

Water contamination is another common reason for gastro. "Apart from gastroenteritis, typhoid, amebiasis and viral hepatitis are all caused by water contamination. Thus people should take care of their hygiene from the beginning of monsoon to avoid any such hazards. The best way to ensure that the water you are drinking is safe is to boil it and then cool it before drinking," said Dr Aravind.

## **Nerve disease**

### **Viagra reverses nerve disease: Study (New Kerala: 23.5.2011)**

Anti-impotence drug Viagra drastically reduces symptoms of multiple sclerosis - which affects the brain and spinal nerve cells - in animal models, says a study.

The research by Universitat Autònoma de Barcelona (UAB) in Spain shows that a practically complete recovery occurs in 50 percent of the animals after eight days of treatment.

Researchers are hopeful of clinical trials with patients, given that the drug is well tolerated and has been used to treat sexual dysfunction in some multiple sclerosis (MS) patients, reports the journal *Acta Neuropathologica*.

MS is the most common chronic inflammatory disease of the central nervous system comprising the brain and the spinal cord and one of the main causes of disability among young adults, according to an UAB statement.

The disease can cause a variety of symptoms - changes in sensation, muscle weakness, abnormal muscle spasms, or difficulty moving; difficulties with coordination and balance; problems in speech or swallowing, visual problems, among others.

There is currently no cure for the disease, although some drugs have proven effective in fighting symptoms and preventing it from progressing.

A research team from the UAB Institute of Biotechnology and Biomedicine, directed by Agustina Garcia, along with another led by Juan Hidalgo, Garcia's counterpart, has studied the effects of a treatment using sildenafil, sold as Viagra, in an animal model of multiple sclerosis.

Researchers demonstrated that a daily treatment with sildenafil after disease onset quickly reduced clinical signs, with a practically complete recovery in 50 percent of the cases after eight days of treatment.

Scientists observed how the drug reduced the infiltration of inflammatory cells into the white matter of the spinal cord, thus reducing damage to the nerve cell's axon and facilitating myelin repair.

## Allergies

### **Do Allergies Affect Men More Than Women? Possibly(Medical News Today: 26.5.2011)**

A huge study involving 14 million blood tests appears to contradict previous studies which suggest women are more likely to have an allergy than men. This one showed that men exhibit higher sensitivity to 11 common allergens. The Quest Diagnostics Health Trends Report - Allergies Across America - by Quest Diagnostics, suggests that perhaps males require different reporting standards when using blood tests to evaluate for allergies.

The ImmunoCAP® specific IgE (Immunoglobulin E) blood tests detect 11 common allergens people might be susceptible to, including ragweed, mold, two dust mites, dog dander, cat epithelia (skin), and five different foods (egg white, milk, peanut, soybean, and wheat). When an allergen is present our body produces IgE, an antibody. If blood IgE levels are high in the presence of an allergen, it is an indication the individual may have an allergy. Doctors use the blood test, along with symptom evaluation, the patient's medical history and some other factors before diagnosing an allergy.

Surya N. Mohapatra, Ph.D. chairman and chief executive officer, Quest Diagnostics, said:

"This landmark report, based on testing of patients in every state of the country and the District of Columbia, underscores that allergies are a major public health concern, and that gender, age and region influence their impact on the health of Americans."

#### Allergen Sensitivity According To Gender

The authors reported that the IgE allergen sensitization rate for the 11 allergens evaluated in the blood tests was about 10% higher for adult males than adult females overall (all age groups). The results in this study challenge previous ones, including a meta-analysis of 591 studies which showed that approximately 65% of adults with allergies were women.

Study researchers, Stanley J. Naides, M.D., medical director, Immunology, Quest Diagnostics, said:

"Our study suggests that allergies in men may not be less prevalent than in women, as suggested by other research, and men may be at risk for underdiagnoses of allergies. Additional research will determine whether men truly are at greater allergy risk or simply

experience higher sensitization rates as a result of their gender, a finding which could affect physicians' interpretation of increasingly used IgE blood tests."

The authors wrote that IgE blood testing has become increasingly common in doctors' practices.

Misdiagnoses are common

According to AAFB (Asthma and Allergy Foundation of America), 51% of individuals experiencing allergies symptoms admitted in a survey that they had misdiagnosed their sinusitis as allergies.

Study investigator Harvey W. Kaufman, M.D., senior medical director, Quest Diagnostics, said:

"As our study and the recent survey by AAFA demonstrates, physicians and patients should exercise caution in concluding an allergy exists based on allergy-associated symptoms. We suspect that some people assume their runny nose, coughing and other symptoms are due to allergies, when this may not be the case. Appropriate evaluation by a physician may reveal another medical condition which, if accurately diagnosed, may be treatable."

## **AIDS-HIV Infection**

### **HIV Infection May Be a Risk Factor for Heart Failure (Science Daily: 26.4.2011)**

Patients with HIV infection without a prior history of coronary heart disease may be at a higher risk of developing heart failure, according to a report in the April 25 issue of Archives of Internal Medicine, one of the JAMA/Archives journals.

Previous studies have suggested that "class of antiretroviral drugs (particularly protease inhibitors), Human immunodeficiency virus 1 (HIV-1) RNA levels, and low CD4+ lymphocyte counts are each associated with an increased risk of cardiovascular disease events, an important risk factor for heart failure," according to background information in the article. "Heavy alcohol consumption, which is more prevalent among HIV-infected people, is also an established risk factor for heart failure," the authors write. "Other important risk factors for heart failure in the general population include increasing age, hypertension, diabetes mellitus, and obesity, factors that are being seen with increasing frequency among the HIV-infected population," because of improved survival among individuals with the infection.

Adeel A. Butt, M.D. M.S., from the University of Pittsburgh School of Medicine, Pittsburgh and Pittsburgh Healthcare System, and colleagues analyzed data from HIV-infected and HIV-uninfected veterans enrolled in the Veterans Aging Cohort Study Virtual Cohort and the 1999 Large Health Study of Veteran Enrollees from January 1, 2000 to July 31, 2007. The objective of the study was to determine whether HIV infection was independently associated with an increase risk of heart failure (HF).

A total of 8,486 patients were included in the analysis, of whom 2,391 (28.2 percent) were HIV infected and 6,095 (71.8 percent) were HIV uninfected. During the median (midpoint) 7.3 years of follow-up, there were 286 new heart failure events and 1,096 deaths. "Participants with HIV infection were more likely to have hepatitis C virus co-infection (30.5 percent vs. 11.4 percent) and cocaine abuse or dependence (21.9 percent vs. 15.7 percent) and higher reported rate of current smoking (55 percent vs. 45.3 percent), but were less likely to have hypertension (18.7 percent vs. 28.8 percent) or diabetes (16.7 percent vs. 24.8 percent)," the authors report.

Compared with HIV-uninfected veterans, those who were HIV-infected had an increased risk of HF, and this association was also present among veterans who did not have a coronary heart disease event or a diagnosis related to alcohol abuse or dependence before the incident HF event. In addition, the authors report that "Compared with patients without HIV infection, those with HIV infection who had baseline HIV-1 RNA levels of 500 or more copies/mL had a significantly higher risk of HF." Those patients with HIV

infection, who had baseline and HIV-1 RNA levels less than 500 copies/mL, did not have an increased risk of heart failure. The authors suggest there could be several mechanisms at work in this relationship between HIV and heart failure, including direct effects of the infection, heavy alcohol consumption, antiretroviral therapy leading to an increased risk of coronary heart disease, nutritional deficiencies, and immunologic damage to the myocardium (heart muscle).

"In conclusion, HIV infection is associated with an increased risk of heart failure after adjusting for traditional risk factors for heart failure. This association persisted even after exclusion of patients with a baseline history of coronary heart disease, heart failure and angina, as well as a coronary heart disease event in the follow-up period prior to the diagnosis of heart failure and a history of alcohol abuse or dependence diagnosis. Ongoing viral replication is associated with a higher risk of heart failure."

### **HIV infection**

#### **HIV infection raises heart failure risk: Study (World Newspapers: 26.4.2011)**

Infection with HIV, the virus that causes AIDS, can increase the risk of heart failure even in patients who don't have a prior history of heart disease, a US study said.

And as the HIV virus replicates, the risk increases, added the study, published in Archives of Internal Medicine.

"Health care providers traditionally think of HIV and its therapies increasing the risk of atherosclerotic heart disease," said lead author Adreel Butt, at the University of Pittsburgh School of Medicine in Pennsylvania.

"The surprising finding from our study was the association of HIV with heart failure in the absence of prior coronary heart disease."

The study involved nearly 8,500 adults, with a median age of 48 years in both HIV infected subjects and controls.

The HIV group was more likely to also be infected with Hepatitis C, 31% to 11%, and to abuse cocaine -- 22% to 16%.

They were also more likely to be smokers but less likely to have hypertension or diabetes.

During a median follow-up of 7.3 years, 286 people developed heart failure. Rates of heart failure per 1,000 person-years, adjusted for age as well as race and ethnicity, were 7.12 for HIV patients and 4.82 for the controls.

After accounting for traditional risk factors, the hazard ratio for heart failure with HIV was 1.81.

In addition, ongoing replication of the virus led to a significantly higher risk of heart failure.

"On the other hand, if HIV replication is well controlled, then the risk of heart failure is closer to that seen among HIV-uninfected persons," Butt said.

The exact mechanism by which HIV infection is linked to heart failure remains unclear, but possible explanations include the direct effects of the HIV infection, antiretroviral treatment that leads to an increased risk of coronary heart disease, and nutritional deficiencies.

"Our results suggest that HIV itself is playing an important and independent role," Butt and her colleagues wrote.

The message for HIV care providers is clear, though.

"Be on the lookout for early signs of heart failure in HIV-infected persons, even if there is no history of preceding coronary heart disease," Butt told Reuters Health.

"Controlling HIV well may reduce the risk of heart failure



## **Alzheimer's**

### **Alzheimer's-Like Brain**

#### **Alzheimer's-Like Brain Changes Found in Cognitively Normal Elders With Amyloid Plaques (Science Daily : 1.4.2011)**

Researchers using two brain-imaging technologies have found that apparently normal older individuals with brain deposits of amyloid beta -- the primary constituent of the plaques found in the brains of Alzheimer's disease patients -- also had changes in brain structure similar to those seen in Alzheimer's patients. Results of the study, which has received early online publication in the *Annals of Neurology*, may help identify individuals who could be candidates for therapies to prevent the development of dementia.

"Our findings support the theory that Alzheimer's disease begins many years before symptoms appear and that amyloid plaque is an early sign of this process," says Keith Johnson, MD, Massachusetts General Hospital (MGH) Imaging, senior author of the study. "We see that when amyloid deposits are present, even in cognitively normal individuals, the degenerative changes of Alzheimer's are underway. Long-term studies to track these changes and observe how they evolve are ongoing."

Definitive diagnosis of Alzheimer's disease requires finding amyloid plaques and neurofibrillary tangles in the brain at autopsy. In recent years it has been possible to detect amyloid in living brains by PET scanning with an imaging agent known as Pittsburgh Compound B (PiB). Plaques have been observed in the brains of apparently healthy individuals, as well as those with dementia, but whether the presence of plaques indicates the early stages of Alzheimer's disease is not yet known.

High-resolution magnetic resonance imaging studies have identified characteristic changes in brain structure -- thinning of key cortical regions and reduced volume of structures such as the hippocampus -- in persons with mild cognitive impairment, in individuals known to carry gene mutations that directly cause Alzheimer's disease and in diagnosed Alzheimer's patients. A recent study reported similar brain changes in some cognitively normal elders but did not distinguish those who had amyloid deposits from those who did not.

The current study involved 87 cognitively normal older individuals and 32 patients diagnosed with mild Alzheimer's -- matched for age, gender and education -- who had

enrolled in the long-term Harvard Aging Brain Study. Participants underwent both high-resolution MR imaging of brain structure and PET scanning with PiB to detect amyloid plaques. The results showed that those cognitively normal individuals who had amyloid plaques also had structural changes similar to but less pronounced than the neurodegenerative changes seen in the symptomatic patients. Structural changes were most evident in areas comprising what is called the default network, which is known to be affected early in the course of Alzheimer's disease.

"If amyloidosis -- deposits of amyloid plaques -- in the brains of clinically normal people is associated with Alzheimer's-like neurodegeneration, then amyloidosis itself may signify 'preclinical' AD," say Johnson, an associate professor of Radiology at Harvard Medical School. "We need to learn more about how long it takes a normal person with amyloid to develop AD, whether there are critical 'second hit' factors that convert amyloidosis to Alzheimer's disease, and if there are measures that can halt the process of neurodegeneration."

Alex Becker, PhD, of MGH Imaging, is lead author of the *Annals of Neurology* report. Additional co-authors are Jeremy Carmasin, Jacqueline Maye, Bruce Fischl, MD, and Douglas Greve, PhD, MGH Imaging; Trey Hedden, PhD and Deepti Putcha, Martinos Center for Biomedical Imaging at MGH; Dorene Rentz, PsyD, Gad Marshall, MD, and Reisa Sperling, MGH and Brigham and Women's Neurology; Randy Buckner, PhD, MGH Psychiatry; Stephen Salloway, MD, Brown University; and Donald Marks, MD, Tufts University School of Medicine. The study was supported by grants from the National Institutes of Health, Massachusetts Alzheimer's Disease Research Center, Howard Hughes Medical Institute, the Alzheimer's Association and the Charles Farnsworth Trust.

## **New Alzheimer's Genes**

### **New Alzheimer's Genes Widen Portal into Disease Causes (Medical News Today: 5.4.2011)**

The discovery of several new genes linked to late-onset Alzheimer's disease widens the portal into the causes of the disease and offers new ways for identifying those at risk and finding proteins and pathways for drug development, according to authors of two large studies published in *Nature Genetics* this week.

The new genes reveal that processes other than accumulation of amyloid protein, so far the only genetic knowledge we have of Alzheimer's, are involved in the disease.

In the largest study of its kind, the Alzheimer Disease Genetics Consortium (ADGC), identified common variants in four genes, MS4A4/MS4A6E, CD2AP, CD33 and EPHA1, associated with late onset Alzheimer's disease.

Each of the genes adds to the risk of developing the most common form of Alzheimer's, which accounts for the vast majority of cases and occurs in older people over the age of 65.

Until recently, only four genes linked to late-onset Alzheimer's disease had been confirmed, with apolipoprotein E-e4 (APOE-e4) having the largest impact on risk. These genes are involved with the development of amyloid protein plaques in the brain.

But the four new genes relate to inflammatory processes, lipid metabolism, and the movement of molecules within cells, explained Dr Richard Mayeux, a lead scientist in the ADGC and Chairman of the Department of Neurology of Columbia University Medical Center in New York.

He told the press that:

"A significant aspect of our research is that these genes clarify three new pathways."

Add these to what we already know and:

"... we may now have four pathways that are critically related to the disease and that could really make a difference in how we study and potentially prevent and treat it," said Mayeux.

The genome-wide association study (GWAS) was conducted by the ADGC and led by the University of Pennsylvania School of Medicine, the University of Miami, Boston University School of Medicine and Columbia University. It was supported by the National Institute on Aging, part of the National Institutes of Health in the US.

Altogether 44 research centers collaborated in the study, led by Dr Gerard D. Schellenberg from the University of Pennsylvania.

The consortium analysed the genomes of more than 11,000 people with Alzheimer's and almost the same number of elderly people who were dementia-free.

This data was joined by additional, confirming data from three other consortia, bringing the total of people studied to more than 54,000.

Work from this study also contributed to the discovery of another gene, reported in the same issue of the journal.

In that study, senior author Dr Julie Williams a professor at Cardiff University's MRC Centre for Neuropsychiatric Genetics and Genomics in the UK, and colleagues followed up previous GWAS work from the GERAD+ consortium that examined 20,000 people with Alzheimer's and 40,000 well individuals.

Parkinson's Disease - Treatment Options, Latest Advances. Trustworthy, Current Report.  
- [www.parkinsonsdisease-guidebook.com](http://www.parkinsonsdisease-guidebook.com)

Sequence Alignment Tool - Easy-to-use software to align and edit DNA and protein sequences - [www.Geneious.com](http://www.Geneious.com)

Heart Disease - An initiative to salute critical illness survivors. Support now. - [BhartiAxaSurvivors.in](http://BhartiAxaSurvivors.in)

They identified common variants at ABCA7 and MS4A6A/MS4A4E associated with Alzheimer's disease, plus evidence to support several additional susceptibility loci.

Williams said in a statement that:

"Through our on-going research we are finding genes that increase a person's risk of developing Alzheimer's disease, allowing us to pinpoint what may be going wrong, biologically, in the brain."

Their study was funded by the Wellcome Trust, Medical Research Council, Alzheimer's Research UK and the Welsh Assembly Government.

She said that the exciting thing about these new discoveries is the genes appear to be clustering in patterns.

"So several genes are implicating the immune system, for example - and it's telling us there's something different about the immune system of people who go on to develop Alzheimer's disease. So their immune response or inflammatory response within the brain is different in Alzheimer's disease," explained Williams.

But perhaps the most exciting part of discovering these new genes, is a cluster of four that relate to a new area of research called endocytosis, the way a cell imports big molecules and processes them in a very specific way.

"We now have four genes that implicate this very precise process and it offers a very big clue that this process is playing a strong role in the development of Alzheimer's disease," said Williams.

Schellenberg said while this work represented years and years of effort by many scientists, it is only beginning to define "how genes influence memory and intellectual function as we age".

"We're all tremendously excited by our progress so far, but much remains to be done, both in understanding the genetics and in defining how these genes influence the disease process," he added.

The researchers want their work to achieve two things: find out what causes Alzheimer's so as to help develop effective drugs, and predict who is at risk, which will be important as preventive measures become available.

Finding out more about the genes involved in the disease will help uncover the steps that begin in the brain long before the symptoms of Alzheimer's, memory loss and cognitive decline, begin to show, and eventually, help researchers understand the processes that lead to the destruction of large parts of the brain.

Williams also described these efforts as just the beginning of piecing together "the jigsaw", and there was still a long way to go before we can start using this information to find people at risk or develop new drugs, although she expressed hope at what they might promise:

"If we were able to remove the detrimental effects of these genes through treatments, we hope we can help reduce the proportion of people developing Alzheimer's in the long-term," said Williams.

Plans are already under way for an even bigger study, under the auspices of the newly formed International Genomics of Alzheimer's Project, which met for the first time in Paris in November 2010. The project is funded by the Alzheimer's Association in the US and the Fondation Plan Alzheimer in France.

"Common variants at MS4A4/MS4A6E, CD2AP, CD33 and EPHA1 are associated with late-onset Alzheimer's disease."

Adam C Naj, Gyungah Jun, Gary W Beecham, Li-San Wang, Badri Narayan Vardarajan, Jacqueline Buross, Paul J Gallins, Joseph D Buxbaum, Gail P Jarvik, Paul K Crane, Eric B Larson, Thomas D Bird, Bradley F Boeve, Neill R Graff-Radford, Philip L De Jager, Denis Evans, Julie A Schneider, Minerva M Carrasquillo, Nilufer Ertekin-Taner, Steven G Younkin, Carlos Cruchaga, John S K Kauwe, Petra Nowotny, Patricia Kramer, John Hardy, et al.

Nature Genetics, Published online 03 April 2011.

DOI:10.1038/ng.801

"Common variants at ABCA7, MS4A6A/MS4A4E, EPHA1, CD33 and CD2AP are associated with Alzheimer's disease."

### **Alzheimer's Onset**

#### **Alzheimer's Onset Preceded By Brain Shrinkage Ten Years Before (Medical News Today: 15.4.2011)**

If a person's brain size starts to shrink, it could mean that within a decade they may start presenting symptoms of Alzheimer's disease, researchers from Massachusetts General Hospital, Harvard Medical School revealed in the journal Neurology. Rush University researchers were also involved in this study.

This new discovery adds compelling evidence to Alzheimer's slow and gradual emergence. Experts say it could help health care professionals and scientists identify individuals at risk before damage occurs.

The authors used magnetic resonance imaging (MRI) scans to measure the thickness of the cerebral cortex - part of the brain - in 65 individuals. Cortex thinning is a characteristic of Alzheimer's disease. The cortex is the outer part of any organ, which in this text refers to the outer portion of the cerebrum (brain).

They divided the study participants into three groups and worked out how many eventually developed Alzheimer's symptoms:

High thickness measurements - none of these people went on to develop Alzheimer's disease

Average thickness measurements - 20% of these people went on to develop Alzheimer's disease

Low thickness measurements - 55% of these people went onto develop Alzheimer's disease

The authors concluded:

"By focusing on cortical regions known to be affected in AD dementia, subtle but reliable atrophy is identifiable in asymptomatic individuals nearly a decade before dementia, making this measure a potentially important imaging biomarker of early neurodegeneration."

The Alzheimer's Society, UK, wrote in a communiqué:

"We have known for some time that changes in the brain can happen a long time before a person starts showing symptoms. Research such as this is helping us build on our understanding of where these changes happen and how early. However, while these latest results are significant, it is a small sample size and we are still some way from being able to say for certain which people will go on to develop Alzheimer's.

Alzheimer's disease, also known as Senile dementia of the Alzheimer Type (SDAT), or simply Alzheimer's is a progressive neurologic brain disease which leads to irreversible loss of neurons and loss of memory, reasoning, intellectual functions - all of which eventually become severe enough to make social and occupational functioning impossible.

As the disease progresses, plaques and tangles develop in the structures of the brain, causing its cells to die. Alzheimer's patients also have abnormally low levels of brain-neurotransmitters, chemicals involved with the transmission of messages in the brain.

Alzheimer's, which gets worse with time, is the most common form of dementia. There is no current cure, although some therapies may help slow down its progression and alleviate symptoms. It is a terminal disease (causes death). Approximately 4.5 million Americans and 417,000 British people have Alzheimer's.

"Alzheimer-signature MRI biomarker predicts AD dementia in cognitively normal adults"

B.C. Dickerson, MD, T.R. Stoub, PhD, R.C. Shah, MD, R.A. Sperling, MD, R.J. Killiany, PhD, M.S. Albert, PhD, B.T. Hyman, MD, PhD, D. Blacker, MD, ScD and L. deToledo-Morrell, PhD

Neurology WNL.0b013e3182166e96

Written by Christian Nordqvist

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Blood-to-Brain Absorption - Rapid & ready to use »in vitro« Blood-to-Brain Absorption kit. - [SOVICELL.com](http://SOVICELL.com)

## **Alzheimer's**

### **Early-onset Alzheimer's identified (Med India: 3.5.2011)**

Early-onset Alzheimer's disease can be identified by a 'cognitive reserve', discovered researchers at the Mayo Clinic in Rochester, Minn. , and PET-CT examinations can identify the disorder.

Researchers learnt that the 'cognitive reserve' inhibited the visible symptoms of early-onset AD, which takes a more aggressive course and progression. Dr. Jacob Richard Hodge, lead researcher for this study, states that with patients with a good background of education, the symptoms manifest themselves late, since the patients are better able to develop coping strategies.

Using earlier PET-CT examination results, the researchers identified significant abnormalities in patients with early-onset AD. This becomes important in the diagnosis of younger patients as Alzheimer's dementia is usually not suspected in a younger age group.

The discovery of the "cognitive reserve" will help patients to cope and improve the quality of their lives with a proper diagnosis. "Once the diagnosis is determined, a patient can begin to manage the disease and plan for the future," stated Dr. Hodge who will present the study on May 2, 2011 at the 2011 ARRS Annual Meeting at the Hyatt Regency Chicago.



## **Alzheimer's**

### **Middle aged obesity can trigger Alzheimer's (New Kerala: 4.5.2011)**

Piling on the pounds in middle-age makes for greater chances of developing Alzheimer's -- as high as 80 percent.

The latest evidence shows maintaining a 'healthy' weight or losing the spare tyre is the best way to avoid an increased risk of mental decline in later years.

Researchers in Sweden concluded that middle-age spread could lead to memory problems after analysing information spanning 30 years on 8,500 twins aged 65 and over.

Study author Weili Xu, Karolinska Institute in Stockholm, said half of adults in European countries such as Britain could be at risk because they were overweight or obese, the journal Neurology reports.

"Our results contribute to the growing evidence that controlling body weight or losing weight in middle age could reduce your risk of dementia," Xu said, according to the Daily Mail.

The conclusions duplicate evidence two years ago from a US review of 10 international studies involving more than 37,000 people, pointing to obese people having an increased risk of all types of dementia.

Experts do not know exactly why obesity affects the risk of dementia, although hardening of the arteries and high blood pressure play a role.

New dementia treatments could be available in 10 years using six drugs already available for other conditions, says the Alzheimer's Society.

Its chief executive Jeremy Hughes said the drugs are not being named because further evidence is needed to show they work and so that people do not try to use them before they have been tested properly.

## **Alzheimer's**

### **15-min online test to spot early signs of Alzheimer's (The Times of India: 16.5.2011)**

Scientists have developed what they claim is a 15-minute online test which can help detect the early signs of Alzheimer's disease.

A team at Oxford University has developed the online quiz called the Cognitive Function Test which it claims could help diagnose the most common form of dementia perhaps years earlier than it might normally be spotted.

To take the test, go to [www.foodforthebrain.org](http://www.foodforthebrain.org). It has three sections which use computer-based tasks and games to measure different components of memory.

The test is not intended to replace checks with a doctor and it is intended that they will continue to be done to check the diagnosis is correct.

The quiz will provide an instant result and could either set people's minds at rest or encourage them to act sooner than they might have to visit their doctor. It could also help some people who feel a stigma to admitting they are suffering memory problems, say the scientists.

It will provide guidance on lifestyle and diet which could also slow the development of the condition.

## **Alzheimer'**

### **Excess copper, iron linked with Alzheimer's (New Kerala: 23.5.2011)**

The exact causes of neuro-degenerative disorders like Alzheimer's and Parkinson's disease are unknown, but scientists say excess of copper and iron in the human brain may be one of the influencing factors.

Another is DNA damage by reactive oxygen species, highly destructive molecules usually formed as a byproduct of cellular respiration.

Researchers from the University of Texas Medical Branch at Galveston have discovered how these two pieces of the neuro-degenerative disease puzzle fit together, the Journal of Alzheimer's Disease reports.

"Reactive oxygen species cause the majority of the brain cell DNA damage that we see in Alzheimer's and Parkinson's disease, as well as most other neuro-degenerative disorders," said post-doctoral fellow Muralidhar Hegde, who led the study.

Alzheimer's sufferers may repeat statements and questions over and over, forget chats, appointments or events, routinely misplace possessions, often putting them in illogical locations. Eventually they forget the names of family members and everyday objects.

Humans ordinarily have small amounts of iron and copper in their bodies - in fact, the elements are essential to health, according to a Texas statement.

But some people's tissues contain much larger quantities of iron or copper, which overwhelm the proteins that normally bind the metals and sequester them for safe storage.

The result -- so-called 'free' iron or copper ions circulating in the blood are able to initiate chemical reactions that produce reactive oxygen species.

A high level of copper or iron, they say, can function as a "double whammy" in the brain by both helping generate a large numbers of the DNA-attacking reactive oxygen species and interfering with the machinery of DNA repair that prevents the deleterious consequences of genome damage.

## **Anemia**

### **Kids with low vitamin D levels more susceptible to anemia (The Tribune: 4.5.2011)**

A new study has suggested that low vitamin D levels in kids may cause anaemia, a severe condition which leads to the damage of vital organs by depriving them of oxygen. Anaemia occurs when the body has too few oxygen-carrying red blood cells, and is diagnosed by measuring hemoglobin levels. Symptoms of mild anaemia include fatigue, lightheadedness and low energy. To examine the relationship between hemoglobin and vitamin D, researchers analyzed data from the blood samples of more than 9,400 children in the 2-18 years age group. They found out that lower the vitamin D levels, lower was the hemoglobin and higher the risk for anaemia.

# Asthma

## Harmonica

### **Playing harmonica may improve lung function in pediatric patients (New Kerala: 4. 4.2011)**

Playing the harmonica is a new program which is being used at Sinai Hospital in Baltimore, Maryland, to improve breathing in pediatric patients with asthma and pneumonia and pediatric patients who are postoperative to exercise their lungs.

Jerry Henderson, assistant vice-president for perioperative services, contacted the Respiratory department with the idea to use the harmonica as a tool to help patients with pulmonary disease.

This concept was introduced by Buddy Wakefield, the father of Henderson.

Wakefield has been teaching the harmonica to patients with Parkinson disease, asthma and chronic obstructive pulmonary disease.

According to him, "playing the harmonica is like doing push-ups for the lungs."

Wakefield's method is simple. He distributes a kit that contains a music book with a simple harmonica and instructions on how to play.

He reviewed the instructions with a respiratory therapist and within 15 minutes she was playing her first tune on the harmonica.

Respiratory therapists and nurses are always looking for fun ways to help patients exercise their lungs, and this was a way to achieve this goal.

# **Bacteria**

## **Superbug**

### **Superbug: Brit docs seek reality check (The Times of India: 13.4.2011)**

#### **Want Study to Establish Prevalence in Delhi**

British scientists, who found the deadly gene NDM1, now want to join hands with India's Indian Council of Medical Research (ICMR) to check exactly how many people in Delhi actually carry the E coli bacteria with the gene, inside their gut.

Speaking exclusively to TOI from UK, Dr Mark Toleman from Cardiff University, who recently found gene NDM1 in Delhi's water supply, said it is now important for the ICMR to know what is the exact "carriage rate" of NDM1 in Delhi or how many people actually carry the E coli bacteria in their gut with the NDM1 gene.

"It can be simply found out from faecal samples or anal swabs.

From there, we can also analyse whether the carriage is higher in hospital patients or in the community. We want to collaborate with ICMR in this study," Dr Toleman told TOI.

He added "All human beings carry E coli bacteria in their gut flora which is the main cause of urinary tract infections and diarrhoeal diseases. However, not everybody has E coli with NDM1 gene.

These people, when hit by common infections that can be treated with a two-day regimen of antibiotic will find

it difficult to recover because of the antibiotic resistant bacteria."

Since the time the existence of NDM1 was announced last August, 17 countries have reported infections of it.

"The community carriage study, looking for presence of the NDM-1 gene in faecal samples or anal swabs in different regions of New Delhi will highlight risk factors, particularly water supplies or food and also put down a base-line to assess if intervention measures are working or not," he said.

According to Dr Toleman, “A rough guess is that at least 5 per cent of Delhi’s population would be carrying E coli and the NDM1 gene.

Several people in the 17 countries who have been affected by NDM1 have visited Bangladesh, Pakistan or India. Several had not entered hospitals but just travelled around.”

However, a collaboration between ICMR and Cardiff is unlikely.

ICMR still maintains that “NDM1 is no public health concern” and questions the intention of the scientists who carried out the study.

Meanwhile, India’s plans to conduct prescription audit to check for antibiotic overuse and National Centre for Disease Control’s (NCDC) decision to lead a study to gauge the “prevalence of Carbapenem resistance in Delhi’s ICUs and environment,” was called a “major step in the right direction” for which Dr Toleman said, “I applaud the Indian government.”

## **WHO - Superbug'**

### **WHO to Assist India in 'Superbug' Study (Med India: 15.4.2011)**

The World Health Organization will help India in its study to check for the presence of multi-drug resistant "superbug" in Delhi's water and whether it poses a health risk, says report.

The WHO "will be assisting Indian government in the research on whether the superbug is a health threat," country representative Nata Menabde said, according to India Abroad News Service.

The decision came after British medical journal The Lancet reported last week deadly superbug NDM-1 (New Delhi metallo-beta-lactamase 1) was found in 51 out of 171 New Delhi samples taken from water pools and two out of 50 tap water samples.

"Nobody is contesting whether what Lancet has written, but we have to confront science through science. Whether or not it's a public health threat needs to be established through research," Menabde was quoted as saying.

New Delhi officials have rejected the report of the drug-resistant "superbug" in the Indian capital's water supplies.

However, the Delhi government said on Wednesday it would distribute free chlorine tablets to people as a precautionary measure against water-borne diseases such as cholera and diarrhoea and advised people to boil water.

"There is no superbug in Delhi's water," said Delhi Chief Minister Sheila Dikshit, dismissing the Lancet report. The water "is totally safe," she said.

But Indian media were sceptical about the government denial with the Mail Today newspaper on Thursday calling it a "super cover-up on superbug."

NDM-1 is a gene that enables some types of bacteria to be highly resistant to almost all antibiotics.

## **Bacteria**

### **Some bacteria 'go to sleep to hide from antibiotics'(New Kerala: 27.4.2011)**

Some bacteria avoid antibiotic treatments by going off the grid and hiding until it is safe to come out again, according to a new study.

The study, led by Thomas Wood, professor of chemical engineering at the Texas A and M University, details this surreptitious and elaborate survival mechanism of the bacteria.

"Through our research, we're understanding that some bacteria go to 'sleep', and that antibiotics only work on bacteria that are metabolically active," said Wood.

"You need actively growing bacteria to be susceptible to antibiotics. If the bacterium goes to sleep, the antibiotics are not effective because the bacterium is no longer doing the thing that the antibiotic is trying to shut down," he added.

It's an alternative method for survival, said Wood, that starkly contrasts the widely studied genetically based approaches utilized by bacteria through which bacteria gain resistance to antibiotics as the result of mutations experienced throughout time.

Wood and his colleagues found that when encountering oxidative stress, their bacterial cells initiated a process through which an antitoxin called MqsA was degraded, in turn allowing the toxin MqsR to degrade all of the cells' messenger RNA.

This messenger RNA plays a critical intermediate role in the cell's process of manufacturing proteins, so without it the cell can't make proteins.



With the protein-manufacturing factory shut down, the bacterial cell goes dormant, and an antibiotic cannot "lock on" to the cell. When the stressor is removed, the bacterial cells eventually come back online and resume their normal activities, said Wood.

"A small community of bacteria is in a sense hedging its bet against a threat to its survival by taking another approach," he said.

"To the bacteria, this is always a numbers game. In one milliliter you can have a trillion bacterial cells, and they don't always do the same thing under stress, " he said.

"If we can determine that this 'going to sleep' is the dominant mechanism utilized by bacteria, then we can begin to figure out how to 'wake them up' so that they will be more susceptible to the antibiotic. This ideally would include simultaneously applying the antibiotic and a chemical that wakes up the bacteria. That's the goal - a more effective antibiotic," he added.

The study is explained in the online April edition of Nature Chemical Biology.

## **Oncolytic virus**

### **Oncolytic virus can cure pancreatic cancer (New Kerala: 11.5.2011)**

A new study has uncovered the potential of oncolytic viruses in killing cancer stem cells, particularly in the case of the fatal pancreatic cancer.

Oncolytic viruses are naturally occurring viruses that have been genetically engineered to be safe and express tracking genes, as a possible therapy against pancreatic cancer stem cells.

Researchers have found that oncolytic virus quickly infects and kills cancer stem cells, paving the way for treatment of tumours that are resistant to conventional chemotherapy and radiation.

It has emerged that cancer stem cells are thought to cause disease recurrence and metastasis, even after therapy and oncolytic viruses may offer a new treatment strategy.

"What we learned is that oncolytic viruses have been engineered to selectively target cancer cells and have a low toxicity profile in animal studies," said Joyce Wong, surgical researcher with Memorial Sloan-Kettering Cancer Center.

"Targeting the cancer stem cell may enhance our ability to eradicate tumours and prevent future recurrence of disease," he added.

## **Probiotic bacteria**

### **Probiotic bacteria help repair intestinal injury: Study (World Newspapers: 12.5.2011)**

Researchers at Emory University School of Medicine have shown that probiotic bacteria promote healing of the intestinal lining in mice by inducing the production of reactive oxygen species.

The results demonstrated a mechanism by which bacterial cultures in foods such as yogurt and kimchi have beneficial effects on intestinal health. The insights gained could also guide doctors to improved treatments for intestinal diseases, such as necrotising enterocolitis in premature babies or intestinal injury in critically ill adults.

"It's been known for years that probiotic bacteria can have these kinds of helpful effects, but it wasn't really clear how this worked," said Andrew Neish, professor of pathology and laboratory medicine.

"We've identified one example, among many, of how certain kinds of bacteria have specific biochemical functions in the body," added Neish.

The researchers showed that *Lactobacillus rhamnosus* bacteria can accelerate this healing process, both in culture dishes and in mice with intestines damaged by chemicals. *Lactobacillus rhamnosus*, a species of bacteria found naturally in human intestines and often used as a probiotic, is a relative of other kinds of *Lactobacillus* bacteria found in fermented foods.

"Unlike most cell types that can not tolerate bacterial contact, intestinal epithelial cells respond to *Lactobacillus rhamnosus* by increasing their motility," said Neish.

Using a fluorescent dye that is sensitive to reactive oxygen species (ROS), the researchers showed that intestinal epithelial cells produce ROS internally when in contact with *Lactobacillus rhamnosus*. The ROS induced by the bacteria stimulate the formation of focal adhesions, structures on intestinal epithelial cells that act as anchors for their movement.

"Focal adhesions are where cells attach to the matrix that surrounds them," said Neish.

“The cells lay them down on one side and remove them on the other side, like the tracks of a bulldozer,” added Neish.

The study is detailed in Proceedings of the National Academy of Sciences Early Edition.

## **Bugs**

### **Soon, electricity to be produced from bugs (The Times of India: 25.5.2011)**

Scientists Discover Bacteria That Let Off Tiny Electrical Charges; May Also Be Used To Clean Up N-Disasters

Oslo: Microbes may be harnessed more easily to generate energy after a finding about how they naturally let off tiny electrical charges, scientists said on Monday.

The bacteria, found to have microscopic “wires” sticking through their cell walls, might also be used to clean up oil spills or uranium pollution, according to the report in the US journal Proceedings of the National Academy of Sciences.

The discovery about the exact structure of the bacteria and their atom-sized wires would permit researchers to design electrodes with better contacts to pick up the charges, let off by the microbes to avoid a build-up of electricity.

“We should be able to use this finding to harvest more electricity from the bacteria,” lead author Tom Clarke of the University of East Anglia in England said.

“Until now it’s been a bit like trying to build a radio when you don’t know what type or size of battery you are going to put into it,” he said. “Now we have a blueprint of what the battery looks like,” he said of the study, also involving scientists at the US Pacific Northwest National Laboratory.

“Identifying the precise molecular structure of the key proteins involved in this process is a crucial step towards tapping into microbes as a viable future source of electricity,” Clarke said.

“All living things generate electricity, it’s not the stuff of science fiction.” Humans, for instance, use electricity to keep their hearts pumping and brains thinking.

And the bacteria use their wires to discharge excess electricity. “If they get a build-up of charge then everything else stops,” from feeding to respiration, he said.

Still, it could take perhaps a decade to develop use of the bacteria, a type called *Shewanella oneidensis* that live in oxygen-free environments, as an attractive power source for everything from lights to mobile phone chargers.

Before that, existing uses of such bacteria needed to become 100 or 1,000 times more efficient, Clarke added. The findings could also help speed development of microbebased agents to clean up oil or uranium pollution, as well as use of fuel cells powered by sewage or compost.

"These bacteria don't need energy-rich fuels. They can take in oil slicks, waste oil... degrade it and at the same time produce energy," he said of the research, funded by the British Biotechnology Council and the US department of energy.

Or in stricken nuclear plants, bacteria could separate uranium from waste water, he said. Microbes might in future be enlisted to clean up any accidents such as Japan's Fukushima Daiichi disaster in March.

The scientists used a technique called x-ray crystallography to reveal the molecular structure of the proteins attached to the surface of the bacteria. REUTERS

## **Bacteria**

### **Bacteria In Atmosphere May Play Key Role In Hail, Rain, Snow (Medical News Today; 26.5.2011)**

After finding high concentrations of bacteria inside hailstones, researchers suggest there is mounting evidence that atmospheric microorganisms play a key role in how water molecules aggregate in hail, rain, snow and other weather events.

At the 111th General Meeting of the American Society for Microbiology (ASM) in New Orleans this week, Alexander Michaud of Montana State University in Bozeman presented his team's latest findings in the new and growing field of "bioprecipitation", where researchers investigate the extent to which bacteria and other microorganisms influence weather events.

In his presentation on Tuesday, Michaud spoke about how he and his group found a high concentration of bacteria in the center of hailstones. The center of the hailstone is the first part to develop, the "embryo":

"The embryo is a snapshot of what was involved with the event that initiated growth of the hailstone," explained Michaud.

He said water molecules need a nucleating particle to aggregate around and this is what leads to precipitation in the form of rain, snow and hail.

"There is growing evidence that these nuclei can be bacteria or other biological particles," Michaud added.

He and his team looked at hailstones bigger than 5 cm in diameter that fell in the University campus during a hailstorm in June 2010.

They analyzed the meltwater from four layers in each hailstone and found that the inner cores contained the highest number of live bacteria, as proved by them being able to grow on in cultures.

The term "bioprecipitation" was first coined in the early 1980s by David Sands, a professor and plant pathologist at Montana State University. It is now a growing field, where researchers investigate how ice clouds form, and how bacteria and other microorganisms contribute to this by providing ice nuclei (IN), particles that the ice crystals can form around.

Brent Christner of Louisiana State University, and colleagues are also working in this field. He too gave a presentation at the ASM general meeting, addressing some key questions about the nature and role of biological ice nucleators in the atmosphere.

He said that as temperatures in clouds reach higher than -40 degrees Celsius, ice does not form spontaneously:

"Aerosols in clouds play key roles in the processes leading to precipitation due to their ability to serve as sites for ice nucleation."

Christner explained that while many different types of particle can serve as ice nucleators, the most active naturally occurring ones are biological, capable of catalyzing ice formations at around -2 degrees Celsius.

The most well studied of these biological IN is the plant pathogen *Pseudomonas syringae*, which gardeners who have seen frost damage on their outdoor tomatoes will recognize as the bacterial specks on the fruits.

"Ice nucleating strains of *P. syringae* possess a gene that encodes a protein in their outer membrane that binds water molecules in an ordered arrangement, providing a very efficient nucleating template that enhances ice crystal formation," explained Christner.

From using computer models to simulate the conditions of aerosol clouds, researchers believe high concentrations of biological IN may influence many events in the Earth's atmosphere, such as the size and concentration of ice crystals inside clouds, cloud

coverage, the amount of rain, snow, hail that falls to the ground, and even helping to insulate against solar radiation.

Given the amount of IN in the atmosphere and the warm temperatures at which they function, Christner said the evidence is mounting in favor of the view that "biological IN may play a role in the Earth's hydrological cycle and radiative balance".

"The Role of Ice Nucleating Bacteria in Hailstone Formation."

Presented by A B Michaud of Montana State University on 24/5/2011 at ASM General Meeting, New Orleans.

"Cloudy With a Chance of Microbes - Lingerin Questions About the Nature and Role of Biological Ice Nucleators in the Atmosphere."

Presented by Brent C Christner of Louisiana State University on 24/5/2011 at ASM General Meeting, New Orleans.

## **Virus**

### **Human got Virus from dog (The Asian Age: 27.5.2011)**

Humans and their best friend dogs may have exchanged genetic material over the millennia via viruses, scientists believe. It's known that all mammals and most vertebrates (or creatures with backbones) possess retroviruses -such as HIV that have the ability to incorporate their genetic material into that of their hosts -in their genomes.

To get a broader picture of how deeply retroviruses have invaded genomes, a team of scientists in Sweden analysed the first sequenced carnivore genome, that of a female dog of the boxer breed.

They found that "endogenous" retroviruses only seem to make up 0.15 per cent of the dog genome, six times less than humans, LiveScience reported.

It's because dogs may have better mechanisms to protect their genomes against retroviruses, or their genomes may house unknown types of retroviruses that current techniques can't yet detect, the researchers said. Intriguingly, they discovered a novel group of retroviral material in dogs that is highly similar to endogenous retroviruses seen in humans. They belong to a type of virus known as gammaretroviruses.

## **Healthy bacteria**

### **Healthy bacteria could prevent obesity (New Kerala: 27.5.2011)**

Healthy gut flora -- microorganisms living in the digestive tract of animals -- can reduce the risk of obesity, a study says.

The study, done on rats, showed that daily intake of a lactic acid bacteria, which has been given the name *Lactobacillus plantarum* HEAL19, appears to be able to prevent obesity and reduce the body's low-level inflammation.

"Rats who were given this specific lactic acid bacterium from their time in the uterus up to adult age put on significantly less weight than other rats. Both groups ate the same amount of high-energy food," explains Caroline Karlsson, researcher in food hygiene at Lund University, Sweden.

Karlsson also observed that the rats which were given lactobacilli had a richer and better composition of the bacteria which occur naturally in the intestines, reports the British Journal of Nutrition.

Probiotics is an umbrella term for bacteria with proven health benefits. They are important for the prevention of various stomach and intestinal problems. Research findings also indicate that probiotics could affect the immune system, relieve eczema and help fight viral infections.

Certain foods, for example olives, yoghurt and cheese, naturally contain lactobacilli -- the type of bacteria most often used as probiotics, according to a Lund statement.

A healthy gut flora should contain a large proportion of 'good bacteria', such as lactic acid bacteria, in order to keep the inflammation-causing bacteria in check.

## **Chronic diseases**

### **Chronic diseases**

**Global threat: 60% of deaths caused by chronic diseases (The Times of India: 28.4.2011)**

New Delhi: Three out of every five deaths in 2008 were caused by non-communicable diseases (NCDs) like cancer, stroke, diabetes and cardiovascular diseases. What's worse, deaths caused by these diseases are expected to increase by 15% in the next decade — from 36 million in 2008 to 44 million in 2020. In 2030, it will cross the 50 million mark.

The region projected to have the greatest total number of NCD deaths in 2020 is South-East Asia — 10.4 million deaths. These stats are bound to bother India since 80% of these deaths occurred and will occur in low and middle income countries, according to the first global status report on NCDs launched on Wednesday by the World Health Organization.

Calling it “an impending disaster for many countries — a disaster for health, for society and national economies”, WHO director general Dr Margaret Chan said “Chronic NCDs deliver a two-punch blow to development. They cause billions of dollars in losses of national income, and they push millions of people below the poverty line, each and every year.”

According to the report, of the 57 million global deaths in 2008, 36 million, or 63%, were due to NCDs. Each year, NCDs are estimated to cause more than 9 million deaths before the age of 60 years. Over 80% of cardiovascular and diabetes deaths, almost 90% of deaths from chronic obstructive pulmonary disease and more than two thirds of all cancer deaths occur in low and middle-income countries.

NCDs also kill at a younger age in countries like India where 29% of NCD deaths occur among people under the age of 60, compared to 13% in high-income countries.

CVDs, cancer, respiratory disease and diabetes account for around 80% of all NCD deaths, and share four common risk factors: tobacco use, physical inactivity, harmful use of alcohol and poor diets.



Dr Ala Alwan, WHO's assistant director-general for NCDs said "about 30% of people dying from NCDs are aged under 60 years and are in their most productive period of life. These premature deaths are largely preventable."

"Poverty contributes to NCDs and NCDs contribute to poverty. Around 29 million of the overall deaths in 2008 were due to NCDs in low and middle income countries, dispelling the myth that such conditions are mainly a problem of affluent societies. Without action, the NCD epidemic is projected to kill 52 million people annually by 2030," Dr Alwan added.

## Killers On The Prowl

### Cardiovascular diseases |

Account for most NCD deaths, or 17m people annually, followed by cancer (7.6m), respiratory disease (4.2m), and diabetes (1.3m)

Tobacco | 6m die from tobacco use each year. By 2020, this number will increase to 7.5m, accounting for 10% of all deaths. Smoking causes 71% cases of lung cancer, 42% of chronic respiratory disease and 10% of cardiovascular disease

### Physical activity |

Approximately 3.2m people die each year due to physical inactivity. People who are insufficiently physically active have a 30% increased risk of all-cause mortality

Alcohol | 2.5m die each year from use of alcohol, accounting for

3.8% of all deaths in the world. More than half of these deaths occur from NCDs including cancers, cardiovascular disease and liver cirrhosis

Diet | Adequate consumption of fruit and vegetables reduces the risk for cardiovascular diseases, stomach cancer and colorectal cancer. Most populations consume much higher levels of salt than recommended by WHO

Blood pressure |

Raised blood pressure is estimated to cause 7.5m deaths, about 12.8% of all deaths

Overweight and obesity | At least 2.8m people die each year as a result of being overweight or obese. Risks of heart disease, strokes and diabetes increase steadily with increasing body mass index (BMI)

Cholesterol |

Raised cholesterol causes 2.6m deaths annually

Cancer-associated infections | 2m cancer cases per year, 18% of the global cancer burden, are attributable to a few specific chronic infections

## **Coronary artery disease**

**Coronary artery disease (The Times of India: 13.4.2011)**

### **Coronary artery disease & yoga**

Due to excessive deposition of cholesterol and fat under the inner smooth lining of the blood vessels, plaque is formed, which restricts the flow of blood, oxygen and nutrients to the heart

The coronary heart disease (CHD) also called coronary artery disease (CAD) is one of the leading causes of death all over the world. Due to excessive deposition of cholesterol and fat under the inner smooth lining of the blood vessels (coronary arteries), plaque is formed, which restricts the flow of blood, oxygen and nutrients to the heart. Thus, due to lack of nourishment to the heart, hypertension, angina (pain in the chest region) and heart attack occur.

#### **Causes**

High blood pressure, high cholesterol in the diet and blood, smoking, diabetes or high blood sugar, lack of exercise or sedentary habits, obesity, stress, heredity, age, gender and a combination of the above risk factors (this increases the risk of heart attacks manifold)

#### **Symptoms**

- Chest pain - The pain is usually very severe and occurs in the centre of the chest with radiation to the left arm. The pain lasts for 15 to 30 minutes and sometimes can radiate to the left jaw or the right arm. Sometimes, the pain may be absent and there may be an uncomfortable pressure on the chest
- Shortness of breath or breathlessness
- Sweating
- Weakness

- Dizziness
- Nausea or vomiting
- Unusual heaviness in

### **Coronary artery disease**

#### **Coronary artery disease & yoga (The Times of India: 20.4.2011)**

The Health Rejuvenating Exercises (HRE) for the neck involve rubbing your hands vigorously and massaging the back and front portions of your neck, and then bending your neck backwards and forwards .

The Health Rejuvenating Exercises (H R E) for coronary artery disease are as follows:  
For neck:

- Rub your hands vigorously and massage the back and front portions of your neck
- Then bend your neck backwards and forwards, left and right (ear and shoulder should touch both the sides)
- Rotate the neck clockwise & vice versa five times each For shoulders:
- Keep your arms hanging straight with the fist closed. Raise the shoulders up while inhaling and bring them down while exhaling
- Rotate the shoulders from backwards to forwards and vice versa
- Bend your arms, keeping the fingers straight and touch the shoulders. Rotate the arms clockwise & anticlockwise five times each For chest:
- Bend both the arms bringing palms to the chest with middle fingers meeting at the middle of the sternum.

- Inhale and extend the left hand, exhale and bring the hand to its position. Repeat the exercise with the right hand.
- Keep the hand in front on the thighs. Inhale and raise the left arm touching the ear without bending, bring the arm down and exhale. Repeat it with the right arm and then with both the arms For waist: Keep the feet apart according to the shoulders' width; hands should be at the sides of the body
- Stand raising your hands while inhaling and then at 30 degrees bend from the waist to the left and inhale and exhale three times. Come back to the normal posture. Repeat this on the right side
- Lock the fingers, raise the hands and repeat the above exercise
- Raise the arms to the shoulder level, keeping the palms facing each other. Twist from the waist to the left and then right and repeat the above exercise For thigh and hip:
- Stand straight and keep the legs apart — about 15/20cm Strike the buttocks with the heel alternately For knees
- Let your left heel hit the hip in the standing position. Then stretch forward feeling a jerk in the knee. Do it with the right leg as well. Repeat it five times —Adhyatma Sadhana Kendra

## **Diabetes**

### **Diabetes**

#### **Age-related problems develop faster in middle age adults with diabetes (New Kerala: 1.4.2011)**

A new study has found that patients in their 50s with diabetes have nearly double the risk for developing "geriatric" ailments.

According to experts from the University of Michigan Health System and VA Ann Arbor Healthcare System, middle-aged adults with diabetes are much more likely to develop age-related conditions than their counterparts who don't have diabetes.

They found that adults between 51 and 70 with diabetes developed age-related ailments like cognitive impairment, incontinence, falls, dizziness, vision impairment and pain at a faster rate than those without diabetes.

"Our findings suggest that middle age adults with diabetes start to accumulate these age-related problems," said lead author Christine Cigolle.

"Because diabetes affects multiple organ systems, it has the potential to contribute significantly to the development of a number of issues that we associate with aging," she added.

The research was based on nationally representative data from the University of Michigan Health and Retirement Study.

The study has been published in the March issue of the Journal of General Internal Medicine.

### **Diabetes**

#### **Avoiding or Controlling Diabetes May Reduce Cancer Risk and Mortality (Science Daily: 4.4.2011)**

Results of the NIH-AARP Diet and Health Study revealed that diabetes is associated with lower risk of prostate cancer in men but with higher risk of other cancers in both men and women. The data, presented at the AACR 102nd Annual Meeting 2011, held in Orlando, Florida April 2-6, also showed an association between diabetes and higher cancer mortality rates.

Previous epidemiologic studies have shown an association between diabetes and an increased risk for cancers including colorectal, liver and pancreas, according to Gabriel Lai, Ph.D., a cancer prevention fellow at the National Cancer Institute.

"Our results provide further evidence that abnormal insulin and glucose signaling may contribute to cancer initiation and development," he said. "There are myriad benefits from avoiding diabetes through exercise, diet and maintaining a healthy body weight. Our study confirms additional benefits in the form of reduced morbidity and mortality from certain cancers."

Lai and colleagues conducted a prospective study using data from more than 500,000 predominantly white, non-Hispanic men and women aged 50 to 71 years. From 1995 to 1996, the participants completed questionnaires about diet, lifestyle and whether or not they had diabetes. Researchers followed the patients for 11 years.

Results showed that diabetes was associated with an 8 percent increased risk for cancer among women and a 4 percent decreased risk for men. In previous research, a decreased risk for prostate cancer was associated with diabetes, which researchers believe might be due to the lower testosterone levels associated with diabetes. After excluding prostate cancer from their evaluation, Lai and colleagues found that diabetes was associated with a 9 percent increased risk for cancer in men.

As for mortality, diabetes was associated with an 11 percent increased risk in women and a 17 percent increased risk in men.

"These risks appeared independent from other cancer risk factors, such as obesity and cigarette smoking," Lai said.

After evaluating by cancer site, the researchers found diabetes was associated with a significant increase in risk for colon, rectal and liver cancers among men and women. In men, diabetes was associated with an increased risk for pancreatic and bladder cancers; in women, it was associated with an increased risk for stomach, anal and endometrial cancers. No association was found between diabetes and lung, skin or other cancers.

"Follow-up studies to identify the biologic mechanisms involved should be performed to build upon confirmed findings," Lai said.

## **Diabetes**

### **Diabetes or lipid-lowering medications may help treat addiction (New Kerala; 7.4.2011)**

Two recent studies have suggested that diabetes or lipid-lowering medications may play roles in the treatment of nicotine and alcohol addiction by acting in the brain.

Thiazolidinediones (TZDs) are a class of medications that are commonly prescribed to treat type-2 diabetes, while fibrates are a structurally-related class of medications that are prescribed to modulate lipid levels in both diabetic and non-diabetic patients to help reduce the risk of cardiovascular disease.

These drugs work by binding to peroxisome proliferator-activated receptors (PPARs), with TZDs reducing insulin resistance and lowering the levels of cytokines that promote inflammation, and fibrates reducing low-density lipoprotein (LDL) and triglyceride levels and increasing high-density lipoprotein (HDL) levels to help prevent the development of cardiovascular disease.

Another effect of TZDs and fibrates is to raise leptin levels, an effect that may reduce appetite.

Recent studies also suggest that PPARs are expressed in the central nervous system, particularly in brain regions implicated in reward.

Now, the new studies have suggested that drugs that stimulate two different subclasses of PPARs, PPAR- $\alpha$  and PPAR- $\gamma$ , may play roles in the treatment of nicotine and alcohol addiction by acting in the brain.

The first study, by Mascia and colleagues, used a multi-pronged approach to demonstrate that nicotine's addictive effects can be counteracted by drugs that activate PPAR- $\alpha$ .

In both rats and monkeys, these drugs reduced nicotine intake and relapse to nicotine seeking after a period of abstinence. They also prevented nicotine from altering electrical activity and neurochemical levels in addiction-related brain areas.

In the second study, Stopponi and colleagues used pioglitazone to evaluate its effects on alcohol drinking, relapse-like behavior, and withdrawal in rats. Pioglitazone activates PPAR- $\gamma$  and is an FDA-approved medication for the treatment of type 2 diabetes.



Corresponding author Roberto Ciccocioppo detailed their findings, "We demonstrated that activation of PPAR-g receptors by pioglitazone potently reduces alcohol consumption in a rat model of excessive drinking. We also found that pioglitazone abolishes alcohol craving elicited by exposure to stress and prevented the expression of somatic signs of alcohol withdrawal."

The studies have been recently published in Biological Psychiatry.

## **Diabetes**

### **Some diabetes drugs are better than others: Study (New Kerala: 8.4.2011)**

A new study has found that several commonly prescribed drugs for type 2 diabetes may not be as effective at preventing death and cardiovascular diseases, such as heart attacks and stroke, as the oral anti-diabetic drug, metformin.

Insulin secretagogues (ISs), such as glimepiride, glibenclamide (known as glyburide in the USA and Canada), gliclazide and tolbutamide, have been used to treat type 2 diabetes since the 1950-1970s. Nevertheless, the long-term risk associated with these drugs has largely been unknown. Metformin is the first drug of choice in type 2 diabetes, but, until now, there have not been studies investigating the long-term risk of individual ISs compared with metformin.

The study followed a large, unselected group of everyone living in Denmark, aged over 20, who had been treated with either an IS or metformin (monotherapy) between 1997 and 2006 – a total of 107,806 people. It found that, compared to metformin treatment, monotherapy with most ISs, including glimepiride, glibenclamide, glipizide and tolbutamide, was associated with a greater risk of death from any cause, and a greater risk of heart attacks, stroke or death from cardiovascular diseases. This was the case both for patients who had already suffered a heart attack and for patients who had not. Two other ISs, gliclazide and repaglinide, showed no significant difference to metformin in their effectiveness in patients with and without a history of heart attacks.

Compared to metformin, patients who had not suffered a heart attack had approximately a fifth to a third higher risk of death from any cause if they were taking glimepiride, glibenclamide, glipizide or tolbutamide. In patients with a history of heart attacks, the risk was approximately a third to a half higher.

The researchers, led by Tina Ken Schramm, a senior resident doctor at the Heart Centre at the Rigshospitalet Copenhagen University Hospital (Copenhagen, Denmark), stress that the findings may not mean that these ISs actually cause harm, but only that they appear to be less effective than metformin.

The study has been published online in the European Heart Journal.

## **Caffeine and Diabetes**

### **Caffeine and Diabetes: Helpful or Harmful? (Science daily: 8.4.2011)**

A growing body of research suggests that caffeine disrupts glucose metabolism and may contribute to the development and poor control of type 2 diabetes, a major public health problem. A review article in the inaugural issue of Journal of Caffeine Research: The International Multidisciplinary Journal of Caffeine Science, a quarterly peer-reviewed journal from Mary Ann Liebert, Inc. publishers, examines the latest evidence, contradicting earlier studies suggesting a protective effect of caffeine.

James Lane, PhD, Duke University, describes numerous studies that have demonstrated caffeine's potential for increasing insulin resistance (impaired glucose tolerance) in adults that do not have diabetes, an effect that could make susceptible individuals more likely to develop the disease. In adults with type 2 diabetes, studies have shown that the increase in blood glucose levels that occurs after they eat carbohydrates is exaggerated if they also consume a caffeinated beverage such as coffee. This effect could contribute to higher glucose levels in people with diabetes and could compromise treatment aimed at controlling their blood glucose.

"More than 220 million people worldwide have diabetes, says Editor-in-Chief Jack E. James, PhD, School of Psychology, National University of Ireland, Galway, Ireland. "The links that have been revealed between diabetes and the consumption of caffeine beverages (especially coffee) are of monumental importance when it is acknowledged that more than 80% of the world's population consumes caffeine daily. Dr. Lane's review of the topic gives the clearest account to date of what we know, what we don't know, and what needs to be done -- urgently!"

## **Diabetic**

### **Diabetic? Forget pills, pop almonds (New Kerala: 3.5.2011)**

As India grapples with a major public health problem, being home to an estimated 50.8 million diabetic population, the largest in the world, experts say consuming a few almonds daily can help combat the lifestyle disease.

Eating almonds has a positive effect on reducing low density cholesterol and also improves insulin sensitivity; so it does help in pushing diabetes away," says Ritesh Gupta, head of clinical operation at Fortis C-Doc Hospital.

"It is a healthy source of fibre, protein and calories and has been found to have a positive effect in reducing bad cholesterol and improved insulin sensitivity," Gupta told IANS.

Diabetes is caused when there is deficiency of insulin hormone, which controls blood sugar levels. Its symptoms include fatigue, excessive thirst and frequent urination.

With an estimated 50.8 million people living with the disease, India has the world's largest population of diabetics in the world, followed by China with 43.2 million, says the World Health Organisation (WHO).

The number in India is expected to go up to 87 million - 8.4 percent of the country's adult population - by 2030.

With India staring at a major public health threat due to diabetes and other lifestyle diseases, almond is now being hailed as the health nut.

"Indians are more prone to lifestyle diseases like diabetes. The increasingly sedentary lifestyle and fast food double up the risk. Almond, which has traditionally been part of our diet, is a high source of nutrition and helps push these diseases away," says Anoop Misra, director of Diabetes Foundation (India).

"A handful of almonds contains 164 calories and 7 gm of protein, which helps in fighting hunger pangs and helps you control what you eat. Almonds also help growing children in developing strong bones," he adds.

A study done by scholars from the University of Medicine and Dentistry of New Jersey, West Chester University, Pennsylvania, and Loma Linda University of California, all in the US, and published in the Journal of the American College of Nutrition also confirms that the nut can control diabetes if consumed regularly.

"A diet consisting of 20 percent of calories as almonds over a 16-week period is effective in improving markers of insulin sensitivity and yields clinically significant improvements in LDL-C (low density lipoprotein cholesterol) in adults with pre-diabetes," the study said.

"We have made great strides in chronic disease research, from evidence of effective treatment to evidence of effective prevention," said Michelle Wien, assistant research professor in nutrition at Loma Linda University's School of Public Health.

She was also the principal investigator for the study, which was conducted at the University of Medicine and Dentistry of New Jersey.

"Low density cholesterol is the cholesterol which blocks the arteries. According to the study, the intake of almonds had a significant effect on reducing the levels, along with improving insulin sensitivity," said Karen Lapsley, chief scientific officer of the Almond Board of California, which was an associate in the study.

"It's also very easy to consume, one can have it any time, so it merges well with the hectic lifestyle," Lapsley said.

Gupta, however, adds that indiscreet consumption of almonds alone will not help and it should be seen as a percentage of total calorie intake.

"It is not that one can eat anything and pop five almonds. It has to be seen as a percentage of total calorie intake. The rest of the diet is as important," he added.

## **Diabetics**

### **Diabetics at Higher Risk of Tuberculosis Infection, Researchers Find (Science Daily: 26.5.2011)**

People with diabetes have a three to five times higher risk of contracting tuberculosis (TB) than non-diabetics, according to researchers at The University of Texas Health Science Center at Houston (UTHealth).

Results of the study, which included 233 patients with TB who live in Texas and Mexico along the border, are published in the May issue of the Bulletin of the World Health Organization. It was funded by the National Institutes of Health.

"With the increase in diabetes patients in TB-endemic areas, our findings highlight the re-emerging impact of diabetes mellitus, known as type 2, on TB control in regions of the world where both diseases are prevalent," said Blanca Restrepo Ph.D., lead investigator and associate professor of epidemiology at The University of Texas School of Public Health Brownsville Regional Campus, a part of UTHealth. "There is a need to focus on identifying the opportunities to prevent TB in diabetes patients."

Study results found 25 percent of TB cases were attributed to the presence of diabetes. In contrast, only 6 percent of the TB cases were due to HIV.

"Physicians should be screening at-risk diabetic patients for TB and patients should be aware of their diabetes status," said Restrepo. "Opportunities are being missed for patients and physicians to work together to manage both diseases." At-risk patients are considered those who have diabetes and had recent contact with a TB patient, making them prime candidates for preventive TB treatment.

TB is a leading killer among bacterial diseases worldwide. In 2009, more than 9 million new cases were diagnosed and 1.7 million people died from the disease. The World Health Organization (WHO) suspects TB control is being undermined by the growing number of patients with diabetes mellitus in the world, which is anticipated to reach 438 million by 2030. Research suggests that diabetes depresses the immune response, which in turn facilitates infection with *Mycobacterium tuberculosis* and/or progression to symptomatic disease.

"This research confirms results from several other studies showing an increased risk of TB in people with diabetes and means that it is important that clinicians actively seek to diagnose diabetes in people with TB, and vice versa," said Knut Lonnroth, M.D., Ph.D., medical officer in the Stop TB Department at the World Health Organization. "WHO and several partner organizations are in the process of finalizing a Collaborative Framework for Care and Control of Tuberculosis and Diabetes, which will guide countries on how to prepare health services for coordinated management and prevention, especially countries with high burden of both diseases."

According to Restrepo, a combined diagnosis of TB and diabetes is becoming more evident in the Hispanic population, but this may also be the case in populations at higher risk for the two diseases such as American Indians and African-Americans.

The TB study group included 61 patients in South Texas and 172 in Northeastern Mexico.

The impact of diabetes on TB control varies by country. In South Texas, nearly all of the diabetic patients in the study were aware of having diabetes for at least six months before being diagnosed with TB, but in Mexico, 20 percent were not previously aware of their diabetes status.

In the United States, TB rates are disproportionately higher among racial/ethnic minorities, according to the Centers for Disease Control and Prevention. "Screening TB contacts for diabetes would be useful to identify individuals at high risk for TB who should be taking TB prophylaxis, and could also lead to earlier detection and better management of both diseases," said Restrepo. She said this study has implications in particular for countries with high prevalence of both diseases, such as Bangladesh, Brazil, China, India, Indonesia, Pakistan and the Russian Federation.

Restrepo and Lonnroth both said improved diabetes prevention and management with partial integration of TB programs worldwide will benefit the management of both diseases.

"TB clinics can reach out to a population that is medically underserved and provide new diabetes diagnosis to this population," Restrepo said.

Study participants were new TB cases diagnosed between March 2006 and September 2008 at clinics in Hidalgo and Cameron County Health Department's clinics and the Secretaría de Salud de Tamaulipas in Matamoros, Mexico. Diabetes diagnoses were confirmed using blood testing.

## **Eye Diseases**

### **Retina**

#### **Researchers Discover How the Retina Develops (Med India: 23.5.2011)**

Studies by UC Santa Barbara researchers on expanding vision have revealed the basic biological understanding on how retinas develop.

"These studies individually demonstrate the genetic determinants of nerve cell number. Together, they show that different nerve cell types are modulated independent of one another," said Benjamin E. Reese, senior author and professor with the Neuroscience Research Institute and the Department of Psychological and Brain Sciences. The scientists used mice as a research model organism to show that the size of different populations of retinal neurons display wide-ranging variability among individuals.

In the PNAS article, they demonstrated a nearly two-fold variation in the number of interneurons called horizontal cells. In the IOVS article, they report a conspicuous variation in the number of cone photoreceptors.

## **Heart disease**

### **Heart disease**

#### **Crude oil chemical linked to congenital heart disease (New Kerala: 2.5.2011)**

Fetal exposure to a chemical found in crude oil is associated with an increased risk of congenital heart disease (CHD), a new study has found.

The study also showed that babies who had been exposed in utero to a chemical found in cleaning agents and spot removers were at increased risk of CHD.

Environmental causes of CHD have been suspected, and animal studies have suggested certain chemicals may cause CHD, a problem with the heart's structure and function due to abnormal heart development before birth.

McCarver and her colleagues sought to determine whether human fetal exposure to solvents is associated with increased risk for CHD. The researchers tested samples of meconium, or fetal stool, from 135 newborns with CHD and 432 newborns without CHD.

Results showed that 82 percent of infants had evidence of intrauterine exposure to one or more of the solvents measured.

"This is the first report that exposure to ethyl benzene, a compound present in crude oil, was associated with CHD," said D. Gail McCarver, lead author of the study and professor of pediatrics at the Medical College of Wisconsin and Children's Research Institute, Milwaukee.

The study has been presented at the Pediatric Academic Societies (PAS) annual meeting in Denver.

### **Coronary Artery Bypass**

#### **Coronary Artery Bypass Graft Surgery Numbers Drop 30% In 7 Years (Medical News Today: 4.5.2011)**



The numbers of coronary artery bypass graft surgeries dropped by one-third between 2001 and 2008 in the USA, researchers from the University of Pennsylvania reported in JAMA (Journal of the American Medical Association). However, the number of balloon angioplasties insertions of stents used to open up narrow blood vessels remained pretty much the same - these procedures are known as PCI (percutaneous coronary interventions).

The authors wrote

"Coronary revascularization, comprising coronary artery bypass graft (CABG) surgery and PCI, is among the most common major medical procedures provided by the U.S. health care system, with more than 1 million procedures performed annually," according to background information in the article."

The researchers explained that new techniques for coronary revascularization, including DES (drug-eluting stents) and minimally CABG surgery have become increasingly more common over the last ten years - they tend to have better outcomes compared to old techniques and technologies.

The authors added:

"During this period of technological innovation, new published evidence, and updated guidelines, it is not well known whether or how the volume of coronary revascularization and its constituent types changed in the United States. Substantial changes in the overall volume of revascularizations or the relative use of CABG surgery vs. PCI would have important ramifications on clinical outcomes, health care costs, and the future organization and delivery of hospital-based cardiovascular care."

Andrew J. Epstein, Ph.D., and team estimated patterns in the yearly totals for coronary revascularization procedures by gathering data from a representative national sample of hospitalization claims. They gathered data on individuals who underwent PCIs or CABG surgery between 2001 and 2008 in American hospitals in the Healthcare Cost and Utilization Project's Nationwide Inpatient Sample. They also added Medicare outpatient hospital claims data.

They found that from year 2001-2002 to 2007-2008 there was a 15% drop in the yearly totals for coronary revascularizations.

The number of CABG surgeries dropped by one third in the seven years up to the end of 2008, from 1,742 surgeries per million adults annually in 2001-2002 to 1,081 seven years later.

However, during the same period PCI rates dropped only slightly, from 3,827 PCIs per million annually in 2001-2002 to 3,667 per million seven years later.

The authors wrote:

"Between 2001 and 2008, the number of hospitals in the Nationwide Inpatient Sample providing CABG surgery increased by 12 percent, and the number of PCI hospitals increased by 26 percent. The median (midpoint) CABG surgery caseload per hospital decreased by 28 percent and the number of CABG surgery hospitals providing fewer than 100 CABG surgeries per year increased from 23 (11 percent) in 2001 to 62 (26 percent) in 2008."

. Regarding their study findings, the authors wrote:

"(our findings) suggest the possibility that several thousand patients who underwent PCI in 2008 would have undergone CABG surgery had patterns of care not changed markedly between 2001 and 2008. Our data imply a sizeable shift in cardiovascular clinical practice patterns away from surgical treatment toward percutaneous, catheter-based interventions.

In conclusion, although the total rate of U.S. coronary revascularization decreased modestly between 2001 and 2008, there was a substantial decrease in the CABG surgery rate. Between 2001 and 2008, the rate of PCI did not significantly change; however, there were continual changes in the frequency of stent types used for PCI."

## **High blood pressure**

### **High blood pressure**

**Blocking action of protein blunts serious ill effects of high blood pressure (world newspapers: 4.5.2011)**

Scientists at Johns Hopkins have revealed a new route to treat heart disease.

They have found through mice studies that blocking the action of a signaling protein deep inside the heart's muscle cells blunts the most serious ill effects of high blood pressure on the heart.

These include heart muscle enlargement, scar tissue formation and loss of blood vessel growth.

Specifically, the team found that their intervention halted transforming growth factor beta (TGF-beta) secretion at a precise location called cell receptor type 2 in cardiac muscle cells.

Blocking its action in this cell type forestalled pathways for hypertrophy, fibrosis, and angiogenesis by stopping the unbridled TGF-beta signaling, which is typically observed in heart failure, in all other non-muscle types of cells in blood vessels and fibrous tissue.

However, blocking TGF-beta signaling in non-muscle cells did not stop disease progression.

The study is believed to show the first evidence of how TGF-beta is stimulated differently by various cell types in the heart and which resulting pathways promote heart failure, the most common kind of heart disease.

The study is forthcoming in the Journal of Clinical Investigation.

### **Blood pressure**

**Blood pressure bleep for life on fast lane (World Newspapers: 16.5.2011)**

A fifth of the world's population is hypertensive. Yet more than half of them are unaware of their condition.

A disorder that was more common among geriatric population about two decades ago, hypertension is now increasingly becoming the concern of the youth in their prime as the average age of hypertension patients has fallen drastically in the last generation. People in their twenties and thirties suffer from high blood pressure.

“Compared to 10 years ago, the instances of hypertension has increased by quite a significant number, to may be almost one in five,” said Dr Arvind Jagdish from Suguna Hospital, Rajajinagar. Reasons? Earlier, people used to relax, exercise and follow healthy lifestyles. However, now, no one has time for himself or herself, the doctor explained.

Today's generation, according to experts, experience more stress which is one of the leading causes of hypertension. “Everyone today is working on a target-oriented way under tight deadlines, leading to immense stress,” Dr Jagdish pointed out.

Trends show that hypertension patients are now younger than they were a decade ago. Dr Ram Murthy Bingi, chief cardiologist, Apollo Hospital, said, “Hypertension is caused by a combination of genes and the environment, but over the last 10 years the environment has been playing an increasingly larger role.” Our environments lead to situations of more mental stress and less physical activity, two very important factors causing high blood pressure. There is also an increase in the trend to eat at fast food joints where the salt content in the food is high, said Dr Murthy.

Stressing the risk factors of hypertension, Dr Murthy said, “Blood pressure is a risk factor in the development of heart attacks, strokes and kidney problems. And these diseases become premature when younger people develop unhealthy habits.”

Solution? At least 45 minutes of physical activity every day, along with mind controlling exercises like deep breathing for about 15 minutes a day could be relaxing and helpful, said Dr Murthy.

## **High Blood Pressure**

**High Blood Pressure May Be More Common In Young American Adults Than Previously Thought (Medical News Today: 27.5.2011)**

Nearly one in five young American adults may have high blood pressure, much more than previously thought, according to a study that challenges the widely held view that the figure is under one in twenty; but even if it is actually somewhere in between, the researchers say young adults and their doctors should not assume high blood pressure only occurs in older people.

People with high blood pressure have a much higher risk of stroke and heart disease, the leading cause of death among adults in the United States. It is also a condition that often shows no signs or symptoms, and many otherwise healthy people who have it first find out when a health professional measures their blood pressure.

For the study, published this week in the journal *Epidemiology*, researchers from the University of North Carolina (UNC) at Chapel Hill and colleagues, analyzed data on more than 14,000 men and women between the ages of 24 and 32 who participated in the 2008 National Longitudinal Study of Adolescent Health (known as Add Health, funded mainly by the National Institutes of Health, with contributions from other agencies and foundations).

The results showed that 19% of the participants had high blood pressure or hypertension, and only about half of them had ever been told by a health professional that they had the condition.

Lead author Quynh Nguyen, an epidemiology doctoral student at UNC Gillings School of Global Public Health, told the press that:

"The findings are significant because they indicate that many young adults are at risk of developing heart disease, but are unaware that they have hypertension."

The results also showed that young men (27%) were more likely to have high blood pressure than young women (11%), and young adults with a college education (17%) were less likely to have high blood pressure than those who did not have a high school degree (22%).

The researchers believe their findings are important because the data is drawn from the first nationally representative, field-based study of hypertension to focus on young adults. Other studies have not done this, focusing on older populations where high blood pressure is more common and only including smaller samples of young adults.

Co-author Dr Kathleen Mullan Harris, interim director of the UNC Carolina Population Center, and principal investigator on the Add Health study, said they were surprised to find such a high rate of hypertension among the Add Health participants.

Add Health defined high blood pressure as 140/90 millimeters of mercury (mmHg) or more.

This is the same definition used in another widely cited and reputable study, NHANES, the National Health and Nutrition Examination Survey, which for the same period (2007-2008) as Add Health, reported a much lower 4% rate of high blood pressure for a similar age group.

## Type 2 Diabetes Impact

Learn more about type 2 diabetes & its challenges

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Harris said while there is a gap in the findings of the two studies, they have the same message:

"Young adults and the medical professionals they visit shouldn't assume they're not old enough to have high blood pressure. This is a condition that leads to chronic illness, premature death and costly medical treatment."

She said the processes that trigger these problems start early in life but are preventable, and urged young adults to check for high blood pressure now and "head it off at the pass".

The researchers considered a number of reasons for why the Add Health and NHANES estimates should be so different. For instance they looked at differences in the characteristics of the participants, how they were surveyed (at home versus being examined at a center), and the accuracy and reliability of the blood pressure measurements.

But they did not think any of these factors could explain such a large gap in the estimates of the two studies.

There was also another significant area of difference in the results of the Add Health and NHANES results.

The Add Health results found the number of young adults with high blood pressure was nearly twice as many as the number who reported being informed of their condition by a health professional (11%).

(Co-author Eric Whitsel, who headed the biology section of the study, and who is associate professor of medicine in UNC's School of Medicine said this did not surprise them since measuring blood pressure will find it in otherwise healthy young adults who might not be aware of having it).

But in the NHANES study, the pattern was the other way around: the number of people found to have high blood pressure when they underwent the examination for the study (4%) was half that who reported having a history of hypertension (9%).

## **Liver diseases**

### **Non-alcoholic fatty liver disease**

#### **Research on non-alcoholic fatty liver disease sought (World newspapers: 29.4.2011)**

To understand the wide-spread phenomenon of nonalcoholic fatty liver disease (NAFLD), the Indian Council of Medical Research (ICMR) has sought research proposals from doctors.

“We want to investigate the factors associated with NAFLD. Currently the knowledge about this disease and its pathology is very restricted,” said Dr V Katoch, director general of ICMR.

NAFLD constitutes fatty liver disease that is completely asymptomatic or without any history of metabolic disorders like diabetes. There is an abnormal accumulation of fat that triggers damage of the liver. This can later lead to cirrhosis and death.

“We want to investigate the causes first and then make guidelines on how to prevent this disorder,” said Dr Katoch. Currently, the understanding about the disease is that it is an integral part of the metabolic syndrome which comprises of obesity, hypertension with insulin resistance.

The ICMR research aims to be multi-disciplinary. It aims to look at clinical research, apart from epidemiological research (to find patterns of the disease in the population), and from the public health point of view.

The research, senior physician, Dr Hemant Thakker said, “It’s not known why this disease is striking people who do not have any history of drinking or diabetes. This disease was always prevalent, but it is being diagnosed more often thanks to the phase contrast ultrasound which tells the degree of fatty liver.” Currently, modalities of alternate treatment like Ayurveda are available for such patients, added Dr Thakkar.



# **Malaria**

## **World Malaria day**

### **World Malaria day: Making Progress in battling a scourge (The Asian age: 25.4.2011)**

Change has been most dramatic in Africa, where enough insecticide-treated mosquito nets have been delivered to cover 76 per cent of the people at risk and 11 countries have reported reduction in malaria cases and deaths by over 50 per cent

A DECADE ago, far from public outcry or frontpage headlines, malaria was killing 3,000 people every day, mainly African women and children. Few of the over three billion people at risk had access to mosquito nets or effective malaria drugs. Chloroquine, the main anti-malaria drug, had become ineffective against the deadliest strain, and the pipeline for new drugs, vaccines and other tools to control malaria was virtually empty.

April 25 is World Malaria Day. It is an opportunity to recognise the achievements of the past decade, since the moment when advocacy efforts shifted malaria from a neglected disease to global health priority. The immediate results were tangible: a 30-fold jump in international funding, increased commitment by African leaders, a rapid expansion of research and development, and the creation of new alliances addressing malaria.

The Roll Back Malaria Partnership, the global framework for coordinated action created in 1998 by the World Health Organisation, UN Children's Fund, UN Development Programme and the World Bank, is now a worldwide movement of over 500 public and private Change has been most dramatic in Africa, where enough insecticide-treated mosquito nets have been delivered to cover 76 per cent of the people at risk and 11 countries have reported reduction in malaria cases and deaths by over 50 per cent. In just a decade, Africa has begun to extract itself from the grip of a disease that has held sway for millennia. The Global Fund to Fight AIDS, Tuberculosis and Malaria, now the source of two-thirds of all malaria funding, has been instrumental in realising many of these gains together with the US President's Malaria Initiative, the World Bank Booster Programme, UNITAID and other bilateral contributions.

However, these gains are as fragile as they are impressive. While countries could soon be able to distribute enough bed nets to protect everyone at risk, achieving similar traction with treatment, diagnosis and indoor spraying has proven more difficult. More critically, growing drug and insecticide resistance, left unchecked, could leave millions without

effective treatment and prevention options, essentially turning the clock back to the conditions of 10 years ago.

The challenge now is to not only sustain these hardwon results, but also to make greater advances in areas where progress has eluded us most, particularly access to diagnostics and treatment. Without proper use of malaria drugs we will never conquer resistance and eliminate malaria.

As we go forward, two ambitious objectives are before us: the Millennium Development Goal target to halt and begin to reverse the incidence of malaria, and the goals of the Global Malaria Action Plan, particularly the milestone to reduce malaria deaths to near zero by 2015. To reach these goals we will need to both maintain our present gains and intensify our efforts. This cannot be done without greater commitment, innovation and new ways of funding malaria control and elimination. We have already seen the power of public-private partnerships, which have made drugs more affordable and available, nurtured innovative sources of financing, and furthered research and development efforts to create new drugs, insecticides, rapid diagnostics tests and vaccines.

We cannot fail to meet these objectives. If we do, the price will be too high. In addition to the millions of lives which will be lost, the impact on development will be huge. Let us not forget that in countries with a large malaria burden, particularly those in Africa, the disease consumes up to a quarter of household incomes, trapping people in a cycle of poverty. About 40 per cent of government health spending goes to malaria, a disease which costs Africa \$12 billion in direct costs every year and much more in lost productivity.

Countries struggling with malaria and those that have long since eliminated it, both have a role to play in fighting this disease. Political leaders in countries with malaria burden must remain firm in their commitments, from increasing health budgets to improving supply lines. Donors must meet their own pledges and help find ways to bridge the gaps in necessary funding going forward. Malaria has proven itself to be a good investment. As the most costeffective single health intervention after childhood vaccination, universal malaria prevention coverage alone can save the lives of at least three million African children by 2015.

The results of the last 10 years have shown us that with public-private partnerships and by increasing financial and political support, we can move many steps closer to controlling and eliminating malaria.

This tremendous progress has laid the foundation for the next phase of the malaria fight. It is now clear that while creating a malariafree world is challenging, it is possible.

Awa Marie Coll-Seck is executive director of the Roll Back Malaria Partnership and a former health minister of Senegal.

## **Combating malaria**

### **New discovery opens up novel strategy for combating malaria (World Newspapers: 2.5.2011)**

A group of researchers has discovered that a class of chemotherapy drugs originally designed to inhibit key signaling pathways in cancer cells also kills the parasite that causes malaria.

The discovery by researchers from EPFL's Global Health Institute (GHI) and Inserm (Institut National de la Sante et de la Recherche Medicale, the French government agency for biomedical research) could quickly open up a whole new strategy for combating this deadly disease.

The research shows that the malaria parasite depends upon a signaling pathway present in the host - initially in liver cells, and then in red blood cells - in order to proliferate. The enzymes active in the signaling pathway are not encoded by the parasite, but rather hijacked by the parasite to serve its own purposes.

These same pathways are targeted by a new class of molecules developed for cancer chemotherapy known as kinase inhibitors. When the GHI/Inserm team treated red blood cells infected with malaria with the chemotherapy drug, the parasite was stopped in its tracks.

Professor Christian Doerig and his colleagues tested red blood cells infected with *Plasmodium falciparum* parasites and showed that the specific PAK-MEK signaling pathway was more highly activated in infected cells than in uninfected cells. When they disabled the pathway pharmacologically, the parasite was unable to proliferate and died. Applied in vitro, the chemotherapy drug also killed a rodent version of malaria (*P. berghei*), in both liver cells and red blood cells.

This indicates that hijacking the host cell's signaling pathway is a generalized strategy used by malaria, and thus disabling that pathway would likely be an effective strategy in combating the many strains of the parasite known to infect humans.

The research has been published online in the journal Cellular Microbiology.

## **Combating Malaria**

### **Novel Strategy for Combating Malaria (Med India: 3.5.2011)**

A class of chemotherapy drugs originally designed to inhibit key signaling pathways in cancer cells also kills the parasite that causes malaria, a group of researchers has discovered.

The discovery by researchers from EPFL's Global Health Institute (GHI) and Inserm (Institut National de la Sante et de la Recherche Medicale, the French government agency for biomedical research) could quickly open up a whole new strategy for combating this deadly disease.

The research shows that the malaria parasite depends upon a signaling pathway present in the host - initially in liver cells, and then in red blood cells - in order to proliferate. The enzymes active in the signaling pathway are not encoded by the parasite, but rather hijacked by the parasite to serve its own purposes.

## **Curb Malaria**

### **Genetic Approach to Curb Malaria (Med India: 4.5.2011)**

Scientists have found that they can change the DNA of wild mosquitoes to battle malaria.

They inserted a fungus gene into mosquitoes that can attack specific mosquito genes - making it possible, for example, to destroy genes that allow the malaria parasite to reach humans' bloodstreams, reports the Sydney Morning Herald.

Speaking to Los Angeles Times, Andrea Crisanti, the paper's senior author and a molecular biologist at Imperial College London, said: "we developed genetically modified mosquitoes that are unable to transmit malaria - and are able themselves to transmit this genetic modification to local mosquitoes, through mating - that would be an effective solution."

Talking about the way in which the approach works, he said "it's a sort of cut-and-paste function: you have a gene able to attack the other gene, destroy it and copy itself in its location.

The technology is based on a gene that makes an enzyme that selectively recognizes DNA sequences and cuts them. Now if you induce a cut in the DNA, a break in the DNA,

you trigger the cell's repair mechanism. The repair mechanism then uses the enzyme's gene as a template to repair the broken DNA sequence.

# **Metabolic Syndrome**

## **Metabolic Syndrome**

### **Metabolic Syndrome May Increase Risk for Liver Cancer (Science Daily: 4.4.2011)**

Scientists have confirmed that metabolic syndrome, a constellation of conditions that increases the risk of heart disease and diabetes, may also increase the risk of the two most common types of liver cancer, according to data presented at the AACR 102nd Annual Meeting 2011, held in Orlando, Florida on April 2-6.

Katherine McGlynn, Ph.D., a senior investigator at the National Cancer Institute, said approximately one-third of the U.S. population has metabolic syndrome, which is defined as the co-occurrence of at least three of the following five conditions: raised blood pressure, elevated waist circumference, low HDL or "good" cholesterol, raised triglyceride levels and raised fasting plasma glucose levels.

According to McGlynn, persons with these conditions may be at increased risk of developing hepatocellular carcinoma and intrahepatic cholangiocarcinoma.

Liver cancer incidence has been rising since the 1980s in the United States. The factors related to the increase are not well understood. "A lot of attention has focused on viral risk factors, but a significant part of the increase may be due to metabolic syndrome, as well as to diabetes and obesity," said McGlynn.

"The prognosis for liver cancer is only marginally better than the prognosis for pancreatic cancer, with a five-year survival of approximately 10 percent," she said. "Prognosis is more favorable, however, when liver cancers are diagnosed at early stages when they are small and localized to the liver."

For the current study, researchers identified 3,649 cases of hepatocellular carcinoma and 743 cases of intrahepatic cholangiocarcinoma. They compared the medical history of these patients with the medical histories of 195,953 cancer-free adults.

Statistical analyses showed that the persons with liver cancer were significantly more likely than cancer-free persons to have a prior history of metabolic syndrome: 37.1 percent of patients with hepatocellular carcinoma had pre-existing metabolic syndrome, as did 29.7 percent of patients with intrahepatic carcinoma; only 17.1 percent of the cancer-free adults had metabolic syndrome.

## **Non-Communicable diseases**

### **Non-Communicable diseases**

#### **Non-Communicable diseases cause most deaths: WHO (The Indian Express: 28.4.2011)**

THE first World Health Organisation (WHO) global status report on non-communicable diseases (NCDs) was launched on Wednesday in Moscow.

The report revealed that in 2008, 36.1 million people died due to heart disease, stroke, chronic lung disease, cancer and diabetes, putting NCDs on the top of the list of killer diseases. In India, 5,241,400 people (2,967,600 men and 2,273,800 women) died in 2008 due to NCDs.

According to the report, the leading causes of NCD deaths in 2008 were cardiovascular disease (17 million or 48 per cent), cancer (7.6 million or 21 per cent), and respiratory disease (4.2 million). Diabetes caused 1.3 million deaths. These groups of diseases share four common risk factors: tobacco use, physical inactivity, harmful use of alcohol, poor diet.

The report found that 6 million people die due to tobacco use every year both directly and indirectly. By 2020, this will rise to 7.5 million. Also, 3.2 million people die each year as a result of physical inactivity, 2.8 million as a result of being overweight, 2.5 million as a result of excess drinking.

The data demonstrated that NCDs killed 63 per cent of people worldwide in 2008 and 80 per cent of these deaths -equivalent to 29 million people -occurred in low and middle income strata, dispelling the myth that such conditions are mainly the problem of affluent societies. Twenty-nine per cent of NCD deaths occur among those under 60 years of age in low and middle income countries, compared to 13 per cent in high-income countries.

The NCDs are projected to kill 52 million people annually by 2030.

WHO Director-General Margaret Chan, who launched the report, said, "For some countries, it is no exaggeration to describe the situation as an impending disaster; a disaster for health, for society, and most of all for national economies."

## **Non-communicable diseases**

### **Non-communicable diseases leading cause of deaths: UN (New Kerala: 28.4.2011)**

United Nations, April 28 : Non-communicable diseases (NCDs) are the leading killer today and are on the rise, UN spokesman Martin Nesirky said here Wednesday.

"The rise of chronic NCDs presents an enormous challenge," Nesirky told reporters here, quoting the World Health Organization (WHO) director-general Margaret Chan as saying,

"For some countries, it is no exaggeration to describe the situation as an impending disaster; a disaster for health, for society, and most of all for national economies."

WHO issued the first global status report on NCDs Wednesday, which pointed out that 36.1 million people died in 2008 from conditions such as heart disease, strokes, chronic lung diseases, cancers and diabetes, with low- and middle-income countries accounting for nearly 80 percent of these deaths.

NCD is a medical condition or disease which is non-infectious. These are diseases of long duration and generally slow progression. They include heart disease, stroke, cancer, asthma, diabetes, osteoporosis, Alzheimer's disease, cataracts , and more.



# **Paralysis**

## **Paralysis**

### **Playing computer games may help recover from paralysis (The Tribune; 18.5.2011)**

Washington: A recent study has revealed that computer games can speed up a patient's recovery from paralysis after a stroke. American scientists have found that computer simulations and cutting edge techniques to produce computer-generated action could restore the lost function of an impaired arm. The volunteers who used these computer games and robotic training aids showed signs of regaining hand and arm movement together, unlike training sessions which concentrate on the two separately. The games, Plasma Pong and Hammer Task, were used to improve hand/arm coordination, accuracy and speed, while the Virtual Piano and Hummingbird Hunt simulations helped to restore precision of grip and individual finger motion. It was noticed that after training for two-three hours a day for eight days, all of the patients showed increased control of hand and arm during reaching.

# **Parkinson's**

## **Parkinson's**

### **Could a Bacterium be the Cause of Parkinson's? (Med India: 24.5.2011)**

A bacterium that causes ulcers in the stomach may be responsible for triggering the symptoms of Parkinson's disease, a new study conducted by a group of American researchers reveals.

Speculation regarding a link between stomach ulcers and Parkinson's disease has been around in the medical field since the 1960s but this is the first time that researchers have found evidence that a ulcer-causing bacteria may be responsible for the symptoms.

Researchers led by Dr Traci Testerman from the Louisiana State University found that a strain of bacteria *Helicobacter pylori* caused Parkinson's like symptoms in mice five months after they were infected with the bacteria.

"Our findings suggest that *H. pylori* infection could play a significant role in the development of Parkinson's disease in humans. The results were far more dramatic in aged mice than in young mice, demonstrating that normal ageing increases susceptibility to Parkinsonian changes in mice, as seen in humans", Dr Testerman said. The study was presented at the American Society for Microbiology's annual meeting in New Orleans.

# **Tuberculosis**

## **Tuberculosis**

### **Tuberculosis Discovery Paves Way for Drugs That Prevent Lung Destruction (Science Daily: 26.4.2011)**

Scientists have identified a key enzyme responsible for destroying lung tissue in tuberculosis (TB), they report in the Journal of Clinical Investigation. Drugs that inhibit this enzyme are already available, meaning that the finding could lead quickly to new treatments.

TB is caused by the bacterium *Mycobacterium tuberculosis*. The infection destroys patients' lung tissue, causing them to cough up the bacteria, which then spread through the air and can be inhaled by others. The mechanism behind this lung damage is poorly understood, and no treatments currently used prevent it from occurring. Patients require at least six months of antibiotic treatment, but drug-resistant strains of the bacterium are becoming increasingly common.

The new research shows that in patients with TB, there is an increase in levels of an enzyme called MMP-1 in their lungs. When the researchers infected human immune cells with TB in the lab, they found that the cells greatly increased production of this enzyme.

Since the mouse version of MMP-1 is not expressed in the lung, the researchers developed a transgenic mouse with human MMP-1 to investigate whether the enzyme causes lung damage in TB. When these mice were infected with TB, MMP-1 levels increased significantly and the infection led to lung damage similar to that seen in humans with TB.

The scientists also found that a drug proven to be safe in humans was effective at suppressing MMP-1 activity driven by TB infection in human cells.

The findings suggest that similar drugs might prevent lung damage in TB patients and help limit the spread of the disease.

The study was done by researchers at Imperial College London with collaborators at Columbia University in New York and the University of East Anglia, and it was supported by the National Institute for Health Research (who funded the work on human cells), the Scadding Morriston Davies Travel Fellowship and the US National Institutes of Health.

Dr Paul Elkington, from the Department of Infectious Diseases and Immunity at Imperial College London, said:

"A third of the world's population is infected with tuberculosis, and almost 2 million people die from the disease every year.

"Standard TB treatment has remained unchanged for 35 years, and no current treatments prevent the lung destruction that TB causes. These findings suggest that drugs available now might be able to reduce deaths from TB."

Many MMP inhibitor drugs were developed in the 1990s because they showed initial promise for treating cancer. The researchers now plan to carry out further studies to see whether these drugs can prevent lung destruction in patients with TB.

Professor Jon Friedland, senior author of the study from the Department of Infectious Diseases and Immunity at Imperial College London, said:

"Until now, we haven't had a convincing explanation of how lung destruction is caused by TB. We hypothesised that protease enzymes must be involved, since nothing else could break down the strong collagen fibres that make up the scaffold of the lung. The results of this study provide strong evidence to support that idea."

Dr Elkington and his colleagues first put forward their hypothesis that MMP enzymes play a key role in TB in a review article published earlier this year in the journal *Science Translational Medicine*.

## **Vector borne diseases**

### **Vector borne disease**

#### **Delhi government prepares to prevent water, vector borne disease (New Kerala: 5.4.2011)**

The Delhi government is gearing up to prevent water and vector borne disease in the capital city.

Delhi Health Minister A K Walia today chaired a high-level meeting and all concerned agencies to make all sincere and serious efforts to stop breeding of mosquitoes and sensitise people to drink boiled water during next few months.

The meeting was attended by the Health Secretary, Director Health Services and senior officials of MCD, NDMC, Delhi Cantonment Board, DDA, Irrigation and Flood Control Department and other concerned departments.

The MCD has made arrangements for online reporting of Dengue cases and strict surveillance for the improved reporting. It has also been decided to have interaction with RWAs, hospitals, schools and organise workshop on the issue.

The Corporation will also hold regular meeting at ward-level.

Dr Walia instructed to involve school children in sensitising people against mosquitoes breeding. They will be asked to sensitise people with dengue house report cards.

This will help in intensifying home to home checking. Further, the Minister instructed to ensure that there was no shortage of platelets.

Dr Walia instructed the MCD to strictly enforce the ban on cut fruits and sugarcane etc which has been in force since April 1, 2011.

The other civic bodies have also been instructed accordingly.

The people will be advised to drink boiled water.

The Minister also decided to write to Delhi Jal Board, Northern Railway, CPWD, PWD and Delhi police to take care of their buildings as far as mosquitoes breeding is concerned.

He also decided to review the status on monthly basis.

Dr Walia instructed to concentrate in the JJ Cluster, un-authorised colonies, walled city and urbanised village.

He instructed to ensure that chlorination is done at tube-wells and regular water testing is done. The civic agencies have been told to launch sanitation drive with an aim to overcome outbreak of diseases like Malaria, Dengue and chickungunya.

In order to make the efforts fruitful, the agencies have been instructed to collaborate with NCDC and ICMR.

There were 6,259 reported cases of dengue with eighth deaths during 2010 whereas only one case has been reported till now during 2011.

As far as cholera is concerned there were 756 cases during 2010 whereas only six have been reported till now in 2011.

The Irrigation and Flood Department has assured that their desilting work of drains will be completed by May 15, 2011. It has to desilt 12 drains and take out 285706 Cum silt by departmental machines and contractors.

Dr Walia directed the MCD to overcome the problem of water logging during rainy season. He has also decided to conduct inspection of Nallahs to personally take stock of desilting process.

## **Drugs and Medicine**

### **2 drugs**

#### **2 drugs banned (New Kerala; 1.4.2011)**

The Union Ministry of Health and Family Welfare has prohibited manufacturing, sale and distribution of the drugs Gatifloxacin, an antibiotic, and Tegaserod, used for management of irritable bowel syndrome and their formulations for systemic use in human.

Assistant Director, Andhra Pradesh Drugs Control Administration in this region Ravi Uday Bhaskar said the drugs are available in composition under brand names GATAQUIN, GAITY, GATIKIND, GATIFLOX, GATIN, TAGON, TEGIBS and others which contain the above mentioned drugs.

The doctors were advised not to prescribe these drugs to patients, according to a release issued here.

All the distributors, chemists and hospitals are directed not to purchase, supply and use the above mentioned drugs.

### **Insulin**

#### **Insulin could play powerful role in fighting Alzheimer's (New Kerala; 4.4.2011)**

A new clinical research by University at Buffalo endocrinologists has shown that a low dose of insulin can suppress the expression in the blood of four precursor proteins involved in the pathogenesis of Alzheimer's disease.

The research suggests that insulin could have a powerful, new role to play in fighting Alzheimer's disease.

"Our results show clearly that insulin has the potential to be developed as a therapeutic agent for Alzheimer's, for which no satisfactory treatment is currently available," said Paresh Dandona, UB distinguished professor of medicine in the School of Medicine and Biomedical Sciences and senior author on the study.

In the study, 10 obese, type 2 diabetic patients were infused with two 100 ml units of insulin per hour over a period of four hours. The patients were all taking oral drugs to treat their diabetes; none of them were taking insulin or any antioxidant or nonsteroidal anti-inflammatory drugs. The control group received 5 percent dextrose per hour or normal saline solution.

The low-dose insulin was found to suppress the expression of amyloid precursor protein, from which beta amyloid is derived. It also suppressed presenilin-1 and presenilin-2, the two subunits of an enzyme that converts amyloid precursor protein into beta amyloid, which forms the amyloid plaques. Insulin also suppressed glycogen synthase kinase, which phosphorylates, or adds on another phosphate group, to another neuronal protein, tau, to form the neurofibrillary tangles, the other important component of Alzheimer's disease in the brain.

"Our data show, for the first time, that the peripheral mononuclear cells express some of the key proteins involved in the pathogenesis of Alzheimer's disease," said Dandona.

"They demonstrate that these cells can be used for investigating the effect of potential Alzheimer's disease therapies on key proteins involved in the disease.

"Even more importantly, it is likely that insulin has a direct cellular effect on these precursor proteins while also exerting its other anti-inflammatory actions," he continued.

"If this effect of insulin proves, in larger studies, to be systemic, then insulin may well be a potential therapeutic agent in treating Alzheimer's disease. The challenge is to deliver insulin directly into the brain, thus avoiding its hypoglycemic effect," he added.

The study has been published in the Journal of Clinical Endocrinology and Metabolism.

## **Heart drug**

### **Heart drug cuts prostate cancer risk (New Kerala: 4.4.2011)**

Men using the cardiac drug digoxin were found to have a 24 percent lower risk for prostate cancer.



Digoxin, made from the foxglove plant, has been used for centuries in folk medicine and for decades to treat congestive heart failure and heart rhythm abnormalities.

It also emerged as a leading candidate among 3,000 drugs screened by the John Hopkins team for the drugs' ability to curb prostate cancer cell growth, according to the investigators, the journal Cancer Discovery reports.

Some of the prostate cancer symptoms are blood in the urine or semen, impotence, bone ache, especially in the lower back, hips, or ribs, and loss of bladder control.

Additional research by the team, involving more than 47,000 men, revealed that those who took digoxin for heart disease had a significantly lower risk of prostate cancer, according to a Johns Hopkins statement.

"This is not a drug you'd give to healthy people," cautions Elizabeth Platz, professor of epidemiology, oncology, and urology at the Johns Hopkins Bloomberg School of Public Health.

Serious side-effects include male breast enlargement and heart rhythm irregularities, and the drug commonly causes nausea, vomiting and headache.

Johns Hopkins assistant professor Srinivasan Yegnasubramanian and professors William G. Nelson and Jun Liu identified 38 compounds already approved by the Federal Drug Agency or with a history of medical use out of a database of more than 3,000.

The 38 candidate drugs reduced prostate cancer cell growth in the laboratory by at least 50 percent. They did not include known chemotherapy drugs among the 38.

## **Pharma**

### **Pharma FDI over 49% may need FIBP nod (The Financial express: 4.4.2011)**

HAUNTED by the spectre of India's globally acclaimed generic drug industry being swamped by the West's acquisition-hungry Big Pharma, the government is planning to regulate foreign investments in the sector, where 100% FDI is now allowed through the automatic route. As per the plan, FDI above 49%, if used to acquire stakes in Indian companies, would come under the scrutiny of the Foreign Investment Promotion Board (FIPB). FDI meant for greenfield ventures would, however, continue to be under the

"automatic approval" route, where the Reserve Bank of India is the sole gatekeeper. The Indian pharma sector has seen six big-ticket acquisitions since 2006 (see chart). The government reckons that the multinationals, which are hit by drying up of new drug pipelines, are attempting more such buys in India.

Promoters of even large Indian drug companies would find these proposals hard to resist, given that the price to earnings ratio -the measure of price per share offered to the net income per share -being offered by the pharma multinationals are two-to-three times the going rates in other industries. There are reasons for the Big Pharma to be generous: the \$12 billion Indian pharma market (IPM) is estimated to add another \$40 billion to it in the next five years at a time when the annual growth rate in the developed market is around 1%; with scores of US-FDA approved plants in India, India could also be a manufacturing base for exports to the low-income countries.

"The acquisitions have been and would be extortionately priced. Given the fact that India's smaller drug companies are unlikely to grow fast enough to promptly occupy the space ceded by their bigger brothers bought over by the Big Pharma, the trend has serious implications for the Indian drug market," said a government official, asking not to be quoted.

Sources say that consulting firm Ernst & Young, which has been given the mandate to submit a report on the issue to the government, would likely build its arguments around the need to maintain 100% FDI in the segment, provided the government brings in enough riders to ensure the investment suits the domestic market and helps keep prices affordable to the masses. The MNCs' interest in Indian drug companies and the acquisitions they have carried out so far have created a growing concern, especially in three major areas.

One fear is that such takeovers could lead to an 'oligopolistic market' where a few companies will be in a position to decide the prices of medicines. Second, if large Indian companies having the wherewithal to replicate patented molecules are taken over by the MNCs, the 'oligopolistic' situation thus created and being strengthened by the exclusivity of products through product patent rights, will severely limit the power of the government to face the challenge of public health by granting compulsory licenses.

Third, in such a situation, MNCs could well decide to sell only the high priced patented and branded generic drugs rather than the cheaper essential drugs, pushing up the drug prices and causing inconvenience to patients.

Tapan J Ray, director general, Organisation of Pharmaceutical Producers of India (OPPI), a group representing MNC pharma firms in India, however, argues that such an oligopolistic scenario is not bound to arise, since the Indian pharmaceutical market has over 23,000 players and around 60,000 brands (source: IMS 2010). "Even after all the

recent acquisition, the top ranked pharmaceutical company of India Abbott, enjoys a market share of just 6.15% (source: AIOCD/AWACS , February 2011). Even the Top 10 groups of companies (each belonging to the same promoter group though different and not the individual companies) contribute just around 40% of the IPM," Ray argues.

The government, however, is concerned that acquisitions of large Indian drug companies could leave small companies in the lurch. The negative impact on India's small industries and the dependence on imports of bulk drugs from China are also issues before it.

According to DG Shah, CEO, Vision Consulting Group, "These acquisitions should be viewed in the context of the dynamics of industry . Sell-out by two or three more large companies will create immense pressures on others to follow suit. It is incorrect to assume that once big ones are taken over, smaller ones will replace them in the domestic market." "Those who do not sell out may reduce themselves to contract manufacturing for the global pharmaceutical companies," he adds.

OPPI's Ray believes that it is unrealistic to prevent the promoters of domestic pharma firms from selling when the prices offered are lucrative.

"The market competition is extremely fierce in India with each branded generic/generic drug having not less than 50 to 60 competitors within the same chemical compound.

Moreover, 100% of the IPM is price regulated by the government, around 20% under cost based price control and the balance 80% is under stringent price monitoring mechanism," says he. In an environment like this, the very thought of any real threat to public health interest due to irresponsible pricing, will sound very harsh even to the government's own price regulator, which has contributed in making the medicine prices in India cheaper than even neighbouring countries like Bangladesh, Pakistan and Sri Lanka, he adds.

Many independent analysts, however, don't subscribe to this view, as they reckon that price control, as it exists today, is hardly effective in making a meaningful difference to the healthcare expenses of the low income population. The span of price control is inadequate and newer drugs, including imported ones, that are increasingly prescribed by factors are outside the purview of controls, they say .

## **Lupin**

### **Lupin sued by allergen in us over eye drug (The Financial Express: 5.4.2011)**

Japanese firms Senju & Kyorin join Allergan in filing patent lawsuit

The US subsidiary of the Indian drugmaker Lupin has been sued by the US firm Allergan alleging that the former would be infringing its patent coverage by attempting to manufacture and market a generic version of Zymaxid 0.5% (Gatifloxacin ophthalmic solution) in the US market.

Allergan has been joined by Japanese drug firms Senju Pharma and Kyorin Pharma in filing the patent violation suit against Lupin at a US district court in the district of Delaware.

While Senju and Kyorin own the concerned patent rights related to the drug, Allergan is the exclusive licensee of the concerned patent for ophthalmic uses.

It is difficult to ascertain the accurate US market size of this drug as the eye antibiotic received the US Food and Drug Administration approval as late as May 2010 and has not even completed a full year in the US market.

Zymaxid which Allergan claims is the highest concentration gatifloxacin ophthalmic solution in the United States, is a topical fluoroquinolone anti-infective used for the treatment of bacterial conjunctivitis caused by select susceptible strains.

While the worldwide ophthalmology drugs market is expected to reach a size of \$19.8 billion by the year 2014

growing at a CAGR of 4% from 2009-2014, the combined global ophthalmology drug and devices market is expected to reach a market size of \$36 billion by the year 2014, at a CAGR of 5.4% from 2009-2014. The US ophthalmic drug market has crossed \$5 billion in 2008.

In its suit, Allergan has mentioned that Senju Pharma is already battling a legal suit against Canadian generic firm, Apotex for the same drug.

Further Allergan has sought a permanent injunction restraining Lupin's employees from infringing the said patent claims in case of the eye drug.

## **Use antibiotics rationally**

### **Use antibiotics rationally: WHO (The Hindu: 7.4.2011)**

Anti-microbial resistance, theme of this year's World Health Day

Drug resistance renders medicines ineffective

Celebrating World Health Day 2011, the World Health Organisation (WHO) has called for intensification of the global commitment to safeguard antibiotics for future generations.

With growing resistance by microbes to antibiotics threatening the continued effectiveness of many medicines, WHO has made anti-microbial resistance the theme of this year's World Health Day.

It has urged governments and stakeholders to implement policies and practices to prevent and counter the emergence of highly resistant micro-organisms. Though anti-microbial resistance is not a new problem, it is fast becoming more dangerous. "We depend on antibiotics and other anti-microbial medicines to treat conditions that would otherwise be fatal. Anti-microbial resistance is drug resistance that renders these medicines ineffective," noted a release issued by WHO.

"The time for sustained action is now, since we are slowly but surely moving towards a reversion to the dreadful pre-antibiotics era," said WHO South-East Asia regional director Dr. Samlee Plianbangchang. "If that happens, death and disease due to untreatable infectious diseases will become the biggest obstacle to poverty alleviation, development, and global efforts to make the world a better and a more healthy place."

"Anti-microbial resistance is a serious problem that strikes at the core of infectious disease control. The two main factors that drive the rise and spread of resistant organisms – over-use and misuse of antimicrobials -- and the spread of resistant organisms between individuals, communities and countries, has to be curtailed by improving anti-microbial use. Rational use of anti-microbials is essential to stop the selection pressure that drives anti-microbial resistance," said WHO representative to India Dr. Nata Menabde.

Asking people to use antibiotics rationally, WHO noted: "Antibiotics saves lives, it should be taken for the full duration that it has been prescribed for, vaccinate children against preventable diseases, follow a healthy lifestyle and reduce the need for antibiotics and throw away old medicines and never self-medicate."

"In WHO's South-East Asia region inadequate quality, misuse and poor access to drugs continue to be major components of the widespread inappropriate use of antibiotics. Anti-microbial resistance has enormous social and personal costs. Combating anti-microbial resistance is a challenge that cannot be addressed by health administrators alone. Misuse of antibiotics by prescribers and users has behavioural, educational, ethical and economic dimensions which demand concerted and sustained actions by all sectors of society. Weak pharmaceutical regulatory mechanisms in most developing countries also permit the availability of antibiotics of questionable quality and the unauthorised sale of these antibiotics," noted the WHO release.

### **Tackling drug resistance**

#### **Tackling drug resistance (The Hindu: 7.4.2011)**

There was a time around the middle of the last century when it seemed that humans could decisively vanquish the microbes that caused so many dreadful, often deadly, diseases. But that sense of victory over an enemy has given way to alarm. Drug-resistant pathogens have sprung up and 'superbugs' that can shrug off most drugs that are thrown at them have surfaced and spread across the world. With few new antimicrobials under development, there is a real sense among medical experts of humanity having its back to the wall and of the frightening possibility of a return to the bad old days when what started as a simple infection could get completely out of control. This year's World Health Day (April 7) focusses on antimicrobial resistance and its global spread. In a highly interconnected world, drug-resistant microbes can leap from one country to another. Last year, there was a furore over the spread of highly drug-resistant bacteria, which had the New Delhi metallo-beta-lactamase (NDM-1) gene, from South Asia to several countries. But 'superbugs' have made their way to India from elsewhere in the world too. For instance, studies of methicillin-resistant *Staphylococcus aureus* (MRSA) bacteria isolated in India have indicated a movement of such organisms from the United States, Europe, and Australia to this country.

In India, as in other countries, such dangerous microbes are circulating not only in hospitals but also in the larger community; poor sanitation and faecal contamination of water supplies have allowed some highly antibiotic-resistant bacteria to spread. Drug-resistance is a major issue in tuberculosis. India accounts for one-fifth of the global burden of the disease and two people die of it every three minutes. The rise of resistance

as a natural consequence of the process of evolution is perhaps inevitable. But the misuse of antibiotics greatly hastens this process. There is a great deal that can and must be done to conserve the drugs that are available and still effective. Over-the-counter sales of antibiotics must be stopped. Physicians need to be educated on when it is appropriate to use antibiotics. Even when an antibiotic is needed, it is essential that the right drug is given at an adequate dosage and for a suitable duration. A proper system of surveillance for antimicrobial resistance as well as regularly updated guidelines for treatment would help doctors make the right choices. Further, the use of antibiotics as growth-promoters in livestock needs to be curtailed. In all of this, the government, the medical fraternity, and the public must play their part.

### **Antibiotic resistance**

#### **Antibiotic resistance is main focus (the Tribune: 7.4.2011)**

THE Theme of World Health Day 2011 is "Antibiotic resistance: No action today, no cure tomorrow". The health of people today is threatened by a growing phenomenon: bacteria that cause common and life-threatening infections are becoming increasingly more and more resistant to antibiotics -- the very drugs used to treat them. This is due to the widespread use and misuse of antibiotics in both humans and animals.

WHO has called on the public, prescribers, policy-makers, the pharmaceutical industry and the food animal production sector to prescribe and use antibiotics responsibly, monitor and track antibiotic usage and resistance and promote the development of new antibiotics.

We live in an era in which we depend on antibiotics and other antimicrobials to treat conditions that decades ago, or even a few years ago in the case of HIV/AIDS, would have proved fatal. When antimicrobial resistance -- also known as drug resistance -- occurs, it renders these drugs ineffective. WHO has called for intensified global commitment to safeguard these drugs for future generations.

Antimicrobial resistance is not a new problem but one that is becoming more dangerous. There was much hue and cry when one of the leading medical journals, Lancet Infectious Diseases Journal, published a story about the resistant strains of bacteria and named these variants after New Delhi i.e. New Delhi Metallo-beta-lactamases. This feature in medical science is not new but when it was linked with medical tourism, it became a very hot issue for our country.

Recently in February, a formal proposal to create India's first-ever antibiotic policy has been submitted to the Union Health Ministry. A high-level panel of experts, including the Drug Controller-General of India, Dr Surinder Singh, Additional Director General of Health Services, Dr H. Jani and Health Ministry Joint Secretary Mr Arun Panda, for the first time made a formal presentation of the draft antibiotic policy to Union Health Minister Ghulam Nabi Azad. Utmost importance will be given to the antibiotic policy and how to stop third and fourth generation antibiotics from being misused or used in bulk.

This is a very significant milestone in our country. Under the draft policy, 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."

As the antibiotics are the most important drugs to fight various infections of bacterial, fungal, parasitic and viral origin, it is of paramount 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. The draft policy will now ensure both rational and restricted use of antibiotics.

The writer is Professor & Head, Department of Microbiology, Govt. Medical College Hospital, Sector 32, Chandigarh

## **Antibiotics policy**

### **All you need to know about the antibiotics policy (World Newspapers: 7.4.2011)**

Dr Anil Pachnekar Director, IMA, Maharashtra talks about the antibiotics policy.

Do general practitioners follow the antibiotics policy?

As there is a no specific guideline on the use of antibiotics, GPs take precaution while prescribing them to patients.

What should a GP do to enhance medical knowledge?



They need to attend the Continuing Medical Education conferences for credit hours.

What steps has IMA to sensitise GPs over the policy?

We will organise workshops and symposium.

How do you make GPs aware about drugs' resistance?

We have two bulletins — BIMA, dedicated to the Mumbai doctors and MAHIMA, for the rest of the state doctors. We take expert doctors' opinion in this. Some case studies will also be put in the magazine.

Why do senior doctors say GPs use antibiotics irrationally?

Five out of 100 doctors use antibiotics irrationally. You can't blame only the GPs. They prescribe when they feel the need.

### **Multi-drug resistant microbes**

#### **WHO calls for dealing with multi-drug resistant microbes (New Kerala: 7.4.2011)**

As the World Health Day is being observed Thursday, the World Health Organisation (WHO) called for attention towards growing drug resistance in microbes due to wrong and irregular use of antibiotics.

"In WHO's Southeast Asia Region, inadequate quality, misuse and poor access to drugs continue to be major components of the widespread inappropriate use of antibiotics," a statement from WHO said Wednesday.

"The time for sustained action is now, since we are slowly but surely moving towards a reversion to the dreadful pre-antibiotic era," said Samlee Plianbangchang, WHO's regional director for Southeast Asia.

"If that happens, death and disease due to untreatable infectious diseases will become the biggest obstacle to poverty alleviation, development, and global efforts to make the world a better and more healthy place."

Multidrug-resistant microbes are disease causing micro organisms which become resistant to medicines due to getting exposed to it in lesser quantity. This happens when antibiotics are taken on irregular intervals, and the dose is not completed, exposing them to smaller quantity than required to kill them.

"A multi-drug resistant microbe is one which does not respond to various medicines," says S.C. Gera, senior consultant internal medicines at Delhi's Fortis hospital.

"We are regularly seeing such patients who do not respond to antibiotic drugs, these are cases of multi-drug resistance," he says.

Giving the reason for development of such microbes, Gera says fault lies with both doctors and patients.

"At times, doctors don't diagnose the case properly so the antibiotic given does not work. Then the drug is changed many times and it leads to development of antibiotic resistance. Similarly, patients do not take the complete dose of medicine, or they take lesser doses a day than prescribed, leading to the microbes developing drug resistance," Gera says.

According to WHO, these drug-resistant microbes will have huge implication of economic health as well if the trend is not captured in time.

"When infections become resistant to first-line antibiotics, treatment is shift to second and third-line drugs which are much more expensive and sometimes more toxic as well. The drugs needed to treat multidrug-resistant tuberculosis (MDR-TB) are over 100 times more expensive than the first-line drugs," WHO said.

"In some countries, the high cost is prohibitive with the result that some of these cases can no longer be treated. Similarly, the emergence of resistance in HIV to currently effective drugs could destroy the hopes of survival for millions of people living with HIV," the statement added.

WHO also called upon states in South Asia to establish monitoring mechanisms to tackle the challenge.

"Discovery, development and distribution of new antibiotics is a long, drawn out and expensive process. After investing millions of dollars and years of research, when a new antibiotic becomes available, its misuse renders it ineffective in a very short time," the statement added.

## **Colour-coded Antibiotic**

### **Colour-coded Antibiotic stop misuse (H. T. 7.4.2011)**

Antibiotic medicines will soon be colour-coded to avoid overuse and misuse, which create drug-resistant superbugs that cannot be destroyed with the current crop of medicines.

Antibiotics will be colour-coded on the basis of toxicity, efficacy and other parameters under the newly-drafted antibiotic resistance policy expected to be rolled out in a couple of months. In all, 536 antibiotics will be colour-coded.

The policy covers over-the-counter sale of prescription antibiotics, the absence of a standard treatment protocol for antibiotics and fake medicines.

“We'll ensure a protocol is followed everywhere. There should be a deterrent for violators,” said Dr VM Katoch, director-general, Indian Council of Medical Research.

“You can get prescription drugs over the counter in many places and these have the potential of being over-used or misused, resulting in long-term side effects and drug-resistant organisms. The new policy will help check the loopholes responsible for their misuse,” said Dr Nata Menabde, World Health Organisation representative to India. WHO has provided technical assistance to the government in formulating the policy.

Popping antibiotics indiscriminately results in the bacteria becoming resistant to the first line of antibiotics, forcing doctors to prescribe stronger, more toxic and more expensive drugs to treat the disease. The drugs needed to treat multidrug-resistant tuberculosis, for example, are 100 times more expensive than standard drugs.

## **Antibiotic-resistant superbugs**

### **Antibiotic-resistant superbugs 'could take us to pre-Penicillin era' (New Kerala: 8.4.2011)**

The World Health Organisation has warned that the rise of antibiotic-resistant superbugs threatens to take us to pre-Penicillin era where even the smallest infection could be deadly.

The overuse and misuse of antibiotics, which is leading to ‘unprecedented levels’ of resistance, and a lack of development of new drugs means we could see current treatments become useless, reports the Telegraph.

Already 25,000 people die each year from superbugs in Europe and there are a number of bacteria, which are now resistant to all drugs.

That figure will increase to ever-greater numbers unless new more powerful antibiotics are developed and we stop overusing antibiotics.

"Antibiotics are a precious discovery, but we take them for granted, overuse and misuse them," said Zsuzsanna Jakab, WHO director for Europe.

"There are now superbugs that do not respond to any drug. We need to raise the alert that we are at a critical point in time where antibiotic resistance is reaching unprecedented levels, and new antibiotics are not going to arrive quickly enough," she said.

The WHO said abuse of antibiotics for humans and use in animals was fostering the emergence of antibiotic resistance and threatening to take the world to an era before the discovery of penicillin in the 1920s.

The problem is exacerbated because drug companies are put off from developing new antibiotics because they are not profitable enough.

## **Antibiotic**

### **Antibiotic Misuse Demands Urgent Action: WHO (Med India: 8.4.2011)**

Drug resistance, partly caused by misuse of antibiotics is killing hundreds of thousands of people a year and urgent action is needed on the issue, warns the World Health Organization.

"We're really seeing an accelerated evolution in the spread of this problem and the bottom line is that the problem is outpacing the solutions," said Keiji Fukuda, WHO assistant director general.

Health experts noted that few countries across the world had plans to deal with the problem, which was increasing amid increased consumption of antibiotics.

"In the vast majority of the countries -- there are no plans, no budgets, there are no accountability lines for this extremely serious problem," said Mario Raviglione, who heads the WHO's campaign against tuberculosis.

"Surveillance systems are weak, they are absent in many places," he noted, adding that the quality of antibiotics is questionable in some of these countries.

"Suboptimal doses are actually those that steer the mechanism to develop drug resistance. The use of antibiotics is often inappropriate, we call it irrational. It facilitates the creation of drug resistance."

In addition, the use of antibiotics in livestock production -- to promote growth and prevent diseases as well as to treat sick animals -- also contributes to increased drug resistance.

Any drug-resistant microbes developed in livestock can be transferred to humans through the food chain.

As microbes will always seek to become resistant to drugs, "the problem is never going to go away," noted Fukuda.

## **Cocaine-addiction**

### **Cocaine-addiction a major threat to health (The Tribune: 13.4.2011)**

Drug addiction continues to play havoc with the health of people in Punjab's both rural and urban areas. Use of opium, alcohol, sleeping pills, tranquillisers, narcotic pain killers codeine containing cough syrups, smack and heroin have already harmed lives of millions of Punjabis and created a major psycho-social problem in the state. Parental use of narcotic injections have contributed to the vast reservoir of patients with Hepatitis B, C and HIV. Cocaine is the new entrant to the lethal arsenal of the addictive substances being used in the state. It is the most expensive intoxicant and costs Rs 3500-Rs 6000 a gramme. Addicts may use upto one gramme a day.

Cocaine is a naturally occurring alkaloid extracted from the leaves of the coca shrub. It is known with its many street names like flake, "snow", nose, candy, etc. It is commonly known as coke. Its use has been known to mankind for the past 5000 years. It resembles white powder.

Unlike other drugs, cocaine does not cause physical dependence but leads to severe psychological dependence. Its dependence is much more severe than any other drug or chemical substance. A chronic cocaine user needs an increased dose of cocaine to "chase the high" which he felt at first use and he is unable to cut down its use.

When the use of cocaine stops after binge use, it is followed by a “crash” or extremely low state. Thus, a cocaine addict is always on a roller coaster ride. A cocaine addict starts ignoring other aspects of his life. Once the addict stops using cocaine he feels tired, lethargic, exhausted and panicky, and gets insomnia.

People who try cocaine often get hooked to the feeling of increased energy level. The quick high keeps the user feeling energetic and able to endure longer in physical activities. As the time passes he starts lying and stealing, and remaining absent at work. He also ignores his family.

Cocaine effects are extremely detrimental on the body and the consequences can be disastrous.

Cocaine use complicates pregnancy and affects the foetus directly. There is an increased risk of miscarriage, placental separation and still-birth. It can also cause many congenital abnormalities.

Management of cocaine dependence:

Cocaine treatment has two components: detoxification and rehabilitation. The first step is to stop the use of cocaine and an addict may experience anxiety, restlessness, intense craving and depression during withdrawal, which is symptomatically managed. Following detoxification the patient has to be adequately rehabilitated.

There is no proven pharmacological treatment for cocaine dependence. A combination of drug treatment and counseling is used in most cases. Recently a new vaccine for cocaine dependence has shown positive results. The vaccine makes the body produce antibodies to cocaine, which later on deactivate the cocaine molecules in the blood before it gets to the brain.

## **Caffeine**

### **Caffeine contributes to development of diabetes (The Tribune: 13.4.2011)**

A study has suggested that caffeine disrupts glucose metabolism and may contribute to the development and poor control of type 2 diabetes, which is a major public health problem. The study examines the latest evidence, contradicting earlier studies, suggesting a protective effect of caffeine. James Lane, Duke University, describes numerous studies that have demonstrated caffeine's potential for increasing insulin resistance (impaired glucose tolerance) in adults that do not have diabetes, an effect that could make susceptible individuals more likely to develop the disease. In adults with type 2 diabetes,

studies have shown that the increase in blood glucose levels that occurs after they eat carbohydrates is exaggerated if they also consume a caffeinated beverage such as coffee.

## **Antibiotic Resistance**

### **Antibiotic Resistance Spreads Rapidly Between Bacteria (Science Daily: 13.4.2011)**

The part of bacterial DNA that often carries antibiotic resistance is a master at moving between different types of bacteria and adapting to widely differing bacterial species, shows a study made by a research team at the University of Gothenburg in cooperation with Chalmers University of Technology.

The results are published in an article in the scientific journal Nature Communications.

More and more bacteria are becoming resistant to our common antibiotics, and to make matters worse, more and more are becoming resistant to all known antibiotics. The problem is known as multi-resistance, and is generally described as one of the most significant future threats to public health. Antibiotic resistance can arise in bacteria in our environment and in our bodies. Antibiotic resistance can then be transferred to the bacteria that cause human diseases, even if the bacteria are not related to each other.

A large proportion of gene transfer between bacteria takes place with the aid of what are known as conjugative plasmids, a part of the bacterial DNA. A plasmid can only exist and multiply inside a cell, where it uses the cell's machinery, but can then be transferred to another cell and in that way spread between bacteria.

The research team has studied a group of the known carriers of antibiotic resistance genes: IncP-1 plasmids. Using advanced DNA analysis, the researchers have succeeded in mapping the origin of different IncP-1 plasmids and their mobility between different bacterial species. "Our results show that plasmids from the IncP-1 group have existed in, and adapted to, widely differing bacteria. They have also recombined, which means that a single plasmid can be regarded as a composite jigsaw puzzle of genes, each of which has adapted to different bacterial species," says Peter Norberg, a researcher in the Institute of Biomedicine at the University of Gothenburg. This indicates very good adaptability and suggests that these plasmids can move relatively freely between, and thrive in, widely differing bacterial species.

"IncP-1 plasmids are very potent 'vehicles' for transporting antibiotic resistance genes between bacterial species. Therefore, it does not matter much in what environment, in what part of the world, or in what bacterial species antibiotic resistance arises. Resistance genes could relatively easily be transported from the original environment to bacteria that infect humans, through IncP-1 plasmids, or other plasmids with similar properties, as

'vehicles'," says Professor Malte Hermansson of the Department of Cell and Molecular Biology at the University of Gothenburg.

It has been known for some time that plasmids are important in the spread of antibiotic resistance. The research team's findings show that IncP-1 plasmids can move, and have moved, between widely differing bacterial species and in addition have interacted directly with one another, which can increase the potential for gene spreading.

## **Injectable gel**

### **Injectable gel could ease crippling joint pains (New Kerala: 15.4.2011)**

An injectable gel could ease the crippling joint pains that a large number of rheumatoid arthritis and osteoarthritis patients suffer from.

"We think this platform could be useful for multiple medical applications, including the localised treatment of cancer...and cardiovascular disease," said Jeffrey Karp. His research team developed the potentially new way to treat these two conditions at Brigham and Women's Hospital.

Arthritis is a good example of a disease that attacks specific parts of the body. Conventional treatments for it, however, largely involve drugs taken orally, reports the Journal of Biomedical Materials Research: Part A.

Not only do these take weeks to exert their effects, they can have additional side effects. That is because the drug is dispersed throughout the body, not just at the affected joint, according to a Brigham statement.

Further, high concentrations of the drug are necessary to deliver enough to the affected joint, which runs the risk of toxicity.

"There are many instances where we would like to deliver drugs to a specific location, but it's very challenging to do so without encountering major barriers," says Karp.

For example, you could inject a drug into the target area, but it won't last long - only minutes to hours - because it is removed by the body's highly efficient lymphatic system.

What about implantable drug-delivery devices? Most of these are composed of stiff materials that in a dynamic environment like a joint can rub and cause inflammation on their own.

Further, most of these devices release medicine continuously, even when it's not needed. Arthritis, for example, occurs in cycles characterised by flare-ups, then remission.



"The Holy Grail of drug delivery is an autonomous system that (measures) the amount of drug released in response to a biological stimulus, ensuring that the drug is released only when needed at a therapeutically relevant concentration," Karp wrote.

## **National medicine system**

### **Ayurveda will emerge national medicine system: Ramdev(New Kerala: 15.4.2011)**

Spiritual leader and Yoga Guru Baba Ramdev today said Ayurveda will become a national medicine system in another 10 to 15 years.

inaugurating the Rs 20 crore JSS Ayurveda Medical College and Hospital on the outskirts of the city, he said Ayurveda medicine was the only medicine in the country which could cure any kind of disease.

The age-old traditional system had a history and this system had even been practiced by the western countries with more emphasis given by the governments, he added.

About Rs 50,000 lakh crore of Ayurveda medicine were demanded across the world and a country like India, which was known for this kind of medicine system, had great opportunity to earn Rs 25 to 50 lakh crore by way of producing medicines and add to the country's economy, he pointed out.

## **Antibiotics**

### **Antibiotics Cure Anthrax in Animal Models (Science Daily: 20.4.2011)**

In the absence of early antibiotic treatment, respiratory anthrax is fatal. The 2001 bioterrorism attacks in the US killed four people, out of 22 infected (10 of them with respiratory anthrax), despite massive antibiotic administration, probably because therapy did not begin until the disease had reached the fulminant stage. But a multi-agent prophylaxis initiated within 24 hours post-infection prevented development of fatal anthrax respiratory disease, and treatment combining antibiotics with immunization with a protective antigen-based vaccine conferred long-term protective immunity against reestablishment of the disease, according to a study in the April 2011 issue of the journal

Antimicrobial Agents and Chemotherapy. This study is the first to characterize the severity of respiratory anthrax that can be cured.

The researchers, all from the Israel Institute for Biological Research, Ness-Ziona, tested both the efficiency of different therapeutic approaches in preventing fatal disease from developing in infected animals, and their ability to cure animals in which the disease had developed into a systemic, septic phase. Rescue remains possible with appropriate agents even if initiated two days after infection.

Treatment initiated 24 hours after infection with any of four antibiotics protected the animals during treatment, but many of the animals died of anthrax after treatment was stopped, the antibiotics conferring degrees of protection ranging from 10-90 percent. Combining antibiotic treatment with a protective antigen vaccine left all animals fully protected even after the end of treatment.

Animals whose treatment was delayed beyond 24 hours post-infection developed varying degrees of bacteremia and toxemia. Treatment with doxycycline cured both sick guinea pigs and rabbits exhibiting low to moderate bacteremia; adding protective antigen vaccine to the mix boosted the level of bacteremia that was curable 10-fold in the guinea pigs and 20-fold in the rabbits. But ciprofloxacin plus a monoclonal anti-protective antigen antibody was still more effective.

In all cases, the surviving animals developed immunity against anthrax via subcutaneous challenge.

"Our results suggest that doxycycline and ciprofloxacin are efficient antibiotics to treat anthrax, not only as post-exposure prophylaxis, but also during the systemic phase of the disease," the researchers write. "Treatment with both antibiotics can cure guinea pigs and rabbits in an advanced stage of systemic anthrax"

## **Calcium supplements**

### **Calcium supplements cause heart problems in women? (New Kerala: 25.4.2011)**

There is growing evidence that calcium supplements increase the risk of heart attacks among older women, say researchers.

Calcium supplements are often prescribed to older (postmenopausal) women to maintain bone health. High blood calcium levels are linked to calcification (hardening) of the arteries, which may also help to explain these results.

Though the Women's Health Initiative (WHI) study, a seven-year trial of over 36,000 women, found no cardiovascular effect of taking combined calcium and vitamin D supplements, but a team led by Prof Ian Reid at the University of Auckland, re-analysed the WHI results to evaluate the effects of calcium supplements, with or without vitamin D, on the risk of cardiovascular events, the British Medical Journal reports, citing an Auckland varsity statement.

Reid's team analysed data from 16,718 women who were not taking personal calcium supplements at the start of the trial and found that those allocated to combined calcium and vitamin D supplements were at an increased risk of cardiovascular events, especially heart attack.

Conversely, in women who were taking personal calcium supplements at the start of the trial, combined calcium and vitamin D supplements did not alter their usual cardiovascular risk.

The authors suspect that the abrupt change in blood calcium levels after taking a supplement causes the adverse effect, rather than it being related to the total amount of calcium consumed.

Further analyses -- adding data from 13 other trials, involving 29,000 people altogether -- also found consistent increases in the risk of heart attack and stroke associated with taking calcium supplements, with or without vitamin D.

These analyses led the study authors to conclude that these data justify a reassessment of the use of calcium supplements in older people.

## **Drug Abuse and Depression**

### **New Discoveries May Lead To Insights into Drug Abuse and Depression(Medical News Today: 26.4.2011)**

A team of scientists from Columbia University College of Physicians and Surgeons and Weill Cornell Medical College has shed light on the molecular workings of transporter proteins, molecular machines embedded in the cell membranes of neurons that modulate the transfer of signals between cells and recycle neurotransmitters.

The research, published today in the journal Nature, reveals with unprecedented detail how the molecule performs its task, says one of the senior authors, Dr. Jonathan Javitch, the Lieber Professor of Experimental Therapeutics in Psychiatry and professor of pharmacology in the Center for Molecular Recognition at Columbia University Medical

Center. "This level of understanding may ultimately lead to improved treatments for psychiatric disorders and increase our understanding of how drugs such as cocaine work."

In the brain, one neuron communicates to another by releasing chemicals called neurotransmitters into the gap between them, called the synapse. To stop the signal, specialized transporters must remove the released neurotransmitter from the synapse by pumping it back into the releasing cell. In the treatment of some diseases it is beneficial, however, to allow the neurotransmitters to build up in the synapses. Antidepressants make this possible by interfering with particular transporters, as do stimulant drugs like cocaine and amphetamines.

Neuronal cells have different transporters. One family of transporters, known as neurotransmitter/sodium symporters (NSSs) are specialized for the uptake of certain neurotransmitters, including dopamine, noradrenaline and serotonin. They are named symporters because the transport process requires energy to concentrate neurotransmitter inside neurons -- the energy required is provided by the imbalance of sodium ions across the cell membrane. Thus, sodium ions flow down their concentration gradient into the neurons through the NSSs, thereby allowing neurotransmitters to move back into the cell where their concentration is higher than outside. But until now, exactly how these transporters function has been a mystery.

"The transporters themselves are of enormous interest both medically and specifically to the National Institute on Drug Abuse because, fundamentally, they are essential for signaling," says one senior author, Dr. Harel Weinstein, chairman and Maxwell M. Upson Professor of Physiology and Biophysics, and director of the Institute for Computational Biomedicine at Weill Cornell Medical College. "The better we understand neuronal signaling, the better we understand brain function, disease and drug addiction." To figure out how transporters work, it is first necessary to study their molecular structure, Dr. Weinstein says. Because these membrane proteins are so flexible and prefer lipid-rich surroundings, it is more difficult to obtain their crystal structures than those of soluble proteins or DNA. But in 2005, scientists characterized the structure of a bacterial equivalent of NSSs called the leucine transporter (LeuT). This protein is easier to analyze structurally, as it is available in large quantities and is stable because it is found in heat-loving bacteria that live in extreme environments (proteins have to be very stable and rigid to withstand high temperatures). Although LeuT transports amino acids such as leucine and alanine, rather than neurotransmitters, it closely resembles mammalian NSSs in both structure and function.

Dynamic Light Scattering - Molecular size and molecular weight by dynamic light scattering - [www.AvidNano.com](http://www.AvidNano.com)

Ansaris Inc - Fragment Based De Novo Drug Design - [ansarisbio.com](http://ansarisbio.com)

Blood-to-Brain Absorption - Rapid & ready to use »in vitro« Blood-to-Brain Absorption kit. - [SOVICELL.com](http://SOVICELL.com)

But structural analyses alone provide only snapshots of the transporter molecule. To elucidate the entire molecular sequence of LeuT action, the team performed imaging studies using single-molecule fluorescence resonance energy transfer (smFRET) under the leadership of the other senior author, Dr. Scott Blanchard, associate professor of physiology and biophysics at Weill Cornell Medical College. Unlike traditional biochemical approaches, this method does not simply generate information about the average movements of a collection of proteins. "Applying single-molecule imaging to the transporter gave us a unique view of the dynamics enabling the function of the transporters, because it allowed us to look at individual molecules and watch their movements in real time rather than time and ensemble averages," Dr. Blanchard says.

Last year, the researchers used smFRET to collect the first such single-molecule data for a membrane protein, and these results were also published in *Nature*. In their most recent experiments, they used the technique to monitor changes in LeuT conformation and dynamics by labeling moving parts of the protein with fluorescent dyes that emit distinct amounts of light when the distance separating them changes. As the transporter protein moves during function, time-dependent changes in distance between the fluorophores could be directly imaged to extract the first quantitative insights into the motions underpinning the transport mechanism.

Using powerful computational simulations, the researchers had predicted such movements through previous studies aimed at understanding how the transported molecule changes the conformation of LeuT. The new experiments demonstrated that alanine binding to LeuT increased the rate of the transporter's flickering between two conformations: facing outward, as if ready to accept substrates from outside the cell ("inward-closed"), and facing inward, as if releasing its contents into the cell ("inward-open"). How the presence of sodium affects the transporter's response to the binding of the transported substrate, alanine, was also revealed from these experiments: Sodium was essential for the alanine-enhanced dynamics. Surprisingly, alanine did not alter the total amount of time spent in either the open or closed state.

By contrast, the binding of sodium ions alone, without alanine, was found to decrease the transition rate between open and closed states and stabilized the closed state. The antidepressant clomipramine was shown to block the measured effects of alanine and to constrain the transporter in its inward-closed state, thus inhibiting transport. These findings contrast with the traditional view that substrate binding simply changes the conformation from one state to another in a single smooth transition, Dr. Weinstein says. "Unless we understand the dynamics, we can't really understand how the drug molecules work," he explains.

The researchers also report how LeuT utilizes two binding sites on the outward-facing side to enable its function, consistent with their previous findings. Their latest evidence may help to settle a controversy about the number of binding sites in this transporter, Dr. Weinstein says. Thus, they found that the two binding sites must work cooperatively to transport molecules. When either site was mutated, alanine was incapable of causing the transporter to flicker between open and closed states. Therefore, substrate binding to both sites is necessary for altering transporter dynamics and recycling molecules.

"These results may lead to key insights into which binding sites mediate the specific effects of various drugs," says Dr. Javitch. Using computer simulations, the researchers described the molecular events that link substrate binding to changes in transporter conformation. In brief, binding at one site induces structural changes that propagate to the other site, causing the transporter to release its contents into the cell. "We're looking at an unprecedented molecular level at the mechanics of this protein and how the binding of the substrates causes conformational changes," Dr. Javitch says. "We think that our observations have broad relevance to how other sodium-dependent transport processes work."

The results will likely translate to mammals, including the transporters in human nerve cells, as bacterial and mammalian transporters are nearly identical, Dr. Weinstein says. In the future, the team plans to investigate how drugs induce conformational change in human proteins.

The study's equally contributing lead authors are Dr. Yongfang Zhao of the Center for Molecular Recognition at Columbia University; Daniel Terry, a graduate student in the Blanchard and Weinstein labs, enrolled in the Tri-Institutional Program in Computational Biology and Medicine at Weill Cornell Medical College; and Dr. Lei Shi, assistant professor of physiology and biophysics and of computational biophysics at Weill Cornell Medical College. The study is also co-authored by Dr. Matthias Quick, assistant professor of clinical neurobiology in psychiatry and in the Center for Molecular Recognition at Columbia University Medical Center.

## **Nasal spray**

### **Sniff away the blues with this nasal spray (The Times of India: 27.4.2011)**

London: Scientists have developed a new nasal spray which they claim could help beat depression and anxiety within two hours. The spray, which contains a natural brain chemical, is designed to penetrate the brain areas involved in mood.

According to researchers, the spray could be effective within two hours, compared to other antidepressants which take several days to work.

In a trial at the Mount Sinai School of Medicine in New York, researchers are investigating the use of the spray containing neuropeptide Y — the chemical which is used by nerve cells in the brain to communicate with each other.

According to scientists, some of the brain chemicals, especially the 'neuropeptide Y', are thought to be involved in how the brain regulates behaviour and mood. The new trial, which involves 15 volunteers aged 25 to 45, is designed to investigate how well the spray and neuropeptide Y work in the brain, and the effects will be compared with a placebo. P

Breakthrough in hepatitis C treatment:

A new drug that cures hepatitis C in less time could bring in a revolution in the treatment of the viral disease which affects millions of people worldwide, American researchers said in research released on Tuesday. PTI

## **Nasal Spray**

### **A nasal Spray to beat depression (The Asian Age;:27.4.2011)**

Scientists have developed a new nasal spray which they claim could help beat depression and anxiety within two hours.

The spray, which contains a natural brain chemical, is designed to penetrate the brain areas involved in mood. According to researchers, the spray could be effective within two hours, compared to other antidepressants which take several days to work, the Daily Mail reported.

It is estimated that one in four women and one in ten men will require treatment for depression at some time in their lives. One of the downsides of anti-depressants is that they can take a long time to work -between two and eight weeks.

In a trial at the Mount Sinai School of Medicine in New York, researchers are investigating the use of the spray containing neuropeptide Y -the chemical which is used by nerve cells in the brain to communicate with each other. According to scientists, some of the brain chemicals, especially the "neuropeptide Y", are thought to be involved in how the brain regulates behaviour and mood.

This compound is the most abundant peptide in the human brain, and is found in nerve fibres alongside another chemical called norepinephrine, which is thought to be involved in regulating mood and anxiety.

Past research has also shown that stress leads to the release of the chemical, and a recent study by University of Michigan found that people with low neuropeptide levels may be at higher risk of developing depression. Though research has suggested neuropeptide Y may be effective for treating psychiatric disorders, there have been problems in moving the compound into the brain.

## **Antibiotic**

### **Antibiotic May Prove Beneficial to Preterm Infant Lung Health, Study Suggests(Science Daily: 27.4.2011)**

A study performed by University of Kentucky researchers shows promise for the use of azithromycin in treating Ureaplasma-colonized or infected premature infants to prevent bronchopulmonary dysplasia (BPD).

The study, published in Pediatric Pulmonology, showed subjects colonized or infected with the Ureaplasma bacteria developed BPD or died 73 percent of the time in the azithromycin-treated group, compared to 94 percent of the time in the placebo group.

Bronchopulmonary dysplasia is a chronic lung disorder characterized by inflammation and scarring in the lungs. It is common among premature infants, whose lungs are not fully developed before birth.



This disorder can lead to chronic lung damage or death. Many infants who survive are at a greater risk for having recurrent respiratory infections, such as pneumonia or bronchiolitis.

The presence of the *Ureaplasma* bacterium is a risk factor in developing BPD. This bacterium causes inflammation in the lungs and can also lead to meningitis, pneumonia or septicemia. It is passed on from mother to child. An estimated 80 percent of women are already colonized with it, and nearly 45 percent of extremely preterm infants are affected by it.

"Current preventative therapies for bronchopulmonary dysplasia are limited," said Dr. Hubert O. Ballard, the UK neonatologist leading the study. "Because the inflammation from a *Ureaplasma* infection often leads to BPD, and because this bacterium is so easily spread to infants from the mother, we sought to find out if the anti-inflammatory benefits of azithromycin could help prevent the disorder from developing."

The study was performed on a group of 220 infants admitted to the UK Neonatal Intensive Care Unit from September 2004 to August 2008. Enrollment criteria included a birth weight of less than 1,250 grams, the use of intermittent mechanical ventilation for fewer than 12 hours, and an age of under 72 hours.

Upon enrollment, each infant was randomized to receive azithromycin or a placebo for a total of six weeks. Infants testing positive for *Ureaplasma* were placed in a separate subgroup of the study.

Ballard, et al, previously published a pilot study that demonstrated a possible benefit of azithromycin prophylaxis in infants weighing less than 1,000 grams, but the original study excluded patients who tested positive for the *Ureaplasma* bacteria.

Neither the previous study nor the current study demonstrated a statistically significant benefit to using azithromycin therapy to prevent BPD in preterm infants who were not colonized or infected with *Ureaplasma*.

Though the results of the study show potential for preventing bronchopulmonary dysplasia in *Ureaplasma*-colonized or infected patients, Dr. Ballard stressed that a larger multi-centered trial is needed to properly assess the benefits of azithromycin for these subjects.

"Our research demonstrates the benefit of treating preterm infants with azithromycin who are colonized or infected with *Ureaplasma*. To date, this is the largest single-center study to evaluate azithromycin use in preterm infants," Ballard said. "However, further studies are required to evaluate azithromycin therapy for the routine treatment of *Ureaplasma* colonization/infection in the preterm population."

## **Cholesterol-lowering drugs**

### **Cholesterol-lowering drugs may improve blood flow after stroke (New Kerala: 28.4.2011)**

Taking cholesterol-lowering drugs known as statins may help may help restore blood flow after a stroke, according to researchers at Washington University School of Medicine in St. Louis.

The research involved 31 patients with ischemic stroke, a disorder when a clot blocks blood flow to part of the brain.

In 12 patients who were already taking statins to control their cholesterol, blood flow returned to the blocked areas of the brain more completely and quickly.

"We've known that patients on statins have better stroke outcomes, but the data in this study suggest a new reason why: Statins may help improve blood flow to brain regions at risk of dying during ischemic stroke," said senior author Jin-Moo Lee, director of the cerebrovascular disease section in the Department of Neurology.

"If that turns out to be the case, we may want to consider adding statins to the clot-busting drugs we normally give to acute stroke patients," he said.

The team first established that patients were having an ischemic stroke and treated them with a clot-busting drug.

An MRI scan was performed during treatment with the clot-busting drug and again three hours later to assess the restoration of blood flow to blocked areas.

"To our knowledge, this is the first time someone has looked at the effects of statins on restoration of blood flow using brain tissue-based measurements instead of looking at the opening of blood vessels," said lead author Andria Ford.

"It's harder to do, but we feel it gives us more accurate measurements," she added.

Within three hours after treatment, blood flow restoration in the 12 patients already on statins averaged 50 percent.

In the 19 patients not taking statins, though, the average was 13 percent.

## **Antibiotics**

### **Antibiotics, Not Surgery, May Better Treat Appendicitis If Appendix Hasn't Burst, Study Suggests (Science Daily: 29.4.2011)**

Antibiotics rather than surgery may be the better treatment for cases of appendicitis in which the appendix hasn't burst, according to a new study.

The study's authors say the findings suggest that nonperforating appendicitis, as the disease is called when the appendix hasn't burst, may be unrelated to perforating appendicitis, in which the appendix has burst.

Instead, the study found that nonperforating childhood appendicitis, which historically has been treated with emergency surgery, seems to be a disease similar to nonperforating adult diverticulitis, which is often treated with antibiotics.

"It is assumed, but has never been proved, that appendicitis always perforates unless appendectomy is performed early in its course," said the authors. "There is a growing body of evidence to suggest that this is not the case."

The study, "Epidemiological similarities between appendicitis and diverticulitis suggesting a common underlying pathogenesis," was reported in the Archives of Surgery.

Hospital discharge records reveal correlation

Childhood appendicitis and adult diverticulitis share many similarities, including association with colon hygiene and a low intake of fiber in the diet.

Those shared epidemiological features prompted researchers to examine whether the two might be similar, according to economist Thomas B. Fomby at Southern Methodist University in Dallas.

A statistical sampling of data from U.S. hospital discharge records revealed a correlation between nonperforating appendicitis and nonperforating diverticulitis.

"We used a technique called cointegration to investigate common movements in epidemiologic data series," said Fomby, a professor in SMU's Department of Economics, who led the statistical analysis with statistician Wayne A. Woodward, professor and department chair in SMU's Department of Statistical Science.

Lead author on the study was Edward H. Livingston, M.D., in the division of Gastrointestinal and Endocrine Surgery at University of Texas Southwestern Medical School, Dallas; with the Department of Surgery, Veterans Affairs Medical Center Dallas; and in the Department of Bioengineering, University of Texas at Arlington. Also co-authoring was Robert W. Haley, M.D., in the Department of Internal Medicine-Epidemiology, UT Southwestern Medical School, and a past recipient of the SMU Distinguished Alumni Award.

Regional and national data move together over time

The study looked at 27 years of data from the National Hospital Discharge Survey, which is compiled annually by the Centers for Disease Control and Prevention. The analysis specifically compared national data and regional data for children with appendicitis and adults with diverticulitis who were admitted to U.S. hospitals between 1979 and 2006.

The statistical methodology called panel cointegration allowed the researchers to sift through eight different combinations of the two diseases, both by region and nationally, to see whether they vary together across time and to eliminate the possibility of coincidence or a chance correlation, Fomby said.

"We analyzed all the national data, and then found the same thing in every region also," Fomby said. "That reinforced what we were finding at the national level."

The authors' analysis shows that although the annual incidence rates of adult nonperforating diverticulitis and child nonperforating appendicitis changed greatly during the past 25 years, their secular patterns -- long-term trends -- followed the same general patterns, overall as well as region by region, according to the authors.

"These secular changes were significantly cointegrated, meaning that the incidence rates changed in time together, suggesting that nonperforating appendicitis and nonperforating diverticulitis could be different manifestations of the same underlying process."

Statisticians and economists have applied this kind of analysis to international finance, macroeconomics and other areas, but it's not been used to any extent in medical epidemiology, Fomby said. Two economists, Clive Granger and Robert Engle, won the 2003 Nobel Prize in Economics for their invention of the technique.

Appendicitis, diverticulitis may be similar diseases

"Childhood appendicitis and adult diverticulitis seem to be similar diseases, suggesting a common underlying pathogenesis," write the authors. Secular trends for the nonperforating and perforating forms are strikingly different, they said.

"At least for appendicitis, perforating disease may not be an inevitable outcome from delayed treatment of nonperforating disease. If appendicitis represents the same pathophysiologic process as diverticulitis, it may be amenable to antibiotic rather than surgical treatment."

Appendicitis is a painful infection in the area of the lower right abdomen that typically affects younger people, age 10 to 30, according to the National Digestive Diseases Information Clearinghouse within the National Institutes of Health. It is the No. 1 cause of emergency abdominal surgeries, according to NDDIC.

Appendicitis is caused by blockage in the appendix, a fingerlike pouch jutting from the large intestine, according to NDDIC. Among the various causes of the blockage can be feces, abdominal trauma or inflammatory bowel disease, the agency says.

Diverticulitis, which is more common among people older than 60, occurs when pouches that have developed in the lining of the gastrointestinal tract become inflamed and sometimes infected, according to NDDIC. It is often treated with antibiotics, the authors say.

Perforating appendicitis not a progression of nonperforating appendicitis?

"These findings seem incompatible with the long-held view that perforating appendicitis is merely the progression of nonperforating disease where surgical intervention was delayed too long," write the authors. "If perforating appendicitis was simply a manifestation of nonperforating appendicitis not treated in a timely manner, the secular trends should have been statistically similar, which they were not."

Both diseases have increased in incidence as cleanliness in the Western world has improved, in populations with higher socioeconomic status, and where grain-processing technologies have lowered dietary fiber content, the authors say.

In a previous study, the researchers demonstrated changes in the annual incidence rates of appendicitis. The new study demonstrated changes for nonperforating diverticulitis as well.

## **DOMESTIC DRUG**

### **DOMESTIC DRUG MAKERS SET TO INVOKE COMPULSORY LICENSING ROUTE BY JUNE (Business Standard: 2.5.2011)**

JOE C MATHEW & NAYANIMA BASU New Delhi, 1 May

Compulsory licensing provisions under the Indian Patent Act will be put to test soon, as local drug makers are planning to use it to make low-cost versions of patented drugs.

At least six blockbuster drugs of foreign drug multinationals — Novartis, Pfizer, Merck and Bayer, among others — may be shortlisted by the domestic makers, industry sources say. The first compulsory licensing application should reach the patent office by mid2011, they add.

Under the Patents Act, domestic companies can approach innovator companies with a request to permit them to manufacture and sell generic copies of medicines that enjoy patent protection in India after a minimum period of three years. If the innovator company fails to reach an agreement, which primarily involves a royalty fee for each generic drug sold, to be paid to them, the generic manufacturer can approach the patent office for a compulsory licence.

Two domestic drug makers, Cipla and Natco, are known to have already written such requests to global pharmaceutical MNCs for such a contract to manufacture an AIDS drug and a cancer drug, respectively. Natco's request for permission to manufacture a generic version of cancer drug Sorafenib has been rejected by Bayer. Cipla is awaiting a response from Merck on AIDS drug Raltegravir. The next step, following an unsuccessful attempt to enter into a contract, will be to apply for a compulsory license.

According to sources, three cancer drugs — Nilotinib, exclusively marketed by Novartis under the brand name Tasigna; Sunitinib, marketed by Pfizer as Sutent; and Bristol Myers Squibb's Dasatinib (brandname Sprycel) — are the other products eyed by domestic pharma companies for compulsory licensing opportunities.

The industry estimates the combined annual turnover of such medicines to be around

₹300 crore. "Most of these are sold through direct channels and the market size is difficult to be assessed at the moment. However, entry of generic products, if and when it happens, can increase the affordability of these medicines by at least 10 times, thus benefiting lakhs of critically ill patients," a domestic industry representative said.

The commerce ministry, which administers patent laws, is awaiting such compulsory licensing applications. "Companies had not been approaching the government to apply for compulsory licensing and foreign companies are finding an easy way out to enter the India market with joint ventures and takeovers," said a government official. The official also said the government was planning to revive the country's drug manufacturing capabilities in the public sector to enable life-saving drugs at an affordable cost.

To make cheaper versions of patented drugs; at least six blockbuster drugs of foreign multinationals may be shortlisted

An employee performs a quality check at a drug maker's production site. Under the Patents Act, domestic companies can approach innovator companies with a request to permit them to manufacture and sell generic copies of medicines that enjoy patent protection in India, after a minimum period of three years

## **HIV Drugs**

### **HIV Drugs Can Also Target Tropical Parasites, Study Suggests (Science Daily: 3.5.2011)**

Scientists have discovered that drugs used to treat HIV may also one day become lifesaving drugs targeted at parasitic diseases such as leishmaniasis and malaria. According to new research published in The FASEB Journal, scientists have identified the target of action for some anti-HIV drugs with known abilities to kill serious pathogenic parasites. While scientists have long known that these HIV drugs can kill parasites, exactly how they work was previously unknown. Researchers discovered that a particular protein called Ddi 1 from Leishmania parasites is sensitive to anti-HIV inhibitors. This research could one day significantly change the treatment of parasitic diseases.

"People in developing countries can be exposed to parasitic diseases such as malaria and leishmaniasis that can kill millions of people, so new and effective drugs are urgently needed to combat these infections," said Colin Berry, Ph.D., a researcher involved in the work from the Cardiff School of Biosciences at Cardiff University in Cardiff in the United Kingdom. "The use of existing anti-HIV agents has indicated that there is a potential target in some parasites and by identifying the protein responsible, we hope to exploit this weakness in the parasite to develop new and effective therapeutics to combat these devastating diseases."

Scientists studied yeast that lacked the Ddi 1 protein and found that high levels of proteins were secreted. The addition of the Leishmania Ddi 1 protein returned the yeast to normal low secretion levels until HIV proteinase inhibitors were added. These inhibitors blocked the ability of Leishmania Ddi 1 to reduce secretions and showed that the Ddi 1 protein interacted with the drugs. Additionally, when researchers used human Ddi 1, they identified drugs that were good at blocking the activity of the Leishmania protein, but which were much weaker against the human equivalent, suggesting that possible side effects in a future drug could be reduced. Study data support the potential use of this class of compounds for leishmaniasis, but do not yet support the use of existing marketed compounds in a clinical context. The potency of the existing compounds indicates that they may be a useful start point for further exploratory chemistry.

"Like HIV, parasitic diseases have been and still are a serious threat to human health world-wide," said Gerald Weissmann, M.D., Editor-in-Chief of The FASEB Journal. "Millions die each year from these maladies and we desperately need new drugs. How fortuitous that agents designed against one killer, HIV, may now be turned against parasitic diseases such as leishmaniasis and malaria."

## **Diabetes Drugs'**

### **Popular Diabetes Drugs' Cardiovascular Side Effects Explained (Science Daily: 4.5.2011)**

Drugs known as thiazolidinediones, or TZDs for short, are widely used in diabetes treatment, but they come with a downside. The drugs have effects on the kidneys that lead to fluid retention as the volume of plasma in the bloodstream expands.

TZDs usually increase body weight by several kilograms," said George Seki of the University of Tokyo. "However, TZDs sometimes cause massive volume expansion, resulting in heart failure."

Now his team reports in the May issue of Cell Metabolism, a Cell Press publication, that those negative consequences arise in more than one way. The findings may lead to the development of improved diabetes therapies.

TZDs act on a hormone receptor known as peroxisome proliferator-activated receptor  $\gamma$  (PPAR $\gamma$ ). PPAR $\gamma$  is a master gene of fat cell biology and differentiation, Seki explained, making it an ideal target for diabetes treatment.



However, TZDs also lead to changes in gene expression that enhance the sodium transport system of the kidney and lead to the reabsorption of water and salt, as scientists knew. But, Seki said, that mechanism alone didn't seem to be enough to explain the volume expansion.

Seki's team has found that TZDs also have direct effects on channels in the kidney known as the proximal tubules. TZDs rapidly stimulate sodium-coupled bicarbonate absorption from renal proximal tubules. Inhibitors of PPAR $\gamma$  or other players in the pathway suppress that stimulation, they report.

The researchers confirm that those effects occur regardless of whether PPAR $\gamma$  can bind DNA to influence the activity of other genes.

The discovery helps to explain the speed with which side effects of TZDs can sometimes arise and may lead to strategies to improve insulin resistance without the accompanying severe cardiovascular side effects, the researchers say.

"Massive volume expansion in human subjects usually occurs after weeks of use of TZDs," they wrote. "However, it can also occur as rapidly as 4 days after use of TZDs, supporting the involvement of multiple mechanisms. Thus, combination therapy with different diuretics targeting both renal proximal tubules and the distal nephrons could be a therapeutic option in case of TZD-induced massive volume expansion."

The findings also raise the possibility that other small molecules might bind PPAR $\gamma$  in slightly different ways, leading to different biological responses, they added. In fact, several selective PPAR $\gamma$  modulators have already been developed and appear to induce less fluid retention, at least in animals. Whether that will prove to work in humans to prevent massive fluid retention remains to be seen.

## **Painkillers**

### **Painkillers like ibuprofen may be risky for heart attack patients (New Kerala: 11.5.2011)**

A new study has warned that even short-term use of some painkillers like ibuprofen could be dangerous for people who've had a heart attack.

Researchers analyzed the duration of prescription non-steroidal anti-inflammatory drugs (NSAIDs) treatment and cardiovascular risk in a nationwide Danish cohort of patients with prior heart attack.

They found the use of NSAIDs was associated with a 45 percent increased risk of death or recurrent heart attack within as little as one week of treatment, and a 55 percent increased risk if treatment extended to three months.

In the current study, researchers undertook the first time-to-event analysis of a nationwide group and investigated if the duration of prescription NSAID treatment influenced the cardiovascular risk among heart patients. Among 83,697 heart attack survivors (average age 68; 63 percent men), 42.3 percent had a least one prescription for an NSAID.

The most common NSAIDs prescribed were ibuprofen (23 percent) and diclofenac (13.4 percent). Selective COX-2 inhibitors — rofecoxib (4.7 percent) and celecoxib (4.8 percent) — were also used

The non-selective NSAID diclofenac was associated with early onset risk similar to the selective COX-2 inhibitor rofecoxib.

All NSAIDs were associated with an increased risk of death or recurrent heart attack, with diclofenac having the highest risk (nearly three times).

"Overall, NSAID treatment was associated with a statistically significant increased risk of death," said Anne-Marie Schjerning Olsen, lead author of the study and research fellow at Copenhagen University in Hellerup, Denmark.

"Our results indicate that there is no apparent safe therapeutic window for NSAIDs in patients with prior heart attack, she added.

The research has been published in *Circulation: Journal of the American Heart Association*.

## **Nitric oxide**

### **Nitric oxide disables pain crises of sickle cell disease (World Newspapers: 11.5.2011)**

A new study has suggested that nitric oxide gas directly impacts the source of the classic, disabling pain crises of sickle cell disease.

The short-acting gas helps unglue hemoglobin molecules that stick together, forming long chains that ultimately deform red blood cells and prompting a cellular pileup in small blood vessels and pain, said C. Alvin Head, Chairman of GHSU's Department of Anesthesiology.

The findings get scientists closer to understanding why red blood cells sickle and potentially to an easy-to-use, non-addictive treatment that helps avoid it, said Tohru Ikuta, GHSU molecular hematologist.

The study of 18 patients showed that the half who inhaled nitric oxide for four hours had better pain control than those receiving only the standard self-administered morphine.

The new study examined nitric oxide's impact from many angles and showed that it appears to disperse dense, solid chains of hemoglobin troublemakers.

Once a significant number of hemoglobin molecules stick together, it causes red blood cells to distort from their natural round shape that easily maneuvers blood vessels to a sickle-shape. At that point, red blood cells also become uncharacteristically sticky.

They found nitric oxide reduced the length of the unnatural hemoglobin strands, made the strands more fragile and, using a high-powered confocal microscope, they could see it also helped cells regain a more normal shape. Studies were done on human cells in vitro.

The study has been published in the American Journal of Hematology.

### **Antimicrobial resistance**

#### **ICMR flooded with proposals to study antimicrobial resistance (The Times of India; 16.5.2011)**

A call for project proposals from researchers across India on "antimicrobial resistance" by the Indian Council of Medical Research has resulted in a deluge.

ICMR has received over 130 proposals in just one month, the best of which will be funded by the council.

The call, announced on April 15 in the aftermath of the discovery of the superbug gene NDM-1 from Delhi's water supply, was made to generate scientific evidence on the prevailing trends of antimicrobial resistance.

## **HIV drug - WHO Guideline**

### **India to Phase-out HIV drug as per WHO Guideline (The Indian Express: 18.5.2011)**

MORE than a year after the World Health Organisation (WHO) recommended phasing out Stavudine for treatment of HIV, India has decided to switch to Tenofovir -a drug four times more expensive but less toxic.

Forty-five per cent of the patients in the country use Stavudine or d4T. However, in guidelines issued in December 2009, the WHO had recommended that the drug be phased out due to longterm irreversible side-effects.

Consequently, the technical resource group has decided to do away with Stavudine for first-line treatment in a phased manner.

Tenofovir, a second-line treatment, will now be used more extensively. However in case of patients who are anaemic, antiretroviral therapy (ART) centres have been asked to use Tenofovir as a first option.

"We will be able to completely phase out Stavudine in another next two years.

Even as the toxicity of Stavudine has been found to be as low as 2.1 in Indian patients, we have decided to go by international guidelines," said Dr B B Rewari, National Programme Officer, ART.

While the most preferred drug in India is Zidovudine, as it is less toxic and equally effective and just twice as expensive as Stavudine -55 per cent of Indian patients use it -it cannot be given to those having anaemia.

## **Homoeopathy - Asthma**

### **Homoeopathy can help control asthma (The Tribune:18.5.2011)**

As the harvest season starts, a lot of patients who are allergic to pollens and dust start reporting with symptoms of respiratory problems. Those suffering from asthma, bronchitis and sinusitis are the worst affected, and this is one of the worst times of the

year for them. Although all these diseases are of the respiratory tract, they are different in their nature and causes.

Asthma is characterised by the presence of three symptoms known as the triad of asthma — breathlessness, cough and wheezing. Wheezing is the most essential component for the diagnosis of asthma. A sense of tightness is felt in the chest. Though no age group is exempt from its constricting touch, children are more likely to fall prey to this disease. In children, twice as many boys as girls are affected.

There are some patients who have a personal or family history of allergy. They respond adversely to various allergens like pollens, dust or smoke and when they come in contact with pets. The second type of patients do not have a personal or family history of allergy and are known as suffering from idiosyncratic asthma.

It is pertinent to note that the role of cigarette smoke is often overlooked in causing the attacks of asthma. Even non-smokers are at a very high risk of getting an attack from a passive exposure to cigarette smoke. The effects of a cigarette can linger on in a house for as long as up to a week. This is particularly dangerous for children who are sensitive to smoke. Also, research has found that the first three years of the life a child define its response to the various allergens and this stretches backwards to include the months of pregnancy. So, pregnant women should also be careful to avoid exposure to these allergens in general and cigarette smoke in particular.

Another important aspect that is often overlooked is the role of stress in causing an asthmatic attack. The stress may be due to one's personal life or from business or office situations. It has been routinely observed that whenever a patient goes through a stressful period, the attacks increase in frequency as well as severity.

If there is one disease that has won homoeopathy the maximum laurels for treating chronic diseases, it has to be asthma. The gentle manner in which homoeopathy completely eliminates this dreaded gasping and panting malady is an example to study in the art of medicine. No strong medicines are used. No harsh measures are resorted to. No adverse reactions are ever reported. Only the internal healing powers of the body are harnessed and guided towards the right course and that too in the mildest of manners. Only the minutest of medicinal doses are used, and nature takes care of itself. In a significant and well-documented study at the University of Glasgow, Dr David Reilly achieved a success rate of 82 per cent in asthmatic cases with the help of homoeopathic medicines.

Homoeopathic medicines like Arsenic, Sambucus, Carbo Veg and Phosphorus are very commonly used to treat asthma. All these medicines have their own individual indications and cannot be substituted for one another. These medicines are just a few of

the many medicines used. Constitutional treatment is required to completely cure asthma so that there is no recurrence of these episodes.

The writer is a Mohali-based practising homoeopath.

## **Alternative medicine**

### **Haryana to promote alternative medicine (New Kerala: 18.5.2011)**

The Haryana government will promote alternative medicine and is contemplating to organise acupressure training camps in the state so that the people are benefitted with this natural way of treatment known for quick results and having no side effects.

This was announced by Additional Principal Secretary to Haryana Chief Minister and Director, Haryana Information, Public Relations and Cultural Affairs Department Shiv Raman Gaur after inaugurating the five day Acupressure Training Course by the renowned Acupressure Therapist Dr Rakesh Srivastava at Gandhi Samarak Bhawan, sector 16, Chandigarh today.

Dr Srivastava is considered an expert in the field of acupressure and has treated a number of patients including the former President Dr Shankar Dayal Sharma. It is the first such training camp in the tri-city of Chandigarh, Panchkula and Mohali.

Speaking on the occasion, Mr Gaur said that Haryana government was contemplating on organizing such training camps in the state so that the people could be benefitted. He said that initially, such programmes would be organised in medical colleges in the state.

Mr Gaur said that alternative medicine was effective and becoming popular among the masses. "The Government of India was also popularising the various systems of alternative medicine under AYUSH." Dr Srivastava, having 26 years experience in Su Jok, Twist Therapy and Naturopathy, said that the acupressure was becoming popular with the masses and had got encouraging response for the training camp as it was based on self help system and involved the natural healing system of our bodies.

## **Drugs**

### **Prescribing Generic Drugs May Become Must (The economic Times: 23.5.2011)**

The government may make it mandatory for all doctors to write the generic or chemical name of drugs they prescribe, a move that can cut medicine costs by more than half.

Last year, the health ministry had asked doctors in over 300 central government hospitals, clinics and autonomous institutions under it to write the name of the generic equivalent along with the brand.

Minister of state for chemical and fertiliser Srikant Jena now plans to approach the health ministry and the Union cabinet to make it a national-level initiative that will also cover doctors in private hospitals and clinics.

This means that instead of prescribing, say, Crocin, doctors will have to specify the generic name, paracetamol, an unbranded version of which retails for a fourth of the branded medicine cost and has the same therapeutic efficacy. Jena told ET that the government is examining legal implications of a proposed intervention either through an advisory or a directive since health is a state subject. “Generic drugs can reduce cost of medicines by 50% and is the best way to reduce the cost of drugs,” he said.

Delhi and Rajasthan have already asked doctors in all state government-run hospitals to prescribe only the generic names of medicines.

Drugs worth . 48,000 crore are sold every year by over five lakh chemists and about . 10,000 crore in hospitals and clinics.

The government also plans to launch an awareness campaign to educate the public about the benefits of buying generic drugs and force doctors to give the option to buy a cheaper version of the medicine. Jena said: “Doctors prescribe branded drugs because they are not properly told about generics. A campaign needs to be carried out both at the state and the central level. The impression among public is that cheap drugs have low efficacy...Even in the US and other developed markets, doctors write generic equivalents.”

Unlike other commodities, consumers cannot choose from different brands and drugmakers spend crores of rupees to convince doctors to promote their particular brand

over others. Pharma companies also often give expensive gifts and pay for travel of doctors, practices considered unethical that eventually drive up the cost of treatment.

## **Drug**

### **New drug that can kill cervical cancer virus on the anvil (New Kerala 23.5.2011)**

A group of researchers at Leeds University has decoded the way the human papilloma virus causes cancerous changes and are now working with chemists to adapt existing antiviral drugs to block cervical cancer.

"We are very excited because this discovery gives us the opportunity to attack this cancer-causing virus for the first time which we hope will be able to prevent cancer developing," the Daily Express quoted lead researcher and virus specialist Dr Andrew Macdonald as saying.

The researchers are trying to develop more powerful treatments, which they hope could be on trial within the next five years.

Cervical cancer, which two years ago killed reality TV star Jade Goody at the age of 27, has been on the increase in the developed world and it is now the second most common cancer in women.

## **New Hepatitis C Drug**

### **FDA Approves Second New Hepatitis C Drug Incivek (Med India: 24.5.2011)**

The US Food and Drug Administration approved Incivek to treat hepatitis C when taken along with the current two-drug regimen, marking the second such drug approval this month.

"The sustained virologic response for patients treated with Incivek across all studies, and across all patient groups, was between 20 and 45 percent higher than current standard of care," the FDA said.

Incivek is a pill that should be taken three times a day with food, and is added to therapy made up of peginterferon alfa and ribavirin.



In mid-May, the US regulatory agency approved a Merck-made pharmaceutical known as Victrelis. Both have been shown to boost cure rates when added to the present regimen, which helps fewer than 50 percent of people with the liver disease.

## **Antibiotics**

### **Antibiotics Overused for Children With Asthma and Urinary Tract Infections, Studies Suggest (New Kerala: 26.5.2011)**

Two new studies led by researchers at the University of California, San Francisco have found some antibiotics may be overused for children with asthma and urinary tract infections.

The findings raise concerns around breeding drug resistance in children and underscore the need for pediatricians to take a more prudent approach when prescribing antibiotic medications. In the case of asthma, the findings have led to a new trial, in which the value of targeted antibiotics is being tested.

Both studies are published in the June issue of the journal Pediatrics.

"It is critical for pediatricians to promote the judicious use of antibiotics," said Michael Cabana, MD, MPH, senior author of the asthma study and chief of general pediatrics at UCSF Benioff Children's Hospital.

Nearly 9 million children in the United States have asthma, a chronic respiratory condition that causes the lung's airways to swell and narrow, according to the National Institutes of Health. While certain medications do help prevent asthma attacks and control ongoing symptoms, national health guidelines do not currently recommend antibiotics as an asthma therapy.

Cabana, along with first author Ian Paul, MD, MSc, of the Penn State College of Medicine, and colleagues examined data from two nationally representative surveys that track visits to doctors' offices and emergency departments throughout the country. They assessed how frequently antibiotics were prescribed to children younger than 18 who were seen for asthma-specific complaints from 1998 to 2007.

Of the 5,198 outpatient visits included in the analysis, antibiotics were prescribed during nearly one in six visits. The researchers estimate that this equates to about 1 million antibiotic prescriptions for kids with asthma in the United States each year.

The study also indicated that when pediatricians discussed best practices for treating asthma and preventing attacks during office visits, patients were less likely to receive antibiotic prescriptions. As a next step, the researchers emphasize the importance of encouraging more doctors to take the time to educate their patients about asthma in order to eliminate unwarranted prescriptions.

Additionally, researchers need to systematically examine whether antibiotics have any positive impact on asthma symptoms, so national guidelines can be adjusted, if necessary. According to Cabana, there are anecdotal reports suggesting that some antibiotics -- particularly a group of drugs called macrolides -- may help reduce asthma-related inflammation. UCSF has been designated one of nine participating centers in a recently launched NIH-sponsored trial that will test whether antibiotics are effective in children with asthma.

"This study is a great example of how we have to constantly examine and question what we do, so we can develop valuable studies that will help us continue to improve the therapies we can offer to kids," Cabana added. "Just because something does not fall within today's guidelines doesn't mean we should automatically dismiss it as being potentially helpful."

In the second study, lead UCSF author Hillary Copp, MD, MS, and colleagues investigated patterns of antibiotic use for pediatric urinary tract infections (UTIs) using the same national survey data from 1998 to 2007. On average, urinary tract infections account for at least 1.5 million outpatient visits by children each year in the United States.

The study focused on prescriptions of broad-spectrum antibiotics, which act against a wide range of disease-causing bacteria. Narrow-spectrum antibiotics, in contrast, are effective against more specific families of bacteria, and cause less bacterial resistance since they are more targeted.

Based on the 1,828 doctor visits for pediatric urinary tract infections captured in the analysis, the researchers found that antibiotics were prescribed during 70 percent of the visits, and broad-spectrum antibiotics were the prescription of choice one-third of the time. Moreover, the use of a specific class of broad-spectrum antibiotics, called third-generation cephalosporins, doubled during the study period. Given that narrower-spectrum alternatives often are just as effective against infections, the findings imply that efforts are needed to educate physicians in order to promote more appropriate drug selection, explained Copp.

"It is always concerning when we see a rise in a particular antibiotic class, as this can create drug resistance through antibiotic selection pressures," said Copp, who is an assistant professor of pediatric urology at UCSF. "It is okay to prescribe broad-spectrum antibiotics if a doctor thinks the clinical scenario warrants it. However, when this is done, a urine sample should be obtained so therapy can be tailored accordingly and patients can transition to a more narrow-spectrum drug based on the urine culture results."

### **Antidepressant Anti Cholesterol Drug**

#### **Antidepressant Anti Cholesterol Drug Combo Increases Diabetes Risk: Study (Med India: 26.5.2011)**

An antidepressant taken together with a cholesterol lowering drug, by as many as one million people in the United States, may cause a spike in blood sugar levels, researchers said Wednesday.

Paxil and the anti-cholesterol drug Pravachol do not have this effect when taken independently, said researchers at the Stanford University School of Medicine, Vanderbilt University and Harvard Medical School.

The interaction was uncovered by analyzing voluntary reports of adverse events in a database maintained by the US Food and Drug Administration, and comparing that to electronic medical records held by the three medical institutions.

The study used "data-mining techniques to identify patterns of associations in large populations that would not be readily apparent to physicians treating individual patients," it said.

While none of the patients taking the combination reported having hyperglycemia as a result, researchers found 135 patients who did not have diabetes showed an average increase of 19 milligrams per deciliter in blood glucose after starting treatment.

### **Drug**

#### **Now, a drug that will erase bad memories (The Times of India:27.5.2011)**

A study has found a drug that could help reduce the brain's ability to recall painful memories. According to University of Montreal researchers, recalling painful memories while under the influence of the drug metyrapone reduces the brain's ability to re-record the negative emotions associated with them. The study, by the team at the Centre for

Studies on Human Stress of Louis-H Lafontaine Hospital, challenges the theory that memories cannot be modified once they are stored in the brain.

## **New polypill**

### **New polypill halves heart disease and stroke risk (New Kerala: 27.5.2011)**

A new 'polypill' containing both aspirin and statins halves the risk of heart disease and stroke, according to the first international trial of the drug.

It has long been known that taking aspirin and statins separately reduces the risk of cardiovascular disease, but researchers have, for the first time, examined what happens if you take them both in one combined pill.

Australian researchers have found "sizeable reductions" in blood pressure and in levels of 'bad' cholesterol, among those who took the polypill over a 12-week period.

Researchers examined data from 378 people with a raised risk of cardiovascular disease. Half were given the polypill and half the placebo. About a third of the participants were British, a third Dutch and a third Indian.

Prof Anthony Rodgers of the George Institute for Global Health in Australia, who led the study, said: "The results showing a halving in heart disease and stroke, can be expected for people taking this polypill long-term."

Separate pills are already prescribed to millions of people worldwide to lower their chances of heart attack and stroke, reports the journal Public Library of Science One.

But scientists had been looking at the prospect of a combined pill since a long time, according to the Telegraph.

Eight years ago Prof Sir Nicholas Wald, who demonstrated that passive smoking causes cancer, proposed the polypill in the 'British Medical Journal'.

He wrote that such an easy-to-take pill could significantly reduce the burden of cardiovascular disease, which is Britain's biggest killer, accounting for almost 200,000 deaths a year.

Taking such a preventive pill should be as automatic as "brushing your teeth", he had later suggested.

## **Environmental Health**

### **Air Pollution**

#### **Air Pollution Linked to Premenopausal Breast Cancer in Later Life (Med India: 25.4.2011)**

Exposure to air pollution early in life and when a woman gives birth to her first child may alter her DNA and may be associated with premenopausal breast cancer later in life, researchers at the University at Buffalo have shown.

The findings indicated that higher air pollution exposure at birth may alter DNA methylation, which may increase levels of E-cadherin, a protein important to the adhesion of cells, a function that plays an essential role in maintaining a stable cellular environment and assuring healthy tissues.

Methylation is a chemical process that has been implicated in determining which genes in a cell are active, a process essential to normal cellular function.

"To our knowledge, this is the first study to examine exposure to ambient air pollution at key points in a woman's lifetime," said lead investigator Katharine Dobson, an epidemiology doctoral student and research assistant in UB's Department of Social and Preventive Medicine.

"The investigation looked for an association between exposure to pollution and alterations to DNA that influence the presence or absence of key proteins. Such genetic changes are thought to be major contributors to cancer development and progression, including at very early stages," added Dobson.

"We found that decreased E-cadherin promoter methylation was associated with higher exposure at birth, and increased p16 methylation with higher exposure at the time of a first child birth," said Dobson.

"For breast cancer cases, menopausal status appeared to modify the association between air pollution exposure and E-cadherin promoter methylation, with premenopausal women more susceptible to these early exposures than postmenopausal women," added Dobson.

The study has been presented at the 2011 American Association for Cancer Research meeting in Orlando, Fla.

## **Mucus - Pollutants**

### **Mucus: Fighting the War against Pollutants (Science Daily: 23.5.2011)**

Are our bodies vulnerable to some pollutants whose lack of solubility in water, or "hydrophobicity," has always been thought to protect us from them? New Tel Aviv University research has discovered that this is indeed the case.

Studies by Dr. Michael Gozin of Tel Aviv University's School of Chemistry at the Raymond and Beverly Sackler Faculty of Exact Sciences and Dr. Dan Peer of TAU's Laboratory of Nanomedicine in the Department of Cell Research and Immunology have revealed that mucus -- the thick substance lining those internal bodily organs that come into contact with the outer environment, such as the respiratory system, the digestive system, and the female reproductive system -- may instead play an active role in the penetration of hydrophobic substances, including toxins and carcinogens, into our cells.

But encouragingly, the researchers believe that their discovery will one day prove useful in enabling non-water-soluble drugs to enter cells and treat diseases such as cancer. Their most recent study was published in the American Chemical Society's Chemical Research in Toxicology journal.

#### **When mucus fails**

Some of these dangerous substances, such as polycyclic aromatic hydrocarbons, are present in petroleum products and also formed through the partial combustion of fossil fuels that are used to operate power stations, planes, cars, space heaters, and stoves. In the new publication, Drs. Gozin and Peer describe their success in getting certain substances, some of them toxic, to penetrate digestive-system cell cultures and bacterial cells bathed in a mucus solution.

"Until now, mucus has been regarded as a mechanical and chemical protective membrane. We did not expect to find it actually absorbing these toxic hydrocarbons and facilitating their transport into bodily systems," explains Dr. Gozin.

Dr. Gozin, Dr. Peer and their research teams show that petroleum-based toxins can dissolve in water with the aid of mucins, the proteins that constitute the main component of mucus.

A new drug delivery system?

In their laboratory, Drs. Gozin and Peer bathed single-celled organisms in a solution of the hydrocarbon-mucin complex, and observed that the hydrocarbons penetrated the cells much more rapidly than when no mucins were present. "We do not know what mechanism enables these substances to penetrate the cell membranes. Clearly it is not a simple infiltration. Our assumption is that an endocytosis-like process is at work -- substances are being absorbed into the cell through entrapment, with the cell membrane folding in on itself and creating a bubble," Dr. Gozin explains.

In an earlier study, published in 2010 in the nanotechnology journal *Small*, Dr. Gozin's team demonstrated that nanometer-scale substances such as carbon-based and inorganic fullerenes (ball-shaped nanoparticles) as well as carbon nanotubes can also be dispersed in physiological solutions with the aid of mucins.

"It will be possible to employ the mechanism we have discovered to facilitate the penetration of hydrophobic drugs into the body, whether via the respiratory tract -- with drugs entering the body through the lungs -- or by swallowing a delayed-release drug formulation to be absorbed by the digestive system beyond the stomach," Dr. Gozin notes. The next stage of the research will focus on developing systems for the transport of hydrophobic drugs.

## Family Planning


### Female foeticide

**Female foeticide: Govt to keep track of pregnant Mothers (The Tribune: 27.4.2011)**

Jammu, April 26  
With the state witnessing an alarming decline in the sex ratio during the last one decade, the government has decided to appoint more Accredited Social Health Activists (ASHA) to keep a track of all pregnant mothers to check the menace of female foeticide. Though the system of tracking pregnant mothers and their babies is already in place, the state Health Ministry has decided to make it more effective so as to ensure a total check on female foeticide.

The child sex ratio (0-6 years) is the most realistic indicator of the trend of female foeticide and continuing discrimination against the girl child. Jammu and Kashmir has witnessed a steep fall in the sex ratio during the last one decade, especially the child sex ratio. In the

year 2010, the child sex ratio (0-6 years) was 859, down from 941 in the year 2001, indicating a variation of 82. The national average of the child sex ratio is 914. The

Child sex ratio (0-6 years) 			
District	2001	2010	Variance
Rajouri	905	837	-68
Poonch	959	895	-64
Kishtwar	977	922	-55
Ramban	968	931	-37
Reasi	952	921	-31
Doda	959	932	-27
Udhampur	912	887	-25
Jammu	819	795	-24
Kathua	847	836	-11
Samba	798	787	-11
Kupwara	1021	854	1
Pulwama	1046	836	-210
Badgam	1004	832	-172
Ganderbal	1014	863	-151
Anantnag	977	832	-145
Shopian	1011	883	-128
Kulgam	1003	882	-121
Baramula	961	866	-95
Bandipore	967	893	-74
Srinagar	928	869	-59
Leh	955	944	-11
Kargil	980	978	-2
Whole state	941	859	-82



decision of the government to track pregnant mothers was aimed at minimising this widening gap and ASHA workers had been assigned the job of registering all pregnant mothers.

“We already have 9,500 ASHA workers on the job but our aim is to make it sure that every village has at least one worker so that each and every pregnant mother could be registered for tracking them till the time of delivery,” Director, National Rural Health Mission (NHRM), Dr Yashpal Sharma told The Tribune.

Sharma said all pregnant mothers would be tracked under the new programme, but special attention would be paid to the mothers who already had a daughter as their first child. “It has come to our notice that usually those women go for female foeticide who already have a daughter as their first child,” he observed.

He added that the government had already announced more incentives for the ASHA workers for tracking pregnant mothers in their respective areas. The ASHA workers had been assigned the job of tracking pregnant mothers from three months of pregnancy till the time the child is fully immunised.

In the urban areas, the government has already announced severe punishment for those who were found violating the Pre-Natal Diagnostic Technique (PNDT) Act. “Clear instructions have been given to all ultrasound clinics to maintain a record of all patients,” Dr Sharma said.

Furthermore, the state government has also decided to introduce a software “e-mamta” from next year to track the pregnant mothers. A unique ID would be given to all pregnant mothers.

## **Contraceptive Pill**

### **Contraceptive Pill Protects From Knee Injury Risks During Menstruation (Med India: 29.4.2011)**

Menstrual cycles can increase the risk of injuries in women, but those who take contraceptive pills are more likely to be protected from such risks.

It found that a woman's risk of injuring her knees, feet and ankles is significantly heightened at the beginning and middle of her period.

Podiatrist Simon Bartold from the University of Melbourne has said lower oestrogen levels at the beginning of women's menstrual cycles reduced their muscle tone and coordination, reports the Courier Mail.

On day 14 of the cycle, oestrogen levels are at their peak and this increases the elasticity of the Achilles tendon and the risk of injury.

The university conducted two studies, involving 78 women, over three years.

The researchers, however, found that women who take contraceptive pills had less injury rates because the pill reduces the level of circulating oestrogen.

Bartold has said this research could prove useful for female athletes and coaches.

## **Girl Child**

### **Study Suggests girl child disappearing faster (The Indian Express: 24.5.2011)**

THE first decade of the 21st century saw more selective abortions in India than the two previous decades put together, says a new study by a prominent international health research organisation.

The Toronto, Canada-based Centre for Global Health Research (CGHR), has estimated that 4.5 million girls went missing in India during 2001-2010 as against a total 3.6 million during 1980-2000.

The numbers of selective abortions have risen steadily over the past 30 years, says the study, using nationally representative data. It estimates the number of missing girl children from 1980-1990 at 1 million, which more than doubled to 2.6 million during 1990-2000.

The first 10 years of the new century saw the cumulative number of missing girl children from the previous 20 years rise by 25 per cent.

The study, 'Trends in selective abortion of female foetuses in India: analysis of nationally representative birth histories from 1990-2005 and census data from 1991-2011', says data suggest that selective abortion has spread from a handful of states to "Thus, most of India's population now lives in states where selective female abortion is common," it says.

According to the study, selective abortion is more common if the first child is a girl, or in families with one or more daughters and no sons.

"As family size in India has fallen substantially, it appears that selective female abortion is increasingly being used for second or higher order births if the first born was a girl, in order to ensure at least one boy in the household," the study says.

It adds, however, that the sex ratio of the second born, if the first born is a girl, is lower in families where the mother has had 10 years or more of education, compared with those where she has had no education.

The study notes a sharp decline in the girl-to-boy sex ratio for second order births when the first born is a girl, falling an average of about 0.5 per cent annually between 1990 and 2005.

"These declines are greater in educated and in richer households than in illiterate and poorer households," says the study. The sex ratio of the second born has remained unchanged if the first born is a boy.

## **Aborting Girls**

### **Aborting Girls on rise among educated, rich (Hindustan Times: 25.5.2011)**

BOY BIAS Figures point to greater access to sex selection

Rich and educated Indian parents are increasingly aborting a second girl child and, instead, waiting for a boy, driving 90% of the country's citizens into zones with sex ratios that are unnaturally and often dangerously low.

The sex ratio for second-born children in families where the first-born is a girl has dropped overall from 906 girls per 1,000 boys in 1990 to 836 in 2005, new research published in the journal Lancet on Tuesday shows.

But this low ratio has fallen even lower to just over 750 girls for 1,000 boys among the richest 20% families, and to barely above 700 for families where the mother has over 10 years of education.

The scientists warned that the findings did not mean a higher preference for boys among the richest and educated sections, but hinted at their greater access to sex selection and abortion and ability to evade the law.

“Since the proportion of the rich and educated is likely to rise in India, we are worried about the implications,” lead researcher Prabhat Jha from the University of Toronto and the Centre for Global Health Research said.

This conditional sex ratio -for second-born children where the first-born is a girl -was comparatively higher at about 850 for the richest 20% families, and at 880 for families with educated mothers in 1991.

The researchers found that the poorest 20% families and families where the mother had no education on average showed either no change or even improvement in this conditional sex ratio since 1991. The scientists used data from census reports and National Family Health Surveys for analysis.

There was no similar change in sex ratio over the past two decades for the second-born child if the first-born was a boy -suggesting that families are comfortable with girls if they already have a boy. “The demand for sons among wealthy parents is being satisfied by the medical community through the provision of illegal services of foetal sex-determination and sex-selective abortion,” said SV Subramanian, professor at the Harvard School of Public Health.

“The financial incentive for physicians to undertake this illegal activity seems to be far greater than the penalties associated with breaking the law,” said Daniel Corsi of McMaster University in Hamilton, Canada.

From a state that has one of the most skewed sex ratios in the country, here comes another horror story.

Pamela, an executive working with a multi-national bank in Gurgaon, claims she has been a victim of domestic violence and was abandoned by her husband and parents-in-law because she gave birth to two daughters.

This comes as yet another reaffirmation of the fact that sex selection is as prevalent, if not more, in urban areas and among the educated class.

Pamela has been staying with her parents in Sector 54 for the last six months as her husband Sandeep Sharma, an engineer in a government-run telecom company, is allegedly not ready to accept her.

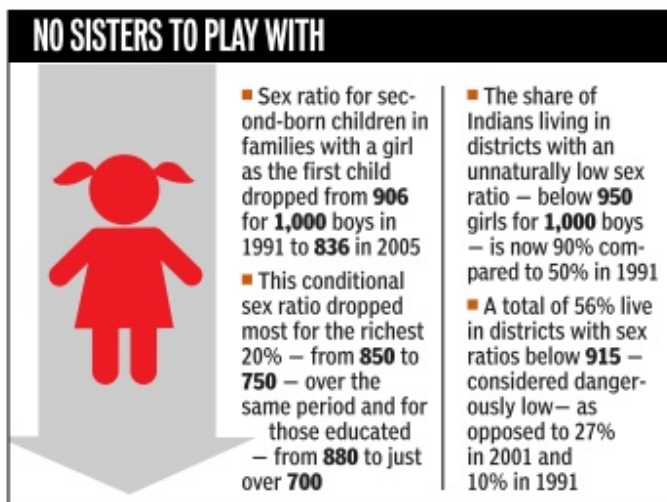
While narrating her side of the story, Pamela said, “My inlaws were so obsessed with a male child that when I conceived for first time, they asked me to eat some herbal medicine to ensure I had a baby boy. When I refused, they threatened me with dire consequences.”

“When I conceived for the second time, I was treated the same way again. Despite the trauma, I had two baby girls and was blamed for it,” she added.

While her elder daughter is two years old, the younger one is five months old.

Pamela further alleged that her husband told her that they would have to try for another child, but will go in for a sex test before delivery the third time around.

Refuting his wife's claims as “untrue and baseless“, Sandeep said, “These are all false allegations. I and my parents are pleading her to come back but she is not ready to listen to us.” He further said, “She works in Gurgaon and my parents are in Delhi. After the birth of our second child, she felt it was convenient to live in Gurgaon. Her parents asked me to come and stay along with them. Problems started ever since I refused.”



## **Abortion**

### **India Loses Millions of Girls to Selective Abortion (Med India: 25.5.2011)**

Sex selection of fetuses in India has led to 7.1 million fewer girls than boys up to age six, a gender gap that has widened by more than a million in a decade, according to a study released Tuesday.

In Indian families in which the first child has been a girl, more and more parents with access to prenatal ultrasound testing are aborting a second female in the hope that a subsequent pregnancy will yield a boy, said the study, published in The Lancet.

The increasingly lopsided ratio of girls to boys is larger in wealthy households than poorer ones, the researchers reported.

Between 1980 and 2010, they estimate, four to 12 million girls were aborted because of their sex.

"Selective abortion of female fetuses, usually after a firstborn girl, has increased in India over the past few decades, and has contributed to a widening imbalance in the child sex ratio," they conclude.

## **Abortion - female fetuses**

### **Lancet: Indian rich killing girls: (The Asian Age: 25.5.2011)**

New research in a soon to be published issue of the Lancet says India's richest and most educated families are amongst the worst culprits in the illegal pre-selection and abortion of female fetuses. It estimates that up to 12.1 million girls may have been selectively aborted across the country between 1980 and 2010. The multi-author study -trends in selective abortions of girls in India: analysis of nationally representative birth histories from 1990-2005 and census data from 1991-2011 -including researchers from Chandigarh's Post Graduate Institute of Medical Education and Research, the Canadian Centre for Global Health Research and Mumbai's International Institute for Population Sciences has analysed 2.5 lakhs birth histories from 1990 to 2005 employing NHFS and Census data to draw its startling conclusions.

“In Indian families where the first child has been a girl, more and more parents are aborting their second child if prenatal testing shows it to be a girl,” states the study also revealing that “declines in girl to boy ratios are larger in better-educated and richer households.” In fact the sharpest fall in the sex ratio for second order births are reported amongst 20 per cent of the richest households in contrast to the poorest 20 percent.

Predictably, the decline in female births has been greater in urban than in rural areas accurately reflecting levels of prosperity and education.

The authors found, however, that if the first child had been a boy, there was no fall in the girl-boy ratio in case of the second child. It is estimated that the numbers of selective abortions of girls rose from zero to two million in the 1980's to between 3.1 and six million in the the new millennium.

### **Abortion rules stricter**

#### **Give Care, Not Counsel (The Times of India: 26.5.2011)**

Government plans to make abortion rules stricter will hurt, not help, women

It is true that India's child sex ratio has declined alarmingly from 927 girls to 1,000 boys aged 0-6 in 2001 to 914 by 2011, and that there has been indiscriminate violation of the Pre-conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act, that prohibits doctors performing sonography and other tests on pregnant women from revealing the sex of the foetus. However, the government's decision, reported in the Times of India (May 19), to make abortion rules stricter as a means of addressing the dismal child sex ratio is somewhat knee-jerk and short-sighted. Far from halting the practice of sex selective abortion, it will end up making abortion even more inaccessible than it currently is to the poor and lead many to seek unsafe abortion.

In truth, safe abortion services are simply not available to millions of Indian women. Indeed, a recent study conducted by the Population Council in two districts each of Maharashtra and Rajasthan found that hardly any primary healthcare centres and just half or fewer community health centres or rural hospitals offered abortion services. Many women are forced to seek abortion from the private sector and unqualified individuals, and face the risk of complications. Many fear disclosing their unwanted pregnancy to family members or even the husband or partner, resulting in their seeking clandestine services from unqualified providers just because they offer confidentiality.

Many are unaware that abortion is legally available. The poor, the young, the unmarried in particular are so poorly informed about signs of pregnancy, the importance of early abortion (in the first trimester) and the location of safe services that they delay pregnancy termination until they are in the second trimester of pregnancy. And many poor women die from complications of unsafe abortion. As is well known, India has one of the highest maternal mortality ratios in the world, and unsafe abortion is the third leading cause of these unnecessary deaths to women.

Imposing conditions such as mandatory counselling, in which women may be "informed" (or frightened into believing) that abortion can affect their likelihood of pregnancy in the future, and in which women will be asked to go home and "think over" the decision will impose still more obstacles in their search for safe abortion services. Most women do not arrive at the decision to terminate a pregnancy frivolously, and many may prefer to seek an unsafe provider rather than make repeated visits to the facility or be subjected to probing questions. Many may prefer a provider who asks no questions than one who requires women to undergo counselling or to "think over" the decision and return to the facility if abortion is desired, clearly a burdensome procedure in time and money for poor women.

Contrary to public perceptions, most women who opt for an abortion do not do so for sex selective reasons and in order to have a son. They do so because they cannot afford another child, because contraception has failed, because they are unmarried, or because they were raped. These women do not need counselling; what they need is caring and respectful services that enable them to terminate their pregnancy with a minimum of probing questions.

There are, of course, those who violate the law and terminate a pregnancy carrying a female foetus illegally and these individuals must face the full extent of the PCPNDT Act. But is making abortion difficult by imposing mandatory counselling an appropriate or realistic way of deterring those who seek to terminate a pregnancy carrying a female foetus from doing so?

The practice of sex selective abortion is most rampant in better-off states, in better-off parts of affected states, and among the better-off more generally. Imposing restrictions intended to apply to this group will unfairly disadvantage many others and, most notably, the poor, the unmarried and the young. And how useful will pre-abortion counselling be to women opting for newer methods of sex detection even before conception? And how will it be imposed since most women obtain their abortions from the private and unregulated sectors?



Mandatory counselling will not achieve its objective, and will only end up making the process of seeking abortion services even more difficult than it currently is for poor women. What is needed instead is mandatory implementation of the PCPNDT Act, with severe punishment meted out to providers who break the law, and to women or, more appropriate, the family members at whose behest the sex selective abortion is undertaken.

Also needed are wide-ranging and serious programmes to enhance the status of women and girls: ensuring education and livelihood skills-building for girls, ensuring economic opportunities for them, ensuring their representation in political processes and, in short, making them valuable and equal partners with men in families, societies and national development.

Indeed, programmes must attempt to change norms among the better-off who violate the PCPNDT Act to ensure both a small family size and a made-to-order sex composition of children, and build accountability among the unscrupulous providers who facilitate this practice. Denying women their rights under the Medical Termination of Pregnancy Act is not the way to go.

The writer is senior associate at the Population Council, New Delhi.

### **Genderless' baby**

**Parents keep sex secret, raise 'genderless' baby (The Times of India: 26.5.2011)**

#### **Say Child To Decide What It Wants To Be – A Boy Or A Girl?**

London: A Canadian couple has sparked controversy by deciding to keep the sex of their 4-monthold baby a secret as part of an attempt to raise a "genderless child".

Kathy Witterick, 38, and David Stocker, 39, are raising their third child, Storm, to be free of societal norms regarding gender, reports the Mirror. They want Storm to decide for itself whether it is going to be a boy or a girl.

Kathy and David feel strongly that gender expectations constrict and damage children. "If you really want to get to know someone, you don't ask what's between their legs," the father says. When Storm was born, therefore, only immediate family, one close friend, and the two midwives present at the home birth were told the baby's sex.

The couple sent an email to friends and family: “We’ve decided not to share Storm’s sex for now — a tribute to freedom and choice in place of limitation, a stand up to what the world could become in Storm’s lifetime (a more progressive place? ...).”

Their announcement was met with stony silence. Then the deluge of criticisms began. Not just about Storm, but about how they were parenting their other two children – both boys – who they allow to dress as they wish.

The grandparents were supportive, but resented explaining the gender-free baby to friends and co-workers. They worried the children would be ridiculed. Friends said they were imposing their political and ideological values on a newborn. Most of all, people said they were setting their kids up for a life of bullying in a world that can be cruel to outsiders.

Their older children, Jazz and Kio, already decide when to cut their hair and pick out their own clothes – from the boy and girl sections of stores. Five-year-old Jazz also wears his hair long, in three braids – two at the front and one at the back.

But after Jazz – who is often mistaken for a girl – suffered an “intense” time over his appearance, they decided to raise Storm as “genderless”.

## **Child sex ratio**

### **Child sex ratio plunges in 431 dists, improves in 149 (The Times of India; 27.5.2011)**

#### *J&K, Nagaland And Manipur See Alarming Decline In Numbers*

Is India sliding into a social catastrophe with the number of younger women set to decline in the coming years because of dipping child sex ratio? Or is there any hope of retrieving the situation? A district-by-district study of the sex ratio trends in India derived from comparing Census results from 2011 and 2001 shows that even as the barbarism of sex selective abortion continues to spread in hitherto untouched communities and regions, other parts of India are holding up a candle in the wind by reversing the trend.

Child sex ratio, measured as the number of girls for every 1000 boys in the 0-6 years age group has declined in 431 districts. But surprisingly, it has improved in 149 districts. In a large swathe covering 4 districts in lower HP, 16 districts of Punjab, Chandigarh and 15 districts of Haryana – 36 districts in all – the ratio has increased. These are the areas

where the last Census had recorded some of the shockingly lowest sex ratios indicating widespread practice of female feticide and infanticide.

But in other parts of the country the trends are grim. States like J&K and Nagaland, long seen as bastions of gender equity, have shown decline in the child sex ratio – J&K from 941 to 859, Nagaland from 964 to 944, and Manipur from 957 to 934. In the 75 districts of the country where tribals constitute 50% or more of the population, child sex ratio has declined over a decade in 52 districts. However, the sex ratios are in the healthy range of 950, above the national average of 914. These tribal districts are spread across the central India and Northeast. In the 50 districts with highest Muslim population, 39 districts show drop in sex ratio again shattering the myth that the minority community preserves its own culture and social behavior.

The same factors that drove declining child sex ratio in other parts of the country, and in other communities are now having effect in tribal areas and among Muslim communities, says Rajni Palriwala, professor of sociology at Delhi University. These include availability of abortion facilities, she adds. “Economic distress is the basis for having smaller families, and in such a condition, sons are preferred. Daughters are thought to be an economic load,” she says.

The shocking decline in child sex ratio in all 14 districts of J&K seen in this year’s Census results is mostly because of faulty counting in the previous Census of 2001, says Dr Sabu George, an expert on sex ratios and activist campaigning against sex-selection tests. “Many villagers and government doctors from Kashmir have told me that in 2001 nobody came to do Census counts in their areas. There was a 20 year gap because in 1991 no Census work was possible. The present Census has simply brought out the reality,” he says. The improvement in Punjab and Haryana is puzzling all experts. “We will have to look at more detailed results – rural-urban splits and lower level data – to figure out what is happening,” says K M Kulkarni, professor at JNU. Despite the improvement, Haryana districts continue to have the lowest child sex ratio in the whole country, says George. “In Punjab, there was a religious and political mobilization against sex selective abortions that may have worked, but we have to see the detailed data first,” he warns.

So, India holds its breath for what may be a crucial point in its history – will Punjab and Haryana show the way or will the present slide continue?

WORST 10 DISTRICTS			BEST 10 DISTRICTS		
District	CSR	Change since '01	District	CSR	Change since '01
1 Pulwama (J&K)	836	<b>-173</b>	1 Kapurthala (Punjab)	872	<b>87</b>
2 Badgam (J&K)	832	<b>-170</b>	2 Fatehgarh Sahib (Punjab)	843	<b>77</b>
3 Kupwara (J&K)	854	<b>-167</b>	3 Shahid Bhagat Singh Nagar (Punjab)	879	<b>70</b>
4 Anantnag (J&K)	831	<b>-130</b>	4 Bathinda (Punjab)	854	<b>69</b>
5 North district (Sikkim)	897	<b>-98</b>	5 Jalandhar (Punjab)	874	<b>68</b>
6 Bid (Maharashtra)	801	<b>-93</b>	6 Salem (TN)	917	<b>66</b>
7 Pithoragarh (Uttarakhand)	812	<b>-90</b>	7 Patiala (Punjab)	835	<b>62</b>
8 Baramula (J&K)	866	<b>-83</b>	8 Rupnagar (Punjab)	866	<b>59</b>
9 Srinagar (J&K)	869	<b>-82</b>	9 Tawang (Arunachal Pradesh)	1,005	<b>57</b>
10 Mon (Nagaland)	900	<b>-73</b>	10 Sangrur (Punjab)	835	<b>55</b>

Source: Census 2001 and 2011

## **Food and Nutrition**

### **Food Dyes**

#### **Food Dyes Linked to ADHD (Med India: 1.4.2011)**

The role of dye additives and its impact on the behavior of children has been under study by a Food and Drug Administration advisory committee.

After first listening to the public and the industry, the committee heard what doctors and scientists had to say on the subject. The experts state that children most definitely show signs of hyperactivity when they have been exposed to certain dye mixtures

Although European companies have stopped using dyes including Blue #1, Yellow #5, Green #3 and others and substituting these with natural dyes, the United States still allows artificial dyes for aesthetic reasons.

In 1975, Dr. Benjamin Feingold's book "Why Your Child is Hyperactive" brought up the issue of food dyes impacting deficit hyperactivity disorder, or ADHD. The doctor stated that if these food dyes were got rid of, hyperactivity would drop dramatically.

But critics claim that the design of the studies has been weak and the data inconsistent. They said that the study focused only on small groups; the findings were reported by parents, not clinicians; and the dyes were not tested individually.

A 2007 project conducted by researchers at the University of Southampton in the United Kingdom brought back attention on the issue when it showed that artificial food dyes, along with a food preservative, increased ADHD symptoms in both hyperactive and non-hyperactive children.

Although evidence is said to be weak again, Michael Jacobsen, executive director of the Center for Science and the Public Interest, a watchdog group on nutrition and food safety says artificial food dyes are not safe for humans and can be connected to numerous health problems, including ADHD allergies, even cancer.

He asks, "There are other factors that could affect child behavior, but if we can take out food dyes as a factor, why not?"

Now, the point is whether the FDA committee will ask the same question.

## **Food Addiction**

### **Food Addiction And Substance Dependence, Similar Brain Activity Going On (Medical News Today: 5.4.2011)**

Some people really are addicted to foods in a similar way others might be dependent on certain substances, like addictive illegal or prescriptions drugs, or alcohol, researchers from Yale University revealed in Archives of General Psychiatry. Those with an addictive-like behavior seem to have more neural activity in specific parts of the brain in the same way substance-dependent people appear to have, the authors explained.

It's a bit like saying that if you dangle a tasty chocolate milkshake in front of a pathological eater, what goes on in that person's brain is similar to what would happen if you placed a bottle of scotch in front of an alcoholic.

The researchers wrote:

"One-third of American adults are now obese and obesity-related disease is the second leading cause of preventable death. Unfortunately, most obesity treatments do not result in lasting weight loss because most patients regain their lost weight within five years. Based on numerous parallels in neural functioning associated with substance dependence and obesity, theorists have proposed that addictive processes may be involved in the etiology of obesity.

Food and drug use both result in dopamine release in mesolimbic regions [of the brain] and the degree of release correlates with subjective reward from both food and drug use."

The authors believe that no studies had so far looked into the neural correlates of addictive-like eating behavior. They explained that some studies had demonstrated that photos of nice food can get the brain's reward centers to become more active in much the same way that photos of alcoholic drinks might do for alcoholics. However, this latest study is the first to tell the food addicts from the just overeaters.

Ashley N. Gearhardt, M.S., M.Phil., and team looked at the relation between the symptoms of food addiction and neural activation. Food addiction was assessed by the Yale Food Addiction Scale, while neural activation was gauged via functional MRI (magnetic resonance imaging). Forty-eight study participants responded to cues which signaled the imminent arrival of very tasty food, such as a chocolate milkshake,

compared to a control solution (something with no taste). They also compared what was going on while they consumed the milkshake compared to the tasteless solution.

The Yale Food addiction Scale questionnaire identified 15 women with high scores for addictive-like eating behaviors. All the 48 study participants were young women, ranging in BMI from lean to obese. They were recruited from a healthy weight maintenance study.

The scientists discovered a correlation between food addiction and greater activity in the amygdala, medial orbitofrontal cortex and the anterior cingulate cortex when tasty food delivery was known to arrive soon.

Those with high food addiction, the fifteen women, showed greater activity in the dorsolateral prefrontal cortex compared to those with low addiction to foods. They also had reduced activity in the lateral orbitofrontal cortex while they were eating their nice food.

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The authors explained:

"As predicted, elevated FA (food addiction) scores were associated with greater activation of regions that play a role in encoding the motivational value of stimuli in response to food cues. The ACC and medial OFC have both been implicated in motivation to feed and to consume drugs among individuals with substance dependence.

In sum, these findings support the theory that compulsive food consumption may be driven in part by an enhanced anticipation of the rewarding properties of food. Similarly, addicted individuals are more likely to be physiologically, psychologically, and behaviorally reactive to substance-related cues."

They concluded:

"To our knowledge, this is the first study to link indicators of addictive eating behavior with a specific pattern of neural activation. The current study also provides evidence that objectively measured biological differences are related to variations in YFAS (Yale Food

Addiction Scale) scores, thus providing further support for the validity of the scale. Further, if certain foods are addictive, this may partially explain the difficulty people experience in achieving sustainable weight loss. If food cues take on enhanced motivational properties in a manner analogous to drug cues, efforts to change the current food environment may be critical to successful weight loss and prevention efforts. Ubiquitous food advertising and the availability of inexpensive palatable foods may make it extremely difficult to adhere to healthier food choices because the omnipresent food cues trigger the reward system. Finally, if palatable food consumption is accompanied by disinhibition [loss of inhibition], the current emphasis on personal responsibility as the anecdote to increasing obesity rates may have minimal effectiveness."

"Neural Correlates of Food Addiction"

Ashley N. Gearhardt, MS, MPhil; Sonja Yokum, PhD; Patrick T. Orr, MS, MPhil; Eric Stice, PhD; William R. Corbin, PhD; Kelly D. Brownell, PhD

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doi:10.1001/archgenpsychiatry.2011.32

## **Green tea**

### **Green tea improves quality of life in post-menopausal women (The Tribune: 13.4.2011)**

Washington: Previous studies have shown that people who consume the highest levels of green tea tend to have lower risks of several chronic degenerative diseases such as cardiovascular disease and osteoporosis. Now, a new study has suggested that drinking green tea and practising "tai chi" may promote bone health as well as reduce the risk of inflammation in post-menopausal women. Researcher Chwan-Li Shen, an associate professor and a researcher at the Laura W. Bush Institute for Women's Health at the Texas Tech University Health Sciences Center, focused on post-menopausal women and investigated the potential for green tea to work synergistically with "tai chi" in enhancing bone strength.



## **100-pc fruit juice**

### **Drinking 100-pc fruit juice 'as healthy as eating whole fruits' (New Kerala: 13.4.2011)**

A research has suggested that drinking 100 percent fruit juices could have protective health benefits similar to those of whole fruits.

Highlights from a new report summarizing recent research on the potential benefits of fruit juice showed a positive association between intake of 100 percent juice and reduced risk for several chronic diseases, including cancer, markers for cardiovascular disease and cognitive decline.

"While it is universally accepted that fruit and vegetable intake is protective, there is not a clear consensus about the benefits of consuming the juices that are extracted from them," said the review's author, Dianne Hyson.

"An analysis of the scientific evidence suggests that 100 percent fruit juices retain important bioactive components that may promote good health and aid in disease prevention," added Hyson.

Among the fruit juices included in the review, consumption of apple, citrus, cranberry, grape, and pomegranate juices all showed beneficial effects. Markers of improved health ranged from reductions in urinary tract infections (cranberry) to improvements in age-related cognitive decline (grape and apple) to reduced risk of prostate (pomegranate) and respiratory and digestive (orange, grapefruit) cancers. Additionally, intake of all juices was linked to heightened antioxidant activity.

The research was presented in a literature review at the 2011 Experimental Biology (EB) meeting.

## **Manuk Honey**

### **Honey Can Reverse Antibiotic Resistance, Study Suggests (Science Daily: 13.4.2011)**

Manuka honey could be an efficient way to clear chronically infected wounds and could even help reverse bacterial resistance to antibiotics, according to research presented at the Society for General Microbiology's Spring Conference in Harrogate.

Professor Rose Cooper from the University of Wales Institute Cardiff is looking at how manuka honey interacts with three types of bacteria that commonly infest wounds: *Pseudomonas aeruginosa*, Group A Streptococci and Methicillin-resistant *Staphylococcus aureus* (MRSA). Her group has found that honey can interfere with the growth of these bacteria in a variety of ways and suggests that honey is an attractive option for the treatment of drug-resistant wound infections.

Honey has long been acknowledged for its antimicrobial properties. Traditional remedies containing honey were used in the topical treatment of wounds by diverse ancient civilisations. Manuka honey is derived from nectar collected by honey bees foraging on the manuka tree in New Zealand and is included in modern licensed wound-care products around the world. However, the antimicrobial properties of honey have not been fully exploited by modern medicine as its mechanisms of action are not yet known.

Professor Cooper's group is helping to solve this problem by investigating at a molecular level the ways in which manuka honey inhibits wound-infecting bacteria. "Our findings with streptococci and pseudomonads suggest that manuka honey can hamper the attachment of bacteria to tissues which is an essential step in the initiation of acute infections. Inhibiting attachment also blocks the formation of biofilms, which can protect bacteria from antibiotics and allow them to cause persistent infections," explained Professor Cooper. "Other work in our lab has shown that honey can make MRSA more sensitive to antibiotics such as oxacillin -- effectively reversing antibiotic resistance. This indicates that existing antibiotics may be more effective against drug-resistant infections if used in combination with manuka honey."

This research may increase the clinical use of manuka honey as doctors are faced with the threat of diminishingly effective antimicrobial options. "We need innovative and effective ways of controlling wound infections that are unlikely to contribute to increased antimicrobial resistance. We have already demonstrated that manuka honey is not likely to select for honey-resistant bacteria," said Professor Cooper. At present, most antimicrobial interventions for patients are with systemic antibiotics. "The use of a topical agent to eradicate bacteria from wounds is potentially cheaper and may well improve antibiotic therapy in the future. This will help reduce the transmission of antibiotic-resistant bacteria from colonised wounds to susceptible patients."

## **Eggs**

### **Hearty welcome: Eggs have less cholesterol (The Times of India: 15.4.2011)**

Washington: Many people avoid dietary cholesterol for fear of increasing their risk for heart disease. However, experts from leading institutions have now dispelled some common myths surrounding dietary cholesterol – they found that such diets don't increase the risk of heart disease. They also found that eggs contain higher Vitamin D levels and less cholesterol than thought. A research has shown that saturated fat intake may be more likely to raise a person's blood cholesterol than dietary cholesterol intake.

The distinguished panel of the symposium speakers examined other factors impacting heart disease risk including refined carbohydrate intake, dietary cholesterol metabolism in the body and the effect of egg intake on blood vessels. Experts from the United States Department of Agriculture's Agricultural Research Service presented new nutrition data that indicates eggs are now lower in cholesterol.

## **Vegetarians**

### **Vegetarians Less Likely to Develop Metabolic Syndrome (Med India; 15.4.2011)**

Researchers claim that vegetarians are less likely to get heart disease, diabetes or a stroke than semi-vegetarians and non-vegetarians. These three conditions are closely linked to metabolic syndrome (the combination of cholesterol and blood pressure-related symptoms).

They have a 1/3rd lesser probability of these diseases as research shows that vegetarians have a 36% lower rate of metabolic syndrome. The study also found that even though the vegetarians were slightly older than non-vegetarians they had lower triglycerides, glucose levels, blood pressure, waist circumference and body mass index (BMI).

Giving up red meat gradually lowers the risk of developing these conditions. The study is published in the April issue of the journal Diabetes Care.

## **Diet**

### **A diet change may bring relief in asthma and allergies (New Kerala: 20.4.2011)**

An alteration in dietary habits can be helpful in bringing relief to those suffering from asthma or allergies.

Spring, with its warmer weather could be an unpleasant time for many allergy and asthma sufferers. But according to Fred Pescatore, the acclaimed author of “The Allergy and Asthma Cure” and the bestselling “The Hamptons Diet”, it doesn’t have to be that way.

“If you or someone you love has had to deal with sneezing, itchy eyes, breathlessness, rashes, and other symptoms this time of year, unbalanced eating habits may be to blame,” said Pescatore.

“Proper nutrition can make a dramatic difference. With insights into diet that I have compiled over the years, I have been able to rid or reduce many of my patients’ use of multiple medications for asthma and allergy. There’s no need for anyone to stay indoors or feel miserable for an entire season due to these conditions.” he added.

According to Pescatore, in addition to modifications in diet, certain nutritional supplements can help allergy and asthma sufferers. Specifically, vitamin D3 can decrease inflammation; Vitamin C can help in combating the added stress to our bodies caused by allergies, and Vitamin A can help in ridding the body of mucus. Additionally, Vitamin B12 stabilizes the imbalance of bacteria that occurs in the gut of most allergy sufferers.

Additionally, there are certain substances like Pantethine that work as a natural steroid that produces a helpful enzyme. Quercetin is one of nature’s best antihistamines, and magnesium helps the body to dispose off the toxins we consume daily that helps one to breathe more easily.

## **Mother's Diet**

### **Mother's Diet Key to Child Obesity (Med India: 20.4.2011)**

In a recent study it was found that a mother's diet during pregnancy can bring about a change in her baby's DNA, increasing its risk of obesity, heart disease and diabetes in later life.

Researchers said the study provided the first scientific evidence linking pregnant women's diet to childhood obesity, with major implications for public health.

"This a a major breakthrough because for the first time it gives us the potential to work out the optimal diet a mother should eat," Professor Peter Gluckman from Auckland University's Liggins Institute told AFP.

"That's likely to vary slightly from mother to mother, but it could be a major tool in addressing the obesity epidemic."

The study, conducted by scientists in Britain, New Zealand and Singapore, showed that what a mother ate during pregnancy could change the function of her child's DNA through a process called epigenetic change.

Children with a high degree of epigenetic change were more likely to develop a metabolism that "lays down more fat" and become obese, researchers found.

Such children were around three kilograms (6.6 pounds) heavier than their peers by the time they were aged six to nine, Gluckman said.

"That's a hell of a lot of extra weight at that age," he said, adding that the extra fat was likely to be carried into adulthood, raising the chances of developing diabetes and heart disease.

The researchers used umbilical cord tissue to measure the rate of epigenetic change in 300 babies, then examined whether it was linked to the children's weight when they were aged six to nine.

## **Diet**

### **Diet of emails, texts, tweets and status updates can drain the brain: Study(World Newspaper : 20.4.2011)**

A new study has shown that emails, texts, tweets and status updates could be detrimental to mental health. It suggested that modern technology could be damaging to the mind by bombarding it with too much information.

With the development of smart phones it is observed that users are becoming more adept at multi-tasking, as they switch between texts, emails and tweets. But evidence suggests that the constant demand to deal with multiple sources of information is weakening the ability to screen out irrelevant data and prioritise what is important, reported the Daily Mail.

Researchers at Stanford University in California have already discovered that persistent multi-tasking can impede long-term memory. Now a team from University of California (San Francisco) has concluded that multi-tasking can also hamper short-term memory performance, especially among older adults.

According to the San Francisco Chronicle, scientists found that multi-taskers performed worse in tests where they had to jump from one task to another - suggesting that they were easily distracted by irrelevant information. There are also concerns of possible technology addiction - with frequent users unable to stop checking their messages or sending out updates at every opportunity.

The newspaper quoted other research that shows that users are spending more time connected to a keyboard. Youngsters now spend an average of 7 hours and 38 minutes on entertainment media per day, but because they are often using more than one medium at any one time, they actually absorb about 10 hours and 45 minutes of content in 24 hours.

The lethal combination has forced some scientists to call for a 'technology diet' in a bid to prevent information overload.

## **Wheat flour and almonds**

### **Eat wheat flour and almonds to 'satisfy hunger pains' (New Kerala: 25.4.2011)**

Want to know the trick to control hunger pangs? Here is the clue.

Eating wheat flour and almonds increases the feeling of fullness, leading to reduced food intake and preventing overeating.

"Although it may affect people at different times throughout the day, reducing or satisfying those hunger pains is a common concern for those either trying to lose weight or maintain a certain weight," said the study's author, Linda Milo Ohr.

"Satiety, or the feeling of being full, is a hot topic addressed by the food industry in recent years," added Milo Ohr.

Satiety-increasing foods include:

- \* Whole grains, such as oats, barley, rye and corn. According to the research, the high-volume, low-energy density and the relatively lower palatability of whole-grain foods may promote satiation.

- \* Fiber, such as resistant starch and oligosaccharides. Resistant starch escapes digestion in the small intestine of healthy individuals and delivers the benefits of both soluble and insoluble fiber. The research found that the quantity of resistant starch in foods correlates with blood glucose response and reduced food intake after two hours. Oligosaccharides are complex carbohydrates that are found in beans and legumes, and they help maintain stable blood glucose levels when eaten as part of a meal. Like resistant starch, they are not digested by the small intestine and end up being metabolized and expelled from the large intestine.

- \* Protein. The author cited a study by Solae of St. Louis that found consumers understand the important role protein plays in helping to manage hunger, and they are interested in protein-enhanced versions of everyday foods such as soup, yogurt and breakfast cereal. Protein choices for satiety include soy, which animal studies have shown stimulates the release of cholecystokinin (CCK), a hormone that plays a role in appetite suppression; whey, which stimulates several gastrointestinal hormones that are thought to regulate appetite control in the brain; egg, which provides protein in the form of readily available, essential amino acids; and potato protein extract, which has shown promise for optimal satiety by enabling the release of CCK.

- \* Almonds. An ounce of almonds contains 6 grams of protein and are often suggested as snacks by popular weight loss programs because of their role in satiety.

The research has been published in the April issue of the Food Technology magazine.

## **Eat popcorn, cheese for healthy ageing**

### **Eat popcorn, cheese for healthy ageing (World Newspapers: 25.4.2011)**

Want to know the secret of healthy ageing? Here is the clue.

According to a research, people who eat a balanced diet, don't smoke, and exercise regularly lead longer, healthier lives. The following tips can help you focus on foods for key parts of the body that are important to healthy ageing:

- Bones: String cheese is not just for the young. Add calcium to your diet by snacking on a stick of string cheese when hunger strikes.
- Muscles: For a quick and easy snack, look for a nutrition bar with added soy protein or add a packet of soy or whey protein to your favourite smoothie.
- Eyes: Punch up your intake of the eye-popping nutrients lutein and zeaxanthin by making a spinach salad with slices of oranges. Many multivitamin and mineral dietary supplements also include lutein.
- Heart: Popcorn is a great source of whole grains.
- Mind: Salmon or tuna that is canned in water or in a shelf-stable pouch can make easy and affordable meals.

A positive attitude and regular physical activity are also key to maintaining good health at any age.

These tips are included in a new healthy aging video featuring the "Guy-a-titian" David Grotto, RD which is the fifth in the International Food Information Council (IFIC) Foundation's "Foods for Health" series.



## Coffee

### **An extra cup of coffee won't increase high blood pressure risk (World Newspapers: 25.4.2011)**

A new study has found that drinking several cups of coffee a day may not hike blood pressure risk or hypertension.

Data pooled in by researchers from six studies, covering 1,70,000 people, asked participants how much coffee they drank each day and then followed them for up to 33 years.

The results showed that nearly one in five persons developed high blood pressure, with the chance of diagnosis no different for people who said they drank more than five cups of a coffee a day compared with those who drank very little.

But a member of the research team, Liwei Chen, from the Louisiana State University School of Public Health in New Orleans, said that the relationship between coffee drinking and blood pressure is complicated by the possibility that it does not work the same way for everyone.

"People with a different genetic background may react to coffee differently," the Daily Mail quoted Chen, as saying.

"For some people maybe it's safe to drink a lot of coffee, but not for other people," she said.

"I don't think of coffee as a risk factor for high blood pressure," said blood pressure expert Lawrence Krakoff. However, he stopped short of giving people free rein to guzzle gallons.

"If people are drinking 12 cups a day and are not sleeping, I assume that is an important issue," he added.

## **Diet**

### **Diet can help keep your entrails calm (World newspapers: 26.4.2011)**

At least 10% of the urban population is affected by Irritable Bowel Syndrome (IBS). In fact, some estimates put the number at about 25%. The disorder calls for long-term treatment.

The International Foundation for Gastro-Intestinal Disorders has designated April as the IBS Awareness Month to focus attention on diagnosis of the disorder, its treatment, and quality of life issues.

“IBS is more common among urban population, due to sedentary lifestyle and a heat-and-eat diet. It is practically a functional problem and patients generally approach us with three kinds of symptoms — vague pain in the abdomen, constipation and loose stool. Many a time, patients do manifest more than one of these symptoms,” said Dr G Srikanth, director, gastroenterology services, BGS Global Hospital.

While IBS is a long-term problem and cannot be rectified with any particular course of medication, dietary modifications help a lot.

“Stress is another dominant factor in causing IBS. Many a time, stress disrupts coordination between cerebral nerves that link the brain to the intestine, leading to IBS. We advise patients to have proper healthy food and lots of fluids, besides indulging in at least 45 minutes of physical activities every day,” added Dr Shrikanth.

IBS is more common in women and people above 40-45 years of age, said Dr Priyanka Rohatgi, chief clinical nutritionist, head, department of nutrition and dietetics, Apollo Hospital and president, Indian Dietetic Association. Awareness about IBS is less and many a time the syndrome goes unreported as patient may not seek timely medical help and miss out reporting all the symptoms correctly, experts felt.

“If any of these IBS symptoms — constipation, diarrhoea and passage of fecal mucous — persist for 9-12 weeks, it should not be ignored. One should be observant for crampy, achy pains with feeling of fullness, bloating and should seek medical advice. Majority of IBS patients complain of acidity, heartburn, early satiety, nausea, vomiting, dyspepsia, low back pain, fatigue, sleeplessness, altered concentration, micturition (increased frequency of urination and incomplete urinary evacuation),” said Dr Rohatgi.

Diet definitely plays a dominant role in keeping IBS under control. “We advise patients with IBS to lessen their intake of spices and have small frequent meals. Based on their food habits, we advise them on a daily diet with moderate fibre intake like fruits and

vegetables. Less of caffeine is advisable. In case of diarrhoea, intake of milk products must be reduced. Sugar and fat must also be restricted,” said Jyothi Prasad, chief dietician, Manipal Hospital.

## **Diet**

### **Diet may repair kidney damage in diabetics (The Times of India: 26.4.2011)**

London: A controlled diet high in fat and low in carbohydrate may help repair kidney damage in diabetics, a new study has found. Researchers at the Mount Sinai School of Medicine in New York found a “ketogenic diet” could reverse the damage caused to tubes in the kidneys by too much sugar in the blood.

For their study, the researchers used laboratory mice with both type 1 and type 2 diabetes. Once kidney damage had developed, half the mice were put onto the ketogenic diet, which is 87% fat and mimics the effect of starvation. After eight weeks, the researchers noted that kidney damage was reversed in those rodents which were on the highly controlled diet.

Charles Mobbs, who led the research, said: “Our study is the first to show that a dietary intervention alone is enough to reverse this serious complication of diabetes.” The scientists said more research is needed to ascertain whether such a diet would yield same benefits for humans too.

## **Potatoes**

### **Potatoes back on menus as healthy meal: Study (World Newspapers: 27.4.2011)**

Potato-based dishes are turning up on more dinner tables and restaurant menus as a healthy addition to almost any meal, according to a new research.

Donald E. Pszczola, senior editor of Food Technology, examined the history of the spud as well as some of the innovative ways it can be prepared and new products on the market that showcase the healthy advantages of potatoes.

"Compared by some to a blank slate, potatoes can effectively work with a wide range of different flavors and ingredients," said Pszczola.

He found that potatoes are appearing on menus in a variety of dishes.

Lime Chicken Potato Tacos, Creamy Potato Leek Soup with Tangy Tarragon Drizzle, Mediterranean-inspired cuisine such as Salad with Potato Medley, Potato Crusted Goat Cheese, Potato Risotto, Potato Chips Strips, Gnocchi Tart with Purple Potato Puree and Caramelized Cauliflower and Potato Soup are some of the more innovative potato-based dishes.

Pszczola published his research in the "Ingredients" column of the April 2011 issue of Food Technology magazine.

## **Vitamin E**

### **Vitamin E Helps Diminish a Type of Fatty Liver Disease in Children, Study Suggests (Science Daily: 28.4.2011)**

A specific form of vitamin E improved the most severe form of fatty liver disease in some children, according to a study funded by the National Institutes of Health. Results appear in the April 27 issue of the Journal of the American Medical Association. A previous study found vitamin E effective in some adults with the disease.

Nonalcoholic fatty liver disease (NAFLD) is the most common chronic liver disease among U.S. children. NAFLD ranges in severity from steatosis (fat in the liver without injury) to nonalcoholic steatohepatitis or NASH (fat, inflammation, and liver damage). Fatty liver increases a child's risk of developing heart disease and liver cirrhosis. The only way to distinguish NASH from other forms of fatty liver disease is with a liver biopsy. Weight loss may reverse the disease in some children, but other than dietary advice, there are no specific treatments. Excess fat in the liver is believed to cause injury by increasing levels of oxidants, compounds that damage cells.

Most children with fatty liver disease are overweight and resistant to insulin, a critical hormone that regulates energy. Boys are more likely affected than girls, as are Hispanic children compared to African-Americans and whites.

Using liver biopsies, researchers found that after 96 weeks of treatment, 58 percent of the children on vitamin E no longer had NASH, compared to 41 percent of the children on metformin (a diabetes drug), and 28 percent on placebo. Vitamin E was better than placebo because it significantly reduced enlargement and death of liver cells.

"These results suggest that vitamin E improves or resolves NASH in at least half of children, which we previously showed to be true in adults," said Stephen P. James, M.D., director of the digestive diseases and nutrition division at NIH's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), which funded the study. While the results are encouraging, patients using vitamin E for NASH should be under a doctor's care. "We hope to build on these results by looking for other therapies and reliable, non-invasive ways to monitor the disease and response to therapy."

The Treatment of Nonalcoholic Fatty Liver Disease in Children (TONIC) trial studied whether vitamin E (an antioxidant) or metformin could improve fatty liver disease. The endpoint to measure success was either a sustained reduction in the liver enzyme alanine aminotransferase (ALT) or improvements in the liver as shown by biopsies. A total of 173 children, mostly whites and Hispanics ages 8 to 17, were recruited into three treatment groups. The children received either 500 milligrams of metformin or 400 international units of a natural form of vitamin E or placebo twice a day for two years.

Neither vitamin E nor metformin were significantly better than placebo in reducing ALT levels. Twenty-six percent of patients on vitamin E, 16 percent on metformin, and 17 percent of those on placebo had reduced liver enzyme levels. Interestingly, ALT levels improved more rapidly among patients on vitamin E (within six months) compared to those on placebo. The ALT levels among the children on placebo improved over the two years.

"We believe all children in the trial benefited from the frequent diet and exercise advice provided throughout the study," said Joel E. Lavine, M.D., Ph.D., a TONIC principal investigator and professor of pediatrics at Columbia University, New York. "Now we have information on the natural history of a placebo group over time, which will help us design future trials."

Using biopsies in children with liver disease is unique. "TONIC is ground-breaking on two fronts. It is the first study to use liver biopsy to evaluate potential treatments for any liver disease in children," said Patricia Robuck, Ph.D., M.P.H., the project scientist at NIDDK. "It is also the first multi-center, randomized, controlled trial to use a liver biopsy to evaluate a therapy for fatty liver in children, considered the most rigorous design for studies of liver disease."

## **Kava Tea and Kidney**

### **Kava Tea and Kidney Failure? (Med India: 29.4.2011)**

A recent insight has put kava tea in bad light following its connection with kidney failure and muscle breakdown.

When doctors at the University of Rochester Medical Center emergency room examined a 34-year-old bicyclist, who was found collapsed on a roadside, they were surprised to find what had caused his ills.

They described it as a cautionary tale, emphasizing the importance of taking a thorough medical history, including the use of any and all herbal remedies and pharmaceuticals.

In this instance the patient recovered, and doctors noted that adverse effects are somewhat rare.

However, across the country the number of kava bars is on the rise, and a recent article noted at least three new businesses in Palm Beach, Fla., despite several documented health problems due to kava ingestion.

"With the increased use of herbal remedies, we in the medical field have become accustomed to asking patients about their use," URMCC Department of Emergency Medicine Chair Michael F. Kamali, M.D., said.

## **Diet**

### **Lay off fat, say new diet rules for Indians (The Times of India: 2.5.2011)**

Mumbai: If you have been on a high-carb (carbohydrate), high-fat, low-protein diet — it's time to make some changes. New national dietary guidelines for Indians, finetuned to suit the urban sedentary lifestyle, suggest decrease in consumption of saturated fat, eating complex carbs (cereals and pulses), high-fibre food (fruits and vegetables), increase in consumption of proteins (soya, whole grams and milk) and decreased salt intake.

These are the first such national consensus guidelines published in a US diabetes journal, which have been reviewed by independent experts.

The guidelines, which took over a year to be formulated by 100-odd national doctors and nutritionists, have been modified keeping in mind the alarming rise in obesity and chronic diseases like diabetes and hypertension, current food habits and Indian body type. These were further reviewed by 25 international experts. At present,

nutritionists follow dietary guidelines which were drawn up nearly a decade ago.

Says Dr Anoop Misra, who led the consensus group: “While these guidelines are applicable to Asian Indians in any geographical setting, they are particularly applicable to those residing in urban and in semi-urban areas. Proper application of these guidelines will help curb the rising epidemics of the metabolic syndrome, diabetes, and heart disease in Asian Indians”.

Experts say that fresh guidelines are required since with urbanization, there has been a transition in lifestyle, diet and food habits over the last decade.

A hectic lifestyle and the easy availability of convenience foods have led to an imbalanced diet, irregular meals and frequent snacking on fast foods (with low nutritional value), including ready-to-use gravies and soups, packaged salty snacks, cookies, rather than traditional home-cooked food.

‘Indians metabolically different from others’

New national dietary guidelines are now available for Indians to cope with changing urban lifestyles.

Consumption of animal foods, sweetened carbonated drinks, sugar, and sweeteners has increased with urbanization. This has led to an alarming rise in obesity, particularly in children, due to high consumption of calories, saturated fats, trans-fatty acids (TFAs) and sugar. While in the older age group, diabetes, hypertension, and cardiovascular disease are on the rise, predominantly in urban areas but also in semiurban and rural areas.

Nutritionist Dr Shilpa Joshi says “The guidelines have been drawn up keeping in mind our sedentary lifestyle, and modern food habits of eating-out culture and ready-to-eat packaged food. Indians are metabolically different from others such as Whites, and also eat different foods. Also, existing guidelines did not address the urban middle-class diet which is deficient in vital nutrients”.

According to the review of consensus guidelines published in a US diabetes journal: “In comparison with the previous guidelines of the National Institute of Nutrition, the consensus group recommends a reduction in the intake of carbohydrate (50-60% of total energy/day), preferential intake of complex carbohydrates and low GI foods, higher intake of fibre (25-40g/day), lower intake of saturated fats (less than 10% of total energy/day), optimal ratio of essential fatty acids/day (1-2% of energy), slightly higher protein intake (10-15% of total energy/day), lower intake of salt (5 gm/day), and restricted intake of sugar (less than 10% of total energy/day)”.

The guidelines not only lay down recommendations for nutrition, but also talk about quality and quantity of cooking oils, cooking methods, water intake, alcohol intake, choice of foods while eating out, meal timings and gaps between meals, and other dietary habits. In order to ensure optimal fat quality in Asian Indian diets, use of two or more vegetable oils is suggested.

The objective was to revise the previous dietary guidelines for India (prepared in 1998 by the National Institute of Nutrition), specifically for healthy living for Asian Indians and prevention of diet-related non-communicable diseases, and to make dietary guidelines user-friendly.

## **Junk food**

### **Junk food cravings traced to prehistoric instinct (The Times of India: 2.5.2011)**

London: Ever wondered why people usually have a craving for sugary or fatty snacks rather than healthy options like fruits and vegetables? Well, it has nothing to do with one having a “sweet tooth”, say British experts.

According to them, food craving is not simply hunger — in fact, it occurs for a variety of reasons like evolution; psychological factors such as stress, anxiety and unhappiness; and sometimes a genuine need for certain foods.

“Cravings are an overwhelming sensation of desire for a certain food. There are a number of chemicals in the brain that are associated with this.”



“First, there is dopamine, a brain chemical that’s involved in learning and concentration. When we experience something new, dopamine is released.”

“This works in tandem with other brain chemicals called opioids, which give feelings of enjoyment. The combination of these factors mean the brain associates certain activities with pleasure, and it teaches us to do them again and again,” Leigh Gibson of Roehampton University said.

Then, experts say, from an evolutionary point of view, junk food cravings are linked to prehistoric times when the brain’s opioids and dopamine reacted to the benefit of high-calorie food as a survival mechanism.

“We are programmed to enjoy eating fatty and sugary substances, and our brains tell us to seek them out. Today, we still have the same chemical reactions to these foods,” he said.

## **Antioxidant**

### **Antioxidant May Prevent Alcohol-Induced Liver Disease, Study Suggests(Science Daily: 3.5.2011)**

An antioxidant may prevent damage to the liver caused by excessive alcohol, according to new research from the University of Alabama at Birmingham. The findings, published online April 21, 2011, in the journal *Hepatology*, may point the way to treatments to reverse steatosis, or fatty deposits in the liver that can lead to cirrhosis and cancer.

The research team, led by Victor Darley-USmar, Ph.D., professor of pathology at UAB, introduced an antioxidant called mitochondria-targeted ubiquinone, or MitoQ, to the mitochondria of rats that were given alcohol every day for five to six weeks in an amount sufficient to mirror excessive intake in a human.

Chronic alcoholics, those who drink to excess every day, experience a buildup of fat in the liver cells. When alcohol is metabolized in the liver, it creates free radicals that damage mitochondria in the liver cells and prevent them from using sufficient amounts of oxygen to produce energy. Moreover, the low-oxygen condition called hypoxia worsens mitochondrial damage and promotes the formation of the fatty deposits that can progress to cirrhosis.

Darley-USmar and his collaborators say that the antioxidant MitoQ is able to intercept and neutralize free radicals before they can damage the mitochondria, preventing the cascade of effects that ultimately leads to steatosis.

"There has not been a promising pharmaceutical approach to preventing or reversing the long-term damage associated with fatty deposits in the liver that result from excessive consumption of alcohol," said Darley-USmar. "Our findings suggest that MitoQ might be a useful agent for treating the liver damage caused by prolonged, habitual alcohol use."

"Previous studies have shown that MitoQ can be safely administered long-term to humans," said Balu Chacko, Ph.D., a research associate and co-author of the study. "As it has been shown to decrease liver damage in hepatitis C patients, it may have potential to ameliorate the initial stages of fatty liver disease in patients with alcoholic and non-alcoholic liver disease."

The Annals of Hepatology estimate that alcohol abuse costs \$185 billion annually in the United States, and that 2 million people have some form of alcoholic liver disease. It links as much as 90 percent of cirrhosis of the liver is related to alcohol abuse and up to 30 percent of liver cancer.

Darley-USmar, who is also the director of the Center for Free Radical Biology at UAB, says his team is in discussions with the National Institutes of Health to develop a whole family of drugs based around interactions with mitochondria. He suggests such drugs might be effective in treating cardiovascular disease, kidney disease and neurodegenerative disorders.

"We know that free radicals play a role in human disease, and we have developed antioxidants that can eliminate free radicals in the laboratory," he said. "Unfortunately, previous trials using antioxidants in humans have not been as successful as anticipated. The difference with our current findings is that we targeted a specific part of the cell, the mitochondria. This is a unique approach, and this is one of the few pre-clinical trials that shows effectiveness."

Darley-USmar says the findings also may have significance for the treatment of metabolic syndrome, a rapidly growing condition that affects some 50 million Americans, according to the American Heart Association.

"Metabolic syndrome describes a complex interaction of factors caused by obesity which includes damage to the liver due to an increase in free radicals, hypoxia and deposition of fat," said Darley-USmar. "It's quite similar to alcohol-dependent hepatotoxicity. It would be interesting to see if an antioxidant such as MitoQ had any therapeutic effect in preventing liver damage in those with metabolic syndrome."

## **Caffeine**

### **Caffeine, technology ruining teens' sleep patterns (World Newspapers: 3.5.2011)**

Researchers have for decades been studying the effect of increasing use of media at night and its impact on adolescent sleep time.

Now, a new study has for the first time evaluated the consequences of caffeine and technology at night and their effect on adolescent sleep.

Working with data gathered through interviews of 100 children ages 12 to 18, Christina Calamaro, assistant professor and director of the School's Primary Care Pediatric Nurse Practitioner master's specialty discovered that the more nighttime multitasking teens did, the more caffeine they consumed, and the less they slept.

Eighty-five percent of the teens in the study drank caffeine daily, and 11% of those she studied drank more than 400mg of caffeine daily—the equivalent of four espressos.

"It is not just about caffeine, it's about calories," she said.

The study has been published in Pediatrics.

## **Dietary calcium,**

### **Dietary calcium, supplements better than prescription bone-building meds (New Kerala: 4.5.2011)**

A study has found that increasing dietary calcium and vitamin D or taking calcium and vitamin D supplements is better than taking prescription bone-building medicines.

Karen Chapman-Novakofski, a U of I professor of nutrition and co-author of the study said that for many people, prescription bone-building medicines should be a last resort.

The study reported that adults who increase their intake of calcium and vitamin D usually increase bone mineral density and reduce the risk for hip fracture significantly.

These results were often accomplished through supplements, but food is also a good source of these nutrients.

The scientist said that prescription bone-building medications are expensive, and many have side effects, including ironically an increase in hip fractures and jaw necrosis.

"Bisphosphonates, for instance, disrupt normal bone remodelling by shutting down the osteoclasts-the cells that break down old bone to make new bone," she explained.

"When that happens, new bone is built on top of old bone. Yes, your bone density is higher, but the bone's not always structurally sound.

"Although the test reports that you're fine or doing better, you may still be at risk for a fracture," she said.

Lead author Karen Plawewski, director of the U of I's dietetics program said, a woman in midlife can get enough calcium in her diet without gaining weight.

"Menopausal women should consume 1,200 milligrams of calcium a day. Three glasses of 1 percent to skim milk will get you up to 900 milligrams. The rest can easily be obtained through calcium-rich and calcium-fortified foods," Plawewski said.

According to Plawewski, the number of foods fortified with calcium and vitamin D is increasing exponentially. Examples are cheese, soy milk, orange juice, yoghurt, crackers, cereal, bread, breakfast bars, and even pancakes.

She recommends a "portfolio diet" that contains a number of nutrients, not just extra calcium and vitamin D.

For bone health, the researchers also encourage consuming adequate protein, less sodium, and more magnesium and potassium.

"That can be done by following a diet that's high in fruits and vegetables, has adequate calcium and protein, and is light on salt," she said.

Chapman-Novakofski noted that the National Osteoporosis Foundation recommends more physical activity. She suggests a combination of aerobic, strength, balance, and flexibility exercises with a focus on improving your core muscles so you can catch yourself if you start to fall.

The paper has been published in a recent issue of *Nutrients*.

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Chapman-Novakofski noted that the National Osteoporosis Foundation recommends more physical activity. She suggests a combination of aerobic, strength, balance, and flexibility exercises with a focus on improving the core muscles.

## **New Food Safety Act**

### **New Food Safety Act to be enforced in 3 months (The Tribune: 12.5.2011)**

Delhi health minister A.K. Walia today said that the city government was gearing up to enforce the new Food Safety and Standard Act 2006 in the next three months. The rules under the Act had been notified, he said.

The minister said with the enforcement of the new Act, food adulteration would attract heavy fines and punishments, including life imprisonment. A few strict provisions had been included in the Act to increase its deterrent values, he added.

He stated that after the enforcement of the new Act, adulteration of food items in Delhi would become very difficult as fear of strict punishment would discourage traders.

The department of Prevention of Food Adulteration is committed to checking the menace of food adulteration as it is a major health hazard, Walia said.

Walia, while giving details of the new Act, said that all those in food business would have to get themselves registered or get licences. The small shopkeepers will have to apply for registration whereas other business establishments will have to get a licence.

Under the new law, the punishments for adulteration have been divided into two categories. The first category of punishment is for selling substandard and fake brand food items and the second category is for issuing misleading advertisements about food products (not injurious to health). The complaints against the second category of offences will not go to court and will only invite a fine of up to Rs 10 lakh.

For selling unsafe food, a trader could be punished with imprisonment up to 7 years along with a fine of Rs 10 lakh. In case of the death of a person due to the consumption of adulterated food items, the seller could be punished with jail term ranging from seven years to life imprisonment and a fine up to Rs 10 lakh. The new Act will have a provision of compensation for injury or death.

In case of a death, the compensation will not be less than Rs 5 lakh. In case of grievous injury, the victim will get compensation up to Rs 3 lakh and in case of minor injury, up to Rs 1 lakh.

## **Coffee**

### **Drinking coffee reduces breast cancer risk (New Kerala: 12.5.2011)**

Coffee drinkers enjoy not only the taste of their coffee but also a reduced risk of cancer with their cuppa, according to a research.

It showed that drinking coffee specifically reduces the risk of antiestrogen-resistant estrogen-receptor (ER)-negative breast cancer.

Swedish researchers compared lifestyle factors and coffee consumption between women with breast cancer and age-matched women without. They found that coffee drinkers had a lower incidence of breast cancer than women who rarely drank coffee.

The group from Karolinska Institutet explained that, "There is often conflicting information about the beneficial effects of coffee – when we compared our results to that of a German study we discovered that their data showed the same trend, but the relationship was much weaker. We suggest that this may have something to do with the way the coffee was prepared, or the type of bean preferred. It is unlikely that the protective effect is due to phytoestrogens present in coffee since there was no reduction in the incidence of ER-positive cancer in this study."

So while it is evident that coffee may have beneficial effects in protecting women from ER negative breast cancer the exact mechanism and compounds involved are not yet clear and not all types of coffee are the same.

The study has been published in the BioMed Central's open access journal Breast Cancer Research.

## **Onions, green tea and olive**

### **Onions, green tea and olive leaf can help tackle obesity (New Kerala: 16.5.2011)**

A biomedical professor has found onions, green tea and olive leaf extract can fight obesity and its related diseases such as heart disease, diabetes and fatty liver, even when a high-fat and high-carbohydrate diet is indulged in.

Prof Lindsay Brown, from the University of Southern Queensland, tested a range of foods on rats that were being fed an unhealthy diet high in sugar and fat.

He found certain foods helped prevent the growth of inflammatory cells in the animals' fat pads, located in the abdomen, which take fat from the blood stream and store it, reports the Daily Telegraph.

Rats being fed food such as onions, green tea, olive leaf extract, purple carrots and chia seeds had a decreased number of fat cells and lost weight by the end of the study, despite maintaining a poor diet overall.

The rodents were also found with improved liver and heart function.

Brown said that the key message of his research was that people should "eat better rather than eat less".

Onions and olive leaf extract contain a flavonoid called rutin - also found in apples, tea and red wine - that Brown found reversed or prevented metabolic changes in rats fed the high-sugar, high-fat diet.

The findings have been published in the Journal of Nutrition and the Current Pharmaceutical Biotechnology.

## **Coffee**

### **Coffee May Reduce Risk of Lethal Prostate Cancer in Men(Science Daily: 18.5.2011)**



Men who regularly drink coffee appear to have a lower risk of developing a lethal form of prostate cancer, according to a new study led by Harvard School of Public Health (HSPH) researchers. What's more, the lower risk was evident among men who drank either regular or decaffeinated coffee.

The study was published May 17, 2011, in an online edition of the Journal of the National Cancer Institute.

"Few studies have specifically studied the association of coffee intake and the risk of lethal prostate cancer, the form of the disease that is the most critical to prevent. Our study is the largest to date to examine whether coffee could lower the risk of lethal prostate cancer," said senior author Lorelei Mucci, associate professor of epidemiology at HSPH. Lethal prostate cancer is cancer that causes death or spreads to the bones.

Prostate cancer is the most frequently diagnosed form of cancer and the second leading cause of cancer death among U.S. men, affecting one in six men during their lifetime. More than 2 million men in the U.S. and 16 million men worldwide are prostate cancer survivors.

"At present we lack an understanding of risk factors that can be changed or controlled to lower the risk of lethal prostate cancer. If our findings are validated, coffee could represent one modifiable factor that may lower the risk of developing the most harmful form of prostate cancer," said lead author Kathryn Wilson, a research fellow in epidemiology at HSPH.

The researchers chose to study coffee because it contains many beneficial compounds that act as antioxidants, reduce inflammation, and regulate insulin, all of which may influence prostate cancer. Coffee has been associated in prior studies with a lower risk of Parkinson's disease, type 2 diabetes, gallstone disease, and liver cancer or cirrhosis.

The study examined the association between coffee consumption and the risk of prostate cancer, particularly the risk for aggressive prostate cancer among 47,911 U.S. men in the Health Professionals Follow-Up Study who reported their coffee consumption every four years from 1986 to 2008. During the study period, 5,035 cases of prostate cancer were reported, including 642 fatal or metastatic cases.

Among the findings:

Men who consumed the most coffee (six or more cups daily) had nearly a 20% lower risk of developing any form of prostate cancer.

The inverse association with coffee was even stronger for aggressive prostate cancer. Men who drank the most coffee had a 60% lower risk of developing lethal prostate cancer.

The reduction in risk was seen whether the men drank decaffeinated or regular coffee, and does not appear to be due to caffeine.

Even drinking one to three cups of coffee per day was associated with a 30% lower risk of lethal prostate cancer.

Coffee drinkers were more likely to smoke and less likely to exercise, behaviors that may increase advanced prostate cancer risk. These and other lifestyle factors were controlled for in the study and coffee still was associated with a lower risk.

The results from this study need to be validated in additional populations that have a range of coffee exposure and a large number of lethal prostate cancer cases. If confirmed, the data would add to the list of other potential health benefits of coffee. The authors currently are planning additional studies to understand specific mechanisms by which coffee may specifically lower the risk of lethal prostate cancer.

The study was supported by the National Cancer Institute at the National Institutes of Health, the American Institute for Cancer Research, and the Prostate Cancer Foundation.

## **Coffee**

### **Cup of coffee keeps prostate cancer away (The Times of India: 19.5.2011)**

Washington: More is better when it comes to drinking coffee to ward off the risk of deadly prostate cancer, according to a major US study released by researchers at the Harvard School of Public Health.

Men who drank six or more cups per day had a 60% lower risk of developing the most lethal type of prostate cancer and a 20% lower risk of forming any type of prostate cancer compared to men who did not drink coffee, it said. Even just one to three cups per day was linked to a 30% lower risk of developing lethal prostate cancer.

“Few studies have specifically studied the association of coffee intake and the risk of lethal prostate cancer, the form of the disease that is the most critical to prevent,” said Harvard associate professor and senior author Lorelei Mucci.

The effects were the same whether the coffee was caffeinated or decaffeinated, leading researchers to believe the lower risk could be linked to the antioxidant and anti-inflammatory benefits of coffee.

The study examined 47,911 US men who reported on how much coffee they drank every four years from 1986 to 2008. PTI

## **Eating disorders**

### **Eating disorders: Chew on this (world newspapers (World Newspapers: 23.5.2011))**

According to various studies and related reports, for a body image conscious young population, the average age of onset for anorexia and bulimia is 13 years.

The incidence of eating disorders though less in India, is said to prevail primarily among the upper middle class and upper class girls. These eating disorders are compulsive food rituals that result in various abnormalities. While anorexia is characterised by refusing to eat, bulimia involves bingeing and then purging due to guilt. Explains Dr Lata Hemchand, clinical psychologist and professor at Richmond Fellowship College, “Eating disorders are associated with mood disorders. Due to a combination of depression and an exaggerated body perception, the appetite drops resulting in disorders.”

Individuals suffering from eating disorders are always occupied with thoughts of food, and resort to food as a comfort factor when they feel neglected and ignored. These psychological and behavioural conditions need a strong and continuous intervention. Sheela Krishnaswamy, nutritionist and founder of NICHE, a nutrition consulting firm says, “These are not just nutritional or psychological problems. They can lead to severe deficiencies like irregular menstrual cycle, anaemia, hair loss, dull skin, deteriorating bone health, reduction in bone density and muscle mass.” These disorders need constant care and counselling that help restore normalcy. However, the question really is, is it possible to regain normalcy?

Anorexic and bulimic individuals are always in denial and to recognise the disorder on the onset is difficult. Dr Yesheshwini Kamaraju, consultant psychiatrist, says, “It is due to a lack of awareness regarding these disorders that most cases often go neglected in the initial stages.” Especially in the case of youngsters, since large segments of them are in denial, it is difficult to bring them back to normalcy immediately. The key to bring them back to a healthy lifestyle is by bringing an attitude change. As Sheela points out, “It is the blend of a medication, counselling and nutrition that helps the individual restore normalcy.”

The most important aspect that helps restore normalcy is not treatment. It is the follow up, point out experts.

These sessions are the toughest part, as the relapse rates are high among patients. They are forthcoming the first few times, but as the sessions progress, denial sets in again resulting in a fall out. Dr Hemchand, speaking of the right treatment, says, “The best way to fight these disorders is through cognitive behaviour therapy. It involves teaching the patient to challenge their thoughts and arrive at a logical thinking process.”

Treating patients of eating disorders is a long drawn procedure. Dr Kamaraju, says, “Counselling is a continuous and a stepwise process. The counsellor should take lead from the patient for a productive session. It is not just the counsellor’s task. Relapse can be avoided only if the patient is also responsible, puts in effort and follows up regularly.”

However it does not end at attaining a certain amount of normalcy. In order to maintain a good and healthy lifestyle, it is essential to involve family therapies where family members of the patient are taught to deal with stress, conflicts and domestic problems in a different manner that helps the individual recoup faster. Psychologists around the world agree that, creating insight, teaching healthy coping styles, relationship counselling and awareness about constructive mechanisms to deal with stress are imperative for improvement.

## **Cheese**

### **Say cheese: Dairy produce doesn’t up heart risk (The Times of India: 23.5.2011)**

Contrary to the beliefs that eating cheese and butter may lead to heart attack, a new study has claimed that saturated fat doesn’t pose a risk for your most precious organ.

Researchers at Brown University in the US who surveyed thousands of middleaged people found that even those who ate more than half a kilo of cheese did not seem to suffer from increased risk.

It was also found that nutrients in dairy products actually counteract the harmful effects. Stella Aslibekyan, who led the study, said: “We looked at heart attack risk and dairy products in their entirety and then looked at separate components of those dairy products, including fats, and it turns out that the results are null.

She doesn't believe the saturated fats in dairy products are harmless, but says other nutrients such as calcium and vitamin D may protect against heart disease.

## **Food Security Act**

### **Mending the Food Security Act (The Hindu: 24.5.2011)**

The National Advisory Council has proposed a framework for the National Food Security Act. But its potential could be wasted by a flawed approach to the PDS.

Two years have passed since the Central government announced that a draft National Food Security Act (NFSA) would be posted on the Food Ministry's website "very soon." After prolonged deliberations, a detailed framework for this Act has recently been proposed by the National Advisory Council (NAC), and a draft is on the anvil. This is a "compromise draft" of sorts, heavily influenced by the government's own concerns and priorities.

The NAC framework includes important provisions relating, for instance, to child nutrition, reform of the public distribution system (PDS), and redress of grievances. It has the potential to put all food-related schemes on a new footing, in a rights framework. However, this potential is in danger of being wasted by a flawed approach to the PDS.

In this approach, the PDS rests on a three-way division of the population, among "priority," "general" and "excluded" households. (This article focusses on rural areas.) Priority households, covering at least 46 per cent of the rural population at the all-India level, are to get 35 kg of grain a month at "Antyodaya prices" (Rs. 3 a kg for rice, Rs. 2 for wheat and Re. 1 for millets). General households will get 20 kg at no more than half of the Minimum Support Price. And excluded households, which account for 10 per cent of the rural population, will get nothing.

This framework is problematic. First, it hinges on a lasting division of the population into three groups, without any clarity as to how the groups are to be identified. In the absence of any obvious alternative, the NAC is effectively falling back on the Below Poverty Line census to identify priority groups. This is a major setback — the NAC's entire work began with a virtually unanimous rejection of BPL-based targeting for the PDS. Exclusion errors in earlier BPL censuses were very large, and the next BPL census is unlikely to fare much better, judging from the pilot survey.

Second, since identification criteria are left to the Central government, with some discretion for State governments, nobody has guaranteed PDS entitlements under the Act, except for a few ultra-marginalised groups (such as the so-called Primitive Tribal Groups) which have a right of “automatic inclusion” in the priority list. Other households have no legal entitlement to be included in the priority list or, for that matter, in the general list. Therefore, they have no guaranteed PDS entitlements at all. This undermines the basic purpose of the Act.

Third, the transition from the current Above Poverty Line-Below Poverty Line framework to the NAC framework is likely to be disruptive. There are at least three major sources of disruption: the creation of an “excluded” category; the transition to a new BPL list; and the switch from household to per capita entitlements. Each of these changes entails a loss of entitlements for significant numbers of households. Meanwhile, the entitlements of other households will be enhanced. Can we expect this transition to happen without major tensions, or even to be completed at all?

Fourth, the NAC framework fails to “de-link” PDS entitlements from official poverty estimates, and to prevent a rapid shrinkage of PDS coverage over time. It is well understood by now that official poverty lines in India are abysmally low, and that undernutrition is not confined to households below the “poverty line.” In the NAC framework, 46 per cent coverage of priority groups in rural areas corresponds to the proportion of the population below the “Tendulkar poverty line,” plus a margin of 10 per cent for targeting errors. This is significantly higher than the current BPL coverage of about 33 per cent. But except for ruling out any reduction of PDS entitlements before the end of the 12th Five Year Plan (which is only a few years from now), nothing in the draft NFSA prevents the government from reducing PDS coverage in tandem with official poverty estimates over the years.

Fifth, the idea of a universal PDS in the poorest 200 districts was dropped from the NAC framework (after being agreed and placed on record). This was an important idea, because any targeting process here is likely to lead to massive delays, fraud, and exclusion errors. In many of these districts, the local administration has little credibility. Large numbers of poor households are outside the BPL list, and are likely to remain excluded from the proposed “priority” list. Further, targeting is pointless in areas where an overwhelming majority of the population is vulnerable to food insecurity. Launching a universal PDS in these districts would have addressed a large part of the food insecurity problem in rural India in one go, at a small extra cost.

Sixth, the NAC abandoned another important idea as it went along: the automatic inclusion of all Scheduled Caste and Scheduled Tribe (SC/ST) households in the priority

list — unless they come within the standard exclusion criteria. This will be a major protection against exclusion errors, and a well-justified form of positive discrimination in favour of SC/ST families. But the idea was dropped, on the grounds that it is difficult to reconcile with pre-specified “caps” on the coverage of priority groups at the State level based on poverty estimates. Punjab, for instance, has a low poverty ratio but a high proportion of SC/STs in the population — there is no obvious way to handle this.

In short, the NAC framework not only perpetuates the flaws of BPL targeting but also institutionalises artificial social divisions under the law. It is not difficult to imagine the Act being used as a foothold to extend these divisions to other domains.

The obvious alternative, a universal PDS, is a ‘no-no’ for the Central government. Is there another way to repair, or at least contain, the damage? I believe there is. Before coming to that, let me mention an interesting finding of recent BPL identification studies (by Reetika Khera, Sabina Alkire, and Himanshu, and others). These analyses, mainly based on the 2004-05 data from the National Sample Survey or the 2005-06 data from the National Family Health Survey, suggest that about 25 to 30 per cent of households in rural India meet simple, transparent and verifiable “exclusion criteria,” such as having a government job, owning a motorised vehicle, or living in a multi-storied pucca house.

This suggests a simple but far-reaching modification of the NAC framework: expand the excluded category, but extend “priority” entitlements (35 kg of grain at Antyodaya prices) to all other households. With an exclusion ratio of, say, 30 per cent, the foodgrain requirements will be the same as in the current NAC framework. The financial cost will be a little higher (because all entitled households will pay Antyodaya prices), but the extra cost will be a small fraction of the total food subsidy.

In this “quasi-universal” framework, every rural household will be entitled, by law, to 35 kg of grain a month at Antyodaya prices, unless it comes within the well-defined “exclusion criteria.” Everyone will be clear about their legal entitlements. The burden of proof, so to speak, will fall on the government to exclude a household, and poor households will be well protected from exclusion errors. State governments will be free to move even closer to universalisation, if they wish, by waiving some exclusion criteria and contributing additional resources to the PDS (as many States are already doing). Automatic inclusion of SC/STs (unless they come within the exclusion criteria) will be built in. PDS entitlements will be de-linked from the APL-BPL rigmarole, and from poverty estimates. And while some social division will remain, it will be “at the top,” without undermining solidarity among disadvantaged groups.

Two further modifications of the NAC framework will round up this proposal quite nicely. First, the idea of a universal PDS in the poorest 200 districts could easily be reinstated, by waiving exclusion criteria in these districts for an initial period of, say, 20

years. Second, the Act could be gradually extended to the whole country, over a period of, say, three years, starting with the poorest 200 districts. This will make it easier to meet the additional foodgrain requirements in a phased manner.

This approach is not perfect, but it seems much preferable to the confused, impractical and divisive framework that has emerged from the NAC (or rather, from protracted discussions between the NAC and the government). It will be easy to adapt the current NFSA draft to this approach, while retaining the valuable work that has been done by the NAC on other aspects of the draft. This small modification could make a big difference.

### **Fibre-rich foods**

#### **Fibre-rich foods guard against bowel cancer (world Newspapers: 24.5.2011)**

Leading scientists have found more evidence than ever before that foods rich in fibre prevent bowel cancer.

They found that three servings a day of cereal fibre and whole grains reduce the risk of the disease, reported the Scotsman.

Experts from Imperial College London came to the conclusion following analysis of the most up-to-date research on the bowel cancer.

The World Cancer Research Fund (WCRF), which commissioned the study, said it recommended people eat a plant-based diet including fibre-rich foods such as fruits, vegetables, whole grains and pulses such as beans.

### **Coffee**

#### **Too much coffee hinders conception (The Times of India: 25.5.2011)**

Women, please note — drinking too much coffee, say four or more cups of the beverage, daily can hinder conception, says a new study.



Previous researches have already shown that consuming too much coffee can affect female fertility. But until now the reason for the link was a mystery. No more.

Researchers in the US have carried out the study and found that caffeine, the stimulant in coffee, impairs the transport of eggs from the ovaries to the womb, the British Journal of Pharmacology' reported.

The study, conducted on mice, showed that caffeine inhibits contractions of the Fallopian tubes which are needed to carry eggs to the womb. The stimulant actually deactivates specialised pacemaker cells in the walls of the tubes.

### **Asian mushrooms**

#### **Asian mushrooms could help fight prostate cancer (New Kerala; 25.5.2011)**

Mushroom used in Asia for medicinal purposes vanquished prostate tumour successfully in mice during early trials.

Polysaccharopeptide (PSP), a compound extracted from the "turkey tail" mushroom, was found to target prostate cancer stem cells and suppress their formation in mice, says a new study conducted by senior research fellow Patrick Ling.

Ling, from the Institute for Biomedical Health and Innovation (IHBI) at the Queensland University of Technology (QUT) added that the results could be an important step towards fighting a disease that kills 3,000 Australian men a year, reports the journal Public Library of Science ONE.

"What we wanted to demonstrate was whether that compound could stop the development of prostate tumours in the first place," said Ling, according to a Queensland statement.

"In the past, other inhibitors tested in research trials have been shown to be up to 70 percent effective, but we're seeing 100 percent of this tumour prevented from developing with PSP. Importantly, we did not see any side effects from the treatment."

Ling said conventional therapies were only effective in targeting certain cancer cells, not cancer stem cells, which initiated cancer and caused the disease to progress.

During the research trial, in collaboration with the University of Hong Kong and Provital Pty Ltd, transgenic mice that developed prostate tumours were fed PSP for 20 weeks.

Ling said no tumours were found in any of the mice fed PSP, whereas mice not given the treatment developed prostate tumours. He said the research suggested that PSP treatment could completely inhibit prostate tumour formation.

### **Best Weight Loss Diet - Just Fruits**

#### **Best Weight Loss Diet - Just Fruits (Med India: 26.5.2011)**

A day long diet of fruit salads and fruit snacking will help you lose weight in a healthy way, a new book on diet reveals.

Co-authors Dian Griesel, and Tom Griesel, of the new book, 'TurboCharged: Accelerate Your Fat Burning Metabolism, Get Lean Fast and Leave Diet and Exercise Rules in the Dust' (BSH, 2011) proposed a significant amount of fruit in the diet. They even recommended that sometimes days of just fruit.

"Fruits which are so commonly restricted in most "weight-loss" diets and lacking in most everyday diets are essential for optimal health along with plenty of fresh vegetables, nuts, seeds, and animal proteins like meat, fish, eggs and cheese," said Griesels.

"The plethora of benefits delivered by fruit will continue to be proven in scientific studies."

### **High-fat diet**

#### **High-fat diet during pregnancy puts baby at risk of future diabetes (New Kerala: 27.5.2011)**

A high-fat diet during pregnancy may program a woman's baby for future diabetes, even if she herself is not obese or diabetic, a new study has warned.

We found that exposure to a high-fat diet before birth modifies gene expression in the livers of offspring so they are more likely to overproduce glucose, which can cause early insulin resistance and diabetes," said Yuan-Xiang Pan, a U of I professor of nutrition.

"In recent years, the American diet has shifted to include many high-energy, high-fat, cafeteria-type, and fast foods," he noted.

In the study, Pan and doctoral student Rita Strakovsky fed obesity-resistant rats either a high-fat or a control diet from the first day of gestation. Because the animals were not obese before the study began, the scientists were able to determine that diet alone had produced these effects.

"At birth, offspring in the high-fat group had blood sugar levels that were twice as high as those in the control group, even though their mothers had normal levels," Strakovsky said.

"Until now we didn't realize that a mother's diet during pregnancy had a long-term effect on the metabolic pathways that affect her child's glucose production," Pan said.

"Now that we know this, we urge pregnant women to eat a balanced low-fat diet that follows government guidelines. Then a woman can prime her child for a healthy life instead of future medical struggles," he added.

The study has been published in the Journal of Physiology.

## **Protein Drinks**

### **Protein Drinks after Exercise Keep Muscles Fitter and Stronger Med India: 27.5.2011)**

The kind of drink you have after exercise plays a critical role in maximizing the effects of exercise, a new research has indicated.

Specifically, the report showed that protein drinks after aerobic activity increase the training effect after six weeks, when compared to carbohydrate drinks. Additionally, this study also suggested that this effect could be seen using as little as 20 grams of protein.

"If you want to age gracefully, this study shows that proteins taken after exercise keep your muscles strong and fit," said Gerald Weissmann, Editor-in-Chief of the Journal.

"You've got to feed your body with the proper nutrients after a work-out. Fortunately, protein shakes are cheap, readily available and some say taste good," added Weissmann.

## **Health Care**

### **Midwife**

#### **Midwife shortage costs over a million lives worldwide: Report (World Newspaper: 1.4.2011)**

Over a million mothers and newborn babies are dying each year from easily prevented birth complications because of a chronic shortage of midwives across much of the developing world, a new report from Save the Children said on Friday.

In the world's least developed countries over half of mothers give birth without any trained help - compared with only one percent in Britain - and some 2 million women face one of the most frightening days in their life entirely alone.

Some 1,000 mothers and 2,000 newborns die every day as a result. Another 350,000 trained professionals are needed to save their lives, the "Missing Midwives" report said.

"It doesn't have to be complicated: someone who knows how to dry a baby properly and rub its back to help it breathe can make the difference between life and death," said Save the Children chief executive Justin Forsyth.

"No mother should face giving birth without help."

Of the 8 million children who die each year before the age of five, one in ten do not even see the end of their first day.

But midwives trained in just eight procedures, including keeping newborns warm and fed, could immediately cut newborn deaths by more than a third in the 68 countries with the worst neonatal mortality rates, the report said.

History suggests these deaths can be avoided. British Prime Minister David Cameron has highlighted how the introduction of a British national midwifery programme in the 1930s cut maternal deaths 80 percent over 15 years.

Some developing countries are now fighting for or have won support to roll out similar programmes.

In Afghanistan, which has some of the highest risks to both mothers and children, the number of rural births attended by trained professionals rose from 6% to 19% between 2003 and 2006, Save the Children said.

Around 2,400 midwives have joined the workforce and 300 or 400 more graduate each year - although at this rate it will still take time to reach the World Health Organisation's recommended rate of one midwife for every 175 pregnant women.

But the report also warned that resolving the shortage will require more than just cash for colleges and training schools.

Working as a midwife is not a very attractive profession in many areas. Despite demand for their services, midwives in the developing world are often poorly paid and over-worked, or have to work in remote or even dangerous places.

And rich countries often attract healthcare workers from poorer nations - whether through active recruitment or not - leaving the neediest women short of midwives.

"We are calling on rich and poor country governments to put health workers at the heart of their plans," Forsyth said, seeking strong financial and political support for training and funding more midwives for developing nations.

"Without it, mums and babies will continue to die needlessly every day."

### **UNICEF team**

#### **UNICEF team in Nagaland to study need of Children (New Kerala: 5.4.2011)**

Country Representative of UNICEF Ms Karin Hulshof and her entourage are on a three-day visit to Nagaland, with a primary objective to learn and understand about the situation and emerging needs of children beyond HIV/AIDS.

Nagaland Minister for Health and Family Welfare Kuzholuzo Nienu highlighted on the scenario of AIDS in Nagaland to the visiting UNICEF officials and pointed out that few months' back Nagaland was unfortunately placed second in the list of high HIV prevalent States in the country.

However, with the assistance of the Nagaland State AIDS Control Society (NSACS), Legislators Forum on AIDS (LFA), civil societies, churches and NACO, the state has been brought down to fourth sloth with a prevalence rate of 0.178 per cent, he informed.

Dwelling at length on the LFA, Mr Nienu informed Ms Karin and the other officials about the various activities undertaken by the forum, with the contribution of Rs one lakh each by all the legislators.

"With this fund we create awareness on HIV/AIDS in our respective constituencies and also sponsor trips outside the State to learn more and help more," he added.

### **New advanced lab for TB patients**

#### **New advanced lab for TB patients in LNJP Hospital (New Kerala: 5.4.2011)**

Delhi Health Minister A K Walia today inaugurated the new advanced lab at the New Delhi Tuberculosis Centre at Lok Nayak Jai Prakash (LNJP) Hospital.

The centre was established as a joint venture of Tuberculosis Association of India and the Central government in 1940 as a model clinic. It has been designated as State TB Training and Demonstration Centre which was formally inaugurated in September 2005.

"The new lab will give results within one week with the state-of-the-art Line Probe Assay(LPA) technique. The lab will provide free services to TB patients. With this all infectious open cases will be tested for MDR-TB within a period of one year," Dr Walia said on the occasion.

He stated that the Delhi government was committed to making the city TB free in partnership with the Central government, MCD, NDMC, WHO, World Bank, NGOs and other private players.

Dr Walia added that it was heartening to know that annual risk of infection was showing a decline in the Capital.

### **Post-Disaster Health Woes**

#### **New Orleans Residents Grappling With Post-Disaster Health Woes (Med India: 5.4.2011)**

The effects of a major natural disaster can linger and cause heart attacks and other health woes for years, according to a study released Sunday of New Orleans residents after Hurricane Katrina.

Four years after the massive hurricane swept through the celebrated southern US city in 2005, residents continued to experience a threefold increase in heart attacks, sustaining a trend witnessed two years after the event, it said.

"This data was surprising for us," said Anand Irimpen, associate professor of medicine for the heart and vascular institute at Tulane University.

"We thought we would see a trend downward at four years," said Irimpen, who presented the long-term study of post-disaster health consequences at the American College of Cardiology conference.

Irimpen describes the phenomenon as "Post-Katrina Stress Disorder," whereby chronic stress exacerbates health problems and may give rise to psychological difficulties, which can also play a role in poor health.

The observational study was based on patients admitted to Tulane University Hospital with heart attacks in the two years prior to Katrina and the four years after hurricane. The hospital, which is inside the city itself, reopened five months after the storm.

The threefold higher rate of heart attacks also came with a new rise in psychiatric problems such as depression, schizophrenia, and bipolar and anxiety disorders -- all of which were more prevalent than at the two-year mark.

Irimpen said that researchers had ruled out that traditional risk factors such as high blood pressure, obesity and diabetes had any more effect on the heart attack rate than they usually did.

## **HEALTH CARE FOR "AAM AADMI**

### **HEALTH CARE FOR "AAM AADMI" (The Tribune; 7.4.2011)**

#### **World Health Day**



While cities and towns have witnessed the introduction of huge medical speciality and super-speciality complexes, both in public and private sectors, primary rural health care centres have remained a pipedream

WHO is an "aam aadmi" in India? He is a remote rural rustic. When he grows up, he is forced to migrate to sprawling cities and towns, mainly for food, clothing and shelter. He lives in humble, inhospitable and, at times, inhuman urban periphery. He and his family are seen constructing roads, bridges, buildings and as domestic aids and engaged in various so-called class IV and III pursuits.

The rural and the displaced migrants of rural India constitute 70-75 per cent of India's "aam aadmi", spread over nearly six lakh villages. Thirty to 40 per cent of them patiently and quietly suffer the scarcity and frugality that is the destiny of everyone below the poverty line.

And yet, 70 to 80 per cent of our meagre budget for health care, both at the Centre and in States, is utilised by 25-30 per cent preferred urban sons and daughters at the cost of 70-75 per cent rural underprivileged step-children of Mother India.

Towards the fag end of British rule in India, the Bhore Commission gave a skeleton health plan for India in 1946. Sixtyfive years have since passed and we have had a series of Five Year Plans. We need political will and bureaucratic accountability to give a comprehensive health care to the common man of India.

Inspired by UNO in 1977 WHO resolved at Alma Ata to provide primary healthcare to all by the turn of the century. India was a signatory to this resolution and resolved to establish rural primary health centres, including basic investigative facilities for every group of 2-3 villages, within 1-2 km from each health care centre by 2000 AD.

Decades have since gone by. Governments have come and gone. While cities and towns have witnessed the introduction of huge medical speciality and super-speciality complexes, both in public and commercial private sectors, primary rural health care centres have remained a pipedream.

The Central Government announced yet another scheme in 2005 with a humane face and called it the National Rural Health Mission for BPL masses.

In essence it is a promise for free primary health care and health insurance for hospital services for Rs 30, 000 against a premium of Rs 30 for a family of five members. To make it a peoples movement the scheme lays emphasis on maximum encouragement to NGOs at all levels for a public/private participation for primary and hospital health care for the common man.'

## **Only an apology**

Hospitalisation for any major surgery costs Rs 50,000 to Rs 1 lakh, Health insurance for Rs 30,000 for a family of five members is only an apology. Documentation for BPL registration is not only cumbersome but also a journey into wilderness. It is almost impossible for an illiterate person to go to several government departments to get registered. There has to be a single-window service.

More than five years have gone by, but the National Rural Health Mission launched with a lot of fanfare, is still to find its feet.

India needs more than two lakh primary health care centres for six lakh villages. Each PHC needs to cater for 2-3 villages, not more than 1-2 km from each health centre. Each PHC should operate a daily general OPD, supported by a free dispensary, X-ray, lab, ECG and dental services. Each block should have one 100-bed hospital with a medical, surgical, gynae and obstetrics and paediatrics specialist, who should also attend each PHC once a week or twice a month. Each district should have one or two multi-specialty hospitals and one or two super-specialty hospital in each state. Those below the poverty line should have free health care at all levels.

Ninety per cent of ailments are within the curative scope of the rural primary health centre and the block hospitals. Hardly 5-7 per cent patients need reference to multi-specialty district hospitals, and 2-3 per cent to super-specialty state hospitals. Obviously we need to revise our expenditure and development priorities for health care accordingly for each level.

## **Four-tier care**

This four-tier health care system will channelise the patient inflow with a regulated referral system and considerably reduce primary health care workload on district and state hospitals.

Private health care entrepreneurs who have only commercial interest and goals and are escalating cost of medicare need to be controlled both by the Centre and states, to make them fit with the overall national and state healthcare plan and layout of facilities.

Health care is essentially state subject, and also its budget planning, which is an exercise by itself. Nevertheless, a revolutionary outlook to raise the priority for health care is imperative, both at Centre and state levels.

Dr (Brig) M.L. Kataria (retd), Chairman cum Managing Director of Chandigarh Rural Health Care Mission that has established 20 rural health care centres in UT Chandigarh and adjoining districts of Punjab & Haryana during the last 25 years.

A "fiasco"

On March 24, the Public Accounts Committee came down heavily on the National Rural Health Mission (NRHM), describing it as a fiasco.

The committee also asked the health ministry to carry out a complete re-appraisal and restructuring of the project.

The Head of PAC Murli Manohar Joshi explained to reporters that the government's expenditure on public health was merely 1.1% of the GDP, which was really shocking. The per capita expenditure in India on public health stood at \$7, even less than that of neighbouring Sri Lanka at \$30.

The PAC, in its report, said it was dismayed to note that health centres at various levels were being used as foodgrain godowns, community halls, local offices or cowsheds in many of the 18 states where the NRHM is being implemented. The Health centre lacked qualified doctors, necessary infrastructures, medical supplies etc.

The PAC also noted that the health centres were being supplied substandard and expired lifespan medicines and there was a lack of trained health workers and absence of common drugs in many states.

### **Chandigarh model**

The Union Territory of Chandigarh has 18 villages on its periphery. The city state has developed a unique health care system for a population of over 15 lakh residents completely conforming to the four-tier model. Five rural polyclinics in villages Attawa, Maloya, Sarahpur, Ram Darbar and Mauli Jagran have been established in close collaboration with the NGO. While the accommodation, electricity and water are being provided by the government, the entire bio-medical equipment and the daily operating cost and management is being met by an NGO.

Each rural polyclinic has 3-4 villages/colonies within 1-2 km from each polyclinic. Free consultation, medicines, X-ray, lab tests, ECG and dental services are being provided at each polyclinic. Thus 100 per cent primary health care with basic investigate services has been ensured as a door delivery service to the common man in the entire rural periphery of the Union Territory.

The 2nd tier specialist services are available at the two well equipped mini hospitals in Sector 22 and 45, while the 3rd & 4th tier multi-specialty and super-specialty services are being provided by the Govt. Multi-Specialty Hospital, Sector 16, and Govt. Medical College and Hospital Sector 32, respectively.

### **Doctor networking**

**Patient – Doctor networking finds latest medium in social sites: (The financial Express: 7.4.2011)**

Private hospitals use Facebook & Twitter for online marketing

Private hospitals have found a new way to connect with patients: social networking sites. Fixing appointments with doctors, getting online queries answered within 24 hours, uploading your health reports for consultation- it's all happening on these websites.

Moreover, these online marketing campaigns are also giving high returns to private hospitals chains like Max, Fortis and Apollo, which are now thinking of charging a fee for their online services.

Arpita Mukherjee, manager, marketing and CRM, Max Healthcare, started the Facebook initiative for the hospital in July last year, tells FE, "We receive 2,500 online enquiries a month on Facebook.

Of these, 30-40% are for appointments with a particular doctor. Another 8-10% are to know if any doctor is available for a particular health problem. And the rest, 40% of them, ask about tips on diseases ranging from a simple cold to cardiac ache or cancer." The Facebook account has created business worth R80 lakh so far for Max by converting enquiries into sale of health treatment.

Once a serious query is uploaded, the marketing team takes it up with specialists and doctors and then replies within 24 hours to Facebook patients. Today, Max has over 3,000 fans on Facebook and 808 followers on Twitter. However, Twitter is just about posting information about the hospital. "Patients can also upload their previous health reports on Facebook to have a better opinion from the doctor. For international queries, we also have video conferencing for a face-to-face consultation with the doctor," says Mukherjee.

Right now, the facility is free, but the hospital plans to have a payment gateway to facilitate this consultation, says Mukherjee. Fortis also plays on the prize temptation strategy on Facebook. It has recently started running a quiz on its Facebook page that asks questions about four common areas of enquiry—road accidents, toxic, outdoor injuries and lifestyle diseases—to members. The winners are given prizes, which is attracting a lot of people to this page. A part of the social media campaign of Fortis is taken care by an agency, Ibibo. Ranjana Smetacek, director, marketing and corporate communications, Fortis, says, "Our Facebook fans have increased from 1,400 in December last year to 3,200 in March this year."

Apollo Hospitals also has 1,335 members on its Facebook page, which is a platform to invite patients to show their concerns and even senior doctors to post their blogs. This initiative by Apollo was taken six months back.

It has immense focus on the medical tourism aspect and a lot of YouTube videos are posted showing how patients from abroad have been cured at Apollo. "We started marketing on the website only six months back and receive 10-15 enquiries per week on Facebook. On the other hand, our website receives 100 to 200 enquiries a day. We have the same team to cater to both," says Srinidhi Kartikay Chidambaram, senior GM, health communication, Apollo Hospitals.

However, the challenge amongst all this remains to get senior doctors to directly interact with patients through blogs or posting messages, confesses Ranjana from Fortis.

Max's Mukherjee is more optimistic, "Going forward, even top doctors like Dr P Chowbey, who is the chairman for MAS (minimal access surgery), Max Institute of Surgical Sciences, want to get on Facebook and connect with their patients directly.

This is the trend we will see in the future."

## **14 healthy ways**

### **14 healthy ways to manage stress (World Newspapers: 7.4.2011)**

1. Exercise. It is the best way to handle stress. A sweaty cardio session will ease stress and anxiety while releasing feel-good endorphins.

2. Meditate on the Positives. It's easy to forget about all the wonderful things in life when you're stressed out, but it's absolutely essential during times of stress. Thinking about and being thankful for all the ways your life is going right will help you gain perspective.

3. Keep a Journal. Often, just getting your frustration out on paper (or on a computer) helps you sort it out, come up with a pro-active plan and gain a sense of control.

4. Eat a Healthy Diet. Don't binge on junk food and alcohol. Keep your energy up by eating a well-balanced diet rich in fruits and vegetables, whole grains and dairy.

5. Laugh. Whoever said that laughter is the best medicine was absolutely right. Get together with friends and enjoy the company of those who make you laugh. Seek out companionship.

6. Get plenty of sleep. A good night's sleep – at least 7 hours – does wonders for your state of mind.

7. Chew gum. Replace bad stress-induced habits like nail biting and smoking with gum chewing.

8. Listen to music. Listening to your favourite music can do wonders for your mood. Take a walk or enjoy a rejuvenating time-out from the world with your favourite music mix.

9. Volunteer. Helping someone in need will make you feel good about giving back while taking your mind off your own personal troubles.

10. Spend time with a pet. Take your dog out for a walk or to the park. Having pets is proven to lower stress levels and make you smile.

11. Let it out. Don't keep stress all bottled up inside. Talk it out with a friend or spouse. If you feel you can't handle your stress or anxiety, a professional expert can help.

12. Accept and adapt. Flexible people that are able to change and adapt to fit new circumstances are able to handle stress much better than people with rigid mindsets

13. Begin the day with a smile. And face crises and difficult situations with a smile as well. Don't hold on to your emotions and express them.

14. Take micro breaks. Take breaks between work and talk to family or friends instead of smoking. Make surprise calls to friends.

## **Health & safety concerns**

**‘There is balance between health & safety concerns and competitiveness’ (Business Standard: 8.4.2011)**

According to the European Union’s stated goals, REACH is supposed to be about protecting health and environment, but also increasing European industry’s competitiveness. Many feel there is a trade protection angle to reach. How would you respond to the charge that REACH is in fact a non-trade barrier?

ECHA is an implementation agency and can’t really comment on trade issues. But, yes, there is a balance between health and safety concerns and competitiveness as the main goals of REACH. The fact is that once there is information available about the safety of various chemicals, it helps the marketing of the end products as ‘safe’ and increases the competitiveness of those products. When we speak to people in the industry, we are led to believe that REACH is like a tool for them to use in making their marketing strategy more competitive. Are you aware of any figures that look at the increased cost to the chemical industries of developing countries as a result of REACH? In India, the government has said the regulation threatens some 24 per cent of the country’s exports, by pushing up the cost per exporter per chemical by

₹500,000-600,000.

I am aware of the reports from India. But the figures sound somewhat high to me. There is a data sharing principle underlying REACH. So, it aims to bring various companies together and forces them to share data, which helps keep the costs of compliance lower. As far as high-volume chemicals are concerned, I’m sure the costs are not so high. For those chemicals on which there was already existent data, compliance with REACH is relatively cheap. For those chemicals where no information was available in the past, there are more complicated compliance issues, but this is the same for all companies, Indian or European or from any other country. REACH covers conventional chemicals such as sulphuric acid, nitric acid, etc, which the world has known for centuries. Is REACH founded on empirical evidence of manifested risks? Or is it only founded on precautionary approach?

The aim is to get information on all chemicals exported or imported in and out of Europe. For some chemicals, there is already a lot of information out there, so making a dossier on these is relatively easy. The idea of REACH was to set up a reliable channel by which health and safety information could be transmitted to the authorities and on to the public.



Before REACH came into effect in 2007, in Europe we had information available on only 140 chemicals and realised we needed to change the system and put the burden of proof on the industry, so as to help consumers make better choices.

With REACH, the aim is to have information on 30,000 chemicals by 2018, when the final deadline for registration expires. Since REACH has been implemented, we have already gathered data on around 4,500 substances. There were worries that drug prices would be pushed up as a result of the increased costs for exporting intermediates into Europe. Has this, in fact, happened?

I'm not sure about this, since we don't follow the pharmaceutical industry but would be surprised if there had been any impact. Under REACH, intermediates are subject to special rules. So, if you import intermediates under strictly controlled conditions, for example, using closed containers, you only have to provide a very minimal amount of data, compared to what is needed for other chemicals. There may be some other administrative costs, but the overall costs for intermediates should be low. So far, 46 Substances of Very High Concern (SVHC) are identified by ECHA, which require special authorisation.

This list is expected to grow at the rate of 30-40 substances per year over the next few years. What implications will this have for Indian businesses that are exporting to the EU?

SVHC are a group of most hazardous chemicals based on criteria like, carcinogenicity, bio-accumulation and so on.

Companies must also notify the presence of any SVHC in their articles. The SVHC issue is generating considerable discussion in India because many companies may not be aware if their articles contain SVHCs at all.

Secondly, they often don't know the exact percentage of the SVHC in the article. According to REACH, if there is over 0.1% of any SVHC in an article then ECHA must be informed of it by the European importer. Another point to keep in mind is that increasingly there are retailers in Europe who don't want to sell products with any SVHCs at all.

So once again, awareness of SVHCs becomes a marketing issue. If you want to export into Europe then you can expect pressure directly from retailers on the SVHC issue as well. Further, there is a separate list of substances, currently numbering 6 chemicals, amongst the SVHC which need special authorisation from the European Commission.

**Q&A JACK DE BRUIJN**

Director, Risk Management, European Chemicals Agency

The Indian chemical industry has become big business in recent years and is expected to be worth \$200 billion by 2020. However, a European Union (EU) legislation called Regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) that came into effect in 2007 could cut into this growth over the next decade. REACH already threatens 24 per cent of India's chemical exports, according to the Indian government. Although EU chemical exports are worth more than \$2 billion a year to the Indian economy, some Indian chemical producers are wondering if the European market is worth the investment. JACK DE BRUIJN ,Director, Risk Managing Unit, European Chemicals Agency (ECHA), the organisation charged with implementing REACH, spoke to Pallavi Aiyar on some of the issues surrounding the regulation. Edited excerpts:

### **Health camp**

#### **Health camp by Times Foundation (The Times of India: 8.4.2011)**

Times Foundation in association with Indraprastha Apollo Hospitals on the occasion of World Health Day organized an awareness programme on the importance of personal hygiene and prevention of spread of germs and infections on Thursday. The campaign was launched in six cities, including Ahmedabad, Chennai, Hyderabad, Bangalore, Calcutta and Delhi.

The awareness programme was aimed at making people aware of the importance of personal hygiene, especially in rural areas. As part of the programme, a free health camp was organized at Disha Public School in Jasola village in the capital. Free health check up like blood pressure, ECG, blood sugar, pediatric and cardiac consultation were given to the villagers. Free medicines were also distributed. Around 300 people attended the camp.

Consultants from Indraprastha Apollo Hospitals spoke about communicable diseases and how to prevent them from spreading. "If infections are to be kept in check, there needs to be a fundamental change in our approach to hygiene, with emphasis being placed on empowering families to take on this responsibility. Prevention of many

infectious diseases is easy when you keep in mind some very simple rules and safety tips,” said Dr Raman Sardana.

**TAKING CARE:** A free health check-up camp was held at Jasola village on Thursday on the occasion of World Health Day

### **Regular shopping**

**Regular shopping helps you live longer. Are men listening? (The Times of India: 8.4.2011)**

London: It may not come as a surprising for women, but scientists have found that shopping regularly can help one live longer and men are likely to benefit the most.

A 10-year study by a team from Taiwan's National Health Research Institutes found that those who went to the shops more or less every day were about a quarter less likely to die over that period than the average person.

According to the team, this could be possible because shopping is a convenient, enjoyable and sociable way of getting exercise, the Telegraph reported. For the study, the researchers looked at the shopping habits of 1,850 people aged 65 and over, living at home without support.

It was found that those who shopped daily were 27% less likely than average to die over the study period, from 1999 to 2008. Men appear to benefit from a daily dose of retail therapy more than women. Female daily shoppers were 23% less likely to die over the decade — but male daily shoppers were 28% less likely to do so, the researchers found.

## **Fortis Healthcare**

### **Fortis Healthcare to acquire 86% in Super Religare Labs(The Tribune: 15.4.2011)**

Fortis Healthcare today said its board has accorded in-principal approval to acquire 86 per cent stake in Super Religare Laboratories (SRL) for an undisclosed amount. Both Fortis and Religare are controlled by billionaire brothers Mr Malvinder Singh and Mr Shivinder Singh, but are different companies in the healthcare business.

The in-principal approval given by the company's board during a meeting today is in line with company's strategy of adding new verticals focused on medical specialties, Fortis Healthcare said in a statement.

"We see great benefit in augmenting Fortis presence in new specialty-based verticals. The addition of diagnostics and retail dialysis will serve to enhance the quality of care to our customers," Fortis Healthcare (India) Managing Director Mr Shivinder Mohan Singh said.

The board at its meeting also approved setting up of standalone dialysis centres and foray into standalone and in-hospital diagnostic centres.

"The new structure is a meaningful step toward medical inclusion in India and will help us offer value-based medicine. This will better enable Fortis to deliver comprehensive and quality healthcare, with end to end service," Mr Singh added.

Super Religare Laboratories, which is one of the largest diagnostics providers, acquired Piramal Diagnostic Services Pvt Ltd (PDSPL) in August 2010 for Rs 600 crore to strengthen its presence in the radiology services.

## **Simple blood test**

### **Simple blood test can now predict premature birth risk(New Kerala: 20.4.2011)**

Until now, there was no way to predict a woman's chance of giving birth prematurely

A simple blood test taken during the second trimester of a pregnancy can now spot whether a baby will arrive early, 80 percent of the time, according to researchers from Brigham Young University.

“What’s been missing is a way of assessing risk,” said Steven Graves, who directs the chemistry portion of the research at Brigham Young University.

“Our approach has been to look at the naturally occurring molecules that are present in women’s blood to see if we can identify the peptides and small proteins that are at quantitatively different levels in women who go on to have these complications.”

Graves and Sean Esplin at the University of Utah began their search for molecular clues to pregnancy complications in 2002 and now have something to show for it.

The paper introduces three new peptide biomarkers that, in combination with a few other proteins, can signal high risk of pre-term birth.

And it’s done by looking at just a drop of blood from a mother who is 24 weeks into a pregnancy.

In this study, the researchers tested their method on blood samples from 80 women that went full-term and 80 women whose babies came prematurely.

Knowing she is at high risk for pre-term birth is a big advantage for the mother when it comes to decisions about travel and activity level.

Esplin also notes that a new hormone treatment can help a baby stay in the womb a little longer.

“With pre-term birth, if we could even prolong a pregnancy by one or two weeks, we could make a very big impact on the number of babies that survive and make sure that those that survive are healthy,” said Esplin. “With just one intervention, we could have a really huge impact.”

The method for predicting pre-term birth is patented by BYU and the University of Utah and has been licensed to a company called Sera Prognostics.

The company hopes to have a diagnostic test on the market in the first half of 2012.

The study will appear in the May issue of the American Journal of Obstetrics and Gynecology and has been posted online by the journal.

## **Critical Illness**

### **Why Critical Illness Cover is so Crucial for Everyone (The Economic Times; 20.4.2011)**

Overwhelmed, Gupta breathed a sigh of relief when he discovered that even after missing three EMIs for his home loan, his dream house continued to be his. Despite the most sophisticated heart surgery and medical attention, his savings were untouched. This 37-year-old manager, with no previous medical history of any illness, had never imagined in his worst nightmares that the ever-growing work related stress would land him in the ICU of a hospital.

Gupta found himself surrounded by life-supporting equipments and a battery of doctors struggling to keep his heart beating. Gupta, the most unlikely to suffer a severe cardiac arrest, had lived a disciplined life with cautious food habits and regular exercise. However, more often than not, he brought his work stress home and with every promotion came along increased levels of stress and anxiety. He woke up to realise he had been unconscious for several weeks after the heart attack. Amidst the chaos, it had not occurred to anyone that the immediate financial burden arising from the cost of two long months of hospitalisation including ICU charges, cost of medicines, regular check-ups, was paid for by his home insurance policy. None of the EMIs for his home loan had bounced, as the loan was insured. Fortunately, three years ago, Gupta had opted for the critical illness cover in his bancassurance home loan insurance policy, which not only kept three EMIs for his home loan from bouncing but also covered his medical bills, keeping him from digging into his savings during contingency. The procedure to obtain such a cover was also simple, as all it required was just a simple declaration of his health. There was no medical check-up either. The thought of not losing his life-long investment facilitated his speedy recovery.

A recent ICICI Lombard analysis hints at a worrying pattern in the occurrence of various lifestyle diseases in men and women alike. ICICI Lombard's Health Research Cell analysed the claims distribution data of the past two years from the company's group health portfolio. The results clearly indicate that critical diseases such as cardiac ailments, cancer, kidney or renal failure and stroke are affecting people at an early age. It shows that there is an immediate need to address these health risks that affect a large number of individuals and increasingly so at a younger age. The cost of treatment or procedures related to critical illnesses is usually high, which may not be covered by an individual's savings alone. Thus, it becomes imperative to obviate the risk of these lifestyle ailments through health insurance that provides comprehensive protection against critical or

life-endangering diseases such as cancer, coronary artery bypass graft surgery, heart attack, end stage renal failure, major organ transplant, stroke, paralysis, heart valve replacement surgery, multiple sclerosis cancer, heart attack, stroke and kidney failure etc. A critical illness cover is a definitive means of countering such risks. It allows you to focus on health as it takes away the stress about money. Careful assessment of both existent and imminent health risks based on factors such as age, gender, heredity and lifestyle is essential to determine one's insurance needs and choosing the right cover. Some general insurance companies have addressed the rising need of health insurance in the market by designing comprehensive home loan insurance policies, which pay off the loan, insure the home and simultaneously provide cover against critical illnesses. These policies encompass covering losses to structure and contents of home, covering living expenses while one is off work due to the ailment. These policies also ensure that the loan EMIs are not dishonoured in case of loss of employment in the event of such illnesses. Even in case of unfortunate death or permanent disability caused by an accident, the total sum assured is paid off to the insured. So you should opt for a policy that covers multiple individuals under the same loan in case of joint loans. Prior to taking a policy, it is important for the customer to keep a track of the different exclusions in the insurance contract which may prevent payout in certain circumstances. The policy's premium usually depends on the age of the applicant, loan amount, loan tenure, sum insured and applicant's occupation.

The risk in all financial liabilities can be nullified with adequate insurance cover. A critical illness cover takes care of immediate and future financial requirements arising from a severe ailment so that the savings are intact and used in the way initially planned. You may not be able to prepare for a critical illness completely but some of the burden can be lifted with a critical illness insurance plan.

HEAD- CUSTOMER SERVICE, HEALTH & MOTOR ICICI Lombard General Insurance

## **Medical errors**

### **Medical errors in top 10 killers: WHO (The Asian Age: 2.4.2011)**

Medicine heals, but this fact doesn't hold true for every 300th patient admitted to hospital. Call it the law of averages or blame human error for it, but the World Health Organization believes that one in 10 hospital admissions leads to an adverse event and one in 300 admissions in death.

An adverse event could range from the patient having to spend an extra day in hospital or missing a dose of medicine, said Dr Nikhil Datar, a gynaecologist and health activist. Unintended medical errors are a big threat to patient safety.

Although there is no Indian data available on this topic, WHO lists it among the top 10 killers in the world. While a British National Health System survey in 2009 reported that 15% of its patients were misdiagnosed, an American study published in the 'Journal of the American Medical Association' in 2000 quantified this problem most effectively. It said that there are 2,000 deaths every year from unnecessary surgery; 7,000 deaths from medication errors in hospitals; 20,000 from other errors in hospitals; 80,000 from infections in hospitals; and 106,000 deaths every year from non-error, adverse effects of medications. In all, 225,000 deaths occur per year in the US due to unintentional medical errors.

## **Medical errors**

### **Medical errors as high as 17% in west: Study (The Times of India: 20.4.2011)**

According to a study by the World Health Organization one in 10 hospital admissions leads to an adverse event and one in 300 admissions in death. "In the western nations, it is believed that the incidence of unintentional medical errors is between 10% and 17% of all cases," said Dr Nikhil Datar, a gynaecologist and health activist.

The Indian government has woken up to the concept. It set up the National Initiative on Patient Safety in the All-India Institute of Medical Sciences a couple of years back.

But the idea, as Dr Akhil Sangal of the Indian Confederation for Healthcare Accreditation, points out is not to apportion blame. "When medical negligence occurs, the first question to be asked is who is to blame. We instead have to evolve to a system in which we ask questions about how, when and where the negligence occurred," said Dr Sangal.

Datar illustrates with an example of a 10-year-old leukemia patient in Britain who had to be given a chemotherapy injection. "This is a published report of how due to a series of unintended changes the boy died due to a wrong injection being given to him," said Datar.



The boy ate food that was prohibited before the procedure; he was hence taken hours later by a different department than the cancer doctors. “The injections were given in a particular order but that day due to the mix-up he got the wrong injection and died five days later.” The panel exonerated the doctor because it found other factors that had played a role in the boy’s death.

“By talking about patient safety, we can reduce the overall mortality and morbidity associated with hospitalization. Even time and costs could come down as a result,” said Dr Mathew Joseph, PGI Chandigarh.

### **Microwave-size test kit**

#### **Microwave-size test kit detects TB in 90 mins (The Times of India: 204.2011)**

A rapid molecular test kit – the size of a microwave — has undergone a successful trial in a resource poor, primary-care setting by detecting both TB and multi-drug resistant TB in just 90 minutes. While the same sample took three days to confirm through a microscopy test — most prevalent now — and 106 days through a culture test.

The findings of the study, carried out simultaneously in India’s Christian Medical College, Vellore; South Africa, Peru, Azerbaijan, the Philippines and Uganda and published in the medical journal “The Lancet”, said the Xpert MTB/RIF test eventually reduced delays in diagnosis and treatment, and thus reduced morbidity and mortality.

The test was conducted on 6,648 patients of which 1,033 were found to be TB positive. Interestingly, 90% of these cases were detected by Xpert when 77% of these cases were found to be negative through microscopy.

The kit’s specificity rate – how many of those who are found positive are actually positive of TB — was 98.3% and its sensitivity – how many of the total cases did it detect — stood at 90.3%. In India, it tested 902 patients and found 101 to have TB with 7 being multi-drug resistant.

Two of the three key infectious diseases that afflict humans — HIV and malaria — can be diagnosed in primary-care settings with simple rapid tests. No such technology has been available to accurately detect TB and its drug-resistant forms.

Dr Mark Perkins from FIND (Foundation for Innovative New Diagnostics), Switzerland, told TOI, “Most people once tested fast could be detected early. This will

ensure reduced transmission to hapless people. But there is one problem. The instrument is too expensive for most countries that have a high burden of TB like India. The machine costs \$17,000 and each test costs \$17.

His Emperor of All Maladies acclaimed study of the disease After St. Columba's in New Delhi, he went to Stanford, Oxford, Harvard med school

## **Us Indian Docs**

### **Us Indian Docs Cancer Book Win Pulitzer (The Asian Age: 2.4.2011)**

New Delhi-born cancer physician and researcher Siddhartha Mukherjee has been awarded the Pulitzer Prize in the general non-fiction category for his acclaimed book The Emperor of All Maladies: A Biography of Cancer.

Dr Mukherjee, 40, who will receive \$10,000 in

prize money, is an assistant professor of medicine at Columbia University and a cancer physician at the CU/NYU Presbyterian Hospital in New York.

The Pulitzer award citation described The Emperor of All Maladies as "an elegant inquiry, at once clinical and personal, into the long history of an insidious disease that, despite treatment breakthroughs, still bedevils medical science."

The two other books on the shortlist were The Shallows: What the Internet Is Doing to Our Brain, by Nicholas Carr, and Empire of the Summer Moon: Quanah Parker and the Rise and Fall of the Comanches, the Most Powerful Indian Tribe in American History, by S.C. Gwynne.

Dr Mukherjee's parents, who live in New Delhi, told this newspaper that they are completely overwhelmed by the news of their son winning such a prestigious prize. His mother Chandana said she expected her son to do "this well, but we were not expecting it this soon."

Giving her son's educational background, Mrs Mukherjee said he had finished his schooling at St.

Columba's School in New Delhi and went to Stanford University in the United States for undergraduate studies. He then went to the University of Oxford on a Rhodes scholarship and finished his doctorate there. He later went to Harvard Medical School.

Dr Mukherjee called his parents in the middle of the night (Monday-Tuesday) "My son and his wife have two little children, so I was a bit taken aback by a call at 1 am in the night," Mrs Mukherjee said. "I asked him if everything was fine, and he told me that he had some good news," she said.

Dr Mukherjee is married to a sculptor, Sarah Sze, and they have two daughters, five-year-old Leela and one-year-old Arya.

"I questioned him three to four times after he told me that he had won a Pulitzer Prize. I just couldn't believe it. We were so thrilled and became emotional," she said, describing the moment she heard the news from her son. Dr Mukherjee's parents said they will visit him in June as they had already planned their annual visit earlier. Dr Mukherjee and his wife and two daughters will visit India in November, his mother said.

"He was in India in January as he had been invited by the Jaipur Literature Festival, but he came alone at the time," she said.

Mrs Mukherjee said she hadn't had time to call her son on Tuesday, and does not know how he and his family are celebrating.

"Today he is very busy with the press conferences and everything... He asked me not to call as his phone will mostly be switched off. He said he would give me a call as soon as he had some time to himself."

The flood of journalists and congratulatory phone calls has meant that Dr Mukherjee's parents haven't managed to go out for a celebration. "The phone is ringing constantly and the house has been flooded with journalists, so we haven't had time to go out," Mrs Mukherjee said, adding that the happiness for her son was celebration enough.

The Pulitzer Prize is awarded to Americans for achievements in newspaper and online journalism, literature and musical composition. The prize is administered by Columbia University in New York City.

Dr Mukherjee is the fourth person of Indian origin to win the prestigious Pulitzer Prize. Indian-origin journalist Geeta Anand was among the staff of the Wall Street Journal to be awarded a Pulitzer in 2003 for explanatory reporting; Indian-origin author Jhumpa Lahiri won the Pulitzer for fiction for her book *Interpreters of Maladies* in 2000; and Indian-origin journalist Gobind Behari Lal had won the prestigious prize for reporting in 1937.

The book's publisher in India described it as an "engaging" book. "Siddhartha Mukherjee has produced a real tour de force, with *The Emperor of All Maladies*. It is a wonderfully warm, erudite and engaging book. A panoramic history of the disease of cancer and its treatment that is infused with meticulous detail and clarity, it is a heartfelt book, but not sentimental. For a non-fiction work on cancer to hold and engross the reader from start to

finish: a superlative achievement! The Pulitzer is well deserved," HarperCollins India chief executive P.M. Sukumar said on Tuesday.

## **Topical Treatment**

### **Topical Treatment May Prevent Melanoma (Science Daily: 27.4.2011)**

While incidents of melanoma continue to increase despite the use of sunscreen and skin screenings, a topical compound called ISC-4 may prevent melanoma lesion formation, according to Penn State College of Medicine researchers.

The steady increase in melanoma incidence suggests that additional preventive approaches are needed to complement these existing strategies," said Gavin Robertson, Ph.D., professor of pharmacology, pathology, dermatology and surgery, and director of Penn State Hershey Melanoma Center.

Researchers targeted the protein Akt3, which plays a central role in 70 percent of melanoma by preventing cell death and has the potential to prevent early stages of melanoma.

"The Akt3 signaling pathway is deregulated in the majority of melanomas, making it a promising target which, if inhibited, could correct the apoptotic -- or cell death -- defect in melanocytic lesions, thereby preventing this disease," Robertson said.

Isothiocyanates were identified as inhibitors of Akt3. These are naturally occurring compounds found in cruciferous vegetables like broccoli and Brussels sprouts that have anticancer properties. Unfortunately, previous research showed they have low chemotherapy potency on melanoma cells because high concentrations are needed to be effective. To create a more potent version, Penn State Hershey Melanoma Center researchers previously developed isoselenocyanates (ISC-4), by replacing sulfur with selenium.

Researchers have now found that repeated topical application of ISC-4 can reduce tumor cell expansion in laboratory-generated human skin by 80 to 90 percent and decrease tumor development in mice skin by about 80 percent. The research also showed that the use of the compound is safe. The research was recently reported in Cancer Prevention Research and featured on the journal cover.

To be an effective preventative agent, a substance needs to kill the melanoma cells while having little effect on normal cells. Researchers learned that ISC-4 kills melanoma cells two to five times more effectively than it kills normal cells. In addition, examination of the treated skin showed no obvious damage to skin cells or skin structure, and treated animals did not show signs of major organ-related toxicity. This indicates a potential for use as a topical application.

"ISC-4 prevented melanoma by decreasing Akt3 signaling that led to a three-fold increase in apoptosis rates," Robertson said. "Thus, topical ISC-4 can delay or slow down melanocytic lesion or melanoma development in preclinical models and could impact melanoma incidence rates, if similar results are observed in humans.

Currently, surgical excision is used to remove melanocytic lesions or prevent development into more aggressive cancer. Topical ISC-4 treatment could potentially be an alternative to surgery for some patients.

"Topical or localized treatments, such as those we propose for ISC-4, could permit the use of high local concentrations with minimal toxicity and be useful for treating cutaneous lesions not amenable to surgical removal or other currently available approaches," Robertson said.

"With more than \$1 billion spent on sunscreen every year in the United States, the market for skin cancer prevention is enormous and continues to grow," Robertson said. "Addition of agents such as ISC-4 to sunscreens, body lotions or creams could have a profound impact on this market for preventing melanoma."

The study was supported by the American Cancer Society, the Foreman Foundation for Melanoma Research, National Institutes of Health, Elsa U. Pardee Foundation, Melanoma Research Foundation with support in part from the Mike Geltrude Foundation and the Pa. Department of Health.

Scientists who contributed to this research are Natalie Nguyen, Nhung Nguyen, Arun K. Sharma, Ph.D., Dhimant Desai, Ph.D., Sung Jin Huh, Ph.D., Shantu Amin, Ph.D., Department of Pharmacology; Arati Sharma, Ph. D., Department of Pharmacology, Penn State Melanoma Center and Penn State Melanoma Therapeutics Program; and Craig Meyers, Ph.D., Department of Microbiology and Immunology.

## **Traumas**

### **Traumas Could Cause Greater Damage in Women (Med India: 27.4.2011)**

Women seem to be more vulnerable to health problems resulting from the post traumatic stress disorder (PTSD), men less so. The differing impacts have been traced to starkly different immune system responses in the two genders.

While a robust immune response protects the body from foreign invaders, such as bacteria and viruses, an over-activated response causes inflammation, which can lead to such conditions as cardiovascular disease and arthritis. Thus the findings could help women combat such adverse developments.

The findings of researchers at the San Francisco VA Medical Center and the University of California, San Francisco have been published in the March, 2011 issue of Brain, Behavior, and Immunity.

The authors took blood samples from 49 men (24 with PTSD and 25 controls) and 18 women (10 with PTSD and 8 controls). They then used gene microarray technology to determine which genes were activated in the subjects' monocytes, which are immune cells that regularly cross the barrier between the bloodstream and the brain, and thus give a broad picture of immune reaction in both the body and brain.

## **Running barefoot better for health**

### **Running barefoot better for health than with shoes (New Kerala: 28.4.2011)**

Barefoot running can be beneficial while heavily cushioned running shoes may be leaving the foot prone to injury, according to a US sports medicine expert.

Irene Davis of Harvard University has been studying both barefoot running and minimal footwear running, which uses a type of running shoe almost like a glove for the foot, but with a thin layer of rubber on the bottom, reports ABC Science.

These shoes give the foot its full range of natural movement, but protect the sole from stones or extreme surface temperatures.

Davis, a Fellow of the American College of Sports Medicine and a Catherine Worthingham Fellow of the American Physical Therapy Association, said cushioned running shoes encourage runners to land hard on the heel at the end of each stride.

"When you land on your heel you end up with a very quick rise to peak in the force that your body experiences. That completely goes away when you run barefoot because you land on the ball of your foot," said Davis.

Davis and co-authors tested their theories by looking at Kenyan runners.

"We wanted to find if people who had never worn shoes before demonstrated the same kind of running pattern," said Davis.

"We felt that was a better indication of how we were naturally meant to run because these individuals had never worn shoes. When we tested [the runners] in Kenya, we found exactly those same kinds of mechanics. They don't land on their heels, they land with a very gentle forefoot strike pattern," she said.

Once you remove the shoe and take away the artificial shock absorber, the tendons and muscles in the foot, the ankle, calf and thigh start to do the job they were built for, Davis said.

She said that causes some runners pain because they aren't used to using those muscles to control the foot and absorb shock, and they tend to overdo it in the initial stages.

"We've basically deconditioned our feet by wearing shoes and by wearing very robust motion controlling and cushioning shoes, which takes away some of the function of the foot," she said.

Davis said she has also found that running barefoot can help flatfooted people to strengthen and raise the arches.

The study was presented at the 2011 Australasian Podiatry Conference in Melbourne.

## **Diagnostic Centers**

### **3 more diagnostic centers sealed in Kashmir (New Kerala: 3.5.2011)**

Three more diagnostic centres were sealed in the Kashmir valley, where the health department has already rejected registration of 104 such centres and sealed 61 labs during the past one week.

An official spokesman said here today that a team headed by Chief Medical Officer, Budgam, conducted inspection of various clinical establishment of Magam area in the central district of Kashmir.

"Three USG clinics in Magam which were being operated without proper registration were sealed. It include Whole Some Diagnostic Centre, Heart Line Diagnostic Centre, and Prime Diagnostic centre, Magam," he said.

The health department has rejected the registration of 104 diagnostic centres and also sealed 61 labs in the Valley last week.

A special drive has been launched by the department of health services to implement the pre-conception and pre-natal sex selection/determination (prohibition and regulation) Act in letter and spirit in the Valley.

He said accordingly, all District Appropriate Authorities have been directed to seal down any unauthorised genetic clinics/genetic counselling centres, imaging and scanning centres and ultra sonography clinics as well.

104 establishments have been rejected registrations which failed to fulfil the criteria under the act, the spokesman added.

On April 29, registration of 12 Diagnostic centres in Srinagar, four each in Baramulla and Ganderbal, 29 in Kupwara district, four in Kulgam and eight in Budgam district were rejected.



## **Blood donation**

### **Why blood donation is essential (The Tribune: 4.5.2011)**

Blood can be defined as the red-coloured fluid we have in our body that carries oxygen from the lungs to the rest of the body. It also carries waste to be eliminated from the body. The different blood groups are:

A positive or A negative

B positive or B negative

O positive or O negative

AB positive or AB negative

Every adult has four to six litres of blood in one's body, depending on one's size. Of this, 350-450 ml of blood is taken out, depending on the weight of the donating person.

Millions of people will need blood this year. There are lakhs of units of blood that are needed every day to help people worldwide.

Some of the reasons why people need blood transfusions are:

Surgery, road accidents, cancer, premature births, etc.

Almost all serious health issues require blood donated by people like you and me to save lives.

Blood that is donated lasts a little more than 40 days. That means we need to constantly replenish the blood so that it is there when someone needs it.

Blood is in short supply usually on holidays. Maybe in the next holiday season, that could be your gift to a needy person.

Our blood could save a child, a mother, a father, a grandfather or a grandmother. They cannot make blood; it is a gift we all have inside of us to give to those who are injured or sick, or are in need because of any other reason.

These are the best reasons to donate blood. Not everyone can save a life. But you have an opportunity to. Don't waste it.

When you donate a unit of blood you can save the life of more than one person. Nowadays with the help of modern technologies, different blood components are prepared, which are used for different types of sick people.

A healthy blood donor is a person in the age group of 18-60 years with a body weight of at least 45 kg, and having the haemoglobin content as minimum as 12.5 gm%.

The main reason why people do not donate blood is because no one has asked them to do so. If you motivate people, they will come forward. Don't hesitate. Tell them that through this noble act, they may save precious lives.

Blood donation is a noble, selfless service! It gives the donor a feeling of joy and contentment. Also, this is an expression of love for mankind, as blood knows no caste, colour, creed, religion, race, country, continent or sex.

The writer is a medical technologist, Blood Bank, PGI, Chandigarh.

## **Health and Behavior**

**Study finds disconnect between health and behavior in young adults (World Newspapers: 4.5.2011)**

A new survey has found that eight out of 10 people between ages 25-44 years old think they are living a healthy lifestyle and are more likely to engage in healthy behaviours than 18-24 year olds.

The results are part of a survey of 1,248 Americans aged 18 to 44 on their attitudes about health, including influences of and beliefs about health behaviors and their risks for stroke.

"This survey shows the dangerous disconnect that many young Americans have about how their behaviours affect their risks for stroke and other cardiovascular diseases," said Ralph Sacco, a neurologist and president of the American Heart Association/American Stroke Association.

"Starting healthy behaviours at a young age is critical to entering middle age in good shape. The investment you make in your health now will have a large payoff as you age. We want everyone especially young people to strive to avoid stroke, which can affect anyone at any age," he said.

Younger participants -- age 18 to 24 claimed that they want to live long and maintain quality health throughout their life. On average, they said they want to live to age 98.

Yet, one-third of those surveyed said they don't believe engaging in healthy behaviors now could affect their risk of stroke in the future and 18 percent could not identify at least one stroke risk factor.

"Young adults need to make a connection between healthy behaviors and a healthy brain and healthy heart," said Sacco.

"If we are not able to help young adults understand the relevance of their actions now and their risk of stroke tomorrow, then we could be looking at an increase in stroke diagnoses and deaths within the next 10 to 20 years," he said.

"Everyone should recognise the severity of stroke, which threatens quality of life and can be prevented. People need to think in terms of striving for ideal health as well as surviving and thriving if a stroke occurs. An easier way to remember this is: Strive, Survive and Thrive," he added.

Results from the survey also revealed that as people age, they become more aware of their overall health and risk factors for heart disease and stroke.

## **Health Professionals**

### **Health Professionals Concerned Over Biases In Commercially Funded Continuing Medical Education (Med India: 11.5.2011)**

Commercial funding of continuing medical education (CME) and the potential for bias appear to concern many health care practitioners and researchers, but many reported being unwilling to pay higher fees to eliminate or offset commercial funding sources, according to a report in the May 9 issue of Archives of Internal Medicine, one of the JAMA/Archives journals.

Although over the past several years, the role of pharmaceutical and medical device manufacturers in directing CME has been reduced, these entities still fund a substantial proportion of costs. Organizations such as the Institute of Medicine, the American Association of Medical Colleges and the American Medical Association have called for further decreases in or the elimination of commercial support for educational activities. However, such a change might shift costs to attendees, and little has been known of their attitudes.

From January through June 2009, Jeffrey A. Tabas, M.D., from the University of California San Francisco, and colleagues surveyed attendees at live CME courses delivered by the International AIDS Society–USA (IAS-USA), a nonprofit organization that pools the support it receives from industry so that no one company funds any particular program. In total, 770 attendees (a 57% response rate) completed the 22-item survey, which focused on beliefs about commercial funding and potential for bias, willingness to offset the cost of commercial support, knowledge about the costs of producing CME programs, and demographic information. Participants included physicians, nurses, nurse practitioners, physician assistants, and persons with Ph.D.s or other academic degrees. "Our two main outcome variables were dichotomized as follows: (1) agreed or strongly agreed that raising the registration fees is an effective way to decrease commercial support vs. not, and (2) agreed or strongly agreed that commercial support for live CME should be eliminated vs. not," the authors explain.

## Calipers

### Look Mom, with these I can walk on my own (H. T. 11.5.2011)

HELPING HAND AIIMS and MTU develop calipers that help those paralysed waist down walk

Priya Singla can't stop smiling. Her 16-year-old son Karan Aditya Singla, who suffers from cerebral palsy and has been wheelchair-bound since childhood, will soon be able to walk.

On Tuesday, Karan was fitted with walking calipers at the All India Institute of Medical Sciences (AIIMS). The calipers have been designed with the help of Michigan Technical University (MTU), US.

With this advanced pair of calipers, Karan will soon be able to walk on his own. "It feels different," he said, smiling.

Not just Karan, this new technology will change the lives of all those who are paralysed waist down, as not only is it available at one-tenth the price, it also enables the person to kneel and squat apart from helping the user walk in an almost natural manner

The current ones are imported from Germany and cost R2.5 lakh and the user has to depend on crutches and drag himself to move forward.

"Due to its high cost there weren't many takers, so the company had to withdraw the product. The ones we developed will not cost more than R25,000," said Dr Rajesh Malhotra, professor, department of orthopaedics, AIIMS, who was involved in designing the calipers with the MTU team.

A team of eight mechanical engineering students from MTU designed two prototypes - one adult and one for children - as part of their final year design project.

In April last year, they had contacted AIIMS with their proposal. "We didn't want them to go for the usual cars or bridges, as is expected of a mechanical engineering student. When they discussed their idea, the university was too happy to help," said Tammy Donahue, faculty member, MTU, and the project supervisor.

The new calipers were also tried on a 38-year-old man, paralysed due to a spinal injury, on Tuesday.

The design is locally made at the workshop of a Delhi-based NGO--Ortho Prosthetics Care and Rehabilitation. "We will provide the calipers for free to the poor. To begin with, we will fit two persons in a month at AIIMS. For those who can afford to buy these calipers, we'll sell them at nominal rates," said Vimal Oberoi, chairman of the NGO.

With the huge disease burden-nearly 50 people a month at AIIMS are paralysed waist down due to some neurological condition -it is a boon for the wheel-chair-bound.

## **Doctors**

### **We need to double the number of doctors (The Financial Express: 11.5.2011)**

The founder chairman of Apollo Hospitals tells Sushila Ravindranath that India will definitely become the world's leading healthcare provider. But we have to decide whether this will happen in five or fifty years Why can't healthcare get infrastructure status? The more hospitals one builds, the more steel and cement are consumed. And the employment opportunity is big

I am waiting outside Dr Prathap C Reddy's office to have a chat with him over coffee. I know he will offer me tender coconut water on a sweltering May afternoon in Chennai and not coffee. I have to walk across the Apollo hospital lobby to get to his room. The place is buzzing with people from all parts of India.

There is a lot of order in the seeming chaos, with polite hospital staff guiding patients and visitors at every step. The founder chairman of the Apollo Hospital Group is talking to a senior government official from Nigeria. Dr Reddy is seeing him off and the gentleman is beaming.

Reddy has assured him that he will help set up a kidney transplant unit in Nigeria.

Ever since his eldest daughter Preetha Reddy took over as managing director, Dr Reddy has focused on new projects. His enthusiasm and passion to make India the top destination for healthcare has not faded one bit. He is the pioneer of the healthcare industry in India. In 28 years, the single hospital he opened in Chennai has grown into a group of 53 hospitals in India and abroad. Apollo is the largest hospital chain in the country. The group's turnover exceeds R2,000 crore. Reddy is the man who infused professionalism in healthcare. He felt it was necessary to set up a corporate hospital in the country. It may be difficult to recall today, but 28 years ago hospitals were run only by charitable trusts or governments. The thought of setting up hospitals or healthcare facilities for profit was an unthinkable proposition in a socialist country. Reddy had to fight long, hard battles to fulfil his vision.

Dr Reddy asks me to come in. His daughter Suneeta Reddy , executive director, finance, who is also waiting to see her father graciously lets me go in. The doctor's office has remained unchanged for years, neat and functional with a couple of interesting paintings.

Sure enough, somebody brings in coconut water and biscuits. "Do you realise that lifestyle diseases are increasing day by day in our country?" the doctor asks me. He says the country will incur a bill of almost \$300 billion by 2015 on fighting these ailments. This amount would be better spent in building healthcare infrastructure. He increasingly sees young people in their thirties being prone to heart attacks and heart diseases. "When I was a student, we used to see an odd case here and there.

But not like this. In Asia, especially in India, this is going to take on pandemic proportions. How are we going to handle this?" he asks.

Government must share the responsibility. Ban on smoking must be taken seriously . Schools and colleges must sensitise their students against obesity . So much can be done to prevent heart diseases. There are many major challenges the country faces in providing healthcare, such as the acute shortage in the availability of hospital beds. With almost 2.5 million births per year, India needs an annual incremental addition to healthcare facilities equivalent to almost half of what a UK or a France or an Italy may need for their entire population. While India has made remarkable achievements in improving its health indices since Independence, we still lag behind other emerging economies like Brazil, Russia and China. We always compare ourselves with China. But China has 2.2 beds per thousand population and Russia as many as 9.7, while we are way behind at 0.7, compared to the global average of 2.6. We need to put up at least 1,00,000 beds a year. And investment for that is a huge amount. To reach developed country healthcare norms by 2027, India will require an astronomical one trillion dollars.

Which is why Reddy would rather put up new hospitals, increase the number of beds, than acquire existing hospitals for expansion. He tells me about the number of patients who come from the Northeast for treatment.

"Didn't you see them in the lobby?" he asks. "Why should they go through the expense and effort of coming all the way to Chennai? That is why we are putting up a hospital in the Northeast. We have to go to tier 2 and tier 3 cities." But then it is not as easy as it sounds.

That is because another major problem exists: inadequate man power in healthcare.

"We have to double the number of doctors, treble the number of nurses and quadruple the number of paramedics." Reddy genuinely does not understand why healthcare cannot be given infrastructure status. The more hospitals one builds, the more steel and cement are consumed. Enormous employment opportunity exists. "The healthcare sector fulfils all the nine criteria set by the Dr C Rangarajan committee on infrastructure.

But we are yet to get that recognition." to get that recognition."

Reddy is convinced that India will become the global health care destination. He says the world has no choice. Apollo has 16 beds for hip replacement. Six of them are occupied by Americans and Canadians. A surgery that used to cost \$2,500 about 27 years ago can still be performed here for less than \$3,000. "I can cross-subsidise my general ward patients from what we earn from international ones." He also says that we have to decide whether we will be the leading healthcare provider to the world healthcare provider to the world in the next five years or fifty years.

The transformation of health through technology truly excites Reddy . Telemedicine, consulting a doctor through your mobile, taking healthcare to rural areas through a rural network and using IT to enhance healthcare delivery are all areas Apollo is actively involved. "We keep innovating. To beat the traffic snarls in the cities, we have introduced the two-wheeler ambulance.

The paramedics reach fast, attend to the patients and then wait for the ambulance." He is equally committed to traditional methods to keep people healthy . "Yoga and meditation should be taught in schools and colleges."

"We should now take a quantum leap in healthcare and not wait for a crisis to happen," is his parting shot as I prepare to leave.



## **Healthcare**

### **Cover's not Enough, Build a Healthcare Kitty (The Economic Times: 11.5.2011)**

As health costs soar, you need much more than a mediclaim to meet hospitalisation, allied expenses

A simple laparoscopic surgery will cost you at least . 25,000 in a hospital in a metro city. The same surgery will cost you at least 30% to 40% more after five years, thanks to the rising medical inflation.

Just as the prices of milk and petrol are on the rise, so is the cost of healthcare facilities. You can turn into a vegan or start taking a public transport to mitigate the impact of rise in prices of milk or fuel. But you cannot have the same approach towards your healthcare cost. If you encounter a health issue, you have to give it the necessary medical attention, which comes with a heavy price tag. And you have to provide for these expenses as you climb up the age ladder.

“Typically, a medical insurance covers mostly hospitalisation but not the other expenses related to medical treatment,” says Swapnil Pawar, Chief Investment Officer at Karvy Private Wealth. “Earning couples who primarily live out of their salaries, have cash in terms of savings, service EMIs, and have limited assets to liquidate, should ideally build a healthcare corpus. This should be over and above the health insurance policy bought by the couple,” he says.

#### **NEED FOR HEALTHCARE CORPUS**

**RISING MEDICAL INFLATION:** The Insurance Information Bureau recently unveiled data on the rising medical inflation and its impact on health insurance claim amount. The average claimed amount for circulatory diseases, cardiac problems and paralytic stroke mainly, had increased by 56.99% in 2009-10 when compared with 2007-08, according to the data. “Overall, there is an increase of 27.09% in the claim severity for the year 2009-10 when compared with 2007-08,” the IIB report said.

**STRINGENT MEDICLAIM NORMS FOR ELDERLY:** Health covers for senior citizens — be it a fresh policy or renewal — come with a higher price tag than for others. Industry experts justify the higher premium cost saying it is to account for the risk

factors. For example, if you paid 1.5% of the sum assured as premium at the age of 25 years, the premium amount can shoot up to 8% of the sum assured when you are 60 years old.

“If you don’t have any financial constraint, then you should sign up for a medical insurance.

“Even if you exhaust the limit on one cover, you will have a back-up option although it is an expensive affair. The second option is to build a contingency fund just to fund your healthcare expenses. If senior citizens don’t want to depend on their children, they should ideally build a corpus for healthcare expenses over and above the regular retirement kitty,” says Kartik Jhaveri, a certified financial planner with Transcend India.

Another common aspect in most health covers for senior citizens is the co-payment clause. This refers to the portion of a claim a policyholder agrees to bear, while the insurance company undertakes to chip in with the rest. “Co-payments happen only in certain reimbursement covers to make the insured more responsible for judicious payments. This clause is seen mostly in health covers designed for senior citizens. It is also common in group medicaid covers offered by employers, which cover employees and his/her family members. The co-payment clause is applicable mostly to the family members of the employee,” says Rahul Aggarwal, CEO, Optima Insurance Brokers.

**MEDICLAIM DOESN’T COVER ALL EXPENSES:** There are two kinds of medical policies available in India. The first is the indemnity policy, which is the traditional medicaid policy offered by general insurers. These are largely reimbursement plans, which cover expenses related to hospitalisation. The claims are settled by the insurer either on a cashless basis through a tie-up with hospitals or by reimbursing the bills. Then, there are the defined benefit plans offered by life insurers, like critical illness policies and payment of a lump sum on the diagnosis of any of the named critical illnesses in the policy document.

“If the insurance company is stipulated to pay . 5,000 for a certain critical illness, the company will pay . 5,000 irrespective of the size of the claim,” says Aggarwal of Optima. However, the caveat is critical illnesses such as cancer, stroke, renal failure or major organ transplants are not standardised and may vary from insurer to insurer.

“Similarly, there are various expenses like commuting to the hospital, buying medicines post hospitalisation and so on, that fall outside the purview of a traditional reimbursement plan,” points out Aggarwal. Hence, it always helps to having a healthcare kitty which can be used as a top-up fund over and above your medicaid.

## HOW TO BUILD A HEALTHCARE KITTY

**SAVE SYSTEMATICALLY:** Investors often complain that they don't have money to save even for their regular goals. Hence, a separate healthcare corpus becomes out of the question. But if you save just ₹ 1,700 in the form of SIP for 20 years, you can accumulate a corpus of ₹ 10 lakh after 20 years. (The annual rate of return is calculated at 8%). Hence, the size of the amount need not be high. Just ensure you start at an early stage in your life to benefit from the compounding effect. However, if you are not cash strapped, then save up all your money for 3-4 months just for your healthcare needs.

“It should not be a long-term plan. Dedicate the excess cash over 2-3 months to build a healthcare kitty. Look at stable instruments such as bank deposits or liquid funds. Do not look to earn higher returns on this corpus through risky instruments, as stability of the corpus is a key factor,” says Pawar.

### RE-BALANCE PORTFOLIO WITH AGE:

Sometimes, you may avoid taking any decision because you fear it may backfire in future. This is called regret aversion in behavioural finance. But you have to fight this fallacy as one investment approach cannot suit you across different life stages. When you turn 60, asset allocation should get more tilted towards debt since your risk appetite will be much lower. For example, you may have a high exposure to equity at an early age, say in your late 20s, so as to meet your goals. But, the fact is you have the risk appetite to deal with a portfolio skewed towards equity, which carries market risks. The same strategy will not apply to you when you touch 40. Your needs change and your responsibilities are higher. The debt-to-equity ratio shifts from 80:20 at 25 to 20:80 at 50. This is the time to enjoy your savings rather than regret over losses from an aggressive, equity-driven investment plan.

**BANK ON DEPOSITS AND LIQUID FUNDS:** Save the corpus in fixed deposits (FDs) and liquid funds, which are more stable in nature. The returns from liquid or liquid plus funds, which come with a lock-in period of a maximum of three days, are in the range of 6-7% and are also redeemable within 24 hours. “One of the main differences between liquid and liquid plus funds is the dividend distribution tax. DDT of liquid funds is 27% (including the surcharge). Liquid plus funds come with a lower DDT at 15%, but the lock-in period is almost a week. So, if investors are parking big money then liquid plus funds will be more beneficial,” says Suresh Sadagopan, certified financial planner with Ladder 7 Financial Services.

## Healthcare

### Healthcare Comes Home to the Poor with Paid Cover (The Economic Times: 12.5.2011)

The success of Centre's health insurance scheme for the needy prompts cos to set up specialty units in rural areas

GAURI KAMATH AND VIKAS DHOOOT MUMBAI/NEW DELHI

The government wants to introduce public private partnerships (PPPs) in hospitals to improve access to healthcare in the hinterland. But its health insurance scheme for the poor has already begun to have that unintended side effect.

The Rashtriya Swasthya Bima Yojana (RSBY) — which has quadrupled India's health insurance penetration in just three years — is now attracting a slew of entrepreneurs wanting to set up hospitals primarily targeted at the rural poor. The trend of private hospitals coming up in districts where there were none before bolsters the view that the government should move into healthcare financing rather than run hospitals.

Baliya in eastern Uttar Pradesh, for instance, has been off the radar for most healthcare barons.

But spurred by the demand generated by RSBY, Asarfi Hospitals' owner Harendra Singh is building a 100-bedded multi-specialty hospital in this town, approximately 200 kilometres from Varanasi.

"The state of healthcare in Baliya is very poor," said Singh. So poor that between eight in the night and six in the morning "people are not allowed to fall sick" he said, only half in jest. He hopes to change this.

Singh set up his first hospital in Dhanbad in 2007 a year before RSBY was launched. With the scheme's impact becoming tangible, he noticed many beneficiaries coming in for procedures ranging from gall bladder surgeries to appendix removals. On an average, 35 in-patients in his 130-bedded hospital are RSBY beneficiaries. Singh believes RSBY's demand push can have a profound impact on the healthcare system. Investors like Singh are being drawn to low-cost healthcare thanks to RSBY's design. RSBY smart cards guarantee an annual health cover of . 30,000 for a poor family, which can be used across 8,000 empanelled hospitals, both public and private, across the country. Health insurers manage the issuance of cards and payouts. The Centre and the state government pay the premium.

“For almost 60 years, the government focused on supply-driven healthcare management by investing in public hospitals,” a senior government official told ET. “Putting the choice in beneficiaries’ hands is now drawing hospitals to go where the demand is,” he said. Here’s how. RSBY premium is paid out on a district-wise basis to insurers. Where districts don’t have good private hospitals, RSBY users simply travel to the nearest district that has one.

This is where entrepreneurs like Singh are stepping in. If they can set up a decent hospital within the district, the RSBY spends can be captured straightaway.

With 2.4 crore smart cards issued and district-wise premia running into crores, there is a potential to create a sustainable business with RSBY beneficiaries acting like anchor tenants for a mall.

GV Meditech’s Indu Sing is working on a hub-and-spoke model around RSBY. An ambulance driver from GV Meditech travels periodically to remote villages, pools 20 to 30 RSBY cardholders with myriad problems ranging from those affecting the eye to the stomach with the help of teachers at local schools, for instance, and brings them to the nearest Meditech hospital. “RSBY is helping in a big way,” said Dr Singh. The firm is now in discussions with a leading Bangalore-based cardiac care hospital to set up a 100-bedded hospital for RSBY patients. “I will provide them local support and patients and they will provide cardiothoracic support,” Dr Singh said.

Similarly, Kolkata-based Glocal Healthcare, spearheaded by former Sebi chairman M Damodaran, is looking to tailor its rates to RSBY packages.

The scheme prescribes standard rates for over 780 medical procedures, which all empanelled hospitals have to comply with. “Broadly, our costs are in line with the RSBY rates,” says Glocal’s CEO Sabahat Azim.

The RSBY is an important cog in its business model, which is hoping to launch innovative insurance schemes with its partners to create affordable healthcare options for people above the poverty line. Experts say RSBY has opened up a healthcare segment — to cater to low-income families — almost overnight.

And while not all hospitals catering to these segments have come because of RSBY, this is clearly at the back of their mind.

The trend also reinforces the argument that the government should move from being a healthcare ‘provider’ to a healthcare ‘financier’. This argument initially drew its strength from the sorry state of most government-backed healthcare infrastructure (with some exceptions such as AIIMs in New Delhi).

It is not just RSBY, but also statesponsored schemes such AarogyaSri that are having a similar impact. For instance, Bangalore’s Narayana Hrudayalya has opened a 500-bedded super-specialty and heart hospital in Hyderabad to cater to beneficiaries of Andhra Pradesh’s community health insurance scheme for BPL families.

## Rural Shift

- RASHTRIYA SWASTHYA BIMA

Yojana has quadrupled health insurance penetration in 3 years

- EXPERTS SAY THE SCHEME has also, overnight, opened up a healthcare segment that aims to cater to low-income families.

- A PRIVATE HOSPITAL IS COMING

up in Baliya, UP, which has been off the radar for healthcare barons

- THE TREND REINFORCES the argument that the govt should be a healthcare ‘financier’ rather than a healthcare ‘provider’

### **BPL patients - free treatment**

#### **BPL patients to get free treatment in IGIMS: Minister (New Kerala:16.5.2011)**

Health Minister Aswani Kumar Chaubey today said people living below the poverty line would get free treatment at Indira Gandhi Institute of Medical Sciences(IGIMS).

Mr Chaubey said here that a decision to this effect was taken at a meeting of governing body of the IGIMS here yesterday.

Patients, belonging to BPL category, would also avail the facility of free pathological and radiological tests at the IGIMS, he said, adding they would also be provided free meals during the period of treatment.

With a view to improving the treatment facilities in the hospital, a decision has also been taken to introduce round-the-clock emergency services in the IGIMS.

IGIMS would be equipped with the latest medical gadgets to ensure quality treatment of the patients, he said, adding modular operation theatre machine would be purchased for ophthalmology department of the hospital.

### **Preventive Health Services: Research**

#### **Unhealthy Substance Use a Risk Factor for Not Receiving Some Preventive Health Services: Research (Med India: 16.5.2011)**

Unhealthy substance use is a risk factor for not receiving all appropriate preventive health services, researchers from Boston Medical Center (BMC) and Boston University School of Medicine (BUSM) have revealed.

The findings, which currently appear in BMJ Open, identify unhealthy substance use as a barrier to completion of mammography screening and influenza vaccination.

Cancer and influenza are among the leading causes of mortality in the United States. Influenza is preventable, in part, through vaccination, and mortality from cervical, breast and colorectal cancer can be reduced through routine screening. Nevertheless, many eligible U.S. adults do not receive these recommended preventive services, in particular, low-income persons, racial and ethnic minorities, the uninsured and the foreign-born.

Despite this knowledge, and the implementation of interventions targeting these groups, preventive services are still underused, which has led some to believe that high-risk "pockets" of the population may account for gaps in service receipt.

### **Blood test**

#### **Coming soon: blood test that tells how long you will live! (The Tribune: 18.5.2011)**

London: Soon, it will cost just 435 pounds to keep tab on your ageing process. Scientists have developed a blood test which can show the speed of ageing and give an estimate of how long a person is going to live. The test results may be vital to life-insurance companies offering medical cover that depends on a person's lifetime risk of falling seriously ill or dying prematurely. The controversial blood test is to go on sale to the general public in Britain later this year. The test has been designed to measure vital structures on the tips of a person's chromosomes called telomeres, which scientists believe are one of the most important and accurate indicators of the speed at which a person is ageing.

### **Trainers**

#### **Trainers 'cause more injuries than killer high heels' (The tribune: 18.5.2011)**



London: So far, it was the heels that were a worry for you. Now it has been confirmed that even trainers that you wear to mimic celebrities are no less harmful - they cause far more injuries than killer high heels. And wearing the same trainers for leisure, the gym and other sporting activities also leads to problems. Many people wear trainers known as the 'Lily Allen effect' after the pop star, who promotes them. Chiropodists say one in 10 patients wears the wrong type of trainer. Four in 10 wear trainers every day, with more than half buying a new pair only every two years, reports the Daily Express. According to research from JJB Sports, the trainer is the perfect shoe, when worn correctly. But misuse and overuse causes 60 per cent more injuries than killer heels.

### **GGH doctors**

#### **GGH doctors to prescribe only generic medicines (New Kerala: 23.5.2011)**

The District Collector of this district has advised all the government hospital doctors to prescribe only generic medicines instead of non-generic branded drugs that are costly.

"If any one prescribes non-generic branded drugs, they would have to face disciplinary action," M Ravichandra warned while addressing the government general hospital development committee meeting here today.

He said sale of generic medicines was arranged for the benefit of the patients at the hospital by the DRDA and prescription of generic drugs by the doctors was being made compulsory from June 1.

The generic medicines would also be made available at all the mandal level government hospitals shortly, he added.

### **Apollo Hospitals**

#### **Apollo Hospitals, University College of London sign MoU (New Kerala: 23.5.2011)**

A Memorandum of Understanding between Apollo Hospitals Enterprise Limited and University College of London (UCL) for collaboration in training and clinical research was signed in London on May 6.

The MoU expresses the desire of both partners to enter into a strategic partnership to promote and carry out educational and research initiatives in health sciences, an Apollo Hospital release said here today.

Ms Shobana Kamineni, Executive Director, New Initiatives, Apollo Hospital Group said "Apollo Hospitals Group carries out scientific and medical research having a bearing on the health, social, economic and industrial needs in India." Abundant opportunities in healthcare can be explored as we have a lot of scope to leverage on our acquired knowledge and skills.

"This collaboration will significantly enhance training programmes and research carried out in priority areas of relevance in India." University College London is one of the world's leading multi-disciplinary universities. It has 4000 academic and research staff and 21 Nobel Prize winners from its faculty, the release said.

## **Placebo treatment**

### **Placebo treatment heals headache! (New Kerala: 24.5.2011)**

A new study found a considerable number of patients recovered from headache when treated with placebo.

Headache is a very common complaint, with over 90 percent of all persons experiencing a headache at some time in their lives.

Headaches commonly are tension-type (TTH) or migraine. They have high socioeconomic impact and can disturb most daily activities.

In the study, a group of Dutch researchers analyzed 119 randomized controlled clinical trials (RCTs) and determined the magnitude of placebo effect and no treatment effect on headache recovery rate.

"The aim of this study was to analyze the observed effects in the "no treatment" and placebo control groups in clinical trials with TTH and migraine patients," said corresponding investigator Arianne P. Verhagen, from the Erasmus Medical Center, Rotterdam, The Netherlands.

In the headache clinical trials studied, the "no treatment" and placebo groups had a high overall recovery rate of 36 percent.

Control groups in pharmacological trials showed a higher response rate than the behavioral (non-pharmacological) trials.

The study was published online in the Journal of Manipulative and Physiological Therapeutics.

## **Skin**

### **Skin gets affected by our emotions (The Tribune: 25.5.2011)**

As one matures from a child to an adult, one develops social habits and maturity to control emotions. In the battlefield of life, humans have to encounter various challenges, one of which are diseases and disorders which are bound to happen. As medical science evolved and progressed in its research on various skin disorders, it has been found that the most of the skin diseases are influenced, triggered or relapsed by various emotions of the patient.

Therefore, once a human becomes a skin patient he needs to adapt quickly and develop the necessary art and maturity of managing one's emotions and immediate reflex actions — scratching over an itchy area, wetting the dry lip surface with one's tongue and other lip, squeezing a pimple, biting nails and lips, pulling hair in stress and anger. Thus, it's very important to know about the various emotional factors that affect our skin and bring the necessary changes and develop emotion-coping strategies when a person becomes diseased.

It has been estimated that the effective management of at least one-third of the patients visiting hospitals depends to some extent upon recognition and precise effective management of emotional factors.

Disease control and cure becomes better if there is less stress, anxiety and depression associated with the skin disorder. So, if one gets a skin disease, it is very important that one makes oneself mentally more tougher, stronger and calm. One must try to raise one's threshold to getting stressed, angry and nervous in various situations. Emotion-focused coping strategies help patients to share their feelings and become realistic about prognosis. Adverse psychological responses to illness are related to chronicity, to increasing disability and poorer prognosis.

Stress, bouts of anger and anxiety have been found to flare up and cause relapses in diseases like psoriasis, atopic dermatitis, melasma, vitiligo, acne, telogen effluvium (hair loss), rosacea.

Skin diseases affected by compulsive habits :

**Lichen simplex chronicus:** This skin disease is caused due to hyperactivity of certain skin cells which become unstable and release certain chemical mediators in more quantity than what is considered normal and this tends to incite itching. The reflex action of scratching over the itchy area to get relief instead excites the unstable cells more, thus resulting in more itching, more reflex scratching. Scratching and then repeated scratching over an itchy area finally culminates into a compulsive habit.

Scratching in psoriasis and eczemas further disturbs the skin barrier causing secondary infections and thus aggravating the skin lesions.

**Acne excoriée:** Some patients with acne (pimples) cannot resist squeezing and pinching the acne lesions leaving them prone to develop pitted scars on the face. It starts as a compulsive habit to get rid of acne, but some people, when under bouts of stress and anxiety, tend to pinch or squeeze their skin even when there are no acne. This has been particularly found in adolescents under emotional stress.

**Trichotillomania:** The term means a morbid craving to pull out hair. This disease is characterised by recurrent pulling out of one's own hair, resulting in hair loss. Patients feel pleasure, gratification or relief when pulling out the hair. Persons having this disease under bouts of stress, anger, anxiety tend to develop a habit of pulling their hair.

This is mostly seen in young school-going children specially during the examination days or if there's a lot of family stress.

Onychotillomania and onychophagia: The compulsive habits of nail picking and nail biting have been shown to be common in children and adolescents.

Nail biting is usually confined to the fingernails, but nail picking, especially in adults, may involve all digits. Damage to nails causes inflammation of nail folds, nail dystrophy and formation of dark lines over the nails.

Lip lick dermatitis: It (Lip Licking) starts as a reflex action when lips are dry, but repeated wetting of lips with tongue and lip-licking finally results in the skin disease liplick dermatitis characterised by dryness and darkening of the skin around the lips.

Children and adolescents suffering from skin diseases like eczema and psoriasis show more anxiety, handle situations less well and are provoked to anger more readily. Stress makes eczemas worse.

Psoriasis: Psoriasis is a disease most affected by emotional factors. Depression is particularly significant and may remain undetected. But if it remains untreated it may contribute to therapy-resistant diseases and increased pruritus.

Chronic urticaria: The urticarias (hives) are significantly affected by depression, dysthymia and anxiety.

Alopecia (hair loss): There has always been a strong medical proof that the onset and recurrence of alopecia is related to stress and major events in life. First episodes of alopecia areata (common disorder resulting in coin-shaped patches of hair loss) is associated with the avoidance of personal binding relationships, poor social support and high alexithymic personality characteristics.

On cosmetic front: Repeated frowning in anger and desperation can leave fine-to-deep wrinkles on the forehead and crows feet around the eyes at an early age.

Laughter increases oxygen in the blood, which also encourages healing of skin ulcers.

The writer is Chief Consultant Dermatologist & Dermato-Laser Surgeon, National Skin Hospital, Mansa Devi Complex, Panchkula. E-mail: drvikas.nscindia @gmail.com

## CT scan

### CT scan could help predict early death in diabetic patients (The Tribune: 25.5.2011)

Washington: A study has found that a common test in the form of a CT scan may be useful in predicting early death in individuals with diabetes. The test conducted by the Wake Forest Baptist Medical Center was able to identify which of the individuals were at a higher risk. “People with diabetes are already at a high risk of developing heart disease and experiencing an early death,” Donald W. Bowden, the Director of the Center for Diabetes Research at Wake Forest Baptist and lead investigator, said. “With this study, we’ve discovered that we can identify a subset of individuals within this high risk group who are at even higher risk, and the means to do this is already widely available in the form of a computed tomography (CT) scan — a relatively inexpensive and non-invasive test,” he explained. For the Diabetes Heart Study, Bowden and colleagues followed nearly 1,500 patients with diabetes in North Carolina for about 13 years, gathering data on various aspects of the disease and how it affects individual health.

## Docs to villages

### Even incentives can’t push docs to villages (The Tribune: 27.5.2011)

\* **Government’s ambitious scheme falls flat**

\* **Rural areas short of over 16,000 doctors**

No amount of incentive seems enough to inspire medical graduates to do rural stints. To the utter surprise of the government, its much-touted scheme, to offer extra marks in the medical postgraduate entrance exams to

#### THE BIG CRUNCH



\* To meet a massive shortfall of 16,000 doctors, the government notified a scheme in 2009.

\* The scheme offered extra marks in the medical postgraduate entrance exams to MBBS docs who work in rural areas.

\* The scheme has failed miserably and the government is now mulling strong measures to address the crunch of doctors in rural pockets

“ We may have to think of stricter means to ensure that our medical graduates do rural postings. We are very concerned about the poor delivery of healthcare to our rural populations. Our schemes have yielded no results. — Ghulam Nabi Azad, Health Minister ”

MBBS docs who work in rural areas, has fallen flat with no takers.

Notified in 2009 with the objective of meeting a massive shortfall of 16,000 doctors, including 12,000 specialists in the villages, the scheme guaranteed better success in the tough medical PG exams to MBBS doctors who volunteered to work in rural areas. Someone who worked in a designated rural area for a year before taking the PG exam would get an assured 10 marks in the test; the share of additional marks would increase to 20 and 30 respectively for graduates who have put in two and three years in villages.

As part of the same incentive scheme, the government had also reserved 50 per cent seats in MD (Diploma) and MS (Diploma) courses for the practising MBBS doctors who wished to take diplomas later. Even in this category, the Health Ministry found no response despite the entrance tests to these diploma courses being extremely tough.

Faced with a lukewarm response to the schemes, Health Minister Ghulam Nabi Azad today, for the first time, hinted that if the situation remained grim, the government might have to consider stronger measures. “We may have to think of stricter means to ensure that our medical graduates do rural postings. We are very concerned about the poor delivery of healthcare to our rural populations. Our schemes have yielded no results,” he admitted. The Tribune has learnt that at a recent convocation of the Lady Hardinge Medical College Delhi, not a single MBBS pass out replied in the affirmative when Azad asked them if they would serve in a village.

Government data shows that rural India is short of 12,263 specialists at the level of community health centres (CHCs) and 3,789 doctors at the primary health centres (PHCs). Madhya Pradesh villages are facing the largest shortage of 1,087 specialists and 614 doctors, while in Uttar Pradesh 1,442 specialists and 1,689 doctors are needed. The level of shortage of trained medical practitioners in primary health centres is 500 for Assam; 413 for Orissa; 211 for Bihar; 65 for Gujarat and about 45 for Punjab. One primary health centre serves a population of 25,000 people.

Interestingly, former health minister Anbumani Ramadoss had anticipated the problem long ago and proposed to make rural posting mandatory for all postgraduate medical aspirants. He had, before the 2009 General Election, told the Parliament that considering a shortage of 8 lakh doctors in India, particularly in rural areas, the health ministry was going to make it compulsory for MBBS pass-outs applying for postgraduation to do a combined rural posting for four months each in a PHC, CHC and district hospital under the state government. The proposal envisaged the payment of a stipend of Rs 10,000 to each doctor doing a rural stint.

## **AIIMS doctors**

### **AIIMS doctors to demand regulated duty hours (The Hindu: 27.5.2011)**

Resident doctors at the All-India Institute of Medical Sciences here will be approaching the Union Health Ministry asking for their duty hours to be regulated.

“AIIMS is a premier institute in terms of medical facilities and research and seeing the number of patients coming here, doctors are often working round-the-clock to accommodate them. This in turn leads to doctors being overworked and the long work hours reduces their efficiency putting them under undue stress. This isn't good for the patient either. We will be submitting a letter to the Union Health Ministry on Friday asking them to ensure that guidelines are put in place to make sure that the working hours for doctors are regulated,” said AIIMS Resident Doctors' Association president Dr. Debjyoti Karmakar.

“Work hour guidelines are an integral part of the work ethics in almost all the countries in the West and since AIIMS is a leading institute we are hoping that we lead the country in bringing in some guidelines for the doctors in this area. Of course in India with the heavy patient load it is not possible to have water-tight duty hours, however, some guidelines on the issue could be the first step forward in the area. AIIMS could lead the way to giving doctors a basic framework of duty hours,” added Dr. Karmakar.

This issue, however, isn't a new one and has been in discussion for over a year at AIIMS.

“Most resident doctors in the various government hospitals spend long hours on duty and the condition is no different at AIIMS. With the guidelines being brought in at AIIMS we are hoping that the other hospitals too can follow the example and bring in regulate duty hours of the doctors,” said Dr. Karmakar.

Doctors at the Institute added that they work more than what is permitted duty hours for doctors in the United States.



## **Health Education**

### **Educating India**

#### **Educating India (The Hindu: 5.4.2011)**

India's performance over the past decade on one key development indicator, literacy, is not bad at first glance. Data from the provisional population tables of Census 2011 show the 'effective literacy rate' (the percentage of the population above seven years that is literate) has increased by 9.21 percentage points over the decade to reach 74.04 per cent. A clear positive is that literacy rates among women grew faster than those for men. This growth in bare literacy reflects the significant steps free India has been taking to create a more literate society. It stands out when one compares the relevant pre- and post-1947 data. In 1901, the crude literacy rate (the number of literates as a percentage of the total population) was an insignificant 5.35 per cent. In 1951, this was a still dismal 16.67 per cent. In contrast with a 11.32 percentage point increase between 1901 and 1951, the crude literacy rate rose by 48.22 points between 1951 and 2011, with the 1991-2001 decade registering the highest growth (11.67 percentage points).

But this encouraging portrait must be understood in context — and also in comparison with what other countries have achieved. Any set of data is only as good as its definitions. By the prevailing Census definition, anyone above the age of seven who can read and write with understanding in any language is considered 'literate'. The giveaway is that it is not necessary for the literate person to have received any formal education or to have attained any minimum educational standard. This is a huge conceptual weakness that calls for a radical course correction. The rhetorical question before policymakers is this: does the mere ability to read and write 'with understanding,' albeit no mean achievement, add real value to the self-realisation of the individual and to social development? Conceptually, therefore, rising India must earnestly set about realising the true meaning of literacy by aiming to provide its whole population — male as well as female — a nationally acceptable minimum level of educational qualification. This floor can be nothing other than school education for ten years. This means creating public opinion and developing public action that obliges policymakers to put in place effective measures to solve the problem of school dropouts, especially in the Hindi-speaking States. It also means no-nonsense implementation of the fundamental Right to Education and taking this beyond the primary stage.

## **Rural health course**

### **Centre mulls over tie-up with IGNOU for rural health course (The Hindu: 5.4.2011)**

NEW DELHI: While the Medical Council of India has refused to notify the proposed Bachelor of Rural Health Care course, the government is considering several other options – including a partnership with distance university IGNOU, or an independent regulatory set-up – to launch the course anyway.

“MCI does not want to notify the course, because they say it is not medical training, it is not meant to produce doctors. And I think that's fair enough,” said Keshav Desiraju, additional secretary at the Ministry of Health and Family Welfare. “But we are certainly not scrapping the course...We just need some sort of regulatory mechanism.” He added that affiliation with the Indira Gandhi National Open University was one idea being considered, while another is the possibility of an independent regulator.

Mr. Desiraju, who has worked for both the Union Ministries of Education and Health, was speaking at a symposium on health education organised by the National Board of Examinations and the Public Health Foundation of India.

The Ministry is also considering a plan to locate medical colleges around district hospitals and hopes that this would be included in the 12th Five Year Plan.

“In the 1990s, the policy of allowing a large number of private medical colleges has led to a concentration of medical education in urban centres,” he said, adding that setting up more government colleges at the district level could help balance that out.

## **Literacy rate rises**

### **Literacy rate rises, sex ratio falls (The Tribune: 8.4.2011)**

#### **Census 2011**

Jammu and Kashmir's literacy rate has increased by 13 per cent in the last decade even as the state witnessed a dip in the sex ratio and the child sex ratio, the provisional figures of the Census 2011 reveal.

"The literacy rate in Jammu and Kashmir has increased from 55.52 per cent in the 2001 Census to 68.74 per cent in the Census 2011," Director, Census Operations, Jammu and Kashmir, Farooq Ahmad told reporters here today.

While female literacy has increased from 20 per cent in 1981 to 58 per cent this year, the male literacy has increased from 44 per cent to 78 per cent during the corresponding three decades, Ahmad said while releasing the data.

Jammu, Samba and Leh districts have the highest literacy rates of over 90 per cent, while Bandipora, Ganderbal, Budgam, Ramban, Kulgam and Reasi districts have literacy rates of less than 60 per cent. Remote Kupwara district has made the biggest stride in improving the literacy rate, moving from 42 per cent in 2001 to 68 per cent this year.

Ahmad said, however, the data regarding the sex ratio was a cause of worry as the numbers had fallen to the level of 1901. The sex ratio in Jammu and Kashmir has fallen from 892 in 2001 to 883 in the Census 2011, a drop of nine points. In 1901, the sex ratio was 882. The national average is 940.

Leh district in the Ladakh region has a shocking sex ratio of just 583, which is a massive drop of 240 from the Census 2001. Considering the sex ratio, Leh district is ranked 22nd in as many districts in the state. Nearby Kargil district is one rank above at 21st position with a sex ratio of 775, down 62 from the Census 2001.

Kulgam and Shopian districts have the highest sex ratio of 951, which is 11 more than the national average.

The two capital cities of the state, Jammu and Srinagar, have almost identical figures of 871 and 879 and both have registered improvements over the 2001 figures.

The child sex ratio was equally worrisome, as it has dropped by 100 points from 963 in 1981 to 863 in 2011.

“It will have serious affects on our future population and it is time that we take steps to correct it,” Joint Director, Census Operations, CS Sapru said.

According to the data, the state’s population has grown from 1.01 crore in 2001 to 1.25 crore this year, with the male population accounting for 66.65 lakh. The state has registered a decadal growth of almost 24 per cent, which was the seventh highest in the country. However, the growth rate for the past decade was six percentile points less compared to last four Census operations since 1971. The population density has been stated as 124 in the current Census against 100 in the Census 2001.

While the Kashmir valley has a population of 69.08 lakh, the Jammu division has 53.50 lakh and the Ladakh region 2.90 lakh population. “These figures include whosoever was physically present in the territorial jurisdiction of Jammu and Kashmir during the enumeration period. The security forces posted in the state were also counted,” the Director, Census, said.

He thanked the political leadership, both mainstream and separatists, for extending cooperation to the Census exercise. “I am thankful to people at large and the political leadership on either side of the fence for their wholehearted cooperation in data collection,” Ahmad said.

Governor NN Vohra was keen to see that the Census operations Went on smoothly and also advised the Census officers to ensure a complete coverage of the operations in the state, Ahmad said. He added that the Governor, the Chief Minister and other senior officers of the state administration were being apprised from time to time about the census operations that involved the services of 27,500 enumerators and supervisors.

### **Ayurveda college hospital**

#### **Minister makes surprise visit to Ayurveda college hospital (New Kerala: 27.4.2011)**

Karnataka Medical Education Minister S A Ramdas today ordered an investigation into irregularities he found at the Government Ayurveda College and Hospital here during a surprise check.

Going through the attendance register of the hospital Mr Ramdas found that all the 15 doctors on contract were absent while Principal Dr Aruna was on leave. On questioning, the in-charge Principal Dr. Chandramouli contended that they were on strike.

An upset Mr Ramdas shot back, "they have not served any notice, it is illegal" and instructed initiation of disciplinary action against them. Out of the 19 regular doctors, two were found to be unauthorisedly absent, while a few others had not signed the register.

The vexed minister got all the doctors lined up and took attendance himself.

## **Medical education**

### **Medical Students' and Internal Medicine Careers(Med India: 27.4.2011)**

Compared results from a 1990 survey of medical school seniors with results from a similar survey in 2007 and found that many medical students in 2007 viewed internal medicine as a potentially meaningful career, however majority of students are opting for other specialties, reveals report published in the Archives of Internal Medicine.

"The United States faces a troubling shortage in its primary care medical workforce," the authors write as background information in the article. "According to the Institute of Medicine, the United States is not prepared to meet the health care needs of the growing number of older adults."

Mark D. Schwartz, M.D., of the New York University School of Medicine, and colleagues examined data collected during two previous national studies of senior medical students that addressed student characteristics, specialties chosen and perceptions of internal medicine among other questions. The 1990 survey included 1,244 students at 16 schools and the 2007 survey included 1,177 students at 11 schools.

## **Health Education**

### **Multiple options to fund PPP in health, education (Business Standard: 28.4.2011)**

THE government is working on multiple options for financing public-private partnership (PPP) projects in social sectors like health and education. The PPP framework for these projects, like building hospitals and schools, will be different from the existing regime for infrastructure.

Officials said central assistance for financing such projects could be available either directly through the finance ministry or routed through respective ministries (health and education) or even through the Planning Commission.

In a meeting held yesterday, representatives from states, Planning Commission, ministries of health, education, finance and law also discussed models through which government support could be provided to enable access to the poor in hospitals or educational institutions built under the PPP model. “The idea is that both the government and private sector should work together, while the burden for providing access to the poor should rest with the government,” a senior official who participated in the meeting said.

Under the current PPP framework used for the infrastructure sector, mainly covering road, metro and some state government projects, the Planning Commission frames standardised contractual documents for laying down the terminology related to risks, liabilities and performance standards. The schemes and government grants for individual projects are approved by the Public Private Partnership Appraisal Committee (PPPAC) headed by secretary (economic affairs) in the finance ministry.

The finance ministry had expressed divergent views on the role of the Planning Commission in PPP projects, arguing that such partnerships strictly fall within its domain. Officials said such difference of opinion were common, but finally all the parties have decided to work together.

In its presentation to Prime Minister Manmohan Singh last week to formalise the draft approach paper to the 12th Plan, the Commission had pitched for expanding PPP in health and education sectors. The Prime Minister heads the Commission. “The role of

PPP in secondary and tertiary healthcare must be expanded, while such models in school and higher education should also be explored," the presentation said.

While the final approach paper to the 12th Plan is in its formative stage, the Commission has started working on framing model concession agreements to involve private partners in developing and operating hospitals and educational institutes.

OFFICIALS SAID CENTRAL ASSISTANCE FOR FINANCING SUCH PROJECTS COULD BE AVAILABLE

either directly through the finance ministry or routed through respective ministries or even through the Planning Commission

### **National Advisory Council**

#### **NAC for Social Audit of Health (The Asian Age: 2.5.2011)**

The National Advisory Council led by UPA chairperson Sonia Gandhi has asked the health ministry and the department of public grievances to conduct a social audit of programmes under the National Rural Health Mission and implementation of the Right to Information Act on the lines of similar monitoring of schemes under the Mahatma Gandhi National Rural Employment Guarantee Act.

An NAC member told this newspaper: "We have stopped discussing the Lokpal Bill ... but corruption in this country cannot be seen in isolation -involving only politicians and bureaucrats. We must take a holistic view to ensure that schemes and programmes of the government reach the targeted poor."

The NAC member, saying the much-talked-about Lokpal Bill is "for the middle class, of the middle class and by the middle class", said the council had recently suggested that the two government departments conduct a "social audit" of programmes under the NRHM and of RTI implementation. "This is very important in the wake of certain cases like the death of 13 pregnant women in Rajasthan and the repeated refusal by the authorities to give information under the RTI Act," he added. Thirteen women had died in one fortnight in February this year in Umaid and MG Hospitals of Jodhpur district after developing serious post-delivery complications resulting in profuse bleeding, allegedly after they were administered contaminated drips.

Stressing the need to enlarge the scope of the national discourse on corruption, the National Advisory Council member said the Lokpal alone would not be able to ensure a corruption-free society in which the poorest of the poor could get justice.

"We at the National Advisory Council have started working on a larger plan, which includes issues like administrative reforms, strengthening RTI, electoral and judicial reforms and public appointments," he said, adding a background note for further discussion was finalised at the National Advisory Council's last meeting on Friday.

This focuses on the need to ensure accountability at all levels and putting in place a smooth grievance redressal mechanism.

### **Public health research**

#### **What ails public health research? (The Hindu: 2.5.2011)**

Why has the incidence of tuberculosis in India remained around 170 per 100,000 people for the last 20 years despite DOTS, the directly observed treatment strategy, being in place? Answer: DOTS is a passive system that kicks in only after a person takes the initiative and gets tested for the disease. Despite the high prevalence and mortality rate, researchers are yet to figure out a system that works proactively, identifying all people with active TB and treating them. The compulsion to identify and treat people with active pulmonary TB as early as possible arises from the fact these patients stop infecting others only at the end of two months of treatment. The reason for the overall failure to identify an efficient and effective system for tracking down people with tuberculosis boils down to a grievous lack of public health research originating from India. India has the greatest total disease burden in the world, and is plagued by both communicable and non-communicable diseases. Yet the total number of research reports and journal papers on public health is small. This, despite the fact that public health research plays a pivotal role in understanding disease distribution in the population and reducing the burden through effective intervention strategies.

A paper recently published online in The Lancet ("Research to achieve health care for all in India," by Lalit Dandona et al.) reported that though the proportion of health papers published from India increased from 0.4 per cent of the global total in 1988 to 1.8 per cent in 2008, the papers on public health constituted a measly 5 per cent of the total health research papers published. While there has rightly been increasing representation of diabetes and cardiovascular disease in recent times, many of the leading causes of the disease burden such as lower respiratory infections and mental illness continue to be



under-represented. The skew in the focus of health research reflects funding priorities. For instance, HIV/AIDS is better covered than chronic diseases and injuries that have much greater weightage in India's disease burden. Of what use are public health programmes and policies if the evaluation research to understand their effectiveness and deficiencies is weak? It is time these shortcomings were addressed by the national health policy, which promises to strengthen public health research. Increasing funding for evaluation research in addition to research on high burden diseases and the health system must be taken up as a life-saving priority. Now is the time for the government to put its money and political will where its mouth is.

### **Hospital Management System**

#### **Haryana to introduce District Hospital Management System (New Kerala: 4.5.2011)**

The Haryana government has decided to introduce District Hospital Management System (DHMS) in the state so that the people are provided quality health services and schemes of the Health Department are implemented more effectively.

This information was given in a review meeting taken by Haryana Health Minister Rao Narender Singh and Chief Parliamentary Secretary Ram Kishan Fauji here today.

The Health Minister said all Civil Surgeons would submit the progress reports of their respective districts under the DHMS and the Department would effectively monitor their performance.

He also instructed the officers to monitor the progress and implementation of various health programmes in their districts.

Mr Singh directed the Civil Surgeons to effectively implement the Pre Natal Diagnostic Technique Act and adopt zero tolerance for sex determination tests.

## **Nursing education**

### **Nursing education is a mess (The Tribune: 12.5.2011)**

Good nurses are essential for efficient delivery of health care services, but most of the private institutes opened for training them are no better than teaching shops

Radha Saini

This year the theme of International Nurses Day is “Closing the Gap: Increasing Access and Equity”. The theme primarily focuses on the contributions of the nurses towards efficient delivery of health care services even to the far-flung remote areas, including vulnerable communities, marginalized communities, rural communities and economically weaker sections of society with a view to promoting the utilisation of health services and health care resources by the people. However, India has been neglecting the education and training of nurses badly.

The country has 2,178 nursing diploma schools, 1373 nursing degree schools and 401 MSc nursing colleges and annually, the country produces around 60,000 nurses. According to Ministry of Health and Family Welfare (MOHFW) statistics the nurse-population ratio in India is 1:2,950 and hence among 133 developing nations we stand 75th in the nurse-population ratio even though we remain the biggest supplier of doctors and nurses to the developed world.

According to WHO, India will need 2.4 million nurses by 2012 to achieve the government's aim of a nurse-patient ratio of 1:500. More than mere setting up of buildings and infrastructure or even complying with the norms set up to establish a new college as per the guidelines of the Indian Nursing Council (INC), the need of the hour is to give evidence-based and competent practical training to our new nursing graduates and also motivating them to build/develop interest and passion for patient care. Practices need to be highly skillful and competent based on a lot of practice to deliver holistic care to clients.

There are 150 nursing institutes in Punjab with more than 25 colleges offering MSc nursing course. Not even one MSc nursing college in the state has been able to comply with even basic norms and rules set out by the Indian Nursing Council, New Delhi, and Baba Farid University of Health Sciences, Faridkot. Mainly there is lack of experienced MSc nursing faculty, lack of publications and independent published research work of

high quality by MSc Nursing faculty, lack of independent research and development projects by college along with lack of resources and infrastructure for MSc Nursing course.

Furthermore, on the day of inspection especially by the INC, everything is shown on papers i.e. rented buildings, lab equipment and library books. So much so, even MSc and BSc nursing faculty is hired for just 1-2 days. After that nothing is there. Imparting nursing education is a mere business for the private businessman of Punjab. The relaxations given by the INC in opening /setting up BSc nursing and MSc nursing colleges have been grossly misused by the latter.

#### Teaching shops

In the race to be one-up on each other, these colleges indulge in all types of unscrupulous activities ranging from assisting students in cheating in examinations to allowing students to do non-attending MSc nursing course which is totally illegal, unprofessional and unethical. Teachers are made to work by making them kill their conscience and are left on the whims and fancies of their respective managements.

Student nurses while pursuing their training often lament inappropriate practical training. Nursing procedures ought to be practiced by students many times on dummies before being administered independently on patients. Yet, a majority of nursing institutes do not even have dummies. Even if a dummy is present, a student hardly gets a chance to practice on it as student-dummy ratio is 50:1 or even 75:1.

Students are forced to try out procedures directly on poor patients, making the latter guinea pigs for carrying out simple to complex nursing procedures. Often nursing students end up harming the client in one way or the other.

Nurses are always caught in a dilemma between their accountability to patients in terms of nursing care and professional duty to doctors and other health care professionals in terms of obeying their orders and hence assisting the latter by all means. So much so, while assisting physicians in clinical trials they never question the doctor regarding the authenticity of these trials in terms of the bioethics involved.

#### Lack of ethics

They rather blindly follow physician's orders and hence equally contribute to unscrupulous medical practices which make poor patients guinea pigs in pharmaceutical company-sponsored clinical trials. The good reason is that there are no defined nursing ethics in our country.

The difference in the care rendered to a patient by a locally trained illiterate girl/quack nurse and a diploma/degree holder or postgraduate nurse is not appreciated. Hence there is no motivation for increasing one's qualifications.

The modus operandi of private nursing homes and hospitals is to train local illiterate young girls and boys in basic nursing care which primarily includes changing IV bottles and administering medications, including injectables, and subsequently making the latter don nurses' dress and hence giving a vague and fraudulent picture of nurses to the entire society.

In the government sector, till date there is no post of Professor or Assistant Professor/Reader. Nurses in all the private nursing institutes, including mission hospitals such as CMC Ludhiana, and CMC Vellore, use self-proclaimed designations of Professor and Assistant Professor/Reader, which is totally unprofessional! Till date nurses have not been able to create a separate directorate of nursing and still are governed by Director Health services at the state level and Ministry of Health and Family Welfare at the central level. With the population of our country exceeding one billion, it is shocking that we have only one nursing advisor at the Centre.

#### Need of the hour

The need of the hour is to strengthen the inspection criteria of the INC and the university. It has two main components: one, checking of credentials of MSc nursing teachers in terms of published papers of high quality, conducting independent research projects or involvement in ongoing/current research project of government or any other international UN body or NGO, and secondly evaluating the academic performance of a college in terms of conducting national level workshops and organising conferences on an annual basis along with taking research grants from national bodies like the ICMR, the MOHFW, NACO and WHO, UNDP Geneva etc at the international level.

More rigorous evaluation criteria for practical and theory examinations of students, along with starting a common exit exam for all nursing passouts, thorough investigation of Masters and Bachelors nursing students' dissertation thesis, recruitment of special nurse researchers by the university are a few things needed urgently. Above all, nursing students must be continuously motivated for "selfless service" and "significance of empathy" while caring for patients.

Nurses of India need effective training and ought to acquire skills necessary for effective implementation of the government's programmes and policies, especially in relation to the Reproductive and Child health Programme (RCH-II), Universal Immunisation Programme (UIP), Adolescent Health programme and Geriatric Health Programme run by the Ministry of Health and Family Welfare at the Central level and the Directorate of

Health and Family Welfare Programme at the state level. Both these programmes are being run under the auspices of the Director-General Health Services (DGHS).

The writer is Vice-Principal, Rayat-Bahra College of Nursing, Distt Moha

### **Medical miracle**

#### **Medical miracle: Falling in step with gods's words (H. T. 12.5.2011)**

PECULIAR CASE Doctors at Moolchand perform operation without use of blood

He belongs to a Christian sect called Jehovah's Witnesses and for him The Bible is the word of God -it also prevents him from taking or giving any blood even if his life depended on it.

This peculiar case baffled doctors at south Delhi's Moolchand Hospital when Gideon Kalu (34), a chartered accountant from Nigeria, suffering from end-stage kidney disease, approached them.

He agreed to undergo a kidney transplant only if the doctors did not transfuse any blood in him.

The sect to which Kalu belongs does not accept or give blood in any form because "The Bible says so".

The doctors were staring at a huge legal hassle if anything were to go wrong during his operation -Kalu's elder brother was to be the donor. All major surgeries such as open-heart surgery, brain operations, organ transplantation, etc., integrally require blood transfusions during, before or after.

"The person could have bled to death on the operation table and we wouldn't have been able to do a thing. It was a matter of two lives," said Dr HS Bhatyal, senior transplant surgeon at the hospital.

Convincing the brothers was impossible, as they would read out passages from The Bible that prohibited them from taking or giving blood.

Seeing no end to this confusion, the hospital took an undertaking from them in the form of an affidavit, which they then got verified from the Nigerian embassy. So on May 3, with nearly 100 people from his church in Delhi present in the hospital, Kalu was successfully operated upon with no blood loss and transfusion.

“They had their own doctor to assess the condition and we performed the surgery only after a go-ahead from all quarters,” said Dr Bhatyal.

What made the surgery challenging was that Kalu's haemoglobin at the time of admission was a dangerous 4, which is 30% of normal haemoglobin count.

Not to mention other complications that he was suffering from including high blood pressure, water in abdomen and chest, breathlessness.

Using iron injections for about a month, doctors first increased Kalu's haemoglobin, and treated him of his blood pressure and other conditions.

“Our primary focus was to perform the surgery so meticulously as to have bare minimum blood loss,” said Dr Ramesh Kumar, transplant physician.

“My life wasn't the point here.

The point was our belief in something and to stick by it, come what may. The Bible says blood means life by itself,” said Kalu casually.

## **Medical Education**

### **Two Docs moves court against AIIMS result (The Hindustan Times: 19.5.2011)**

RE-TEST Applicants, who could not appear due to server glitch, want fresh entrance exam.

There's no possibility of any unfair means adopted during the exam.

Aiims categorically denies the use of unfair means.

D R Y K G U P T A spokesperson, Aiims

The All India Institute of Medical Sciences (Aiims) declared on Wednesday the results for 15 of its 19 super specialty courses entrance examination, despite some applicants asking for a fresh test.

Nearly 150 of Aiims' own candidates, who were among the 1,800 applicants appearing for the online entrance of Doctor of Medicine and Master of Chirurgical courses on Sunday, had alleged unfair means were used during the exam.

Due to a server crash at one of the examination centres, 400 candidates could not even appear for the test.

“Those who took the exam had access to the internet; people were carrying pen-drives and books along. They should have cancelled the exam and given a new date for everyone,” alleged a candidate, who did not wish to be named.

Two of the students, who incidentally cleared the test, even moved court on Wednesday to seek stay on the declaration of result.

The hospital authorities, however, declared the result as scheduled.

“We looked into the issue in great detail and realised there's no possibility of any unfair means adopted during the examination. Aiims categorically denies the use of any unfair means,” said Dr YK Gupta, the institute's spokesperson.

“Those who cleared, cleared on merit. For those who couldn't take the exam, we'll give out a new date in a day or two,” Gupta added.

According to an official from the examination cell of the hospital, the technology used was much-advanced and all candidates had individual computers, which would have automatically shut down after 90 minutes.

“You don't get time to go through any book or `google' things even if you could,” said the official.

## **Committee Guidelines-Clinical Research**

### **Committee set up to prepare guidelines for Clinical Research (New Kerala: 26.5.2011)**

:Karnataka Governor H R Bhardwaj today gave his ascent for formation of a committee to study and prepare guidelines for Clinical Research studies in the state.

According to a release here, Dr A S Aravind, Chief Operating Officer, Clinzer International Limited, and Dr Mahaballeswar Mayya, Renowned Physician and Cardiologist, will be the members of the committee.

The committee would study and prepare guidelines for Clinical Research studies taken up in Government and Private Hospitals and Medical Colleges in the state.

The committee has been asked to submit its report with in three months.

## **MCI team - Ponducherry**

### **MCI team visits Govt Medical College in Ponducherry (New Kerala: 27.5.2011)**

In a bid to grant approval for admissions to first year MBBS this year at the Government Medical College, a three member team from the Medical Council of India (MCI) hold an inspection at the college here last evening.

The team headed by Dr Neena, Professor, Anaesthesia Department, Jaipur Medical College, went around the college.

The team will submit a report to the MCI.

It may be noted that the first year admission this year to the medical college , which was started last year, was not approved citing failure of the college to fullfill several facilities pointed out by the MCI.



After assuming office, Chief Minister N Rangasamy visited college and directed officials to ensure admission this year at any cost. Following this, the director of the college visited New Delhi and urged the MCI to conduct an inspection as the facilities were fullfilled.

The MCI team had visited three times to the college last year.

# **Health Insurance**

## **Health Insurers**

### **Health Insurers Making More Money Than Ever While People Postpone Medical Care (Medical News Today: 24.5.2011)**

If people continue paying their premiums but use medical services less, health insurers make more money because they have to pay out less. It is an irony that as people struggle and postpone medical care, the insurance companies thrive. It is one of the paradoxes of a recessionary environment

Both UnitedHealth Group and Cigna have noticed a drop in hospital stays and medical use.

So far, the irony is understandable. It is like a year with no natural disasters, insurance companies make more money. However, if they are doing so well why are they asking for higher premiums if they are cash rich and paying off nice dividends to their shareholders?

Some in the health insurance industry say they want double-digit premium increases in case there is a sudden rush in demand when people have more money and start going back to the doctors and hospitals, etc. They also say that care is becoming more expensive.

However, it appears much of America has changed over the last few years. People have become much more conscious about the cost of things. This fundamental change may have an impact on how Americans view their health care options.

Household budgets are being squeezed from many directions. The price of gas has risen, food prices have rocketed, and utilities have gone up. The amount of money in the average American household today after paying off all running costs has gone down. People are much more price conscious today, and doctors and other health care providers have noticed it.

With the high price of gas now, the cost of getting somewhere might impact on a person's decision on whether to drive a long way to see a specialist.

Diagnostic tests are not what they were. The number of patients asking for an MRI or CT scan, for example, when they come in with something that is not life-threatening has dropped dramatically.

Many people are finding that, even with health insurance, they cannot afford to pay for medical or dental work - a growing number of individuals are simply putting things off.

Experts seem to have no idea when (or if) this recessionary mindset will go away.

The chances of a good rebound in the medical market have been undermined somewhat by the increase in how much individuals have to pay for their medical care. Many companies have reduced benefits considerably, they have raised co-payments and deductibles - the patient has to pay much more than he/she used to.

In 2008, 5% of employees who were covered by their employers had a deductible of 2,000, compared to 10% today.

If you are liable for the first two thousand dollars, that is a lot of money to think about.

While in the past many people would opt for brand-name medications, today they want the generic version because they are much cheaper.

Health insurers seem to be sure things will pick up later on this year. And it is this projected rebound that concerns them. That is why they say they need double-digit premium increases - some are asking for 22% rises.

Perhaps insurers are trying to beat 2014, when the health care law comes into full force.

# **Health Policy**

## **National Health Research Policy**

### **Ministry finalises National Health Research Policy (The Hindu: 4.4.2011)**

Policy aims at creation of system to maximise returns on investments in health research

National Health Research Management Forum to have representation from all stakeholders

To overcome the weaknesses of the publicly funded health structures that restricted research in priority health areas, the Union Health and Family Planning Ministry has finalised the National Health Research Policy. It would maximise the returns on investments in health research through creation of a health research system to prioritise, coordinate and facilitate conduct of effective and ethical research and its translation into products, policies and programmes aimed at improving health especially of the vulnerable population. It proposes to ensure at least two per cent of the national health funding is utilised for research.

#### **Representation**

The Policy envisages creation of an overarching National Health Research Management Forum having representation from all stakeholders and will function from the Department of Health Research that has drafted the new proposed policy.

The Forum will advise on and evolve national health research policies and priorities and evolve mechanism and action plans for their implementation. It will develop a five-year projection of the plans for health research and prepare an annual National Health Research Plan, do a mid-Plan appraisal for course correction, if needed.

In addition to suggesting mechanisms to nurture a scientific environment to attract talent and to develop human resource for biomedical and health research, the Forum will facilitate utilisation and dissemination of results of health research. To be chaired by the Minister of Health and Family Welfare, and co-chaired by the Minister of Science and Technology, the State Health Ministers would be its vice-chairpersons and the Secretary, Department of Health Research, its member-secretary. All Union Secretaries of various departments of Science and Technology will be the members as also the Directorate-General of Health Services and some health experts.

The policy, which was proposed in 2007 after the Ministry created a separate Department of Health Research, is aimed at ensuring that the results of health are translated into action. It will foster inter-sectoral coordination in health research including all departments within the government, private sector and the academia to promote innovation and ensure effective translation to encourage indigenous production of diagnostics, vaccine, therapeutics and medical devices.

Needed: clear policy

Accepting that there was also a “compelling need to build multidisciplinary research blending physical, medical and social sciences, the final draft says the increasing international collaborative research in priority areas of national health also necessitates a clearly spelt-out policy to ensure that the contributions of our international partners can enhance the ability of the partnership to improve national health. Some of the conflicts and failures of Indian health research can be attributed to the absence of such an overarching policy, it says.

Propelling development

The Policy will be implemented through a National Health Research System wherein all research agencies, cutting across Ministries and sectors, identify priority areas of research and coordinate with each other to avoid duplication, fragmentation, redundancy and gaps in knowledge, to enable the results of research to transform health as a major driving force for development.

Health research is a systematic generation of knowledge that can be used to promote, restore, maintain or protect health of individuals and populations. According to the draft policy, in 2007, 96 per cent of the research publications in India emanated from nine medical colleges out of a total of 300.

## **Health research**

### **Health research in India poor: Lancet study (The Hindu: 4.4.2011)**

“National organisations of health research should come together to provide effective stewardship”

Proportion of published papers increased from 0.4 % in 1988 to 1.8 % in 2008

Only 1/4 public health research reports rated as being of adequate quality

Expressing concern over the scarcity of research on the routine health-information system in both reports and published papers, which is crucial to track the response of the health system to the health needs of the population, a paper on “Research to achieve health care for all in India” published in the latest edition of The Lancet medical journal has suggested that major national organisations of health research in India come together to provide effective stewardship.

Co-authored, among others, by Vishwa Mohan Katoch, Director-General of the Indian Council of Medical Research (ICMR), the paper suggests that these organisations collaboratively develop mechanisms that enable agreement on tangible mid-term and long-term targets for health research in the country, create a plan of action and methods to track the progress in research utilisation to achieve health care for all. Although solutions for India will have to be tailored to its circumstances, there are useful lessons to be learnt from the systematic efforts of other countries aimed at matching research with public health priorities to more effectively improve population health, says the paper written by Lalit Dandona and Rakhi Dandona along with Dr. Katoch.

Quoting PubMed — United States National Library of Medicine — the paper says that the proportion of published papers from India increased from 0.4 per cent of the global total in 1988 to 1.8 per cent in 2008, but the proportion of public health research continues to be small, at 5 per cent of the total health research published.

Additionally, many of the leading causes of disease burden across communicable diseases, non-communicable diseases, and injuries continue to be under-represented in this published research, indicating that even among the limited papers on public health research, public health priority conditions in India are not adequately addressed.

An analysis of public health research reports produced in India also showed that the leading chronic non-communicable diseases and injuries were under-represented between 2001 and 2008. Health system research was more evident in public health research reports than in published public health papers. Only one in four public health research reports were rated as being of adequate quality. The quality was higher for reports produced by collaborations between Indian and international organisations, indicating that there is merit in promoting such collaborations for more useful research output

The paper suggests that a national research-tracking mechanism be developed to guide funding and commissioning of high-quality research. It calls for creation of a systematic plan to integrate research initiatives with policies and implementation of health programmes, so that research is more relevant for the health system and policy, and the knowledge generated is used more often by policy makers. It also suggests that rigorous evaluation research be made an essential component of all major population health programmes and policies to understand how these could be refined to improve health outcomes and how the underserved segments of the Indian population could be better reached to improve health equity

The ICMR has been the nodal organisation for health research in India since 1949. To widen coordination between health research and various sectors, the Department of Health Research was established under the Ministry of Health and Family Welfare. This department aims to: encourage innovation related to diagnostics, treatment methods, and prevention; translate innovations into products or processes by facilitating their evaluation; and introduce innovation through health-systems research.

Although a full analysis of all present funding for health research in India and what it is spent on is not available, the funding from both domestic and international sources has increased substantially in India over the past decade.

### **'Health scenario**

#### **'Health scenario is grim; infections are on the rise' (World Newspaper: 28.4.2011)**

New mutating viruses, improper use of antibiotics resulting into stress, incorrect lifestyle and imbalanced dietary habits among others are resulting into different types of problems and ailments. A member of Indian Association of Gynaecological Endoscopists, Dr Nivedita Pawar, who was recently elected unopposed as the president of Nashik unit of Indian Medical Association (IMA) speaks to DNA on the various kinds of ailments and what people need to do to keep them away.

How would you rate the present health scenario?

The health scenario is grim. Infections of various types are on the rise. There is increased resistance to antibiotics. Ailments related to cardiac, hypertension, cancer, diabetes and spinal cord are on the rise. Many are suffering from medical complications due to obesity. There are concerns of malnourishment too and health problems faced by pregnant women. However, with advancement of medical science, better treatments are also available. The methods of investigations about ailments have improved. There are new drugs to treat the ailing.

As a medical practitioner, what are the challenges before you?

Unfortunately, people are not aware about how to avoid falling prey to various diseases. Proper awareness and information can help a person understand one's body and maintain it properly. The other challenge is the increasing cost of treatment, which includes screening, diagnostics, surgeries and medication. The expenses of medicines, equipment, maintaining a medical setting, training and retaining staff and running cost of a hospital have gone up.

How can the IMA help in such a situation?

IMA is working for people and doctors. For the people, awareness programmes, free check-up camps, check-up of children, senior citizens are done at regular intervals. For the doctors, updation programmes like continuous medical education (CME) are held regularly. The medico legal cell helps lend support to a doctor, if he is attacked or threatened by aggrieved parties in spite of no mistake of his.

Are the medical practitioners looking after their own health?

Cases of doctors falling victims to lifestyle diseases have increased. This is because of tremendous work pressure. Most of the times doctors work under great stress even at odd hours.

All this is resulting in doctors facing cardiac, hypertension, spinal and digestive problems. Although the doctors are aware about the methods to prevent such diseases, they simply lack time. So there is a need to draw attention of doctors to maintain their own health. To reduce this burden, doctors can think of group practice, delegation of work, effective management skills and some understanding from the patients.



# **Hepatitis**

## **Hepatitis**

### **Without mass vaccination, India vulnerable to hepatitis (New Kerala: 26.4.2011)**

: India is very vulnerable to hepatitis as it is yet to initiate a mass vaccination programme to check the disease, experts say, pointing out that half the world's children who have not been vaccinated are in the country.

Over 50 percent of the world's 44 million children who have not got the hepatitis vaccine are in India, making them most vulnerable to the disease," S.P. Singh, secretary of the Indian National Association for the Study of Liver (INASL), told IANS.

"Many nations across the world, including Bangladesh and Pakistan, but excluding India, have undertaken a mass hepatitis vaccination programme," Singh said.

Singh and many other liver disease and hepatitis experts from India and abroad were here to attend a two-day national seminar that began Monday.

According to experts, of the six Hepatitis strains (A, B, C, D, E and G), Hepatitis B and C are the most dangerous as these are transmitted through blood.

"Two to four percent Indians in the plains and 20 percent tribals in the mountainous areas, including the northeastern region, are affected by Hepatitis B virus," said Singh, who is also head of the department of gastroenterology in SCB Medical College, Cuttack, Orissa.

In Tripura, over 5,000 children have so far been covered under the 'at birth Hepatitis vaccination' programme since January this year.

To make the state hepatitis free, the NGO Hepatitis Foundation of Tripura (HFT) in association with the Tripura government had launched the programme Jan 7.

"This is, in fact, a China model where they have attained maximum success of 99.98 percent after running the 'at birth Hepatitis B vaccination,'" said HFT president Pradip Bhaumik.

HFT has been spearheading the movement for a hepatitis-free world for 10 years.

"The disease can cause liver cancer, liver cirrhosis, hepatocellular carcinoma and serious other liver ailments and other organ damage," Bhaumik told IANS.

Experts urged Indian and other state governments to introduce the Tripura model across the country.

Also present at the meet was Abhijit Choudhury, head of the department of gastroenterology and liver diseases in the Institute of Post-Graduate Medical Education and Research and Seth Sukhlal Karnani Memorial Hospital in Kolkata.

"Hepatitis B and C are dangerous diseases like AIDS and cancer. Though the vaccines for Hepatitis are easily available, the Indian government is yet to take the mass vaccination programme in India."

"After hepatitis turned into an epidemic in Taiwan, the authorities in 1984 launched the 'at birth Hepatitis B vaccination' and achieved over 99 percent success," he added.

Bhaumik said: "In India, among liver disease patients, 30 percent of them are alcoholic liver disease sufferers."

Choudhury and Bhaumik said a large number of people also suffer from non-alcoholic fatty liver disease.

According to Chennai's Apollo Hospital consultant gastroenterologist A.T. Mohan, due to population migration and associated microbial migration, various diseases like Hepatitis B and C were being transmitted among newer people, specially tribals.

## **Hepatitis awareness**

### **Hepatitis awareness lacking' (World newspapers: 19.5.2011)(World Newspapers; 19.5.2011)**

While the treatment for hepatitis has advanced tremendously in last few years, doctors say there is still a lack of awareness about the disease. People still lack the promptness to get themselves screened. As the world observes the World Hepatitis Day on Thursday, experts said the key to prevent hepatitis B and C, which can turn into chronic liver diseases, is to be aware about our own lifestyle. Mumbaikars' lack of hygienic eating habits and exposure to contaminated drinking water has also seen increasing number of hepatitis A and E (which are water borne diseases) cases in the city.

Dr Anand Joshi, consulting gastroenterologist, PD Hinduja hospital said, "The treatment for hepatitis B has advanced tremendously over the last decade. However, the disease should be detected early. Immediate treatment helps the person to lead a normal life." The prevalence of hepatitis B in the general population in Mumbai is 4-5%;

the prevalence rate of Hepatitis C is 1-2%.

Dr Pravin Rathi, head of gastroenterology, Nair Hospital, and consulting gastroenterologist at Bombay Hospital said, "Hepatitis B and C spread when a person comes in contact with an infected person's blood. They can also spread through blood transfusion, child birth and sexual intercourse with infected person. If someone is undergoing blood transfusion, it is very important to get screened for hepatitis B and C. The best way to prevent Hepatitis B is via vaccination." According to the doctors, majority of the victims in India are those who undergo blood transfusions, which include women who have just delivered or have undergone hysterectomy.

Dr Joshi further added, "Many people generate the capacity to clear out the hepatitis B virus on their own. However, it is important for the family members to get screened as not everyone generates the immunity."

In hepatitis C cases, a small percentage of patients show symptoms like loss of appetite, fatigue, abdominal pain, jaundice and itching. However, it is known as a silent killer, as many people learn about the disease about 15-20 years after contracting it. While

hepatitis C is mainly contracted through blood transfusion, Hepatitis B can be contracted through saliva or any other body fluid.

The FDA on May 16 approved a new drug to treat hepatitis C. “The drug will increase the response rate from the present 40 % to 70%. There are other drugs on trial for hepatitis B and C treatment which will increase the response rate of the patient to 80%,” said Dr Joshi.

The lack of hygienic eating habits in Mumbaikars is also causing an increase in cases of hepatitis A and E.

“We keep getting Hepatitis A and E cases. Lack of personal hygiene, eating at unhygienic food joints and exposure to contaminated drinking water has lead to sporadic cases in few parts of the city.”

With monsoon around the corner, doctors have also warned people to avoid eating outside food and boil drinking water.

“In monsoon, we always see a rise in hepatitis A and E cases. Special precautions need to be taken in the consumption of paani puri, chat and various uncooked chutneys. All uncooked outside food, especially if it is being handled by bare hands while serving, must be avoided,” said Dr Joshi.

Hepatitis E is especially dangerous for pregnant women. The mortality rate is high, especially if the disease occurs in the third trimester of pregnancy. The cases of hepatitis E virus are high among young adults.

## **Hepatitis C**

### **FDA Approves Incivek For Hepatitis C With Compensated Liver Disease (Medical News Today: 25.5.2011)**

Incivek (telaprevir) has been approved by the FDA as a combined treatment for hepatitis C individuals with compensated liver disease - the liver is damaged but functions. Patients will take Incivek in combination with pegylated-interferon and ribavirin. The FDA specified the approval is for treatment-naïve patients as well as those who did not respond properly to therapy, termed relapsers, partial responders or null responders.

Incivek will be delivered to pharmacies next week, says Vertex Pharmaceuticals Inc., the marketers of the drug.

Doctors can prescribe Incivek (two 375mg tablets three times a day) for twelve weeks in combination with pegylated-interferon and ribavirin. After that they continue with pegylated-interferon and ribavirin alone for either 12 or 36 weeks.

Vertex says at least 60% of patients on Incivek combination treatment should complete their whole course in 24 weeks, versus 48 weeks for those on pegylated-interferon and ribavirin alone.

For easier tracking of doses, the makers have packed the medication in daily blister strips in weekly boxes.

Approval followed FDA examination of three Phase 3 studies which showed that Incivek achieved significantly better sustained viral response (SVR) rates than those on pegylated-interferon and ribavirin alone.

79% of combination Incivek treatment-naïve patients achieved SVR compared to just 46% on pegylated-interferon and ribavirin alone. Relapsers on Incivek combination treatment achieved 86% SVR compared to 22% in the pegylated-interferon and ribavirin alone group. The results for partial responders were 59% versus 15%, and Null responders were 32% versus 5%.

The most common side effects included fatigue, nausea, diarrhea, changes in taste perception, rectal problems and itching - the most serious reported side effects were rash and anemia.

Vertex faces stiff competition from Merck & Co's Victrelis, which was approved earlier this month. Merck signed a promotional agreement with Roche.

Experts believe Vertex has the edge because its drug is more effective and dosing is simpler.

## **Home Remedies**

### **Ayurved**

#### **Ayurved: The Science of Life (The Asian Age: 4.4.2011)**

THE FOUR Vedas: Rigved, Samved, Yajurved and Atharvaved are the rivers of the knowledge, which cover every aspect of Creation. Out of these rivers, a tributary of Atharvaved is Ayurved. Vedas were not documented in the earlier yugs when the Creation began. It was in dwaparyug that rishi Vyas documented this knowledge which existed as shrotras in the earlier yugs and was passed on by the guru to the shishya as gyan.

Also, in the time when this great knowledge or science of life was given by Lord Brahma to Daksh Prajapati, diseases had not manifested in the physical world. The level of purity was so high in the earlier yugs that though diseases did exist at that time, they were unable to manifest themselves. As the level of selfishness increased in every yug, the calamities and diseases also increased as a result of the environment, the heavy thoughts, and karmas of people. Satyug was the age of the ultimate level of purity, selflessness and compassion for the whole Creation, not just mankind.

The sages of yesteryears asked for this knowledge or the science of life even when it was not needed in those times when there were no diseases. Lord Brahma was the original propounder of Ayurved. It was first given to Daksh Prajapati from whom it was given to Asvins, and then from Asvins to Indra. Till this time this science was confined to heaven only. Close to the end of satyug, the sages including Angiras, Vashishtha, Kashyap, Bhrigu, Atreya, Gautam, Bharadwaj, Agastya, Vishwamitra, Chyawan and many more, anticipating the onslaught of the diseases in forthcoming ages, collected in the valley of Himalayas to discuss this sacred topic.

And it was decided by mutual consent that rishi Bharadwaj would go up to Lord Indra and ask for this knowledge for the benefit of everyone. Thus, Lord Indra expounded to rishi Bharadwaj the immortal and sacred science of life consisting of three principles - etiology, i.e., the cause, symptomatology, and the knowledge of therapeutics as a means to well being par excellence, to the healthy as well as diseased.

Gradual decay (ageing) is the very nature of the body. This process is intensified by the onslaught of diseases. By means of yog and Ay u r v e d one learns to slow down this process of ageing and to achieve a state of balance. The causes of the diseases relating to both mind and body are wrong utilisation, non-utilisation and excessive utilisation of time, mental faculties, and objects of the sense organs.

Diseases are categorised into two categories -mental and physical. In the physical, the three factors which are pillars of the body are vat, pitta and kapha. A balance of these three doshas is a healthy body and imbalance is disease. Factors that affect the mind are rajas and tamas, which are of psychological importance. These are the pathogenic factors of the mind and can only be reconciled by the practices of yog.

Out of the physical factors, i.e, tridosh; vat which means vayu, is of greatest importance because of its acuteness, varieties and seriousness of disease caused by it. Also, it is the carrier of any imbalance in the body, because out of all the three doshas, vat is the only one which is mobile.

Then comes pitta, which is the root of digestion and metabolism, and the last one is kapha, which is the root cause of the least number of diseases. Vat is said to cause 80 kinds of diseases, pitta 40 and kapha 20, but in various permutations and combinations they can take innumerable shapes.

A disease manifests in the body when any of these doshas increases or decreases from its state of balance. The state of balance of every individual is different from another depending on the prakriti of the individual; for example, ginger is a poison for people with high pitta but a digestive tonic for others. Ayurved preaches prakriti (nature) to be balance and vikriti (against nature) to be disease. So, the aim is to keep the body in a state of balance to maintain youth, health and glow.

Ayurved is in today's day and age being prescribed as "off the shelf remedy", anything which carries the name Ayurved with it, sells like hot cakes. We need to understand that Ayurved does not work like this. It very gradually over a period of time changes the composition of the body from its roots, thus removing the imbalance which caused the disease. It would be safe to say that Ayurved does not cure diseases, it removes the imbalances of the body.

-YOGI ASHWINI is an authority on yoga, tantra and the Vedic sciences. He is the guiding light of Dhyan Foundation. He has recently written a book, Sanatan Kriya: 51 Miracles... And a Haunting.

## **Carrots**

### **Carrots can help prevent breast cancer (New Kerala: 7.4.2011)**

Carrots can halt the progression of breast cancer in the early stages of the disease, a study says.

The retinoic acid, which is contained in carrot, also rejuvenates the skin and a weak version of it is used in anti-wrinkle face creams, [express.co.uk](http://express.co.uk) reported.

The study has shown that retinoic acid reverses early changes in cells that lead to breast cancer. The chemical affects cell growth, proliferation and survival.

The results were presented Tuesday at the annual meeting of the American Association for Cancer Research in Orlando, Florida. The study suggests that it can halt cancer progression early on, but not at later stages.

US scientists focused on the key role played by a gene that activates retinoic acid's anti-cancer properties.

"There appears to be no way to revert the tumours with retinoic acid when they become too advanced," said study leader Sandra Fernandez.

But certain experimental drugs may increase the effectiveness of retinoic acid in later stages of breast cancer, she added. These drugs were already being used to manage a certain type of leukaemia.

## **Onions**

### **Onions can control obesity, diabetes and BP: Study (World Newspapers: 20.4.2011)**

A new study shows that onions can be instrumental in regulating weight, besides preventing diabetes and reducing blood pressure.



Biomedical scientists at the University of Southern Queensland have revealed that onions can combat obesity, diabetes and increased blood pressure, reports Courier Mail.

They highlighted that rutin extracted from onions reversed fat stores in laboratory rats, lowered blood pressure, reversed glucose problems and repaired liver damage.

The study will be published in next month's Journal of Nutrition.

## **Hot red pepper**

### **Hot red pepper can help burn unwanted calories (New Kerala: 27.4.2011)**

Spicing up the daily diet with some red pepper can curb appetite and help burn unwanted calories, a study says.

"We found that consuming red pepper can help manage appetite and burn more calories after a meal, especially for individuals who do not consume the spice regularly," said Richard Mattes, professor of foods and nutrition at Purdue University, who led the study.

"Dietary changes that don't require great effort to implement, like sprinkling red pepper on your meal, may be sustainable and beneficial in the long run, especially when paired with exercise and healthy eating," the journal Physiology and Behaviour, quoting Mattes, said.

Other studies have found that capsaicin, the component that gives chili peppers their heat, can reduce hunger and increase energy expenditure burning calories.

The current study measured the effects of the spice using quantities of red pepper -- one gram or half a teaspoon -- that are acceptable for many consumers, according to a Purdue statement.

Other studies also have looked at consumption via a capsule, but doctoral student Mary-Jon Ludy and Mattes' study demonstrated that tasting the red pepper may optimise its effects.

This study used ordinary dried, ground cayenne red pepper.

Cayenne is a chili pepper, which is among the most commonly consumed spices in the world.

Most, but not all, chili peppers contain capsaicin.

A group of non-overweight people, half who liked spicy food and half who did not, participated in the six-week study.

The preferred level of pepper for each group was determined in advance, and those who did not like red pepper preferred 0.3 grams compared to regular spice users who preferred 1.8 grams.

In general, red pepper consumption did increase core body temperature and burn more calories through natural energy expenditure.

Mattes said the findings also show that red pepper should be consumed in non-capsule form because the taste - the sensory experience - maximises the digestive process.

## **Natural Product**

### **Natural Product Shows Pain-Killing Properties (Science Daily: 24.5.2011)**

Scientists from the Florida campus of The Scripps Research Institute have for the first time accomplished a laboratory synthesis of a rare natural product isolated from the bark of a plant widely employed in traditional medicine. This advance may provide the scientific foundation to develop an effective alternative to commonly prescribed narcotic pain treatments.

The study, published May 23, 2011, in an advanced online edition of the journal *Nature Chemistry*, defines a chemical means to access meaningful quantities of the rare natural product conolidine. Based on data from mouse models, the study also suggests that synthetic conolidine is a potent analgesic as effective as morphine in alleviating inflammatory and acute pain, with few, if any, side effects.

In recent years, there has been significant interest in developing alternatives to opiate-based pain medications such as morphine. While widely prescribed for pain, morphine has a number of adverse side effects that range from the unpleasant to the lethal, including nausea, chronic constipation, addiction, and breathing depression.

The rare natural product central to the study is derived from the bark of a widely grown tropical flowering plant *Tabernaemontana divaricata* (also known as crepe jasmine). Long part of traditional medicine in China, Thailand, and India, extract from the leaves has been used as an anti-inflammatory applied to wounds, while the root has been chewed to fight the pain of toothache. Other parts of the plant have been used to treat skin diseases and cancer.

Conolidine belongs to a larger class of natural products, called C5-nor stemmadenines, members of which have been described as opioid analgesics, despite a substantial discrepancy between potent in vivo analgesic properties and low affinity to opiate receptors. Conolidine is an exceptionally rare member of this family for which no therapeutically relevant properties had ever been described. Despite the potential value of conolidine and related C5-nor stemmadenines as leads for therapeutics, efficient methods to prepare these molecules were lacking.

"This was a classic problem in chemical synthesis," said Glenn Micalizio, an associate professor in the Department of Chemistry, who initiated and directed the study, "which we were able to solve effectively and efficiently -- an achievement that made subsequent assessment of the potential therapeutic properties of this rare natural product possible."

Micalizio and his colleagues began working on the synthesis of the molecule after they arrived at Scripps Florida in 2008.

#### Testing For Potency

Once the synthesis was complete, research shifted to pharmacology for evaluation. The pharmacological assessment, performed in the laboratory of Scripps Florida Associate Professor Laura Bohn, showed that the new synthetic compound has surprisingly potent analgesic properties.

"Her pharmacological studies confirmed that while it's not an opiate, it's nearly as potent as morphine," Micalizio said.

In various models of pain, the new synthetic compound performed spectacularly, suppressing acute pain and inflammatory-derived pain, two key measures of efficacy. Not only that, but the new compound passed easily through the blood-brain barrier, and was present in the brain and blood at relatively high concentrations up to four hours after injection.

Bohn herself was surprised by the compound's potency and by the fact it so readily enters the brain.

"While the pain-relieving properties are encouraging, we are still challenged with elucidating the mechanism of action," she said. "After pursuing more than 50 probable cellular targets, we are still left without a primary mechanism."

So far, the compound has shown remarkably few, if any, side effects, but that is something of a double-edged sword.

"The lack of side effects makes it a very good candidate for development," Bohn said. "On the other hand, if there were side effects, they might provide additional clues as to how the compound works at the molecular level."

That remains a mystery. While the synthetic compound might be as effective as morphine, it doesn't act at any of the receptors associated with opiates. In fact, it misses most of the major neurotransmitter receptors completely, suggesting it may be highly tuned towards relieving pain while not producing multiple side effects. While still in the early stages of development, further characterizations of conolidine may suggest further development as a human therapeutic for the treatment of pain.

The first author of the study, "Synthesis of Conolidine, a Potent Non-Opioid Analgesic for Tonic and Persistent Pain," is Michael A. Tarselli of Scripps Research. Other authors include Kirsten M. Raehal, Alex K. Brasher, John M. Streicher, Chad Groer, and Michael D. Cameron, also of Scripps Research.

This research was made possible by Scripps Florida start-up funds, resulting from a one-time appropriation of federal economic development funds by the State of Florida, as well as support from Palm Beach County.

## **Indian herb**

### **Compound from Indian herb offers pain relief without any side effects (New Kerala; 25.5.2011)**

Scientists have found that a rare natural product obtained from the bark of a plant widely employed in traditional medicine in China, Thailand, and India shows potent pain-killing properties.

The team from the Florida campus of The Scripps Research Institute has for the first time accomplished laboratory synthesis of the rare natural product conolidine.

This advance may provide the scientific foundation to develop an effective alternative to commonly prescribed narcotic pain treatments.

Based on data from mouse models, the study also suggested that synthetic conolidine is a potent analgesic as effective as morphine in alleviating inflammatory and acute pain, with few, if any, side effects.

The rare natural product is derived from the bark of a widely grown tropical flowering plant *Tabernaemontana divaricata* (also known as crepe jasmine).

Extract from the leaves has been used as an anti-inflammatory applied to wounds, while the root has been chewed to fight the pain of toothache.

Other parts of the plant have been used to treat skin diseases and cancer.

Glenn Micalizio, an associate professor in the Department of Chemistry, initiated and directed the study.

The pharmacological assessment, performed in the laboratory of Scripps Florida Associate Professor Laura Bohn, showed that the new synthetic compound has surprisingly potent analgesic properties.

"Her pharmacological studies confirmed that while it's not an opiate, it's nearly as potent as morphine," said Micalizio.

The study was published May 23, 2011, in an advanced online edition of the journal *Nature Chemistry*.

## **Infant Mortality**

### **Infant deaths**

**Infant deaths Lack a solution (Business Standard: 7.4.2011)**

### **[ ]INDIAN STATES DEVELOPMENT SCORECARD**

### **INFANTDEATHSLACKASOLUTION**

### **INDICUS ANALYTICS**

Diarrhoea is one of the leading causes of morbidity and mortality in children below five years of age worldwide. According to data from the Registrar General of India, diarrhoeal disease accounts for 23 per cent of deaths in children in India. Since deaths from acute diarrhoea are mostly caused by dehydration, they can be prevented through oral rehydration therapy.

The government has been promoting the use of oral rehydration salts (ORS) by way of increasing awareness and distributing free packets. However, its use is not as widespread as it should be. According to the DLHS-3 estimates of 2007-08, 12 per cent of the children surveyed had diarrhoea in the two weeks preceding the survey and while about 71 per cent of them had been given some form of treatment, only about half had been given ORS. Instances of treating diarrhoea with ORS are very low in rural areas; while 68.9 per cent of the children in rural India were given treatment during diarrhoea, merely 30.7 per cent of them were given ORS. Figures are slightly higher in urban India with 43.8 per cent of children being treated with ORS for diarrhoea. Apart from the urban bias, children whose mothers had ten or more years of education and who were in the highest two wealth quintiles were more likely to get ORS treatment.

Diarrhoea management is found to be poor in most states. ORS treatment was given to more than 60 per cent of the diarrhoea-affected children in just three states and one Union Territory — Himachal Pradesh, Arunachal Pradesh, Goa and Andaman & Nicobar Islands. In 2001, the Ministry of Health and Family Welfare created Empowered Action Group (EAG) states to give special attention to states like Bihar, Jharkhand, Orissa, Rajasthan, Uttar Pradesh, Uttarakhand, Madhya Pradesh and Chhattisgarh. These EAG states with high under-five mortality and infant mortality rates also have poor diarrhoea management practices. According to 2007-08 DLHS-3 estimates, in Uttar Pradesh just 17.3 per cent of the children suffering from diarrhoea were given ORS. The situation in Bihar and Jharkhand is also bad with less than a quarter of the diarrhoea-affected children given ORS. Similarly, diarrhoea management is low in the other EAG states with figures ranging from 30 per cent to 49 per cent. Among these states, Orissa is the best performer where about 49 per cent of the diarrhoea-affected children were given ORS solution. In addition, the EAG states, despite their poor health indicators and high prevalence of diarrhoeal disease have not really improved since the previous DLHS survey in 1998-99. Uttar Pradesh and Rajasthan marginally improved coverage by one to two percentage points, while the cover of ORS in Jharkhand and Chhattisgarh worsened. Within this group, Uttarakhand and Bihar stand out as states with the highest improvement, though Bihar continues to trail in overall ORS coverage.

Despite health schemes, management of diarrhoea continues to be a cause for concern across the country. ORS, of course, is the prescribed treatment that works towards preventing deaths from diarrhoea, but there are many other measures that need to be accelerated as well like improving hygiene practices and sanitation facilities that will go a long way in reducing the incidence of diarrhoea itself.

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](mailto:sumita@indicus.net)

Despite health schemes, management of diarrhoea remains a cause for concern

REUTERS

NO FIRST USE

The use of oral rehydrating solution (ORS) to treat diarrhoea remains low

DLHS-3 (2007-08) Total Rural Urban

Children with diarrhoea in the last 2 weeks 34.2 30.7 43.8 who received ORS (%)  
Children with diarrhoea in the last 2 weeks 70.6 68.9 75.4 who were given treatment (%)

Source: DLHS-3

## LEARNING DISABILITY

Education increases use of ORS by mothers

Mother's Percentage of education children with level diarrhoea who were given ORS

Non-literate 23.6 Less than 5 years 34.7 schooling 5-9 years schooling 39.3 10 or more years 52.3

Source: DLHS-3 2007-08

\_1998-99 \_2007-08

Source: DLHS

0 20 40 60 80 100 (in %)



Andaman & Nicobar Goa Lakshadweep Manipur Mizoram Andhra Pradesh Delhi  
Tripura Kerala Dadra & Nagar Haveli Arunachal Pradesh Himachal Pradesh Orissa  
Sikkim Puducherry Chandigarh Meghalaya Assam Maharashtra Chhattisgarh Tamil Nadu  
West Bengal Karnataka Haryana India Rajasthan Daman & Diu Madhya Pradesh Punjab  
Jharkhand Gujarat Uttarakhand Uttar Pradesh Bihar Jammu & Kashmir

State

## TRACKING THE TREATMENT

Children with diarrhoea in the two weeks preceding the survey who received ORS (%)

81.7 71.8 79.5 69.4 72.6 55.7 64.4 52.1 61.6 55.5 57.8 43.3 57.6 48.1 53.7 58.8 53.2 45.1  
52.4 49.8 51.1 64.1 50.9 60.9 48.3 49.0 47.8 49.0 47.7 53.8 46.6 34.0 44.3 45.2 42.8 34.0  
42.0 44.2 41.7 36.6 35.8 37.8 34.9 46.5 32.7 45.5 32.3 31.7 30.3 34.2 28.9 30.6 28.4 32.2  
26.4 29.9 26.2 52.1 13.4 22.0 24.4 36.7 21.6 44.0 15.4 17.3 13.4 22.0 NA 53.1

## Infant mortality rate

**Average infant mortality rate down 30% in past 10 years (The times of India: 18.5.2011)**

Tamil Nadu Reduced Rate by 46%, West Bengal 37%, Urban Delhi Unchanged

Recently released data on infant deaths across states in India has thrown up surprising results, leaving health experts puzzled. Average infant mortality rate for the country as a whole stood at 50 in 2009, down by 30% compared to a decade ago. The rate is much higher than developed countries but the pace at which it is declining is encouraging. But the surprises lurk in state level data.

Three states – Tamil Nadu, West Bengal and Maharashtra – emerge as front runners in reducing baby deaths over the past decade. Tamil Nadu has reduced infant mortality by a whopping 46%, West Bengal by 37% and Maharashtra by 35%.

Infant mortality is measured as number of babies dying before they reach 1 year of age for every 1000 live births. It is an important indicator of both the health status of people and availability of health infrastructure. The data is part of the latest Sample Registration Survey (SRS) report released by the Census office at New Delhi. It covered a sample of 15 lakh households or nearly 72 lakh persons. The survey was done in 2009.

What is puzzling experts and policy makers alike is that factors behind some states, like West Bengal, doing so well remain unclear. Tamil Nadu appears to be doing well because of a better healthcare delivery system reaching down to the grassroots. Maharashtra also has shown improvement due to this.

But West Bengal's record in implementing the National Rural Health Mission (NRHM) is patchy, says T Sundararaman, director, National Health Systems Resource Centre of the health ministry. Even institutional deliveries are not showing much improvement. "Clearly, other factors are at work in Bengal," he says.

Among the factors that may have led to the sharp decline in West Bengal are a stronger mobilisational effect of the panchayat system and no female infanticide, says Sundararaman. West Bengal is one of the rare states with no difference in the infant mortality rates between boys and girls – both are 33. Another state with no such gender difference is Bihar, but at a much higher level of 52.

A 2002 survey by the ministry of health had found availability of government hospitals was much better in Bengal. While 79% of all hospitalization cases in rural areas were dealt with in government hospitals in Bengal, the all India average was just 42%. This indicates the presence of infrastructure and its utility.

The positive impact of programs like the Janani Suraksha Yojana – for encouraging institutional deliveries – is visible in decline in baby deaths in rural Chhattisgarh and Orissa, which are economically backward states.

The SRS report also brings out the continuing crisis of urban health care. Infant mortality has declined by only 23% in a decade in urban areas across India as opposed to a 27% decline in rural areas. Two states, Karnataka and Assam have shown an increase in baby deaths in urban areas, while urban Delhi is unchanged for the past ten years.

Kerala continues to top the rankings by having the lowest IMR of 12 among all Indian states. Delhi is the only major state which has registered a worsening of the IMR over the past decade, driven by an increase in infant mortality in the rural areas. Recent resettlement of slum dwellers in the rural periphery of Delhi without access to basic civic amenities appears to be causing this deterioration, say experts.

That civic amenities have an important role in the health of people is shown dramatically by the case of West Bengal. Between 2002 and 2008, households having an improved source of drinking water increased from a mere 25% to 91%, according to the 3rd District level Household and Facility Survey (DLHS-3) conducted by the ministry of health. Since water borne diseases are one of the biggest killers for babies this may have helped bring down the infant mortality rate.

## **Maternal and Child Health**

### **Kids born with HIV**

#### **Kids born with HIV growing up well: Study (New Kerala: 25.4.2011)**

Once facing an almost certain death, most children born with HIV are now faring well into adolescence and adulthood, says a study.

About two-thirds of these kids, at this point, don't have a virus detectable in the blood," said Russel Van Dyke, professor in paediatric infectious diseases at Tulane University, who led the study.

"While they are still infected and they are not cured, it's surprising how well they're doing, considering what they've been through," said Van Dyke, also an expert in infectious diseases, reports the Journal of Acquired Immune Deficiency Syndromes.

The Paediatric HIV/AIDS Cohort Study was tracking the effects and complications of a lifetime of infection and its treatment, according to a Tulane statement.

"We're not seeing the deaths we used to see due to infections, but we're starting to worry about longer-term complications," said Van Dyke. "Some of these complications may be related to the HIV itself, or some may be related to the medications these kids are on."

The complications that Van Dyke looked at in the study range from coronary artery disease to neurological and cognitive problems.

"These kids are doing very well," said Van Dyke. "They're going to school and doing all of the things that kids should do. Hopefully, they will be living 50 or 60 years or more, so what's going to happen 40 years from now is the real concern."

The other good news, according to Van Dyke, was that cases of newborns with HIV were becoming increasingly rare. Mother-to-baby transmission of HIV has been nearly eradicated because of advances in treatment.

## **Child Malnutrition**

### **India's Child Malnutrition Puzzle (The Economic Times: 29.4.2011)**

*The lack of women's empowerment lies at the heart of India's abysmal record on children's health*

One of the least talked about issues in the debate on India's demographic dividend is child malnutrition. India is home to about a third of the world's underweight and stunted children under the age of 5. A child under 5 is almost twice as likely to be chronically underweight in India as in sub-Saharan Africa. Sadly, the impressive economic growth of the past decade has made only a modest dent into the obstinately high incidence of severe underweight and stunting of children in the country. Poverty is one obvious underlying cause. But it does not explain the wide difference in malnutrition between India and sub-Saharan Africa. Unicef data show that about 47% of Indian children under 5 are underweight; the corresponding figure for sub-Saharan Africa is 24%. The overall poverty rate is lower in India than in many sub-Saharan countries. Besides, the incidence of child malnutrition in India remains high even in non-poor families. According to data from the National Family Health Survey for 2005-06, a quarter of all children below the age of 3 in the wealthiest 20% of families are stunted and 20% chronically underweight. Of course, children living in families with lower incomes and wealth are at a much higher risk of being malnourished. But the incidence of severe underweight and stunting in non-poor families is not trivial. What then explains this puzzle that India has much higher rates of underweight and stunting of children than countries with higher poverty and relatively stagnant economies? Is it per capita food availability? No, India has somewhat higher per capita food availability than countries of sub-Saharan Africa. Is it higher mortality among children under the age of 5 in sub-Saharan Africa? Yes, but only to some extent. Mortality among children under 5 is 140 per 1,000 in sub-Saharan Africa and 66 per 1,000 in India. A back-of-the-envelope calculation would show that about a third of the gap in chronic underweight among children in India and sub-Saharan Africa is due to higher child mortality in the latter, which simply removes from the data a large number of undernourished children in sub-Saharan Africa.

What explains the remaining two-thirds of the gap? Are we Indians less caring about our children than people in sub-Saharan Africa? Is there something in our traditional social and cultural values and practices that hurt the health and welfare of our children? The answer, sadly, is yes.

In 1996, Vulimiri Ramalingaswami, Urban Jonsson and Jon Rohde wrote a commentary for Unicef investigating the various possible determinants of child malnourishment and concluded “the exceptionally high rates of child malnutrition in South Asia are rooted deep in the soil of inequality between men and women.”

How? Here it is worth repeating how the three experts on child health and nutrition reached this conclusion. They studied weights of children at birth in India and sub-Saharan Africa. In India, a third of the children have low birth weight; in sub-Saharan Africa, only one sixth. A child's birth weight is an indicator of the health and nourishment of the mother when she is pregnant as well as her overall health and nourishment as a child and while growing up. Most African women gain 10 kg of weight during pregnancy, but women in South Asia gain only half as much. They also found that while about 40% women in sub-Saharan Africa suffered from iron deficiency, as many as 60% women in South Asia and 83% of pregnant women in India were anemic.

Dr Ramalingaswami and his co-authors also found a major difference in the feeding practices of children in the two regions. In sub-Saharan Africa, the proportion of breast-fed children aged to 6-9 months receiving complementary foods was almost two-thirds; in South Asia, less than one-third. Indeed, age-wise pattern of undernutrition studied in a World Bank report on South Asia published in 2006 shows that most of the growth retardation occurs early in life. The difference in length-for-age and weight-for-age between Indian and South African children begins to widen around the time the child is three to four months of age. The report finds that most of the retardation in growth in India occurs either during the pregnancy or during the first two years after birth. Critics often argue that the economic reforms have failed to reach the poor and deprived sections of society. But malnutrition also prevails in families that are neither poor nor deprived. While it is true that the implementation of government programmes such as the ICDS needs a lot to be desired, and such programmes are not aimed at changing gender relations at home. A sustained long-term dent in child undernourishment can only be achieved by improving the health, opportunities and rights of the mother, the primary caregiver of children. Not just legislative rights but rights to participate in decision-making both at home and outside it, opportunities for social interactions, rights to improve their lives through education and employment. The historical pattern of the state and status of women in India reveals that it is largely unrelated to economic growth. Let's

look at sex ratio — a number that has been much discussed since the release of the provisional 2011 census results. At 914 women per 1,000 men, the sex ratio at birth is the lowest since Independence. In two of the richest states, Punjab and Haryana, preference for the boy child results in many families abort the girl child or kill her soon after birth. But the story does not really end there. Women's subjugation continues throughout their lives. One would hope that an adverse sex ratio would increase the value of women in society. Alas, our beliefs are too deeply embedded in traditional cultural norms to allow us to respond to the forces of demand and supply.



**NEERAJKAUSHAL**

ASSOCIATE PROFESSOR OF SOCIAL WORK, COLUMBIA UNIVERSITY



## **66% slum kids malnourished**

**66% slum kids malnourished (The Times of India: 29.4.2011)**

### ***CRY Report Points Out Children Under 6 Survive On Crumbs***

New Delhi: Beyond the glitz and glamour of the nation's capital, there's a dark underbelly — where thousands of children go to sleep hungry everyday. Statistics show that at least two-third of children under the age of six in Delhi's slums are malnourished — the shocking reality of a nation growing at the rate of 8%. And according to the Situational Analysis of Young Children in Delhi Report, 2010, 66% children under six in Delhi's slums barely survive on crumbs.

The condition of these kids has further worsened with poor facilities provided by government-funded schemes like the Integrated Child Development Services (ICDS).

Child Rights and You (CRY) is leading a crusade for child rights. Ram Kumar Verma, president of Action for Health Education and Social Awareness Society, said anganwadis do not follow ICDS norms and were concerned only with food distribution. Even what is distributed is inadequate in quality and quantity.

Speaking at the CRY meet, Verma said: "Many anganwadis do not have weighing scales or weighing charts to determine the child's health. Some do not even provide a proper referral slip so that these children and their mothers can avail of medical facilities entitled to under the scheme."

The situation is abysmal if one looks at the number of children covered under the 6,400 anganwadis in Delhi, he added. "Delhi has around 12 lakh children of which only around 2 lakh are covered by anganwadis," he said. While the figures in the Capital paint a grim picture, the situation is worse in states like Uttar Pradesh and Madhya Pradesh. A survey done by CRY and Voice of People (VOP) found that of 2,841 children living in 147 villages across eight districts of UP, 54% children were malnourished. Explaining the gravity of the situation and its longterm effects, Shubhendu Bhattacharya, general manager of CRY for the North India programme, said malnutrition is a major



reason high dropout rates from school. “Lack of nourishment hampers development of a child’s brain, which happens till the age of five,” he said. Another sample survey done in Madhya Pradesh found that of 255 children in 11 settlements of Bhopal, 20% were severely malnourished. It is a well-known fact that India is one of the nations moving towards achieving the eight United Nations Millennium Development Goals by 2015, one of them being child health.

But India has slipped to the 67th position in the Global Hunger Index 2010 and contributes to a whopping 49% of the world’s malnourished children. [toireporter@timesgroup.com](mailto:toireporter@timesgroup.com)

## **Children**

### **Children on the border (The Tribune: 3.5.2011)**

Along the 151 kms long India- Bangladesh border in Murshidabad district, children are used extensively for smuggling and sex work. Their rehabilitation remains a challenge, as they find sex work and smuggling more lucrative than beedi- rolling or gamchha weaving.

#### **Children on the Border**

Monika Deb (name changed) is a sex worker in the red light area of Kalabagen, Shamsherganj block of Murshidabad, close to the Bangladesh border. Her clients include cross border smugglers, medical representatives, senior school students and those guarding India’s frontiers. Over the years she has learnt to live and cope with the sleaze and filth of commercial sex work. However, a month ago even she was rattled when sexual overtures were made to her 10-year-old daughter.

At two well kept rooms in a hut on the Jalangi roadside leading to Farrakka, Amona Bibi, just 35, runs a thriving flesh trade business. Her clients include the lower ranks of those guarding the borders as well as the truck drivers ferrying goods to Bangladesh. She makes anything from Rs 2000 to Rs 5000 a day. A mother of three, she supplies young girls to her clients. Girls, on their way to school or, on their way back, come with a set of clothes which they change into and provide service, for which she pays them Rs 1000. If

a school going girl gets pregnant, abortion services are provided by Amona Bibi and its back to business as usual.

No condom, no sex please!

There is a glimmer of hope at Bangladesh border. There is high awareness about HIV and AIDS and most of sex workers refuse to entertain clients who do not use a condom. "Condom promotion has been highly successful," says Ameena Mariam, peer educator at NACO's ( National Aids Control Organisation) drop in centre on the road leading to Farrakka. This is an extremely busy stretch of the highway for sex work. Some 50 to 60 trucks are parked on the roadside day and night and on either of the road are shacks where clients are entertained. Some 200 sex workers operate on this stretch of the road. The women have received the female condom and use it, though they are not comfortable with it. Regular supply of condoms is ensured by NACO and other agencies. Despite various precautions, 12 of the 200 have tested positive for HIV. Four women have died of AIDS.

Women are taken for regular blood tests and ensured medication when needed. When a HIV positive case surfaces, even the Babus (pimps) who live with the women are tested.

The grass is greener on the other side of the fence

n The Central Law Commission report on the Foreigners Amendment Bill- 2000 estimated the clandestine cross border trade between India and Bangladesh is at \$ 5 billion.

n A bottle of phensedyl that costs Rs 75 in India, sells for Rs 700 in Bangladesh.

n A profit of Rs 2000 to Rs 5000 is made on each cattle smuggled.

n 500 girls are rescued every year from Mumbai and Delhi brothels.

n The number of girls trafficked from Nepal has reduced now.

n A sex worker makes anything from Rs 2000 to Rs 5000 a day at the border, and involves less risk.

All the 300 odd women working in red- light area of Shamshegunj depend on babus ( pimps) for sheer survival and emotional needs. They too are a threat for girls reaching puberty.

These were just two of the many horrendous stories on the insecurity of adolescents living on the border villages, shared with a group of NGOs, researchers and journalists who travelled the 151 kms Indian border to Bangladesh in Murshidabad District.

There is extensive use of children for smuggling and sex work on the India/Bangladesh border. Young Bangladeshi girls are also trafficked into India with promise of jobs. Men posing as businessmen, entrepreneurs from India live in the villages of Bangladesh and after winning the confidence of the villagers 'marry' girls and bring them to India --then sell them in Mumbai, Delhi and other places.

Bangladeshi girls replace their Nepali counterparts

NGOs like the Kolkata-based Sanjog working on cross border as well as intra country sex trafficking have seen a decline in the number of girls from Nepal in the brothels of Mumbai. However, there is an increase in Bangladeshi women in sex work. Roop Sen, secretary of Sanjog, says, there are no accurate estimates of the number of adolescents/women being trafficked into India or from different parts of India to the brothels of Mumbai. However, he says 500 girls are rescued every year from Mumbai and Delhi and sent to shelter homes or reunited with their families. But rehabilitating these youngsters remains a challenge. They may be engaged in rolling bidis, making gamchhas (hand woven light towels) or in agricultural work, but the returns are not good enough for young people who have seen more money in the destinations to which they were trafficked. An estimated 20 percent are re-trafficked or migrate again for work.

India's border with Bangladesh is well populated and largely porous despite the large tracks of thickly fenced areas guarded by the Border Security Force (BSF) and the Bangladesh Rifles (BDR) on either side. It's an active border with smuggling by children and trafficking of women and children in disturbing proportions. The Central Law Commission report on the Foreigners Amendment Bill 2000 estimated the clandestine cross border trade between the two countries at \$ 5 billion. Sanjog's research looks at issues of the rural adolescent in poverty, affected by the rapid political and economic changes in South Asia.

Rehabilitation blues

Adolescents and older children of sex workers in Murshidabad have approached the CWC (child welfare committee) as well as SPMUS (Suprava Panchashila Mahila Uddyog Samity), an NGO which has been working for protection, prevention and empowerment of women and children in red light areas in Murshidabad district since 1993, to run a separate home for them so that they don't have to struggle with the stigma of being children of prostitutes.

A high, seasonal drop out of children attending the school is observed so that they can be engaged in smuggling. In fact SPMUS did a study in 2007 showing 300 children of 8 to 14 years smuggling from six spots of the border—Jalangi, Sheikhpura, Sagarpara, Bhagwan Gola, Lal Gola and Shamsherganj.

Children, who have traditionally herded cattle, used to take the animals through one of the illegal ghats or border crossings in the hope that the security forces would be kinder to them. But as the fences came up and the vigilance on the border increased, the number of cattle being smuggle dropped substantially.

At Farrakka, Sheikh (26) from Bangladesh said till two years ago he was smuggling cattle. Purchasing four to 10 cows from the haat in India he would take them through Dhuliyani into Bangladesh. After bribing various people for his illegal operation he made a profit of Rs 2000 to Rs 5000 on each cow. Now he is in the sex trade which is more lucrative and rouses less suspicion.

#### Juveniles used as smugglers

What is more disturbing is the use of children to smuggle phensedyl, a cough syrup used as a narcotic drug and banned in Bangladesh. Quite clearly it is with the tacit support of parents for some of it is put in their school bags. Women smuggle it across in pockets stitched into their petticoats and undergarments. A bottle of phensedyl that costs Rs 75 in India, sells for Rs 700 in Bangladesh. At Fulbari, where there is a 12.5 kms barbed wire fencing and the BSF jawans work in six hour shifts- patrolling on cycles, village women are asked to search suspected female carriers. A woman had 10 bottles of phensedyl on her. At night families living on the Indian side of the fence use mobiles to alert relatives on the other side of the fence and literally chuck bottles of the banned drug to them when the jawan on patrol is some distance from them. Some 200 metres further is the actual border with a BDR outpost. Till women constables are inducted into the BSF, search of adolescent girls and women carriers is a problem.

The smuggling of rice, which costs Rs 17 a kg in India and is sold across the border at Rs 40, is rampant. Old women and children can be seen lugging huge bundles of rice across the sandy river beds, past ferry ghat to Bangladesh. Before walking or swimming (depending on the season) with their bags, the rice is weighed in sacks that have come up close to the ghats. SPMUS study shows that smuggling is at its peak in the four months of the monsoon. This is also the time when school dropout rate is maximum.

Children caught smuggling are produced by the BSF before the Juvenile Justice Board in Murshidabad.

## Day-care centres for children

While many of the sex workers have been able to segregate their children—leave them with parents or send them to residential schools, there are umpteen others living with their mothers, exposed to sexual innuendos. Since 2007 SPMUS has been running two day- care cum night shelters for children of sex workers at Shamsherganj and Behrampore. These efforts have paid dividends. SPMUS tries to wean the children from the trauma of living in a red light area and counsels them but many mothers want to be with their children when not with clients.

At Shamsherganj red light area, where there is a strong committee of sex workers, no girl below 19 is allowed to practice.

## The inevitable pimp

Babus- glorified pimps who live with the sex workers and get clients for them could also be potential threats to children of sex workers. The women depend on them for their emotional and economic needs and trust them completely. Some of them cook, look after their children and get medical aid when the women fall sick.

All the 300 odd women working in the red light area of Shamsherganj have babus who live on their earnings, though they may do sundry other jobs. The sex worker has to pay the babu as well as the owner of the hut on the roadside that she brings her clients to, so she has to earn enough for her upkeep, food, education of children and the babu.

## **Babies insufficiently**

### **Babies insufficiently breastfed, finds study (New Kerala: 3.5.2011)**

Breastfeeding benefits to the babies are multiple, however, that seems to have become an ancient wisdom for modern day women.

A new study has found that of the 75 percent of U.S. babies who start out breastfeeding, only 13 percent are exclusively breastfed at the end of six months.

Six months of exclusive breastfeeding is the American Academy of Pediatrics' minimum recommendation. The rates are particularly low among African-American infants.

Diane Spatz, of Penn Nursing has joined Surgeon General Regina M. Benjamin to develop and promote the Surgeon General's "Call to Action to Support Breastfeeding".

"The Surgeon General's Call to Action is unprecedented. We're looking at the science of the provision of human milk," said Spatz, an expert in breastfeeding and in high-risk pregnancy.

"It's a life-changing thing. It influences both the mortality of infants, and also how healthy they are."

According to the "Call to Action," breastfeeding protects babies from infections and illnesses that include diarrhea, ear infections, and pneumonia.

Breastfed babies are also less likely to develop asthma, and those who are breastfed for six months are less likely to become obese.

Mothers who breastfeed have a decreased risk of breast and ovarian cancers.

## **Catheterization**

### **Catheterization for Treating Children with Heart Defects (Med India: 4.5.2011)**

Doctors should consider using catheterization as a treatment tool in diagnosing and treating pediatric heart conditions, reveals new American Heart Association scientific statement.

A catheter is a thin flexible tube inserted into a blood vessel and used in procedures such as angiography, in which physicians use the catheter to inject dye into the arteries near the heart to illuminate the vessels via X-ray technology. It can also open a valve, enlarge a narrow blood vessel, close a hole in the heart or close off a blood vessel.

The statement, published in *Circulation: Journal of the American Heart Association*, is a major overhaul of the association's last statement released in 1998.

"What we can offer patients now, versus just 10 or 15 years ago, is remarkably different," said Timothy F. Feltes, M.D., lead author of the statement and chief of pediatric cardiology and professor of pediatrics at The Ohio State University. "There have been tremendous advances in the procedures, devices, experience and the expertise of the physicians who perform the procedures. As physicians caring for patients with congenital heart disease, we have to look at heart catheterizations a little differently than we have in the past."

## **Babies**

### **Young mothers can develop natural talents for mothering from their babies (World Newspapers: 4.5.2011)**

The best teacher for a young mother is her baby, according to researchers who train social workers to interact with first-time moms.

"We like to think of babies as 'ordinary miracles,'" said Victor Bernstein, a research associate at the School of Social Service Administration at the University of Chicago.

But adjusting to a baby can take work, and the task of social workers often is to help young mothers learn to focus on an infant's needs, say Bernstein and other SSA experts.

"Mothers are not only important to their kids, but kids are really important to their mothers," Bernstein said.

Teen mothers often face problems that prevent them from developing their natural talents for mothering, Bernstein and Sydney Hans, the Samuel Deutsch Professor at SSA said.

"But my own research has shown that for many young women, becoming a mother is a positive life experience," Hans said.

"They realise they have accepted an important responsibility and take steps to ensure that they will be able to support themselves and their children in the future," he added.

## **Breastfed babies**

### **Breastfed babies 'better behaved than bottle-fed ones' (New Kerala: 11.5.2011)**

A new study has suggested that infants who are breastfed for at least four months are better behaved than bottle-fed kids.

Oxford University researchers examined the health and behaviour of almost 10,000 mums and their children for five years. They discovered that breastfed kids were more social by their fifth birthday and 30 pc less likely to be badly behaved.

Whereas, bottle-fed babies displayed behavioural problems like hyperactivity, anxiety, restlessness and even stealing and lying.

Unsure of what exactly causes this difference in behaviour, researchers have attributed it to the bonding process or breast milk nutrients such as fatty acids, which boost growth of brain cells.

Department of Health guidelines state that women should try to solely breastfeed until babies hit six months.

## **Children**

### **Give children a life (World Newspapers: 11.5.2011)**

Bringing up children is not easy in today's world. Life for them is tough, and we need to soften their struggle with a little bit of understanding and support to give them a sense of security. Also, help them smoothen out the sharp edges of the harsh realities and peer pressure they face today. Many of us today think that giving them freedom makes us good parents. We think we are modern and liberal. But they will know what to do with freedom only if they know what discipline is and what values in life mean. It is our job to ensure that both are there in equal measure.



One of the reasons why there is no discipline today is because parents have so little time to devote to their child. When they do have the time, they try to wash off their guilt by being liberal and allowing tantrums. Whatever time you have with children, ensure that it is quality time where love, togetherness, discipline and a value system reign. Just talking to a child on a daily basis on various issues teaches them more than they can ever learn at school.

There was one thing that always intrigued me in college. I had a close friend, Sunil Brijkrishan, with whom I often had heated arguments on various topics. I always found that he had the right arguments that were logical and well thought out. One day, I asked him how he managed to do that. He wickedly laughed and said he was just smarter than me. But towards the end of the day, he told me the truth — actually all the arguments that I had were also his arguments. After all, we were peers at a Pune college and thought similarly. But the logical arguments he threw at me were his dad's thoughts that were usually discussed daily at the dinner table. How many parents today talk to their children on issues? There is very little handholding. We need to gently help them tell the right from the wrong. We also need to set personal examples of moral courage and integrity.

But we should not resort to speeches. This generation has no respect for lectures. We just need to talk gently and not force our opinions on them. Give them the independence to think and act and also to take responsibility for their actions. Then, they will naturally be more amenable to ideas and cautious with what they do.

Ramesh Menon is a journalist and corporate trainer.

## **Active Children**

### **Active Children Happier In Later Life (Med India: 12.5.2011)**

Active children could find themselves happier in later life, say Australian researchers. Being physically active in childhood could protect one against depression later, it looks like.

The study, carried out at the Deakin University, was based on self-reported levels of physical activity and depression in 2152 women and men from south-eastern Australia.

Researchers found those reporting low physical activity levels as a child were 35 per cent more likely to report depression in adulthood compared to those reporting higher levels of physical activity in childhood.

This association was apparent even after taking adult physical activity levels into account.

Dr Felice Jacka, a researcher with Deakin's School of Medicine based at Barwon Health in Geelong, said being physically active as a child may be important to adult mental health

### **C-section babies**

#### **C-section babies likely to become obese in later life (The Times of India: 16.5.2011)**

In what could spark a debate over caesarean section deliveries, a new study has claimed babies born through this surgical procedure are at greater risk of becoming obese later in life.

The obesity epidemic could be partly driven by rising rates of surgical deliveries, although the reasons for this are unclear, the Brazilian study suggested.

Lack of exposure to beneficial bacteria in the birth canal could explain the link, said the researchers. However, they believe, children of fatter mothers are more likely to have weight problems, the Daily Mail reported.

Given that obesity in pregnancy is a risk factor that leads to more caesarean section births, it may be that this relationship between the weight of mother and child explains the findings, the researchers said.

In the study, a team at the Universidade Federal de Rio Grande do Sul in Porto Alegre looked at obesity rates in 2,000 people aged 23 to 25. They found 15% of those delivered by caesarean were obese compared with 10% of those born naturally.

Helena Goldani, who led the research team, explained that this may be because infants born surgically are not exposed to beneficial bacteria in the birth canal. So, they might take longer to accumulate good bugs which affect the metabolism.

## **Cystic Fibrosis**

### **Cystic Fibrosis in Children - New Findings (Med India: 18.5.2011)**

Poor lung function in children with cystic fibrosis is more likely to persist later in life, regardless of whether the children are exposed to a common infection caused by the bacteria *Pseudomonas aeruginosa* in early childhood.

"We have shown that infection with *Pseudomonas aeruginosa* alone does not explain differences in lung function in early childhood that persist later in life," said study author Jessica Pittman, MD, MPH, fellow in pediatric pulmonology at the University of North Carolina, Chapel Hill. "This implies that there may be other factors (including, perhaps, genetic, environmental, nutritional or inflammatory factors) acting during infancy and early childhood in children with CF that drive lung function in the school-age years and onwards.

"The results indicate that in these children, efforts to preserve lung function before age 6 are critical to maintaining good lung function into adolescence," she said.

## **Child Health**

### **Kids Playing Video Games Eat More, Burn less Calories: Study(Med India; 19.5.2011)**

Playing video games causes children to increase their food intake and/or decrease their energy expenditure, health researchers have found.

Canadian and Danish researchers tested their hypothesis that video game playing is accompanied by increased spontaneous food intake.

Healthy, normal-weight male teens (mean age: ~17 y) were studied in this crossover intervention trial consisting of two 1-h periods. In one period, subjects rested (control period); in the other, they played video games.

For both study periods (which occurred at 10:30 AM), the youth reported to a research laboratory after an overnight fast and were provided with a standardized breakfast (8:00 AM). During the intervention periods, blood samples were collected every 10 min, and energy expenditure was assessed by using indirect calorimetry.

## **Children**

### **Children suffer academically in noisy classrooms ( The Tribune; 24.5.2011)**

CHILDREN who study in noisy classrooms with poor acoustics suffer academically, a new study claims. Experts say that while classroom chatter is unavoidable, many students and teachers suffer needless levels of noise because of badly designed classrooms that exacerbate the problem, or poorly insulated rooms that fail to block outside noises such as aircraft and traffic.

They warn that government proposals to relax noise control rules when picking new school sites could harm pupils.

A study by researchers from the Institute of Education and the Institute of Acoustics took two age groups of secondary-school students and exposed them to low and high levels of noise while being taught. Tests on their working memory, reading and numeracy skills showed that, in noisy conditions, 14- to 16-year-olds performed at levels no better than 11- to 13-year-olds did in the quiet.

Previous studies have shown primary-school-age children perform worse in poor acoustic conditions, but this is the first evidence that it also affects older children.

In the tests, half of each class listened to 50 decibels of background noise through headphones as they worked, while the other half were exposed to levels of 70 decibels. As a control, after one week they swapped over.

Dr Daniel Connolly, of the Institute of Education, said the study showed that poor acoustics were very bad for learning. "In a lot of tasks, higher noise levels take the older age group back to the same level as the younger age group. There will always be a certain amount of noise in a school, but if you put students in an acoustically poor room it will amplify that."

In a government-wide drive to reduce unnecessary red tape, Education Department officials are reconsidering a requirement that stipulates schools must be “suitable” acoustically.

Kathryn Harper-Quinn, head teacher of Hounslow Heath Infant School, which is in the flight path of Heathrow airport, has direct experience of the importance of protecting a school from a noisy environment.

“It is something the government needs to worry about because, if they don’t take acoustics into account, then they will be facing a big problem. We have planes going over about every minute. It has taken us many years to get the building sorted so they aren’t a distraction but there’s still a long way to go.

“Since we insulated the building we’ve noticed a big improvement in concentration, but ideally schools would be built in a place where noise isn’t an issue.”

Today saw the start of Noise Action Week, aimed at highlighting the damaging impact a loud environment can have.

Mary Stevens, of Environmental Protection UK, which sponsors the initiative, said: “There’s a big drive for deregulation at the moment, but if we lose acoustic planning requirements for schools then we’ll lose valuable protection from noise, which would have a serious impact on teachers and pupils.”

## **Unborn babies**

### **To Protect unborn babies, diabetes test mad easy (The Indian Express: 25.5.2011)**

OBSTETRICIANS and gynaecologists are pitching for a one-step test to detect signs of diabetes in pregnant women and as a possible step towards preventing the disease in their babies.

The standard test involves cumbersome steps for screening and diagnosis, the cause for many dropouts, while the onestep, DIPSI test not only limits visits to the clinic to one rather than two but also involves fewer blood samplings. Those pitching for the DIPSI test cite another drawback in the two-step method — it follows glycemic cutoffs that take

into account the risk of the woman developing diabetes in future but not the risk for the foetus.

The Indian College of Obstetricians and Gynaecologists (ICOG) is calling pregnant women to undergo the DIPSI test.

Named for the Diabetes in Pregnancy Study Group, India, the DIPSI test was developed by Dr V Seshiah and group, said Bangalorebased ICOG secretary Dr Hema Divakar. It was validated and published in the Indian guidelines for gestational diabetes mellitus (GDM).

“We are preparing a draft to recommend this single-step test that can be used in low-resource settings and help control diabetes,” said Dr Sanjay Gupte, Pune-based convener of the GDM Guidelines Committee of India, who recently discussed the option at a meeting with the Federation of Obstetricians and Gynaecologists Society of India’s technical advisory group.

GDM is defined as glucose intolerance with recognition or onset during pregnancy, irrespective of treatment with diet or insulin. One-third of women with GDM will develop Type II diabetes after pregnancy and their children are at higher risk for obesity and diabetes at a young age. The prevalence of GDM is 3.8 per cent in Western countries but up to 15-17 per cent in India, which is genetically more prone to diabetes, with major cities showing 10-15 per cent, said Divakar. If a pregnant woman is de

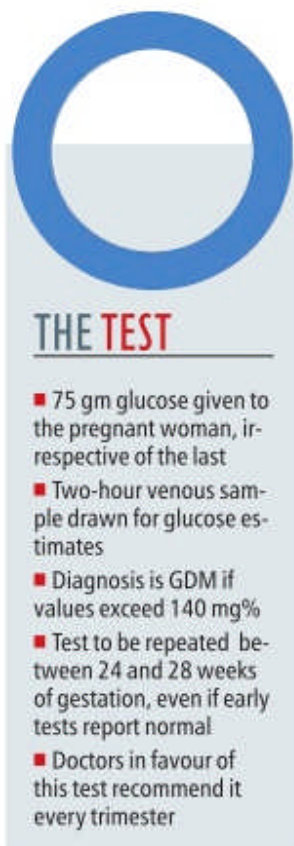
tected with GDM, then proper management can help prevent the disease in the woman and possibly the offspring, said Gupte.

The test is widely used in Tamil Nadu and the ICOG has urged the government to replicate it across states. Divakar estimates about 15 per cent of practitioners nationwide are offering the tests based only on risk factors and history, which would lead to missing a number of GDM cases.

Dr C S Yajnik, a researcher on foetal programming, told The Indian Express that the spread of the diabetes pandemic to the young means there is now a growing epidemic of GDM. Though usually diagnosed during pregnancy, many women have risk factors dating back before pregnancy, sometimes traceable to early life; many continue to be diabetic after delivery or develop diabetes soon after.

A mild change in the intra-uterine environment influences the baby's prospects not only in the perinatal period but over the entire length of its life, Yajnik said, adding that studies raise a concern that the current practice of diagnosing gestational hyperglycemia in late pregnancy might be bolting the door after the horse has fled. In our attempts to

improve perinatal outcomes, we should not ignore the long-term outcomes that have a bearing on the diabetes pandemic, Yajnik said.



**THE TEST**

- 75 gm glucose given to the pregnant woman, irrespective of the last
- Two-hour venous sample drawn for glucose estimates
- Diagnosis is GDM if values exceed 140 mg%
- Test to be repeated between 24 and 28 weeks of gestation, even if early tests report normal
- Doctors in favour of this test recommend it every trimester

## **Children**

### **Children Learn First Words Through Eureka Moments Not Repeated Exposure (Medical News Today: 25.5.2011)**

Eureka moments of insight, rather than repeated exposure, appears to be how children learn new words, according to new research from the University of Pennsylvania published recently in the Proceedings of the National Academy of Sciences.

The researchers speculate that these, and future findings from their work, may overturn current theories of "associative learning", and that spending time with children in their natural environments rich in stimuli is better than using simple object by object picture books for learning new words.

They write that current theories maintain that children learn their first words by being aware of the associations and various contexts in which they become exposed to them and then over time, through a series of statistical "cross-tabulated" comparisons, they narrow down to the common element.

But as a result of their findings the researchers suggest that what really happens is that children have a moment of insight, a "eureka" moment, about the meaning of a word, even if it is not absolutely clear what that is, and they cling onto this until subsequent exposures disprove it; they appear to use a "one-trial 'fast-mapping' procedure, even under conditions of referential uncertainty", write the researchers.

First author and postdoctoral fellow at Penn, Dr Tamara Nicol Medina, told the press that the current theory is "appealing as a simple, brute force approach".

"I've even seen it make its way into in parenting books describing how kids learn their first words," she added.

Co-author and psychology professor at Penn, Dr Lila Gleitman, said:

"This sounds very plausible until you see what the real world is like."

"It turns out it's probably impossible," she explained.



Experiments that back the associative word learning model usually expose the subject to a series of two, three or four pictures of various objects, shown against a neutral background. But the researchers argue that in the "real world", the contexts are more complex and less certain than this: there are an infinite number of possible "referents" for a word, and they can change in type and appearance from exposure to exposure, and not all are present each time.

The authors have long maintained, with other psychologists and linguists, that the vast number of statistical comparisons that would have to be made in order to learn words in this association model, would be beyond the capability of human memory.

If you were to set some of the most sophisticated computers a task like this, they would have to use shortcuts and would not guarantee optimal learning, they say.

Co-author and Penn psychology professor Dr John Trueswell said that this doesn't mean humans can't use the statistical approach at all in learning, "only that we do this kind of tracking in situations where there are a limited number of elements that we are associating with each other".

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"The moment we have to map the words we hear onto the essentially infinite ways we conceive of things in the world, brute-force statistical tracking becomes infeasible. The probability distribution is just too large," he explained.

For their study, the researchers carried out three experiments. In all three experiments, the subjects (adults and pre-school children), watched short, 40-second, videos of parents interacting with their children.

The subjects watched the videos with the sound turned off. The only time they heard a sound was when the parent spoke the target word: in the first experiment the sound was a "beep" noise, and in the second and third experiment it was a nonsense word.

The purpose of the first experiment was to find out how informative the short video scenes were at giving a sense of the meaning of the target word from its context.

If more than half the subjects were able successfully to guess the target word, the short video scene was classed as HI: High Informative.

If fewer than one third of the subjects were able successfully to guess the target word, then the scene was classed as LI: Low Informative.

The first experiment showed that out of 288 short video scenes, only 7% were HI and 90% were LI.

In the second experiment the order of HI and LI video scenes was carefully arranged so that sometimes an HI scene for a word was viewed early in a sequence, and sometimes it was shown later.

Trueswell said that previous studies tended to use artificial stimuli (pictures of objects on a neutral background), with a much smaller number of options for each word. And they also only only measured the final outcome, that is whether the subject was able successfully to guess the word or not.

But in this study they measured the success after each observation, so that they could get a sense of whether the subject got the meaning of the word as a result of a cumulative process or from a moment of insight: a "eureka" moment.

As Trueswell explained they could look at the "trajectory of word learning throughout the experiment, using natural contexts that contain essentially an infinite number of meaning options".

The results strongly suggest that the "eureka" moment was the most likely way that subjects learned the meanings of the target words. Repeated exposure did not lead to improved accuracy, pointing away from association hypotheses as the most plausible explanations.

In support of this conclusion was the fact that when an HI video scene occurred early in the sequence for a given target word, the final guesses improved. The researchers said this was because early HI scenes gave the subjects the best opportunity to learn the correct word, and in fact most of them did guess correctly in those instances. Thus starting on the right track, and viewing subsequent scenes, helped them to "lock in" the correct meaning.

Gleitman said it was as though you "make something like an insightful conjecture" when you know the evidence is good.

When subjects were first presented with LI scenes (and the HI scenes were much later in the sequence for a target word), they tended to give incorrect guesses, and their final

guess was also more likely to be wrong, even though they changed them as the experiment went on.

The researchers said this showed that the subjects did not remember plausible alternative meanings, including the correct one, that they may have seen earlier in the sequence.

The third experiment was done a few days later. The subjects were shown again the video scenes of the words they had guessed wrongly in the previous experiment. They were not able to recall their incorrect guesses and the researchers concluded this showed that "forgetting" incorrect meanings is important to being able to learn correct meanings of new words.

"All of those memories go away," said Gleitman "And that's great!"

Memory failure, that is not remembering the incorrect meanings, is "rescuing you from remaining wrong for the rest of your life", she explained.

As a next step the Penn team wants to explore what makes some interactions informative while others are less so, and what order people process visual information.

They think their work will show that having rich interactions with children, with lots of patience, in their everyday environment, is a more fruitful way to help them learn words than with abstract picture books and "drills".

## **Autism spectrum disorder**

### **Mums who use prenatal vitamins less likely to have kids with autism (New Kerala: 26.5.2011)**

A new study has suggested that women who do not take prenatal vitamins early in their pregnancy are twice as likely to have a child with an autism spectrum disorder than those who do.

It found that for women with a particular high-risk genetic makeup who reported not taking prenatal vitamins, the estimated risk of having a child with autism was as much as seven times greater than in women who did report taking prenatal vitamins and who had more favorable gene variants.

"Mothers of children with autism were significantly less likely than those of typically developing children to report having taken prenatal vitamins during the three months before and the first month of pregnancy," said lead researcher Rebecca J. Schmidt, assistant professor in the Department of Public Health Sciences in the UC Davis School of Medicine.

The finding was strong and robust, and is the first to suggest a concrete step women can take that may reduce the risk of having a child with autism.

The researchers postulate that folic acid, the synthetic form of folate or vitamin B9, and the other B vitamins in prenatal supplements, likely protect against deficits in early fetal brain development.

Folate is known to be critical to neurodevelopment and studies have found that supplemental folic acid has the potential to prevent up to 70 percent of neural tube defects, said the authors.

"This finding appears to be the first example of gene-environment interaction in autism," said senior author Irva Hertz-Picciotto.

"It is widely accepted that autism spectrum disorders are the result of multiple factors, that it would be extremely rare to find someone who had a single cause for this behavioral syndrome. Nevertheless, previous work on genes has generally ignored the possibility that genes may act in concert with environmental exposures," said Hertz-Picciotto.

The finding, if replicated, provides a potential means of reducing the risk of having a child with autism, said the researchers.

"The good news is that if this finding is replicated, it will provide an inexpensive, relatively simple evidence-based action that women can take to reduce risks for their child, which is to take prenatal vitamins as early as possible in a pregnancy and even when planning for pregnancy," said Hertz-Picciotto.

The study is published online in the journal *Epidemiology* and will appear in print in July.

## **Mental health**

### **Mental health**

#### **Online mental health modules reduce anxiety or depression (New Kerala: 7.4.2011)**

Two new trials have found online and email-based support is effective at reducing the incidence of developing anxiety or depression.

Professor Helen Christensen discussed the results of the two "e-mental" health programs at the 5th International Society for Research on Internet Interventions Conference being held in Sydney.

Christensen, the director of the Centre for Mental Health Research at the Australian National University, said the first trial was a collaboration with Constance Guille of the Department of Psychiatry and Behavioural Science, at the Medical University of South Carolina.

She said the work advances on earlier studies by Guille that show first-year medical interns in the US have a 25 percent chance of developing depression or anxiety.

"Guille wanted to see if you could do something to prevent the development of these conditions," ABC Science quoted her as saying.

The trial, held between April 2009 and June 2010, involved 108 medical interns from Yale University and the Medical University of Southern California aged between 23 and 40 years.

One group used the online mental health program, MoodGYM, which includes modules of cognitive behaviour therapy, during a four-week period.

The second group received emails with information about depression and contacts.

Christensen says the trial shows interns using the online mental health modules were 3.5 times less likely to develop an incidence of depression than their counterparts.

This correlated to a 62.6 percent reduction in incidences of depression among the interns.

Christensen says while the trial sample is small it shows the potential for the use of online mental health strategies.

"We are looking at people whose likelihood of developing depression is going to increase ... and this shows that MoodGYM works [in turning that around]," she said.

"I think it is an interesting start," she stated.

Christensen says Guille now plans to replicate the study with a larger group of US interns.

In the second trial, which is ongoing, participants undertake a 10-week multimedia online anxiety intervention.

Christensen says the participants were chosen randomly via the Australian electoral roll and then screened for symptoms of anxiety.

The participants were divided into five groups with three groups receiving the dedicated mental health online program e-couch and two a more generic health program, HealthWatch.

Among e-couch users, the amount of contact with people was varied.

Christensen said this aspect of the study is important because it will help determine what makes the online program most effective.

"I suspect the results will show emails will be as good as a telephone call and it might be that e-couch on its own is good enough," she said.

To date 138 people have undertaken the trial, with the researchers aiming for 500 participants.

Christensen says initial results show "differential effects" between the groups.

"The results are very positive that e-couch is more effective than HealthWatch," she said.

Adding: "One of the most interesting things is there is a significant decrease in suicide ideation as a result of e-couch."

## **Mental disorders**

### **WHO lists mental disorders (The Tribune: 9.5.2011)**

Inclusion only half the battle won

Those suffering from mental health disorders are often treated like pariahs. In this light, it's heartening to note that India, which fought to get non-communicable disease (NCD) status for mental disorders, has been able to get it included in the WHO list which traditionally includes diseases like diabetes, cardiovascular diseases, cancers and chronic respiratory diseases. Of course, this does not mean that the plight of mentally ill patients is going to change overnight. But it is a significant step that could not only lead to de-stigmatisation but also pave the way for better healthcare.

Mental healthcare has always been a matter of concern in India. Studies have pointed out serious treatment gaps. The dismal psychiatrist-patient ratio coupled with societal apathy has only led to abject neglect of mentally ill patients. The country's health plans seemed more obsessed with the burden of communicable diseases and the challenge of mental illness has not been met. In recent times however, steps have been initiated to take a fresh look at the National Mental Health Programme, increase the number of mental health professionals as well as to make their services available at primary level. Now a new mental health policy is being envisaged that will take into account internationally accepted guidelines as well as the draft Mental Health Care Bill 2010 which among other things bans the chaining of mentally ill people, a practice prevalent among the ignorant and uneducated.

No doubt the acceptance of mental disorders as NCD will push the issue on the global agenda and help chalk out strategies to deal with the mentally ill. However, considering the fact that only a minuscule percentage of those suffering from mental problems require to be housed in psychiatric facilities, community and family can play an important role. It's about time society that nurses many ill-conceived notions about mental sickness considered such illnesses just as a disease which can be treated. The government and health machinery on its part has to ensure that the right treatment is made available and accessible, especially to vulnerable and underprivileged sections of society.

# **Obesity**

## **Obesity**

### **Fat Stigma Globalizing Rapidly (Medical News Today: 1.4.2011)**

Stigmatization of fatness is globalizing rapidly, with Western negative attitudes toward overweight people spreading even to countries where large bodies have traditionally been valued, according to a cross-cultural study of attitudes to obesity to be published in the April issue of *Current Anthropology*.

For the study, researchers from Arizona State University surveyed 680 adults living in urban areas in 10 countries and territories around the world, including Argentina, Iceland, Mexico, Paraguay, New Zealand, the UK and the US. They also surveyed respondents in American Samoa, Puerto Rico and Tanzania, cultures that have traditionally been regarded as having positive attitudes towards fatness.

The survey was done mostly via in-person interviews, supplemented with questions posed over the Internet.

It looked for cultural variation in how people viewed and stigmatized excess weight and obesity by asking questions about whether they agreed or disagreed with a range of statements about body size. Some of the statements were negative about fatness (eg "Fat people are lazy") and some of them were positive (eg "A big woman is a beautiful woman").

The researchers found negative attitudes toward fat bodies in every location they surveyed; overweight people are increasingly regarded as lazy, ugly, undesirable, or lacking in self control, they said.

While the US and other Western countries have idealized slimness and stigmatized fatness for decades, in other parts of the world, this has not been the case, until now.

Study author Dr Alexandra Brewis, a biological anthropologist at Arizona State, told the press that:



"Previously, a wide range of ethnographic studies have shown that many human societies preferred larger, plumper bodies."

"Plump bodies represented success, generosity, fertility, wealth, and beauty," she added.

But in their survey, Brewis and colleagues found that the responses across the diverse cultures were largely congruent with Western attitudes.

In fact they were surprised that the highest scores for fat stigma were not in the US or the UK "but rather Mexico, Paraguay, and - perhaps most surprisingly - in American Samoa," they wrote.

Brewis said the speed of change in American Samoa's attitudes to obesity is remarkable.

When Brewis was doing research in the Samoas in the 1990s, she found people were starting to idealize slimmer bodies, but they did not have negative attitudes toward larger bodies.

"But that appears to be changing very quickly," she added.

Co-author and cultural anthropologist Amber Wutich said that respondents from the locations that have taken on negative attitudes to fatness more recently seem to be more strident in their views:

"The late adopters were more likely to agree with the most judgmental statements like 'fat people are lazy' ," said Wutich.

While the survey did not look into what might be behind this rapid shift in cultural attitude toward fatness, the researchers nevertheless suggest that newer types of educational media and global public health messages could be responsible.

Brewis said as there are now more overweight than underweight people in the world, the study shows we should care not only about the public health effects of obesity, but also about the "profound emotional suffering" caused by these rapidly spreading prejudicial ideas about big bodies.

She told the New York Times that a lot more research now needs to be done to investigate how fat stigma is affecting everyday life. For instance, we need to find out if people are being discriminated against, either at work or in social contexts, because of their body size.

The next "big question", said Brewis, is whether the growing fat stigma is "going to create a lot of new suffering where suffering didn't exist before".

She said it was important to think about this, when constructing public health messages about obesity, so they don't make the problem worse.

## **Obese mums**

### **Obese mums-to-be 'risking their babies' lives' (World Newspapers: 4.4.2011)**

Pregnant mothers who are obese are risking their babies' lives, according to a new study.

Researchers from Teesside University, Durham and Newcastle Universities found that more than one lakh babies a year are at risk of death, deformity or serious health problems because of a surge in obesity among pregnant women, reports the Daily Express.

They also found that maternal obesity has more than doubled over the last two decades with one in six women now clinically obese when they conceive.

"We were really surprised to discover such high levels of obesity in such a young age group. A lot of women get pregnant without thinking of the consequences of being obese while pregnant," said Nicola Heslehurst, a health scientist at Teesside University, who helped compile the study.

The study, the first long-term investigation into obesity levels in pregnancy, involved more than 600,000 women who gave birth at 38 hospitals in the UK.

The study is published in the International Journal of Obesity.

## **Childhood obesity**

### **Parents, schools unintentionally contribute to childhood obesity (world Newspapers: 8.4.2011)**

A study has found that parents and schools, which are the two biggest influences on children, may unintentionally contribute to childhood obesity.

Susan Terwilliger, clinical associate professor in the Decker School of Nursing at Binghamton University, had made the observation in her study of the problem.

"As a paediatric nurse practitioner I've taken care of children and their families for about 30 years, and I saw this huge increase in childhood obesity from 5 to 30% over about a 10-year period when I was in the school-based health centres," she said.

In researching childhood obesity, Terwilliger studied third-graders in four schools in Binghamton, NY.

She found 70% of the children drank between two and five sweetened beverages a day, 85 percent watched between two and five hours of television a day, and 42% ate two or more fast-food meals per week.

But these numbers, all hallmarks of childhood obesity, can be the unintended consequences of rational decisions. Children who are told by parents to avoid water fountains because of germs may instead drink sweetened juices. Fear of potential danger can prompt parents to restrict children's play space to a backyard or inside the house.

Schools sometimes trade gym class or recess for academics as they try to raise test scores. Eating fast food on the way to soccer may seem like a trade-off health wise.

"One of the reasons fast food fits into a hectic schedule is that processed food, with its high fat content, literally slips down easily. And the quicker and easier it is to eat, the more you may consume," Terwilliger pointed out.

She also said that there is a lot of data that says today's kids won't live as long as their parents.

"I now have 13-year-olds with type 2 diabetes," she said.

"Heart attack is the number one cause of death and stroke the number three cause, and diabetes and hypertension, both caused by obesity, contribute to both," she added.

## **Obesity**

### **Obesity 'likely to upset key gene clock in cardiovascular system' (New Kerala; 13.4.2011)**

For the first time, researchers at the Georgia Health Sciences University in Augusta have found that that obesity might shut down a key gene clock that regulates the cardiovascular system.

Humans and animals are essentially programmed to physiologically respond to a day/night cycles based on the 24-hour rotation of the planet.

Indeed, there is a molecular basis that precisely controls rhythms, a group of genes dubbed the circadian clock, including one molecule also aptly named 'Clock'.

In obese individuals, the natural circadian rhythms are believed to be disrupted.

With obesity known to affect at least the eat/sleep cycles, Shuiqing Qiu and other researchers determined whether obesity might also affect the molecular components of the clock that governs the vascular system.

They conducted their research in two phases.

In phase I, they examined the circadian variation in the cardiovascular chamber of three groups of mice (lean, obese and diabetic) at three time intervals: early morning, mid-day and evening, and measured the gene expression in the cardiovascular genes during these times.

In the lean animals they found evidence of a cardiovascular rhythm.

By contrast, they found this rhythm was lost in obese animals.

In phase II, the team used the data to examine whether the lack of rhythmic response could translate into a cardiovascular defect. They did so by examining a series of specific molecules from the cardiovascular clock genes and by measuring the acceleration of the genes in the blood vessels.

In the lean animals they found that a key regulator of circadian rhythm, a gene called Clock, was high at 7:00 a.m. and low at 7:00 p.m.

In the obese animals the expression of the gene remained flat throughout the 24-hour cycle.

"Based on the results of this study we now know that obesity impairs the clock machinery of the vasculature system and that correlates with a variation in expression of cardiovascular genes and their loss of the circadian rhythm," said David Stepp, a senior researcher on the team.

The findings were presented at the Experimental Biology 2011 meeting at Washington, DC.

## **Obese Kids'**

### **Wrist Test May Help Better Determine Obese Kids' Insulin Resistance (Medical News Today: 13.4.2011)**

There may be a new way to predict an increasingly obese child population's insulin levels, and resistance, which contributes to eventual cardiovascular complications. All you have to do is measure your child's wrist circumference and there you have it. There is an association between that size and insulin resistance.

Normally, food is absorbed into the bloodstream in the form of sugars such as glucose and other basic substances. The increase in sugar in the bloodstream signals the pancreas (an organ located behind the stomach) to increase the secretion of a hormone called insulin. This hormone attaches to cells, removing sugar from the bloodstream so that it can be used for energy.

In insulin resistance, the body's cells have a diminished ability to respond to the action of the insulin hormone. To compensate for the insulin resistance, the pancreas secretes more insulin.

Raffaella Buzzetti, M.D., senior study author and professor in the Department of Clinical Sciences at "Sapienza" University of Rome, Italy explains:

"This is the first evidence that wrist circumference is highly correlated to evidence of insulin resistance. Wrist circumference is easily measured and if our work is confirmed by future studies, wrist circumference could someday be used to predict insulin resistance and cardiovascular disease risk."

Many studies have shown that atherosclerotic cardiovascular disease, caused by narrowing of the arteries, begins to develop in childhood. Insulin resistance, a condition in which the body makes insulin but can't use it efficiently to break down blood sugar, is a metabolic risk factor for later development of cardiovascular disease.

The researchers found that the correlation between the cross-section of the wrist bones and the level of insulin in the blood or the amount of insulin resistance were much stronger than the correlation between the body mass index (BMI) and insulin levels or insulin resistance. BMI is a numeric value of weight and height used clinically to estimate whether a person is normal weight, underweight, overweight or obese.

Higher insulin levels increase the risk of developing insulin resistance, which in turn increases the risk of developing cardiovascular disease. Although excess body fat is linked to several heart disease risk factors including insulin resistance, measuring body fat in a body mass index test format in children is problematic partly because of how rapidly their bodies change during puberty.

Buzzetti continues:

"Wrist circumference could be a marker for increased bone metabolism in the presence of high insulin levels. If so, wrist circumference may be an easy-to-detect measure of skeletal frame size that's not severely confounded by body fat variation around the time of puberty. One of the major priorities of clinical practice today is the identification of young people at increased risk for insulin resistance. This is a very, very strong link. Wrist circumference mirrors insulin resistance levels."

Heart disease and stroke are the No. 1 causes of death and disability among people with type 2 diabetes. In fact, at least 65% of people with diabetes die from some form of heart disease or stroke.

Adults with diabetes are two to four times more likely to have heart disease or a stroke than adults without diabetes and The American Heart Association considers diabetes to be one of the six major controllable risk factors for cardiovascular disease.

## **Obese people**

### **Obese people can suffer from social anxiety disorder: Study (World Newspaper Today: 15.4.2011)**

A new study has warned that obese individuals with social anxiety related only to their weight may experience anxiety as severe as individuals with social anxiety disorder (SAD).

Researchers from Rhode Island Hospital, led by Kristy Dalrymple, evaluated a group of individuals who were seeking clearance for bariatric surgery.

They identified three separate groups: 135 individuals diagnosed with DSM-IV SAD; 40 individuals classified as "modified SAD" who experienced clinically significant social anxiety related to weight only; and 616 individuals with no history of psychiatric disorders.

In their study, both the SAD and modified SAD groups were rated as having poorer social functioning as an adolescent compared to the no disorder group, but there was no difference between the SAD and modified SAD groups in this respect, with similar results found in social functioning over the past five years.

In addition, the SAD group was rated as having more time out of work in the past five years due to psychopathology or emotional reasons compared to both the modified SAD group and the no disorder group.

Results also showed that those in the modified SAD group experienced more disruption in their social life and were more distressed about having social anxiety in the past month compared to those in the SAD group.

"We found it particularly interesting that the modified SAD group reported greater levels of disruption in social life and distress about their social anxiety compared to the DSM-IV SAD group. This suggests that although our modified SAD group had social anxiety that was related to obesity only, their level of impairment was significant," said Dalrymple.

The researchers state that these findings, combined with others in their study, lead to the conclusion that obese individuals who have weight-related social anxiety experience significant social anxiety when compared to individuals with DSM-IV SAD.

The study was recently published online in advance of print in the journal *Depression and Anxiety*.

## **Obesity**

### **Obesity Not Always Protective Following Surgery (Science Daily: 25.5.2011)**

Obese patients with high blood pressure and diabetes are at much higher risk for major complications following non-cardiac surgery compared to otherwise healthy obese patients and patients of normal weight.

The new finding diverges from previous research demonstrating that obesity is associated with a lower risk of death and complications after non-cardiac surgery and helps clarify the so-called "obesity paradox," or notion that a high body mass index (BMI) confers a protective effect in certain circumstances.

In the study, researchers separated obese patients into two groups -- those who were metabolically healthy and those with additional risk factors related to the metabolic syndrome, specifically, diabetes and hypertension. They found that obese patients with the additional risk factors were at substantially greater risk for cardiac, pulmonary and neurologic complications, and, to the researchers' surprise, had a striking three to seven-fold increased risk of kidney problems.

"I think the general population has the sense that individuals with obesity are all alike and struggle with the exact same health problems, but that is not the case," said Laurent G. Glance, M.D., lead study author and professor of Anesthesiology and Community and Preventive Medicine at the University of Rochester Medical Center. "The obesity paradox may be explained in part by the large number of metabolically healthy but obese patients included in previous studies."

Glance's study is one of very few that has looked at subgroups of metabolically healthy versus unhealthy obese patients and their outcomes following surgery.

"The results of our study suggest that whether or not a patient is obese shouldn't be our main concern. It is really the presence of obesity plus other metabolic risk factors that should raise a red flag," said Rabih Salloum, M.D., study author and associate professor in the Department of Surgery at the Medical Center.

The study, published in the journal *Anesthesiology*, is the first of its kind in non-cardiac surgery and presents a very simple, clinically useful way of identifying patients who may be at high risk. Obesity, high blood pressure and diabetes are all straightforward, easily recognizable conditions, allowing physicians to quickly distinguish patients who may require special attention.

"For surgeons and anesthesiologists, knowing that there are higher risks for obese patients with metabolic disease will allow us to better counsel these patients ahead of time and make them aware of the complications they may face," said Richard N. Wissler, M.D., Ph.D., study author and associate professor of Anesthesiology and Obstetrics and Gynecology .



"If you identify a patient with a high likelihood of complications you may use more extensive monitoring, get additional specialists involved and be more aggressive about intervening should any problems arise," added Glance.

Glance's team used data from a large database managed by the American College of Surgeons and looked at more than 310,000 patients who underwent general, vascular or orthopedic surgery between 2005 and 2007. Based on BMI, patients were classified as underweight, normal, overweight, obese, morbidly obese and super obese.

Researchers further divided the obese patients based on their metabolic health. One group included patients with high blood pressure and diabetes, a diagnosis dubbed the "modified metabolic syndrome," because it aligns closely with the well-established metabolic syndrome. Individuals diagnosed with the metabolic syndrome have three or more of the following risk factors: high blood pressure, glucose intolerance or diabetes, abdominal obesity (being apple-shaped), increased triglycerides (fats in the blood), and low levels of good HDL cholesterol.

The remaining obese patients were deemed metabolically healthy. After taking age, sex, surgical complexity and other factors into account, the team used mathematical models to determine the rate of major complications in each group 30 days following surgery.

In addition to the substantially increased risk of kidney problems, obese patients with the modified metabolic syndrome experienced a nearly two to three-fold higher risk of cardiac complications; a one-and-a-half to two-and-a-half-fold higher risk of pulmonary complications; and a two-fold higher risk of neurologic complications, compared to normal weight and metabolically healthy obese patients.

With the exception of patients with the modified metabolic syndrome and super obesity, the modified metabolic syndrome was not associated with increased risk of death.

"In today's healthcare system, we have to be very careful with how we use our resources. We want to concentrate our efforts on patients who are more likely to have trouble following surgery, and our findings give surgeons and other physicians a much better way to predict who those patients will be," said Salloum.

It is estimated that 22 percent of the adult population in the United States has the metabolic syndrome. Though the study authors used a modified version of the condition, they agree that it is a very close match to the standard definition and that their findings likely apply to a large number of patients.

Glance said the major strengths of the study are the large number of patients identified and the high quality of information entered into the American College of Surgeons

database by trained nurse specialists. Limitations include the fact that the study is not population based, which may limit the generalizability of the findings.

The study was supported by a grant from the Agency for Healthcare Research and Quality and with funding from the Department of Anesthesiology at the University of Rochester School of Medicine and Dentistry. In addition to Glance, Salloum and Wissler, Carol Ann B. Diachun, M.D. and Fergal J. Fleming, M.D., from the University of Rochester took part in the study. Dana B. Mukamel, Ph.D., University of California, Irvine, Yue Li, Ph.D., University of Iowa, and Andrew W. Dick, Ph.D, RAND Health, also contributed to the research.

## **Maternal obesity**

### **Maternal obesity could affect child's brain growth (New Kerala; 2.5.2011)**

Babies born to obese mothers may suffer from iron deficiency, which could affect the development of their brains, a study says.

In non pregnant adults, obesity-related inflammation hinders the transport of iron through the intestine, increasing the risk of iron deficiency anaemia.

When a woman is pregnant, iron is transferred through the intestine to the placenta, but it is not known how maternal obesity affects newborn babies' iron status.

Foetal iron status is important because 50 percent of the iron needed for infant growth is obtained before birth

"These findings are important because iron deficiency in infancy is associated with impaired brain development, and we should understand all risk factors for iron deficiency in infancy," said Pamela J. Kling, principal investigator and associate professor of paediatrics and neonatology at the University of Wisconsin-Madison.

Researchers studied 281 mother-newborn pairs. The women's body mass index (height to weight ratio) was calculated before delivery, and a score of 30 or above was defined as obese, according to a Wisconsin statement.

Investigators also determined infants' iron level by analysing umbilical cord blood.

Results showed evidence of impaired iron status in newborns of women who were obese.

## **Obese women**

### **Docs drop the scalpel for obese women (The Times of India: 2.5.2011)**

It's time you cut at flab and shed those extra kilos. Particularly if you are a woman. It's just not about that extra spring in your step, it's also about staving off a lifethreatening situation if you land on the operation table. Doctors say, they are finding it extremely difficult to operate upon obese women.

Prominent surgeons in the city say they are taking recourse to minimal invasive techniques and natural access vaginal surgery to deal with the problem. And in a hitech leap, even robots are being used in surgeries.

In obese women, most of the space inside the abdomen is layered with fat. And this makes it difficult for the surgeon to cut through and reach the diseased portion. Moreover, post-operative management becomes extremely difficult. "In case of obese pregnant women, the growth of the foetus is stunted and the risk of miscarriage becomes high, said Dr Suneeta Mittal, head of gynaecology department, All India Institute of Medical Sciences (AIIMS). Several other doctors echo the same opinion. Dr Urvashi P Jha, director, obstetrics and gynaecology, Fortis healthcare, said: "It becomes very difficult for the surgeon to reach the target. To remove a benign ovarian tumor, the scalpel has to cut through several inches of fat and this complicates the process."

She said a huge incision has to be made and it is difficult to carry out the procedure with fat stuffed inside the abdomen. It obliterates the view and position of the tumor, she said.

"To avoid this, we are using natural access route surgery for hysterectomy (removal of uterus) and removal of fibroids, benign tumours and cysts. In this technique, we access the diseased organ through the vagina, rather than make an incision in the body. The intestine and peritoneum, which are usually layered with fat, are avoided. There are less complications and no scars," said Jha.

Dr N K Pandey, eminent surgeon and chairman of Asian Institute of Medical Sciences, said most obese patients also suffer from diabetes and hypertension.

"In such patients, the risk of post-operative infection is high and healing of wounds takes a longer time. Obese patients are also at an increased risk of developing blood clots

in lungs after surgery. This can be fatal. Also, we have to take precautions in administering anesthesia and constant monitoring of patients is required.

“Formation of clots can lead to pulmonary embolism, which is a life-threatening condition. So, oxygen levels have to be constantly monitored,” said Pandey.

At some centres in India and abroad, natural orifice technological endoscopic surgery is being experimented with. Surgeons can operate on a patient without any incision by entering through the mouth and other natural routes.

“The uterus of a 58-yearold obese patient suffering from uterine cancer was removed with the help of a robot at our hospital recently. But with a restricted 2D vision and hand movement, laparoscopic surgeries are not possible on obese women,” said Dr Sudhir Rawal, director, surgical oncology at Rajiv Gandhi Cancer Institute and hospital. He said, use robots in such cases because it provides 10 times more magnification and a three-dimensional view.

## **Fat**

### **Fat removed by liposuction returns after a year: Study (World Newspapers Today: 3.5.2011)**

A new study has revealed that the fat removed by liposuction returns and gets redistributed around the shoulders, arms and upper abdomen after a year.

Rudolph Leibel, an obesity researcher at the University of Columbia, told The New York Times that the body controls the number of fat cells as carefully as it controls the amount of fat. When a fat cell dies, it grows a new one to replace it, reported the Independent.

Liposuction, however, surgically destroys the fishnet structure under the skin, which may be why the fat cells don't regrow in the place from which they were removed. Instead the body compensates for their loss by growing new fat cells in other areas.

"It's another chapter in the 'You can't fool Mother Nature' story," Leibel said.

The study involved 32 women aged in their mid-thirties and of average weight. Just under half (14) had a modest amount of fat removed by liposuction from their hips and thighs, while the remainder (18) acted as controls.

Identical measurements of all the women were carried out at six weeks, six months and a year, which revealed how the body "defends" its fat.

After six weeks the treated patients had lost 2.1% of their fat, compared to 0.28% in the control group, but this difference had disappeared at one year. Though the women's thighs remained thinner after a year, the missing fat had found its way back to their stomachs.

The study was recently published in Obesity.

## **Obesity**

### **Obesity closely associated with depression, says Cuban expert (New Kerala: 12.5.2011)**

The word "fat" is fast becoming a social stigma and has a deep psychological toll on the individual, a Cuban health expert has said.

Obesity is very closely associated with depression, Alberto Quirantes Hernandez, chief of Endocrinology Services at the Dr. Salvador Allende Teaching Hospital in Havana, told Prensa Latina news agency.

An overweight person becomes frustrated and is unable to fully develop his personality, desires and interpersonal relationships.

"Some diseases are very visible, but obesity is the only one that provokes disparaging remarks and condemnation," he said.

Obese people may feel defenceless against verbal or other aggression, and their inner response may be one of guilt and shame, both in public life and in their most private relationships.

Hernandez said a time comes when an obese person may feel as if he or she is in a blind alley, frustrated and blocked by the inability to fully develop his or her personality, desires and interpersonal relationships.

"If the obese person does not find an effective, progressive and permanent solution to this issue, the problem becomes more chronic, a psychological toll takes place, and from there to depression it is a short leap."

Depression, accompanied by lack of physical activity, leads to more obesity, and can cause physiological problems in the endocrine and immune systems, he said.

"Obesity-related depression affects women more - in a two-to-one ratio compared to men," Hernandez said.

The only effective, permanent and scientific solution to obesity requires changing our diets and increasing physical activity, he said.

### **Obese - prostate cancer**

#### **Obese men more likely to have prostate cancer (The Tribune: 18.5..2011)**

Researchers at Duke University Medical Centre have found that obese men are exposed to an elevated risk of their prostate cancer worsening than slim men. This is even after they were treated with hormone therapy to suppress tumour growth. Researchers, led by Christopher J. Keto, urologic fellow at Duke University Medical Center, made their conclusions after looking 287 men whose diseased prostates had been removed during the period between 1988 and 2009. Since their cancers had reappeared, the men had also been given androgen deprivation therapy (ADT). The chemical inhibits production of the male hormone testosterone, which fuels prostate tumours.

### **Obesity, asthma, anxiety**

#### **Obesity, asthma, anxiety- likely causes of sleepiness in children (New Kerala: 18.5.2011)**

Children suffering from obesity, asthma, anxiety or depression are more likely to experience excessive daytime sleepiness or EDS.

Sleep researchers at the Penn State College of Medicine sleep have revealed.

EDS is the inability to stay awake during the day, while sleep-disordered breathing is a group of disorders that includes sleep apnea, characterized by pauses in breathing.

"Although EDS in children is commonly assumed by physicians and the public to be the result of sleep-disordered breathing or inadequate sleep, our data suggest that EDS in young children is more strongly associated with obesity and mood issues as it is in adults," said Edward Bixler, professor of psychiatry, Sleep Research and Treatment Center.

The condition may hamper a child's academic performance since he cannot stay alert and concentrate on studies during daytime.

The study further reveals that out of 508 children 15 pc suffer from EDS.

"Our study indicates that EDS is highly prevalent in children, a symptom that may adversely affect daytime functioning," Bixler added.

This study establishes a link between childhood EDS and medical factors, medication for asthma, waist circumference, and parent-reported anxiety/depression and parent-reported sleep difficulties, trouble falling asleep, restless sleep and waking often during the night.

Researchers who conducted the study on 508 children, found waist circumference, positive history of asthma, use of asthma medication, heartburn as causes of EDS.

Parent-reported symptoms of anxiety/depression and of sleep difficulty are also significantly associated with EDS.

The study has been published in the journal Sleep.

## **Lowering fat**

### **Lowering fat intake can prevent diabetes (New Kerala: 24.5.2011)**

Lower fat or carbohydrate intake can stave off diabetes, even without weight loss, new research says.

In this study, 69 people were placed on diets with modest cuts in either fat or carbohydrate for eight weeks.

"At eight weeks, the group on the lower fat diet had significantly higher insulin secretion and better glucose tolerance and tended to have higher insulin sensitivity," said Barbara Gower, professor in nutrition sciences at the University of Alabama at Birmingham, who led the study.

Gower says the unique aspect of this study was that the results were independent of weight loss, reports the American Journal of Clinical Nutrition.

The participants were fed exactly the amount of food required to maintain their body weight, and the researchers took into account any minor fluctuations in body weight during analyses, according to an Alabama statement.

Results from this study suggest that those trying to minimize risk for diabetes over the long term might consider limiting their daily consumption of fat at around 27 percent of their diet.

"People find it hard to lose weight," said Gower. "What is important about our study is that the results suggest that attention to diet quality, not quantity, can make a difference in risk for type 2 diabetes."

## **Obsessive-compulsive disorder**

### **How obsessive-compulsive disorder develops (New Kerala: 25.5.2011)**

A new study has found that obsessive-compulsive disorders start with compulsions, which lead to obsessions, and not the other way round.

The study, conducted at the University of Cambridge in collaboration with the University of Amsterdam, found that in the case of OCD the behaviours themselves (the compulsions) might be the precursors to the disorder, and that obsessions may simply be the brain's way of justifying these behaviours.

The research provides important insight into how the debilitating repetitive behaviour of OCD develops and could lead to more effective treatments and preventative measures for the disorder.

The research, funded by the Wellcome Trust tested 20 patients suffering from the disorder and 20 control subjects (without OCD) on a task, which looked at the tendency to develop habit-like behaviour.



Subjects were required to learn simple associations between stimuli, behaviours and outcomes in order to win points on a task.

The team found that patients suffering from the disorder had a tendency to continue to respond regardless of whether or not their behaviour produced a desirable outcome. In other words, this behaviour was habitual.

The discovery that compulsive behaviour, the irresistible urge to perform a task, can be observed in the laboratory, in the absence of any related obsessions, suggests that compulsions may be the critical feature of OCD.

Indeed, one of the most effective treatments for OCD is cognitive behavioural therapy (CBT), which typically involves a method known as "exposure and response prevention".

This technique challenges patients to discontinue compulsive responding, and learn that the feared consequence does not occur, whether or not the behaviour is performed.

The effectiveness of this treatment is compatible with the idea that compulsions, and not obsessions, are critical in OCD. Once the compulsion is stopped, the obsession tends to fade away.

"It has long been established that humans have a tendency to 'fill in the gaps' when it comes to behaviour that cannot otherwise be logically explained," Claire Gillan, a PhD student at the University of Cambridge, said.

"In the case of OCD, the overwhelming urge to senselessly repeat a behaviour might be enough to instil a very real obsessive fear in order to explain it," she stated.

The findings have been published in the renowned American Journal of Psychiatry.

## **Obesity Epidemic**

### **Obesity Epidemic Fuelled By Decrease In Workplace Physical Activity (Medical News Today: 27.5.2011)**

Decrease in physical activity in many occupations over the last 50 years, and not just a change in calorie consumption, has contributed significantly to the obesity epidemic in the United States, according to a new study published this week in the journal PLoS ONE.

The study was the work of scientists from the Pennington Biomedical Research Center, part of the Louisiana State University System in Baton Rouge, and colleagues from other research centers.

Lead researcher Dr Timothy Church, who holds a John S. McIlhenny Endowed Chair at Pennington Biomedical, told the press that:

"Yesterday's jobs have been replaced by sitting or sedentary activity."

"In the last fifty years, we estimate that daily occupation-related energy expenditure has decreased by more than 100 calories per day, and this reduction accounts for a significant portion of the increase in mean US body weights for women and men," he explained.

Using data from the US National Health and Nutrition Examination Surveys (NHANES) and the Bureau of Labor Statistics to calculate mean body weight and job-related energy expenditure, Church and colleagues estimated that only 20% of jobs in US private industry today demand a moderate level of physical effort, compared with 50% in the early 1960s.

They also estimated that compared with 50 years ago, today's average American burns 100 fewer job-related calories a day.

Using computer models, they then predicted how much extra weight today's workers would carry from burning fewer calories at work, compared to workers of 50 years ago, and the results came quite close to what today's workers actually weigh.

For example, from 1960-62 to 2000-06, they estimated that the job-related energy expenditure for men went down by 142 calories a day. From the NHANES data they saw that the average male worker in 1960-62 weighed 76.9 kg, so they added to this weight the effect of burning 142 fewer calories a day and arrived at an average weight of 89.7 kg for 2003-06: very close to the NHANES figure of 91.8 kg.

The results for women were similar.

Church and colleagues concluded that their findings suggest changes in calorie intake cannot be the only reason for the weight gain in the American population.

"The causes of the obesity epidemic are a hotly debated issue, particularly in regard to the relative importance of diet and physical activity," said Church.

"Our data provides further support to the importance of including both diet and physical activity in discussions related to be both the causes and potential solutions of the on-going obesity epidemic," he added.

In their discussion, the researchers acknowledged the strengths and weaknesses of the study. A major strength was that it used nationally representative data, on both the obesity and the occupation data. They also used a well-known and accepted method for assigning energy expenditure intensity levels to occupation categories.

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However, a potential weakness is that the same method was applied across all five decades, without taking into account the possibility that due to changes in working practices and new labor-saving technology, some of the occupation categories may have shifted to different levels of intensity of energy expenditure.

But, the effect of this potential weakness is to suggest that the estimates in this study may actually be under rather than over: perhaps the daily calorie usage due to job-related activity has gone down even more than this study proposes.

Another potential weakness, and there is insufficient data to eliminate its effect, is that the focus on energy expenditure intensity was based purely on type of occupation and not other factors related to the job such as type of travel to work, total sitting time, use of stairs, and so on. Also, there may be some misclassification of energy use across types of occupation: for example, some agricultural and manufacturing workers' jobs may be less physically demanding than some jobs in the services sector.

But the researchers are confident, given this potential weakness, that they were able to minimize the effect of such misclassification because they were very conservative in assigning the energy expenditure intensities to the various occupations.

In 2008, new federal advice on exercise suggested that men and women should do at least 150 minutes a week of moderate intensity physical activity or 75 minutes of vigorous intensity.

However, only 1 in 20 Americans appears to be achieving this level. The researchers suggest if all American workers were to reach this target, then it would make up for the reduction in job-related energy expenditure over the last five decades.

# **Population**

## **Census 2011**

### **Census 2011 puts India's population at 1.21 billion (The Hindu: 1.4.2011)**

#### **Rise of 181 million in 10 years; decline in child sex ratio**

India's population has jumped to 1.21 billion, an increase of more than 181 million during 2001-11, according to provisional data of Census 2011 released on Thursday.

Though the population is almost equal to the combined population of the U.S., Indonesia, Brazil, Pakistan, Bangladesh and Japan (1,214.3 million), the silver lining is that after 1911-21 the past decade (2001-11) witnessed the addition of smaller population than the previous decade's growth. Of the total provisional population of 1,210.2 million, the number of males stood at 623.7 million and females at 586.5 million. The percentage growth in 2001-11 was 17.64 — males 17.19 and females 18.12. India's population accounts for 17.5 per cent of the world's.

Registrar-General and Census Commissioner of India C. Chandramouli released the provisional data here, in the presence of Union Home Secretary G.K. Pillai. "Provisional population is arrived at by adding the population as reported by each enumerator, and the final population data is likely to be released next year," Dr. Chandramouli told journalists.

Among the States and the Union Territories, Uttar Pradesh is the most populous State with 199 million people, followed by Maharashtra with 112 million people. Lakshadweep is the least populated at 64,429 people.

The percentage decadal growth rates of the six most populous States have declined during 2001-11 compared with 1991-2001. The population growth in Uttar Pradesh has declined from 25.85 per cent to 20.09 per cent, in Maharashtra from 22.73 per cent to 15.99 per cent, Bihar from 28.62 per cent to 25.07 per cent, West Bengal from 17.77 per

cent to 13.93 per cent, Andhra Pradesh from 14.59 per cent to 11.10 per cent and Madhya Pradesh from 24.26 per cent to 20.30 per cent. “This shows that we have added population, but the growth [rate] has been less,” Dr. Chandramouli said.

The overall sex ratio nationwide has increased by seven percentage points to 940 against 933 in Census 2001. Sex ratio is defined as the number of females per 1,000 males. An increase in sex ratio was observed in 29 States/Union Territories. Kerala with 1,084 has the highest sex ratio followed by Puducherry with 1,038. With 618, Daman and Diu has the lowest ratio.

“This is the highest sex ratio at the national level since Census 1971 and a shade lower than 1961. Three major States — Jammu and Kashmir, Bihar and Gujarat — have shown a decline in sex ratio as compared to Census 2001,” Dr. Chandramouli said. India's skewed sex ratio due to female foeticide and selective sex determination has been a cause for concern.

However, the area of grave concern, Dr. Chandramouli said, remained the lowest ever child sex ratio of 914. The provisional data showed that the child sex ratio [0 to 6 years] came down to 914 females per 1,000 males against 927 in Census 2001. It showed a continuing preference for male children in the last decade.

An increasing trend in the child sex ratio was seen in Punjab, Haryana, Himachal Pradesh, Gujarat, Tamil Nadu, Mizoram and the Andaman and Nicobar Islands, but in the remaining States/UTs, the ratio showed a decline. While the overall sex ratio has improved since 1991, the decline in child sex ratio has been unabated since the 1961 Census. The total number of children in the age group of 0-6 is now 158.8 million, less by five million since 2001.

Literacy rate up

The literacy rate has gone up from 64.83 per cent in 2001 to 74.04 per cent, an increase of 9.21 percentage points.

## **POPULATION GROWTH RATE**

**POPULATION GROWTH RATE DECLINES TO 17% (Business Standard: 1.4.2011)**

India's population growth rate has decelerated to 17.64 per cent in the decade 2001-11, the slowest rate of growth this past century, according to the first results of Census 2011 put out by the registrar-general of census.

India's population in 2011 is estimated to be 1.21 billion, comprising 624 million males and 587 million females. While the gender imbalance in population remains, the preliminary census figures show that India's female population grew by 18.12 per cent over the past decade against 17.19 per cent for males.

India's literacy rate has gone up from 64.83 per cent in 2001 to 74.04 per cent in 2011. Literates constitute 74 per cent of the total population aged seven and above. The sex-ratio, that is number of females per 1,000 males, has improved to 940 from 933 a decade ago.

"This shows that we are bottoming out on the gender issue. Gender equality will now improve," says Laveesh Bhandari of Indicus Analytics said.

However, a disturbing figure reported by the census is that male preference persists among newly born, with the child sex ratio at 914, the lowest since Independence. "This is a matter of grave concern," Registrar of India and Census Commissioner of India C Chandramauli said, while releasing the figures. Ritu Priya Mehrotra professor in the Centre of Social Medicine and Community Health in the Jawaharlal Nehru University said that the news was alarming. She also noted that while the world counts the number of men in a population of 1000 females to determine sex ratio, India looks at the number of women per 1000 males as it assumes the numbers to be less.

Sabu George, who has been campaigning for the rights of the unborn girl child for the last two decades and whose PIL in the Supreme Court was instrumental in changes in the Pre Natal Diagnostic Techniques (PNDT) Act, said that the result was not surprising.

India's population accounts for the world's 17.5 per cent, second only to China that constitutes 19.4 per cent. The country's headcount is almost equal to the combined population of the United States, Indonesia, Brazil, Pakistan, Bangladesh and Japan, put together.

The population of India has increased by more than 181 million during 2001-11. This is the first decade which has actually added less population compared to the previous decade, Chandramauli said.

Uttar Pradesh is the most populous state with 199 million people and Lakshadweep the least populated at 64,429.

Census 2011: 1.2 billion Indians, 74% literacy, female population up 18.12% but male preference persists

—————Population grows to

1.21 billion

—————181 million people added during 2001-11

—————Growth declines to 17.64 % from 21.15 % during 1991-2001

—————There are 623.7 million males and 586.5 million females

—————India accounts for 17.5 % of the world's population, China 19.4 % —————First decade (with exception of 1911-1921) which saw addition of lesser people than the previous decade.

—————Child sex ratio — 914 females against 1,000 males — lowest since independence

—————Overall sex ratio rises by seven points — 940 females per 1,000 males

—————Literacy rate goes up from

64.83 % to 74.04 % —————74 % people aged seven and above are literate



\_\_\_\_\_82.14 %male literacy,

65.46 %female literacy

\_\_\_\_\_In 2001, male literacy was

75.26 %, female literacy was 53.67 % \_\_\_\_\_Delhi ( 11,297 people per square km) has the highest population density, followed by Chandigarh ( 9,252 ) \_\_\_\_\_Uttar Pradesh is the most populous state with 199 million people while Lakshadweep is the least populated at 64,429

## KEY FINDINGS OF THE CENSUS

### **High sex ratio**

#### **Large family size behind Mewat's high sex ratio (The Tribune: 8.4.2011)**

Religion has a major role to play in Mewat's high sex ratio, so it seems. The district has the highest sex ratio of 906 and the highest child sex ratio (0 to 6 years) of 903. Explains 50-year-old Ismail Khan: "We are all god-fearing people and our religion does not permit sex-determination or abortion. We deal sternly with those who dare to violate the tenets of of our religion. Anybody who indulges in any malpractice is ostracised."

Ismail Khan has seven children, four of them girls, another reason for the high sex ratio in the district. While the family size is shrinking elsewhere in the state, Mewat is yet to take to family planning. Unlike the rest of Haryana where most families follow the one-child norm or have two children at the most, most families in Mewat have six members.

"The Meos do not indulge in malpractices like sex-determination and abortions for religious reasons and do not take to family planning measures for the same reason.

They believe that children are God's gift and any medical intervention to contain the family size is not right," explains Dr KS Rao, Mewat's Civil Surgeon.

Consequently, against an average fertility rate of 2.7, Mewat has a fertility rate of 4.6, meaning that, on an average, every woman between the age group of 15 - 45 years has 4.6 children. The National Rural Health Mission has asked the state governments to bring down the total fertility rate, fixing the target at 2.1 Also, the Meos tend to marry early.

Sources maintain that ordinarily a family will find a match for a girl by the time she turns 15. It is rare to find unmarried girls above the age of 15. However, things are gradually beginning to change with education.

Says 20-year-old Jamshed Khan, a farmer: "The girl is not seen as a burden because there is little exchange of gifts in the name of dowry during marriages. So, nobody feels the pinch."

With only 11 ultrasound machines in the district and no inclination among the people for sonography tests, the Health Department also finds it easy to keep a tab on such centres.

"Though things are beginning to change with the advent of education, I think, by the time it can show 'results' in the form of a fall in the sex ratio, we would already have evolved systems to curb the menace," Dr Rao says.

### **Ladakh's 'worst' sex ratio**

### **Ladakh's 'worst' sex ratio is a Census glitch! (The Tribune: 27.4.2011)**

### **Leh Council itself claims it has 1,030 girls against 1,000 boys**

Leh district of the state may have reported the worst sex ratio of 583 girls against 1000 boys in the country in the 2011 Census but it has successfully averted the dubious distinction of being called a "girl killer" region.

Twenty days after the shocking figures were declared, Ladakhis can finally hold their head high as Census officials admitted they had included the defence and para-military forces in the count. Now, the Census Department would conduct sample survey in Nubra and Leh to assess the figures afresh.

The Director Census -Jammu and Kashmir Dr Farooq Pakhtu admitted to The Tribune that the sex ratio was detected as worst in the country because defence and para-military personnel were also counted. As the high number of those are males, the sex ratio was directly affected.

There was further embarrassment in store for the Census Department. The Ladakh Autonomous Hill Development Council (LAHDC) has brandished its own figures based on survey of the Health department. Dismissing the 583/1000 sex ratio in Leh, Dr Sonam Wanchuk, Executive Councillor (Health), stated that the ratio was, in fact, in favour of girls, "We have as per our data 53, 475 females against 51,909 males.

Rigzin Spalbar, Chief Executive Councillor of the LAHDC, said they were contesting the figures ever since those were released on April 7 this year, "You go to any school and you would find more girls than boys."

The Ladakh Development Council (LDC), social activists and the state Tourism Minister Rigzin Zora, who belongs to Ladakh, were up in arms refusing to accept the Census figures calling it highly derogatory for the people where women have held a dominant position in society since ages.

When asked to comment on the dismal figure, Zora became furious saying the figures are wrong and claimed the number included defence personnel. "How could they report population of Ladakh as over 2.80 lakh as our figures of 2010 reported the population to be around 1.05 lakh?"

He said the picture went wrong because of the counting of the defence personnel and the Director, Census Operation, has agreed to it. He said another factor could be that a large number of females are studying in Jammu, Chandigarh or Delhi and may not have been counted.

He insisted that women in Ladakh enjoyed more rights and power than they did in other parts of the state, "We have women in all spheres of life, including Air Force, IAS, Army and other vocations where males generally dominate."

Dr Farooq Pakhtu said the sample survey would help in rectifying any anomaly. "Our brief was to count anyone who was present there for a considerable period of time," he said.

## **BPL survey**

### **BPL survey to record caste, religion details (The Times of India: 19.5.2011)**

#### **Sachar Figures Will Be Up For Verification**

By the end of the survey to identify the poor, India will have authoritative data to uphold or dismiss the long-held theory that social backwardness defines the economic status of an individual. It will also know the proportion of every religion among the poor, a break-up which will detail how many Muslims are there in the BPL category, as also Christians and Hindus.

The Centre is set to canvas “caste and religion” with questionnaires to find the poor in the upcoming BPL census, likely to start in July. While details would be sought from every household about its caste and religious identity, it would also have corresponding details of their economic situation.

In the final analysis, it would be known how many from backward castes and how many of which faith — Hindus, Muslims, Christians or Sikhs — live below the poverty line. The Muslim poverty figures given by the Sachar panel would be up for verification.

A key offshoot of the exercise would also be a clear break-up of OBCs in every religion and, the proportion of minorities in the OBC bloc which gets 27% job and education reservation.

It is a major departure from the UPA’s initial idea of getting a rough estimate on backwards through a survey when OBC satraps raised the demand for enumeration of OBCs. Now, the government feels that canvassing caste in BPL census would provide authentic data about the socio-economic status of backwards whose numbers would be identified for the first time since 1931.

## **Sex ratio**

### **Sex ratio: J&K, Maharashtra, Rajasthan new problem area: The Indian Express: 25.5.2011)**

MAHARASHTRA, Rajasthan and Jammu and Kashmir are emerging as the new hotspots of declining sex ratio in India, according to a recent study published in reputed journal The Lancet.

According to the study, about 95 per cent of districts in Maharashtra and Rajasthan have witnessed further decline in sex ratio, slipping towards the range of traditional hotspots. In Jammu and Kashmir, over 90 per cent districts have witnessed a sharp decline in sex ratio.

The good news is that traditional hotspots Punjab and Haryana have witnessed a jump in the sex ratio along with Gujarat. In fact, all the districts of Punjab have witnessed a jump in the child (0-6 years group) sex ratio, while in Haryana 16 out of 21 districts saw a jump in the child sex ratio during 2001-2011.

The big surprise, according to Prabhat Jha, the lead researcher of the study, "is Maharashtra, which has shown sharp decline in sex ratio". Barring Sangli and Chandrapur, 33 of 35 districts witnessed decline in sex ratio. The decline in these districts is much more than the national average of 1.4 per cent. Districts like Latur, Ahmadnagar, Nashik, Parbhani, Washim, Hingoli, Jalna, Buldana, Osamabad witnessed a massive decline. These districts figure in the top 30 districts that have witnessed sharp decline in sex ratio during last one decade.

Rajasthan has a similar story. Barring Ganganagar and Jaisalmer districts, 31 of 33 districts witnessed sharp decline in sex ratio. In fact, 29 of its districts have sex ratio decline sharper than the national average.

In Jammu and Kashmir, 20 out of 22 districts saw the same phenomenon over the past decade. Seven districts -Pulwama, Badgam, Anantnag, Kupwara, Baramulla, Rajouri and Srinagar -also are among those that witnessed the worst. In fact, five of these districts have witnessed an absolute decline of more than 100 in the sex ratio between 2001 and 2011. Only Leh and Kargil districts have shown a better performance.

## MATTER OF CONCERN



■ IN ALL, of the 563 districts whose comparative data for 2001 and 2011 census

is available, only 158 districts witnessed a jump in the sex ratio during last one decade.

■ The study, by Toronto-based research organisation Center for Global Health Research, says that of the remaining 405 districts, 278 showed sex ratio decline of more than the national average of 1.4 per cent.

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### Child sex ratio

**At 914, child sex ratio is the lowest since Independence (The Hindu: 1.4.2011)**

Minister Krishna Tirath stresses the need for proper implementation of women and child development schemes

Home Secretary G.K. Pillai (right) and Registrar-General and Census Commissioner of India C. Chandramouli release the provisional data of Census 2011 in New Delhi on Thursday.

NEW DELHI: The lowest-ever child sex ratio of 914 overshadowed an increase in the overall sex ratio, which is now 940 — the highest nationwide since Census 1971 and a shade lower than 1961 — as it reflects a continued preference for a male child.

As per the provisional data of Census 2011 released here on Thursday, while the overall sex ratio had gone up by seven points to touch 940, against 933 in Census 2001, the child sex ratio plummeted to 914 from 927.

Sex ratio is the number of women against 1,000 men, while child sex ratio is the number of girls against 1,000 boys in the age group of 0-6.

Minister of State (Independent Charge) for Women and Child Development Krishna Tirath was happy that the overall sex ratio had increased, but expressed concern at the decline in the child sex ratio.

Ms. Tirath said she would take up the issue with the 'problem' States and stressed the need for proper implementation of women and child development schemes.

The increasing child sex ratio that came as a shocker in the latest census figures shows 914 girls, and this is the lowest ever since Independence, slipping from 927 in 2001.

The increasing trend has been seen in Punjab, Haryana, Himachal Pradesh, Gujarat, Tamil Nadu, Mizoram and the Andaman and Nicobar Islands, while in all the remaining 27 States and Union Territories, the ratio has shown a decline.

It was the highest in Mizoram at 971, closely followed by Meghalaya (970), while at the rock bottom was Haryana with 830 and Punjab with 846.

At the district level, Lahul and Spiti in Himachal Pradesh had the highest sex ratio in the age group of 0-6 at 1,013, while in Twang (Arunachal Pradesh), it was 1,005. It was shamefully low in Jhajjar and Mahendragarh (Haryana) at 774 and 778.

The census figures indicate an increase in sex ratio in 29 States and Union Territories, with women outnumbering men in Kerala.

There were 1,084 women against 1,000 men in Kerala, followed by Puducherry where the figure was 1038.

Daman and Diu has a sex ratio of 618, next only to Dadra and Nagar Haveli at 775. Among the districts, Mahe (Puducherry) has the highest sex ratio of 1,176, followed by Almora in Uttarakhand, where it is 1,142. In Daman, it is the lowest at 533, and in Leh of Ladakh, it is 583.

The three major States of Jammu and Kashmir, Bihar and Gujarat have shown a decline in the sex ratio compared with the figures of Census 2001, while 29 States and Union Territories have shown an increase.

### **Child sex ratio**

**Haryana & Punjab fare worst on child sex ratio (The Tribune: 1.4.2011)**

**J&K sees steepest drop of 82 points; Mizoram, Meghalaya best**

India's obsession with the male child stood out in all its brazenness today, with the provisional data from Census 2011 scripting a shocking tale of missing daughters. The population in the age group 0-6 years stands at 158.8 million today — five million less than what we had in 2001.

### **CASE OF THE MISSING DAUGHTERS**

Clearly, the girl children are missing, with the country today posting a child sex ratio (defined as the number of girls per 1,000 boys in the 0-6 years group) of 914 as against 927 in 2001 — the lowest since 1961. The dip is visible even in the hitherto gender-neutral states and UTs, including Chhattisgarh, Meghalaya, Puducherry and Dadra and Nagar Haveli. All these states which led the child sex ratio table in 2001 have recorded declines this year.

Dadra and Nagar Haveli, which had the highest child sex ratio of 979 in 2001, has slipped down 55 points to 924; Chhattisgarh is down 11 points from 975 to 964; Meghalaya and Puducherry have lost three and two points to finish at a ratio of 970 and 965, respectively.

But the northern states continue to lead the pack with their low sex ratios and sex selective traditions. Haryana has this year overtaken Punjab as the worst state in the list with the lowest girl child ratio of 830, followed by Punjab at 846, Delhi at 866 and Chandigarh at 867.

Jammu and Kashmir, while entering the dubious club this year, has shocked the nation with an 82 point decline in the sex ratio for children. It is down to 859 from 941.

In the north, Punjab has shown the best improvement with a 48-point increase in the ratio (846 as against 798 in 2001). Haryana's performance is better with 11 points plus since 2001 while Chandigarh, with a gain of 22 points, has recorded a ratio of 867 as against 845 in 2001. Himachal has also risen up in the table improving 10 points to finish at 906.



But the bottommost districts on child sex ratio lie in Haryana — Jhajjar being the worst in India with a meager 774 girls per 1,000 boys and Mahendragarh following it at 778. In 2001, Punjab's Fatehgarh Sahib was the worst of the lot.

Among the gender sensitive states Mizoram tops the list with its ratio of 971 followed by Meghalaya with 970. Himachal's Lahaul Spiti is the most girl child friendly district in India with its highest child sex ratio of 1,013, followed by Tawang in Arunachal, which has 1,005 girls for every 1,000 boys.

But most of the other states, including Delhi, which is down two points from 2001 to register at 866, have disappointed. Madhya Pradesh is down from 932 to 912; Daman and Diu from 926 to 909; UP from 916 to 899; Maharashtra from 913 to 883; Rajasthan from 909 to 883 and Uttarakhand by 22 points from 908 to 886.

### **Child sex ratio**

#### **Child sex ratio down to 914 (Business Standard: 1.4.2011)**

EVENAs the country's population growth rate decreased in the previous decade, the Census for 2011 paints a grim future for the women, with gender imbalance among children showing the worst fall since the Independence.

The sex ratio — the number of females per 1,000 males — among children up to six years fell by 13 points to 914, compared to 927 in the previous census 10 years ago. This is not all. The decline in the child sex ratio has been widespread with the eastern states and the Kashmir valley matching the northern states in the reduced number of girl children. The biggest drop has been in Jammu and Kashmir where the sex ratio came down by 82 points from 941 in 2001 to 859 in 2011.

Union Health Minister Ghulam Nabi Azad, who belongs to the state, is supposed to implement the Pre-Natal Sex Determination (PNDT) Act, which requires action against doctors and sex selection centres encouraging female foeticide.

In Rajasthan, there has been adrop of 26 points from 909 in 2001 to 883 in 2011. Andhra Pradesh witnessed a 18-point drop from 961 to 943, while in West Bengal, the ratio dropped by 10 points to 950.

Haryana and Punjab, after decades of failure in checking a drastically falling sex ratio, have shown some improvement. The ratio in Haryana has slightly improved from 819 to 830 in the last 10 years, while in Punjab it has improved from 798 to 846. There is a marginal improvement in Tamil Nadu (from 942 to 946) and a marginal decline in Kerala from 960 to 959.

Activists and social scientists have expressed alarm at the falling trend of girl population, saying it has not been reversed.

Ritu Priya Mehrotra, professor, Centre of Social Medicine and Community Health, Jawaharlal Nehru University, said the news was alarming.

She also noted that while the world counts the number of men in a population of 1,000 to determine the sex ratio, India looks at the number of women per 1,000 as if it assumes the numbers to be less.

Sabu George, a public health activist who has been campaigning for the rights of the unborn girl child for the last two decades and whose plea in the Supreme Court was instrumental in changes to the PNDT Act, said the result was not surprising. "The fall has been bad all over with the eastern states like West Bengal, Bihar and Orissa now matching steps with the north. The drop in the Valley has been steep, too. All this is primarily because there is a decline in the number of children born and also because of female foeticide," George says.

All the states are showing this trend because no state is taking any action to stop female foeticide, he says. Where some action has been taken there has been improvement, he points out, citing Haryana and Punjab as examples.

George says the 10-point drop in West Bengal is as good as a 30-point drop in Haryana, because the eastern states have been culturally most protective of girls. If they start eliminating girls then there is a task at hand, he says.

Sex ratio of total population and child population in the 0-6 and 7+age groups in the 2001 and 2011 census

India/States/Union Sex ratio (females per 1,000 males) Territory Total Child Population  
population population aged 7 and in the age above group 0-6 2001 2011 2001 2011 2001  
2011

INDIA 933 940 927 914 934 944 Jammu & Kashmir 892 883 941 859 884 887 Himachal  
Pradesh 968 974 896 906 980 983 Punjab 876 893 798 846 888 899 Chandigarh 777 818  
845 867 767 812 Uttarakhand 962 963 908 886 973 975 Haryana 861 877 819 830 869

885 Delhi 821 866 868 866 813 866 Rajasthan 921 926 909 883 923 935 Uttar Pradesh  
 898 908 916 899 894 910 Bihar 919 916 942 933 914 912 Sikkim 875 889 963 944 861  
 883 Arunachal Pradesh 893 920 964 960 878 913 Nagaland 900 931 964 944 890 929  
 Manipur 974 987 957 934 977 995 Mizoram 935 975 964 971 930 976 Tripura 948 961  
 966 953 945 962 Meghalaya 972 986 973 970 971 989 Assam 935 954 965 957 929 953  
 West Bengal 934 947 960 950 929 946 Jharkhand 941 947 965 943 935 948 Orissa 972  
 978 953 934 976 985 Chhattisgarh 989 991 975 964 992 995 Madhya Pradesh 919 930  
 932 912 916 933 Gujarat 920 918 883 886 927 923 Daman & Diu 710 618 926 909 682  
 589 Dadra & Nagar Haveli 812 775 979 924 779 752 Maharashtra 922 925 913 883 924  
 931 Andhra Pradesh 978 992 961 943 981 997 Karnataka 965 968 946 943 968 971 Goa  
 961 968 938 920 964 973 Lakshadweep 948 946 959 908 946 951 Kerala 1058 1084 960  
 959 1,072 1,099 Tamil Nadu 987 995 942 946 993 1,000 Puducherry 1001 1038 967 965  
 1,006 1,047 Andaman & Nicobar 846 878 957 966 831 868 Islands

Source: Government data

## **Child sex ratio**

### **Child sex ratio hits new low (Hindustan Times: 1.4.2011)**

MIXED BAG though overall sex ratio has risen to 940, the figure of 914 girl children per 1,000 boys is the lowest since Independence

Census 2011 had delivered a mixed bag on sex ratio.

Female girl child is still unwanted and their numbers have fallen to all-time low since Independence, but overall female sex ratio has improved, census data released on Thursday showed.

India's sex ratio has increased from 933 in 2001 to 940 in 2011 census. This means of the total population of 1.21 crore, 51.54% are males and 48.46% are females. Kerala has the highest sex ratio of 1,084 whereas the lowest is in Daman and Diu of 618 females for 1,000 males.

Of the eight states in red on female sex ratio in 2001, only four -J&K, Punjab, Haryana and Sikkim-remain in that net now.

Better access to health facilities for women is said to have helped female sex ratio, especially in the North-East with dramatic improvement in number of women in Arunachal, Nagaland, Manipur and Mizoram.

For the girl child, the apathy continues. Child sex ratio in 2011 stands at 914 girls, down from 927 girls for 1,000 boys in 2001.

Total population of children less than six years of age declined with total population of 158.7 million in 2011 as compared to 163.8 million in 2001 even though India's population witnessed an increase of over 18%.

“The fall in the girl child population is a matter of concern as population (0-6) 2001-2011 registered minus 3.80% growth with minus 2.42 for males and minus 3.80 for females,” said women and child development minister Krishna Tirath.

What has enthused policy planners is that sex ratio has improved in Punjab, Haryana, Delhi, Gujarat and Tamil Nadu, which were the worst states on this parameter in 2001 census.

However, Punjab and Haryana still have the worst child sex ratios in India. The grim news is that rest of the 27 states also show a decline in population of girl child. “Measures of the last 40 years had no impact. There is a need to review the policies...” said home secretary GK Pillai.

The ban on use of ultrasound for sex determination of a child appears to have been defeated by availability of techniques on the internet. “Many states still don't have apparatus to enforce the Pre-Natal Diagnostic Techniques Act of 1994,” said Kailash Sathyarathi founder of Bachpan Bachao Andolan.

### **Child sex ratio**

#### **The educated killers (The Tribune: 7.4.2011)**

#### **Daughters still unwanted in Haryana**

Haryana and Punjab have shown a dismal record of child sex ratio. Now Jammu and Kashmir too has gained notoriety. The spread of education or prosperity has nothing to do with ethical living or respect for the rule of law. In fact, both literacy and prosperity contribute to acquiring influence over official machinery and means to get rid of unborn daughters. The conviction rate for female foeticide and infanticide is abysmally low and the better-off often get away with murder. Greed knows no limits. It is a fact of life that a

daughter is still seen as an economic burden. What can be more shocking than a judge of the Supreme Court listing her daughter as a liability.

Haryana's poor child sex ratio record, therefore, comes as no surprise. Despite achieving a commendable economic growth rate, the state is weighed down by its social backwardness. Khap panchayats feel no moral compunction or fear of the law in ordering the killing of young lovers whose marriage they do not approve of. In such a state no one can argue that education will improve things. The latest census figures have presented an uncomfortable trend: daughters are particularly unwanted in areas with a high literacy rate. The district of Mewat, which is among the most backward – economically and educationally – has earned the highest sex ratio of 903 in the 0-6 age group in the state.

The dismal social scenario apart, Haryana's population, like its prosperity, is growing unevenly. There are pockets of high growth like areas close to Delhi and along the G.T.Road. Gurgaon is choking with population growth. Unless the trend is reversed, population pressure on limited amenities would keep rising. Those from less developed villages and towns will migrate to fast-growing cities. This will further widen economic disparities, resulting in greater social unrest and more agitations and road/rail blockades. The state's sleepy political leadership is yet to wake up to such realities. Over the years it has failed to manage social tensions and correct economic growth imbalance.

# **Poverty**

## **Poverty**

### **India Faces Poverty Threat (The Asian Age: 27.4.2011)**

#### **ADB WARNS ABOUT RISE IN POVERTY DUE TO HIGH FOOD PRICES**

High prices leave us all feeling a little poorer, but the high food prices of recent months may have pushed millions of Indians into poverty again. The Asian Development bank (ADB) says that a 10 per cent increase in food prices can send 30 million Indians -almost three fourths of them from rural areas -into poverty.

"A 10 per cent rise in domestic food prices in developing Asia (home to 3.3 billion people) could push an additional 64.4 million into poverty, or lead to a 1.9 percentage point increase in poverty incidence based on the \$1.25-a-day poverty line," said the 'Global Food Price Inflation and Developing Asia' report by ADB.

Domestic food inflation in many regional economies in Asia has averaged 10 per cent in early 2011. In India food inflation was at 8.3 per cent for the week ending on 2 April. Economists don't see inflation falling to 5 per cent in the next few months.

Food inflation in India had shot up to 17.05 per cent for the week ended on January 22, due to high onion prices. The report estimates that in case food prices rise by 20 per cent in India the number of poor in rural area could rise by 45.6 million and in the urban by 13.36 million. It says that inflation erodes the purchasing power of households, especially those with low incomes, and can undermine poverty reduction development gains achieved in the last decade.

"Many who were poor before the price rise may now be on the verge of malnutrition, and those who were barely above the poverty line may have slipped back into poverty.

In this context, it is important to examine the impact of rising food prices on poverty," the report said.

In many of the poorer households, up to 60 per cent of the income is spent on purchasing food, and high food prices may result in reduced consumption or consumption of lower quality foodstuffs. Demand for food from emerging markets continues to rise as their economies continue to grow. The rapidly dwindling world food stock position will not support such demand over the long term unless sustainable food production and supply-augmenting measures are implemented on a war footing, says ADB. The report indicated that India is trying to fight food inflation by tightening monetary policies such actions are unlikely to succeed.

## **Pregnancy and obstetrics**

### **Pregnancy**

#### **Pregnancy after age 35 may cause complications (The Tribune: 13.4.2011)**

The best time for reproduction is in the younger age. However, an increasing number of women are getting pregnant after 35 years due to various reasons. Besides the age factor, smoking, drinking, drug intake or birth control measures may limit one's ability to become pregnant. Why is pregnancy delayed till after 35?

1 Many women delay childbirth to concentrate on professional education or building up a career. They find it difficult to take time out for marriage and children.

1 Ensuring that they are financially secure.

1 Misplaced over-confidence in infertility treatment and prenatal tests.

It is a known fact that 35 is a turning point for an increase in infertility, miscarriage, premature delivery, stillbirth, placenta previa, birth defects, high blood pressure, diabetes as well as complications during labour in an expectant mother. As fertility levels fall, the odds of having twins also increase. Since chromosomal abnormalities are the most common reason for miscarriage, the risk of miscarriage also increases with age.

It has been suggested that higher rates of stillbirth for women over 35 could be attributable in some part to chromosomal abnormalities. Also an increased incidence of induction of labour, instrumental delivery and delivery by caesarean section has been found for women over 35. According to a new research, females making attempts to have a baby after 35 are six times more likely to face infertility problems as compared to those 10 years younger. Delay entails grave medical problems for both the mother and the infant. Men's fertility also drops speedily from 25 onwards.



The main risks:

The risk of miscarriage increases.

Fertility levels do start to drop drastically after 35.

Health problems for a woman after 35 include gestational diabetes, hypertension as well as endometriosis and fibroids.

The need for caesarian section increases.

There is an increased risk of down syndrome. An aged woman has about nine times higher chance of having a baby with a chromosomal defect than a young woman.

What to do if pregnancy is after 35?

1 Take a daily vitamin supplement that contains folic acid (a vitamin that reduces the chance of some birth defects), calcium, iodine and iron, but not a high content of vitamin A.

1 Eat a high-fiber, well-balanced diet, rich in fruits and vegetables.

1 Stay physically active.

1 Maintain a healthy bodyweight, but do not indulge in dieting to lose weight during pregnancy.

1 Work closely with your doctor.

You may need extra care during pregnancy if you have the following: a sexually transmitted disease (STD), diabetes, high blood pressure, or other chronic health problems, especially heart or lung disease.

Complete your family when still younger than 35. But there is no need to panic. Many women over 35 can have normal deliveries.

Adolescent pregnancy is also unsafe.

Similar to the risks involved in the case of a mother in her 35 plus, a teenager pregnancy can cause extra health risks to the mother and the baby. The body and reproductive organs of the teenagers are not developed enough to bear the pregnancy. They have a greater risk of a pregnancy-related high blood pressure and other complications. The baby has the risks of low birth weight and premature birth. Therefore, it is better for the teenagers to apply some preventive measures and avoid pregnancy.

The writer is a Chandigarh-based senior gynecologist.

### **Over 6 lakh stillbirths**

#### **Over 6 lakh stillbirths in India every year: Report (Hindustan Times: 15.4.2011)**

ALARMING Of 2.7 crore babies born annually, 22 of 1,000 are stillborn

Nearly 80% of the pregnant women referred for childbirth to New Delhi's Safdarjung Hospital have not consulted any doctor during their pregnancy.

This lack of obstetric care, which should be provided to pregnant woman, is one of the prime causes of stillbirths.

According to the research data revealed during the launch of British medical journal Lancet's stillbirth series on Thursday, on an average, six lakh stillbirths take place in India every year. Of the 2.7 crore babies that are born in the country every year, there are 22 stillbirths per 1,000 births.

However, the research for the Lancet series states that obstetric care provided to pregnant women can reduce the number of stillbirths by 28% and is also proposed as one of the top 10 preventive measures.

Nigeria and Pakistan have the highest stillbirth rates of 42 and 46 per 1,000 births, respectively and Finland and Singapore have two per 1,000 births. "Eighty per cent is a huge number, and with the absence of any medical history, it becomes difficult to ascertain the actual cause of death that most women are keen to know," said a senior gynaecologist at Safdarjung Hospital, requesting anonymity.

Experts at Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, say that most number of stillbirths happen during intrapartum -the period between labour and delivery.

PGIMER, Chandigarh, routinely conducts post-mortem of the dead babies to determine the cause of death. "It is a practice that we have followed since long, but not all hospitals can replicate the habit for lack of adequate facilities. Congenital defect is the lowest

common cause of death,” said Dr Rajesh Kumar, head, PGIMER School of Public Health, Chandigarh.

Though the gynaecology department of some of the big public hospitals such as Safdarjung, Ram Manohar Lohia, etc would want autopsies to be conducted to learn the cause of death, they are unable to do so due to technical reasons.

### **India's stillbirth figures 3 times mo**

### **India's stillbirth figures 3 times more: Experts (The Times of India: 15.4.2011)**

New Delhi: Bihar did not record a single stillbirth in 2008 — death of an unborn child in mother's womb during the last trimester of pregnancy (after 28 weeks' gestation). Even before you look in disbelief, the truth is that India tremendously underreports stillbirth figures.

According to the sample registration survey in 2008, conducted by the registrar general's office, the country recorded eight stillbirths per 1,000 births — a highly improbable figure considering India's abysmally high maternal and child mortality rate.

The survey says, Karnataka and Chhattisgarh have the highest number of stillbirths — 15 per 1,000 births, followed by Orissa (13), Punjab, Himachal Pradesh and Maharashtra (11), Rajasthan and Andhra Pradesh 10. Delhi, Kerala, Madhya Pradesh jointly recorded seven stillbirths per 1,000 births. Professor Rajesh Kumar, head of department of community medicine at PGI, Chandigarh, said, “It is easily three times more than what is recorded. India does not seriously record still birth rates with surveyors more interested in jotting down how many children died after being born. Stillbirth is equally important. Around 50% of deaths occur during 6-8 hours of labour pain.”

According to scientists, who have published a series of findings on stillbirth in the British medical journal Lancet on Wednesday, “by 2020, 90% of all stillbirths will occur in south Asia and so it's important that India documents it more seriously.” Dr Monir Islam, WHO South-East Asia region's director on family health, added, “Stillbirth is still a taboo in India and not given enough importance. Affected mothers are often subjected to stigma in communities that blame her stillbirth on her own sins, evil spirits and destiny.”

Dr Flavia Bustreo, WHO's assistant director general for family and community health, added, “Many stillbirths are invisible because they go unrecorded. Stillbirths need to be part of the maternal, newborn and child health agenda.”

## **Fibroids**

### **Now, fibroids can be removed without scalpel (World Newspapers: 16.5.2011)**

Women suffering from uterine fibroids, a common gynaecological problem, need not go through painful surgery any more.

Recently, Jaslok Hospital introduced GE Magnetic Resonance-guided Focused Ultrasound Surgery (MRgFUS) — which treats uterine fibroids using high intensity ultrasound waves to non-invasively destroy benign tumours of the uterus.

The procedure involves no hospitalisation or anaesthesia. “The MRgFUS treatment has absolutely no side-effects and the patient can return to work the following day. It is very cost-effective — alternative to hysterectomy or removal of uterus. It removes fibroids without damaging surrounding tissues. Thus fertility, conception and ability to bear a child are not affected,” said Dr Rishma Dhillon Pai, consultant gynaecologist, Jaslok Hospital.

In MrgFUS treatment, fine beam of ultrasound waves are focussed on the fibroid, raising the temperature within it such that the blood flow to it is restricted, causing the fibroids to eventually ‘burn’.

Presently, the most common treatment for fibroids is hysterectomy, a surgical procedure. The package is usually priced at up to Rs1.5 lakh, while the new procedure is likely to cost half the amount.

Most fibroids are non-cancerous and symptoms include heavy menses, painful sexual intercourse, backache, constipation or frequent urination.

However, the MrgFUS has its own limitations. Dr Rakesh Sinha, president of Indian Association of Gynaecological Endoscopists, said, “MrgFUS successfully treats a single fibroid of length not more than 10cm. The fibroid should be in the convenient location for the ultrasound waves to reach and the patient should not have undergone any previous surgery. It is also difficult to get fibroids for biopsy. MrgFUS is good for unmarried women and patients who are unfit for surgery.”

## **Pregnancy**

### **'Eating for two' in pregnancy linked to risk of obesity later in life (New Kerala: 19.5.2011)**

A new study has warned that 'eating for two' during pregnancy could leave women saddled with the extra pounds for life, putting them at higher risk of obesity and health problems such as high blood pressure.

Although weight gain during pregnancy is natural as the baby develops, researchers from the Bristol University suggested that being fat puts baby and mother at risk, reports the Daily Mail.

The findings add to mounting evidence about the harmful effects of being overweight during pregnancy.

The long-term Bristol study found that those who gained more than the recommended amount of weight during pregnancy were three times as likely to be overweight, obese or become 'apple-shaped' 16 years later.

But women who began pregnancy at a healthy weight and who gained only a little weight were much less likely to go on to become fat and develop related health problems.

Complications suffered by obese women in pregnancy range from diabetes to life-threatening pre-eclampsia, while babies born to fat women are at greater risk of diabetes and obesity.

Study leader Dr Abigail Fraser said women should avoid over-eating, particularly in the first six months when extra weight was laid down as fat before the baby really needed it for growth.

The most important take-home message for women is to attain a healthy weight before conceiving, she added.

'You don't need to eat for two in pregnancy because this will cause you problems in later life, and is also linked to a higher risk of your baby becoming obese in childhood,' said Fraser.

The study will be published in the American Journal of Clinical Nutrition.

## **Free medicines - pregnant women**

### **Free medicines for pregnant women in govt hospitals (The Tribune: 26.5.2011)**

In a major bid to reduce maternal and infant mortality in India, the Centre has decided to offer free supplementary diet, diagnostic facilities, and drugs to every pregnant mother visiting a government facility anywhere in the country.

To be formally launched by UPA chairperson Sonia Gandhi in the Mewat region of Haryana on June 1, the scheme is expected to help India arrest the high maternal mortality rate (MMR) and infant mortality rate (IMR) of 264 per one lakh live births and 59 per 1,000 live births. India's MMR is higher than that of even Sri Lanka, which has managed to reduce the same to 39.

Faced with the challenge of faltering on the Millennium Development Goal of reducing maternal mortality rate by three quarters between 1990 and 2015, the Ministry of Health has now decided to offer free consumables to pregnant mothers at all government facilities besides free X-rays and other diagnostic facilities along with a special supplementary diet for expecting mothers.

"This would be in addition to whatever the women get under the National Rural Health Mission," Health Minister Ghulam Nabi Azad said here today. The most important decision taken by the Centre is the offer of free two-way transport to the pregnant women, who, until now, were only being given free transport for admission to the hospital. They were required to go back on their own and more often than not they would leave the hospital without fully recuperating, thus aiding to the MMR.

"Now the mother would be under our supervision till she is declared medically fit to leave. Free transport would further our efforts to reduce MMR," Azad said. The move would also help India arrest IMR, he added. He was speaking about his ministry's achievements over two years. As regards MMR, India is currently ranked 116th among 171 count

## **Welfare plan - for pregnant women**

### **Sonia to launch welfare plan for pregnant women (The Tribune: 27.5.2011)**

AICC president Sonia Gandhi will launch the national programme for welfare of pregnant women and new-born children from Mandi Khera village in Mewat district on June 1. Announcing this here today Haryana Chief Minister Bhupinder Singh Hooda said the programme was being implemented under the National Rural Health Mission.

He said under the programme, being launched at the national level, all pregnant women would be provided free transport to the hospital and back to their homes with the new-born child. All treatment, including operation, medicines, consumables and meals, would be provided free of cost. Claiming that the programme was already functional in Haryana, Hooda said the Union Government had adopted this programme after its success in the state.

Hooda said there was no dispute with Punjab on the naming of the proposed international airport at Chandigarh. He said it had been decided at a meeting attended by the Chief Ministers of Punjab and

Hooda said the state government was pressing for an early hearing on the SYL issue. Answering a query on the Punjab Government's protest on the strengthening of the bund at Guhla-Cheeka in Kaithal district, Hooda said the protest was baseless. "Such protests are lodged near the elections only," he quipped.

Asked about INLD's former MLA Balbir Singh, alias Bali Pahalwan, who is an accused in a murder case at Kalanaur, Hooda said law was taking its own course. "I can say that no culprit would be spared nor any innocent would be held", he added.

## **Sleep**

### **Sleep**

#### **Too little or too much sleep linked with cognitive decline (New Kerala: 2.5.2011)**

Middle-aged adults who sleep too less or too much may be more likely to suffer cognitive decline, a study suggests.

According to the study, less than six hours of sleep each night is considered too little and more than eight hours as too much for middle-aged adults.

The study, conducted by researchers at University College London Medical School, was published Sunday in the American medical journal *Sleep*, Xinhua reported.

The researchers conducted the study in two periods -- the 1997-1999 period and the 2003-2004 period. The participants were asked how many hours they slept on an average week night, and were asked the same question in 2003-2004.

The researchers compared those who reported changes in their sleep patterns with people whose sleep duration stayed the same over the course of the study.

In the follow-up, each individual was given a battery of standard tests to assess his or her memory, reasoning, vocabulary, global cognitive status and verbal fluency.

The findings show that women who slept seven hours per night had the highest score for every cognitive measure, followed by those who had six hours of sleep. For men, cognitive function was similar for those who reported sleeping six, seven or eight hours.

However, less than six hours of sleep -- or more than eight hours -- were associated with lower scores.

"Sleep provides the body with its daily need for physiological restitution and recovery," explained Jane Ferrie, a senior research fellow in the department of epidemiology and public health at the school. "While seven hours a night appears to be optimal for the majority of human beings, many people can function perfectly well on regular sleep of less or more hours."



However, since most research has focused on the effects of sleep deprivation on biological systems, it is not yet fully understood why seven hours is optimal -- or why long sleeping appears to be detrimental, Ferrie said.

"Chronic short sleep produces hormones and chemicals in the body which increase the risk of developing heart disease and strokes, and other conditions like high blood pressure and cholesterol, diabetes and obesity," she added.

## **Sleep**

### **Too much & too little sleep ages your brain by 7 years (The Times of India: 3.5.2011)**

London: Busy and lazy people, please note — sleeping too little or for too long ages the brain by up to seven years, says a new study. Researchers in Britain have found that getting less or more than six to eight hours of sleep every night can trigger a person's mental and physical decline, and ultimately lead to an early death.

Seven hours of shut-eye will keep the brain in peak condition, according to the researchers at the University of London Medical School, who also claim that a lack of sleep affects reasoning and vocabulary.

In their study, the researchers found "the magnitude of the effect is equivalent to four to seven years of ageing", the Daily Express reported. Following a study of sleep patterns, they said changes over a five-year period in late middle-age affect the function of the brain. Between 7 and 8% of those who slept longer than the recommended amount did worse in cognitive tests with the exception of short-term verbal memory.

But a quarter of women and one in six men who failed to get a good night's sleep suffered a decrease in reasoning, vocabulary and cognitive tests, the findings revealed.

Lead researcher Jane Ferrie said: "The main result to come out of our study was that adverse changes in sleep duration appear to be associated with poorer cognitive function in later middle-age. The detrimental effects of too much, too little sleep on various aspects of health have begun to receive more attention.

“Given that our 24/7 society increasingly impinges on the lives of many people, it is important to consider what effects changes in sleep duration may have on health.” PTI

## **Sleeping**

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Following a study of sleep patterns, they said changes over a five-year period in late middle-age affect the function of the brain.

Between seven and eight per cent of those who slept

longer than recommended amount did worse in cognitive tests with the exception of short-term verbal memory. But a quarter of women and one in six men who failed to get a good’s night sleep suffered a decrease in reasoning, vocabulary and cognitive tests, the findings revealed.

Lead researcher Jane Ferrie said: “The main result to come out of our study was that adverse changes in sleep duration appear to be associated with poorer cognitive function in later middle-age.”

“The detrimental effects of too much, too little and poor quality sleep on various aspects of health have begun to receive more attention.

Given that our 24/7 society increasingly impinges on the lives of many people, it is important to consider what effects changes in sleep duration may have on health and wellbeing in the long-term.” However, the study found that the ideal amount of sleep duration of seven hours per night resulted in the highest score for every cognitive test.

## **Sleep!**

### **Grandma was right — babies do wake up taller after a sleep! (The Tribune: 4.5.2011)**

Scientists have finally confirmed what our grandmas have been preaching over the years — babies do really wake up taller right after their sleep. Findings from the first study of its kind measuring the link between daily growth and sleep confirm that infants gain height during sleep, depending on the total hours slept and the number of sleep bouts. “Little is known about the biology of growth spurts. Our data opens the window to further scientific study of the mechanisms and pathways that underlie saltatory growth,” said lead author Michelle Lampl, from the Department of Anthropology at Emory University in Atlanta, Georgia. Researchers have found that longer sleep bouts in both girls and boys predicted an increase in weight and body-fat composition tied to an increase in length.

## **Child’s sleep:**

### **Parents' marital strife affects their child's sleep: Study (World Newspapers: 12.5.2011)**

A new study has found that couples having marital difficulties are more likely to have infants who are losing sleep, which may have a continuing impact on them.

Specifically, researchers found that marital instability when the child was ninth months old was related to child sleep problems at 18 months, including difficulties falling asleep and staying asleep, according to Anne Mannering, an Oregon State University faculty member.

"If sleep problems persist, this can correlate with problems in school, inattention and behavioural issues," Mannering said.

"Parents should be aware that stress in the marriage can potentially impact their child even at a very young age."

Researchers interviewed more than 350 families with adopted infants in order to eliminate the possibility that these shared genes influence the relationship between marital instability and child sleep problems.

"Our findings suggest that the association between marital instability and children's subsequent sleep problems emerges earlier in development than has been demonstrated previously," she said.

The study has been published in the journal Child Development.

## **Sleep Deprivation**

### **Roots of Memory Impairment Resulting from Sleep Deprivation Identified (Science Daily: 18.5.2011)**

From high-school students to surgeons, anyone who has pulled an all-nighter knows there is a price to be paid the next day: trouble focusing, a fuzzy memory and other cognitive impairments. Now, researchers at Penn have found the part of the brain and the neurochemical basis for sleep deprivation's effects on memory.

Ted Abel, a professor of biology in Penn's School of Arts and Sciences and director of the University's interdisciplinary Biological Basis of Behavior program, led the research team. His partners included Cédric Florian, a postdoctoral fellow in biology, and Christopher Vecsey, a neuroscience graduate student, as well as researchers from the Massachusetts Institute of Technology and Tufts University.

Their research was published in The Journal of Neuroscience.

Abel's group aimed to better understand the role of the nucleoside adenosine in the hippocampus, the part of the brain associated with memory function.

"For a long time, researchers have known that sleep deprivation results in increased levels of adenosine in the brain, and has this effect from fruit flies to mice to humans." Abel said. "There is accumulating evidence that this adenosine is really the source of a number of the deficits and impact of sleep deprivation, including memory loss and attention deficits. One thing that underscores that evidence is that caffeine is a drug that blocks the effects of adenosine, so we sometimes refer to this as 'the Starbucks experiment.'"

Abel's research actually involved two parallel experiments on sleep-deprived mice, designed to test adenosine's involvement in memory impairment in different ways.

One experiment involved genetically engineered mice. These mice were missing a gene involved in the production of glial transmitters, chemicals signals that originate from glia, the brain cells that support the function of neurons. Without these gliatransmitters, the engineered mice could not produce the adenosine the researchers believed might cause the cognitive effects associated sleep deprivation.

The other experiment involved a pharmacological approach. The researchers grafted a pump into the brains of mice that hadn't been genetically engineered; the pump delivered a drug that blocked a particular adenosine receptor in the hippocampus. If the receptor was indeed involved in memory impairment, sleep-deprived mice would behave as if the additional adenosine in their brains was not there.

To see whether these mice showed the effects of sleep deprivation, the researchers used an object recognition test. On the first day, mice were placed in a box with two objects and were allowed to explore them while being videotaped. That night, the researchers woke some of the mice halfway through their normal 12-hour sleep schedule.

On the second day, the mice were placed back in the box, where one of the two objects had been moved, and were once again videotaped as they explored to see how they reacted to the change.

"Mice would normally explore that moved object more than other objects, but, with sleep deprivation, they don't," Abel said. "They literally don't know where things are around them."

Both sets of treated mice explored the moved object as if they had received a full night's sleep.

"These mice don't realize they're sleep-deprived," Abel said.

Abel and his colleagues also examined the hippocampi of the mice, using electrical current to measure their synaptic plasticity, or how strong and resilient their memory-forming synapses were. The pharmacologically and genetically protected mice showed greater synaptic plasticity after being sleep deprived than the untreated group.

Combined, the two experiments cover both halves of the chemical pathway involved in sleep deprivation. The genetic engineering experiment shows where the adenosine comes from: glia's release of adenosine triphosphate, or ATP, the chemical by which cells transfer energy to one another. And the pharmacological experiment shows where the adenosine goes: the A1 receptor in the hippocampus.

The knowledge that interrupting the pathway at either end results in mice that show no memory impairments is a major step forward in understanding how to manage those impairments in humans.

"To be able to reverse a particular aspect of sleep-deprivation, such as its effect on memory storage, we really want to understand the molecular pathways and targets," Abel said. "Here, we've identified the molecule, the cellular circuit and the brain region by which sleep deprivation affects memory storage."

Such treatments would be especially enticing, given how sensitive the brain is to sleep deprivation's effects.

"Our sleep deprivation experiments are the equivalent of losing half of a night sleep for a single night," Abel said. "Most of us would think that's pretty minor, but it shows just how critical the need for sleep is for things like cognition."

In addition to Abel, Florian and Vescey, the research was conducted by Michael M. Halassa of the Department of Psychiatry at Massachusetts General Hospital and the Department of Brain and Cognitive Science at MIT, as well as Philip G. Haydon, of the Department of Neuroscience at the Tufts University School of Medicine.

The research was supported by the National Institutes of Health.

## **Smoking**

### **Tobacco**

#### **After cigarettes, health ministry targets other tobacco (New Kerala; 5.4.2011)**

After coming down on smoking, the health ministry is planning measures to curb the use of chewing tobacco - the most widespread form of tobacco use in India - and will soon call a meeting of state ministers to discuss the issue, an official said Monday.

Talking to reporters after a meeting on what he called "smokeless tobacco" - that is chewing tobacco, gutka, paan masala etc. - the health ministry's Additional Secretary Keshav Desiraju said that consultations will be carried out to formulate policies to inform the masses on the ill-effects of tobacco.

"Most of our work so far has focused on smoking. The users of smokeless tobacco are usually from the weakest sections of the society, and different approach is needed to reach them," he said.

"We will discuss it with all state governments. Smokeless tobacco is being increasingly used in university campuses and urban areas," he said.

According to Public Health Foundation of India president K. Srinath Reddy, the use of smokeless tobacco use is increasing among youth and women.

"There is a social stigma related to use of cigarettes by women and youth, so they find it convenient to use smokeless tobacco. It also comes in small pouches, which can be easily hidden. Being economic is the factor which makes it popular among the economically weaker sections," Reddy said.

According to the Global Adult Tobacco Survey, out of 35 percent adults using tobacco in India, 26 percent adults use chewing tobacco in some form or another. India has world's highest incidents of mouth Cancer, according to a study by British Journal of Cancer.

Studies have shown that 12.5 percent of all teenagers use tobacco in some form or another. It has been found responsible for 50 percent of all cancers in men and 25 percent

of all cancers in women, besides being responsible for 90 percent of all oral cancers, according to a study by the Indian Council of Medical Research (ICMR).

India has the world's highest incidence of mouth cancer in the world according to a study by the British Journal of Cancer.

## **Smoking**

### **Smoking doesn't boost breast cancer risk in obese postmenopausal women (World Newspapers: 5.4.2011)**

A new study has suggested that there is a significant link between smoking and breast cancer risk in postmenopausal women, but it depends on their body weight.

A significant association between smoking and breast cancer risk was observed in non-obese women, but not in obese women.

The results from an analysis of the Women's Health Initiative observational study were similar regardless of whether obesity was defined by body mass index (BMI) or waist circumference.

Juhua Luo, assistant professor in the department of community medicine at West Virginia University, and colleagues examined the relationship between obesity, smoking and breast cancer risk.

"We found an association between smoking and breast cancer risk among non-obese women, which is understandable because tobacco is a known carcinogen," she said.

"However, we did not find the same association between smoking and breast cancer risk among obese women. This result was surprising."

The study included 76,628 women aged 50 to 79 years old who had no previous history of cancer. Participants were part of the Women's Health Initiative observational study. They were recruited between 1993 and 1998 at 40 US centres and were followed until 2009.

Obesity was measured by BMI and by waist circumference, and the results were adjusted for other breast cancer risk factors.



The study results indicated that non-obese women with a BMI less than 30 who had a history of smoking had a significantly higher risk for breast cancer. Those who smoked from 10 to 29 years had a 16 percent excess risk; those with a 30- to 49-year history of smoking had a 25 percent excess risk; and those with 50 or more years of smoking had a 62 percent excess risk. However, this same association was not found among women with a BMI over 30.

The researchers then examined the data according to waist circumference to determine if the type of fat distribution - general compared with abdominal obesity - affected the results. When obesity status was defined by a waist circumference greater than 88 cm, similar results were found.

Despite the study's finding that smoking did not affect breast cancer risk among obese postmenopausal women, Luo emphasized that she does not want to give the public the wrong message. Previous research has established that obesity alone is a risk factor for postmenopausal breast cancer.

"Smoking and obesity are among the leading causes of morbidity and mortality, both of which have substantial consequences on health," she said.

"This is only the first study to examine the interaction between smoking, obesity and breast cancer risk. The main conclusion from this research is that more studies are needed to confirm these results," she added.

The findings were presented at the AACR 102nd Annual Meeting 2011.

## **Tobacco**

### **One more reason to give up chewing tobacco: Your heart takes a hit (The Times of India: 27.4.2011)**

You thought that puffing away on cigarettes only could result in a racy heart?

A new research by doctors from India's premier All India Institute of Medical Sciences has found that even chewing tobacco – as less as one gram — significantly raised heart rate.

What was most significant among the findings was that when doctors asked patients with normal coronary arteries to chew tobacco in the catheterization laboratory, a striking transient narrowing of normal coronary arteries were visible even with the slightest chewing tobacco.

This, doctors say may not be such a major worry for youngsters, but when adults with already some amount of narrowed arteries continue to chew tobacco, further constriction of arteries would mean a significant decrease in amount of blood reaching the heart. This raises the chances of a heart attack.

Also, for the first time, the study showed that chewing tobacco could lead to peripheral vasodilation which means the blood instead of reaching the brain would remain at peripheral arteries like hands and feet

This could be the reason why most first-time users of chewing tobacco suffer giddiness and vertigo.

The study has now been published in the American Journal of Cardiovascular Drugs.

Speaking to TOI, Dr Balram Bhargava, senior author of the study said “Never before has it been shown that chewing even a slight amount of tobacco could cause narrowing of major heart arteries by over 14%. For people already having narrow arteries with fat deposit, this would mean a further constriction and angina or pain everytime the person runs or is anxious.”

Twelve habitual tobacco chewers undergoing elective coronary angiography were included in the study. Changes in the heart were calculated at baseline and at 15 minutes, 30 minutes, and 60 minutes following the start of tobacco consumption.

Following coronary angiography, a continuous cardiac output pulmonary artery catheter was used to measure the right heart pressures and cardiac output. Having obtained baseline blood pressure data, 1 gram of tobacco was given to be chewed. Subsequently, data were obtained periodically over a period of 60 minutes.

Around 10 minutes after tobacco was given, doctors estimated the diameter of the left anterior descending (LAD) artery – one of the main arteries of the heart, by a coronary angiography.

The results showed that chewing tobacco led to a significant increase in heart rate (from 68.3–12.4beats/ min to 80.6–14.6 beats/min) — the highest being at 10 minutes after consuming chewing tobacco. And cardiac output from 3.8–0.45L/ min to 4.7–0.64 L/min, peaking at 15 minutes.

Chewing tobacco was associated with coronary vaso-constriction (LAD diameter change from 3.17–0.43mm to 2.79–0.37 mm).

One reason for this, doctors say could be the higher amount of nicotine in India chewing tobacco products like khaini and zarda.

The researchers estimated that Indian smokeless tobacco products for chewing contain more nicotine (13.8–65.0 mg/g) than American smokeless tobacco products.

Dr Ambuj Roy, associate professor of cardiology at AIIMS and one of the authors said although the ill effects of cigarette smoking is known to cause acute hemodynamic effects, there was a lack of data concerning such effects of chewing tobacco.

“Chewing tobacco not only increases the workload on the heart and makes in pump faster causing it to stress but it also reduces the diameter of heart arteries acutely,” Dr Roy added.

According to the recently released Global Adult Tobacco Survey (GATS), 21% of Indian population is addicted to smokeless tobacco alone and another 5% percent smoke as well as use smokeless tobacco.

Around 75% of the 275 million Indians consume smokeless tobacco products.

A large number of children and youth in India are addicted to smokeless tobacco. Smokeless tobacco contains nicotine, which is highly addictive. There are 3095 chemical components in tobacco, among them 28 are proven carcinogen.

Smokeless tobacco causes oral cancer, pancreatic cancer, increased blood pressure and heart rate and adverse reproductive outcomes. One third of males use smokeless tobacco products. Khaini is used the most, followed by gutkha. Around 91% of female tobacco users use smokeless products like betel quid with tobacco is used the most, followed by gutkha and khaini.

## **Smoking**

### **Living with a Smoker May Rise Blood Pressure in Boys (Science Daily: 2.5.2011)**

Exposure to secondhand smoke, even at extremely low levels, is associated with increased blood pressure in boys, according to new research presented May 1, at the Pediatric Academic Societies (PAS) annual meeting in Denver.

Children with elevated blood pressure are at increased risk of having high blood pressure, or hypertension, as adults. Hypertension is associated with a higher risk of heart and kidney disease and is the third leading contributor to illness and death worldwide. Yet, knowledge of risks factors for elevated blood pressure among children is limited.

Studies in non-smoking adults have shown associations between both secondhand smoke and outdoor air pollution with increased blood pressure, but no research has looked at this relationship in children.

In this study, researchers analyzed data from four National Health and Nutrition Examination Surveys conducted from 1999-2006 by the Centers for Disease Control and Prevention. They assessed 6,421 youths' exposure to secondhand smoke from their own reports of whether they lived with a smoker and through participants' levels of cotinine, a substance produced when the body breaks down nicotine. Cotinine levels are considered the best marker of tobacco smoke exposure.

Results showed that boys ages 8 to 17 years old who were exposed to secondhand smoke had significantly higher systolic blood pressure than boys not exposed to tobacco smoke.

"While the increases in blood pressure observed among boys in our study may not be clinically meaningful for an individual child, they have large implications for populations. Over one-third of children in the U.S. and globally are exposed to secondhand smoke levels similar to those associated with adverse cardiovascular effects in our study," said Jill Baumgartner, PhD, lead author of the study and research fellow at the University of Minnesota's Institute on the Environment.

However, the study also showed that girls who were exposed to secondhand smoke had lower blood pressures than girls who were not exposed to tobacco smoke.

"These findings support several previous studies suggesting that something about female gender may provide protection from harmful vascular changes due to secondhand smoke exposure. An important next step is to understand why," Dr. Baumgartner said.

The results of the study -- the first to look at the effect of secondhand smoke exposure on blood pressure among children -- suggest that the cardiovascular effects of tobacco smoke exposure may begin very early in life, she said. It is not known whether these changes are reversible if children are removed from smoke exposure. "What is clear, however, is that this study adds to overwhelming evidence that preventing children's exposure to secondhand smoke is an important public health initiative."

"The relationship between secondhand smoke exposure and blood pressure observed in our study provides further incentive for governments to support smoking bans and other legislation that protect children from secondhand smoke," Dr. Baumgartner concluded.

## **Smoking**

### **Smoking Ban In Public Places Starts Today In China (Medical News Today: 2.5.2011)**

Today new legislation comes into force in China banning smoking in restaurants, theaters, public transport waiting rooms, hotels, and several other enclosed public places. Chinese health authorities want to raise awareness about the dangers of smoking. A significant proportion of the Chinese population is not aware of the health risks of smoking. Tobacco use is deeply ingrained in China.

The new ban does not cover offices. Employers will now have to warn their staff about the dangers of smoking, but they cannot stop them.

Cigarette vending machines will not be allowed to be placed in public places.

China has over 300 million regular smokers, estimated to make up one third of all smokers worldwide. A 2010 survey revealed that more than one quarter of all adults in China were not aware that smoking raises the risk of developing lung cancer, stroke and heart disease.

According to local media, most Chinese citizens who are non-smokers do not know that second-hand smoke is also a health danger. Experts are hoping that this new legislation and its subsequent improved awareness will lead to further legislation to protect people's health.

Some health groups criticize the new rule, saying it does not go far enough. For example, it does not specify what happens if somebody violates the ban - there is no mention of penalties. Without specific penalties, how will the rule be enforced, many wonder.

Some already-existing smoking rules are generally ignored by most of the population. Shanghai tried to impose smoking bans in public places in 2010 - most smokers puffed away regardless.

Smoking, which is said to be a major contributory factor in four of China's five leading causes of death, directly causes the premature death of at least 3,000 Chinese citizens each day, according to the World Health Organization.

The ban comes in response to pressure from WHO, which castigated China for not complying with a global anti-tobacco treaty. China's decision to implement this ban has been described by WHO as "groundbreaking".

A packet of 20 cigarettes can be as cheap as 46 cents (3 Yuan) in China. Smoking culture is so ingrained that even Olympic athletes have been seen in tobacco advertising campaigns. According to WHO, two-thirds of the country's nurses and doctors are regular smokers. The Ministry of Health recently admitted that banning smoking in its own offices was unenforceable.

Cigarette manufacturing is virtually a government-owned monopoly in China. The government receives sizeable revenues from tobacco taxes. Nearly one-tenth of its tax income comes from tobacco products.

## **Smoking**

### **Second-hand smoke linked to stillbirths (The Times of India: 2.5.2011)**

New York: Pregnant women who live or work with smokers may be at slightly higher risk of having a stillbirth, suggests a study that adds to evidence that even secondhand smoke can harm unborn babies.

Newborns also weighed a little less and had smaller heads if their mothers were passive smokers, Canadian researchers found.

According to the researchers, "undiluted sidestream smoke contains many harmful chemicals."

Those chemicals may harm the fetus in a variety of ways, for instance by restricting blood flow and possibly damaging the placenta.

Joan Crane of Eastern Health in St John's used data of pregnant women from Newfoundland and Labrador for the study. The rate of stillbirth, in which the baby dies during the third trimester of pregnancy, was 0.83% in passive smokers and 0.37% in women who didn't breathe tobacco fumes.

That doesn't prove that smoke itself was the culprit, as other risk factors might be different between the two groups. When the researchers accounted for those, passive smokers had more than three times the odds of stillbirth. REUTERS

## **Smoking**

### **Early intervention may prevent smoking (New Kerala: 3.5.2011)**

A School of Nursing professor has shed light on the fact that nicotine addiction can start well before smokers are old enough to legally buy cigarettes.

Using data from large-scale national surveys, Carla Storr was able to show in a study published in *Nicotine and Tobacco Research* that there is a small proportion of youth, who, once they start smoking, move on to meeting dependence criteria very rapidly—within a two-year period.

“Quantity and frequency of smoking is not always synonymous with meeting the definition for being addicted,” explained Storr, whose research focuses on mental health aspects of addictive behavior.

Another one of her studies, published in the *American Journal of Epidemiology*, showed a link between children with behaviour problems in the primary grades and early tobacco addiction.

For that study, she looked at longitudinal data collected by Johns Hopkins researchers from a cohort of more than 2,000 Baltimore City elementary school students, starting in 1983.

Storr found that students whose first grade teachers classified them as having behaviour problems were more likely to start smoking early and become dependent.

The results indicate a need for much earlier interventions, said Storr.

“We wouldn't have to worry about getting people to cease smoking as adults,” said Storr, “if they never started to begin with.”

## **Smoking and Kidney Cancer**

### **Smoking and Kidney Cancer (Med India: 18.5.2011)**

Heavy smoking may elevate kidney cancer risk, a recent study from the Duke University Medical Center has revealed.

The risk was almost double for smokers as well as for those who have smoked in the past and given up, researchers revealed.

But the silver lining is that the risk decreased by 9 percent for every decade a former smoker remained smoke-free.

## **Maternal Smoking**

### **Maternal Smoking Causes Changes in Fetal DNA, Study Finds (Science Daily: 19.5.2011)**

Children whose mothers or grandmothers smoked during pregnancy are at increased risk of asthma in childhood, but the underlying causes of this are not well understood. Now a new study indicates changes in a process called DNA methylation that occurs before birth may be a root cause.

The study was presented at the ATS 2011 International Conference.

DNA methylation is a process that can alter a gene's usual function. These altered genes can be passed along from parent to child. In this case, researchers observed DNA methylation-related changes in the AXL gene in children exposed to maternal smoking in utero. The AXL gene plays an important role in many human cancers and in immune response.

"We found that children exposed to maternal smoking in utero had a 2.3 percent increase in DNA methylation in AXL," said Carrie Breton, ScD, assistant professor of preventive medicine at The Keck School of Medicine of the University of Southern California (USC) in Los Angeles.



"These results confirm results from a prior study and present compelling evidence that environmental exposure to tobacco smoke during pregnancy may alter DNA methylation levels."

Using a detailed questionnaire, the researchers targeted the mothers and grandmothers of 173 children participating in the Early Asthma Risk Factors Study (EARS), a study within the larger California Children's Health Study, and assessed their smoking habits during pregnancy. DNA samples collected from cheek cells of mothers and children were evaluated. Dr. Breton and her team found that DNA methylation of AXL was associated with in utero exposure to maternal smoking, and also found that grandmaternal smoking was not significantly associated with AXL methylation in either the mother or the child. The association between DNA methylation of AXL and in utero exposure to smoking was stronger in girls than in boys, she added.

Dr. Breton said the results of the study indicate the need for a greater understanding of the effects environmental factors have on epigenetic changes -- that is, changes in gene function or expression that occur as the result of mechanisms other than changes to the underlying DNA sequence -- and early development in general.

"Environmental exposures occurring in utero have the potential to affect DNA methylation patterns before birth," she explained. "Imprinted genes appear to be particularly susceptible to these exposures since they come from one parent and only a single copy from one chromosome in DNA is active. Any environmentally-induced epigenetic changes will have greater impact on gene expression and function. In utero and early life exposures are likely to be important, given what we know about timing during development when epigenetic marks are established."

Investigating the effects of environmental exposures on epigenetics is a largely unexplored area of research, and one that holds great promise for understanding biological mechanisms that underlie exposure-disease associations, she added.

"We are interested in further characterizing the pattern of epigenetic marks across this gene and whether there is a widespread response to both maternal smoking exposure and air pollution exposure in utero," Dr. Breton said. "We hope to also evaluate timing of effects of exposure during trimester by increasing the number of samples we evaluated in a manner that will let us compare trimester-specific exposures."

## **Quit smoking**

### **World No-Tobacco Day falls on May 31**

#### **Quit smoking to save your heart (The Tribune: 25.5.2011)**

The good news first: Smokers are not destined to die of cancer. Yes , it is true!

Most people associate cigarette smoking with breathing problems and lung cancer. But did you know that smoking is also a major cause for heart disease for men and women? Smoking cigarettes is correctly perceived by much of the public to be the most common cause of lung cancer. The fact that smoking is also one of the major causes of cardiac disease is generally known to very few people.

Smoking kills. Every cigarette takes away five minutes of one's life. One in 10 persons addicted to smoking dies from it. By 2030 this ratio is likely to be one in six. Statistics released by the WHO proves that smoking is the single largest preventable cause of death worldwide. The startling fact is that of everyone alive today 5,00,000,000 will eventually be killed by tobacco use.

According to the Indian Council of Medical Research (ICMR) , WHO and the Tobacco Institute of India, there is one death every 8 seconds in India directly related to smoking. Increasingly, large tobacco companies are dumping their stock in India, Indonesia and China — which, according to a World Bank study, are the only countries in the last decade which have had an increased consumption of tobacco. What is equally alarming is that the companies are targeting the young population to make them addicted — tobacco is as addictive as heroin!

Effect on heart and cardiovascular diseases:

Coronary artery disease

Tobacco abuse is a major risk factor for coronary artery disease — blockage of heart arteries. According to a WHO estimate, in developing countries, 35 per cent of all deaths related to heart and blood vessel disorders in the 35-69 years age group are related to smoking. The incidence of heart disease is 3 - 5 times higher in smokers than non-

smokers. People who smoke 20 or more cigarettes a day are twice as likely to have a heart attack as non-smokers. Their chances of dying of a heart attack are 70 per cent more than in non-smokers.

Smoking tends to increase blood cholesterol levels. It also raises the levels of fibrinogen (a protein which causes blood to clot) and increases platelet production (also involved in the formation of blood clots) which makes the blood more sticky.

#### Stroke (cerebrovascular accident)

One out of five stroke cases are attributed to smoking. The risk for brain haemorrhage is 3 - 4 times higher in heavy smokers, while stroke due to occlusion of a brain artery is 1.5 - 3 times more common in heavy smokers. About 11 per cent of all stroke deaths are estimated to be smoking related.

#### Peripheral arterial disease

Hardening of the arteries of the legs is one of the most dreaded complications of smoking. Smokers have a 16 times greater risk of developing peripheral vascular disease (blocked blood vessels in the legs or feet) than people who have never smoked. Over 95 per cent of the patients who have occlusions in the leg arteries are smokers.

#### Other blood vessel diseases

Tobacco also increases the risk of weakening of the arterial walls leading to their ballooning (aneurysm formation). This leads to the risk of bursting or clotting, which may have catastrophic consequences. Smokers are very much more likely to die from a ruptured aneurysm of the abdominal aorta than non-smokers.

#### Non-cardiovascular health effects:

##### Respiratory diseases

Smoking is a major cause of respiratory ailments such as the smoker's cough, chronic bronchitis, frequent pneumonia and respiratory failure. About 80 per cent of the deaths from respiratory diseases are attributable to smoking.

Smoking is responsible for about 85 per cent of lung cancer deaths. People smoking one pack of cigarettes per day increase their risk of lung cancer by 10-fold while smoking two packs a day increases the risk to 25 times. Lung cancer accounts for 15 per cent of all cancers in India.

## Cancer

Smoking also increases the risk of cancer of the larynx (voice box) , mouth cavity, esophagus (food pipe) and possibly the urinary bladder, kidney, pancreas, stomach, uterus and cervix. In the US, tobacco is responsible for 30 per cent of all cancer deaths. In India, cancers of the mouth, larynx and esophagus account for 75 per cent of all tobacco-related cancers.

## Infertility/impotence

Smoking reduces a man and woman's fertility, and the more one smokes, the more the ability of sperm to bind to an egg is diminished. It takes at least two-and-a-half months after quitting smoking before the sperm activity can come to normal.

Cigarettes send male sex life up in smoke.

The good news is that quit smoking boosts heart health

Smokers who quit or even just cut down on cigarettes can begin to reap the health benefits within a few months. Individuals who gradually quit smoking get improvements in risk factors for heart disease, including lower cholesterol and carbon monoxide levels.

It is never too late to stop smoking. The benefits begin as soon as you stop.

The writer is Head of the Dept of Cardio-Vascular, Endovascular & Thoracic Surgery at the Christian Medical College & Hospital, Ludhiana.

## **Tobacco products**

### **Harsher cancer warning on tobacco products in the offing (New Kerala: 26.5.2011)**

With a clinical study pointing out to prevalence of cancer more among chewing tobacco users than cigarettes smokers, the government has decided to notify harsher pictorial warnings for smokeless tobacco products in the coming months.

Health Minister Ghulam Nabi Azad said Wednesday that the government was in the process of formulating a harsher policy on pictorial warnings after a report from Global Adult Tobacco Survey India in January had presented an alarming cancer scenario among tobacco users.

"We are in the process of formulating a new policy. We will have one policy for the type of pictorial warning for cigarette and bedi and another harsher warning for chewing, smokeless tobacco. This is because chewing tobacco is more dangerous and is being used by more number of people. It causes cancer in more users," Azad told reporters.

"The pictorial warnings are in the process of notification and can be notified any day. The Directorate of Visual Publicity has selected some pictures. There will be two types of warnings -- for cigarettes and for smokeless tobacco," he added.

Azad was addressing the media to highlight the achievements of the health ministry under him since 2009.

The Global Adult Tobacco Survey found out that 35 percent of Indian adults use tobacco in some form or the other, the minister said.

"Most unfortunately, 35 percent adult Indians use tobacco. Of this, 80 percent are men and 20 percent women. Of the 35 percent, 26 percent men and women use chewing tobacco and only nine percent smoke cigarettes," Azad said, reeling out figures from the study.

He said among the tobacco users with cancer, 80 percent was caused by chewing tobacco while only 20 percent due to cigarette use.

"Most people are worried about cigarettes, not knowing about the harm caused by smokeless tobacco," he added.

Azad noted that the Global Adult Tobacco Survey was the "biggest ever" in India conducted in 28 states and two union territories with technical cooperation from the World Health Organisation (WHO) and full funding by the Indian health ministry.

Tobacco was adding to both oral and lung cancer among Indians, he said, adding that all along India had relied on international agencies such as WHO for warnings about prevalence of cancer.

"Now we are trying to create a data of our own... a better data through screening in the entire country for both detection and treatment of cancer," he said.

He also noted that the government would launch a national programme for control and prevention of cancer, cardiovascular diseases, diabetes and stroke, first in 100 districts in the most difficult and remote areas and later across the entire nation.

Under the programme, the health ministry would provide Rs 1 lakh assistance to cancer patients for early detection and treatment.

"About 100 patients in each of the 100 districts would get this assistance. That is, about 10,000 cancer patients in the select districts would be granted the funds for their treatment," he added.

He also quoted from a WHO warning on cancer to note that by 2015 the number of cancer deaths in India would touch seven lakh.

### **Smokeless tobacco**

#### **Smokeless tobacco to carry harsher pictorial warning (New Kerala: 26.5.2011)**

Underlining that smokeless tobacco was more harmful, Union Health Minister Ghulam Nabi Azad today said the government would soon notify a "harsher" pictorial warnings for these tobacco products.

Briefing media about the achievements of his ministry in two years, Mr Azad said the process of notifying the pictorial warnings was on and the notification could come out any day.

There would be two types of warnings -- for cigarettes and for smokeless tobacco, he said.

He said the Directorate of Advertising and Visual Publicity had been asked to select some pictures.

The Health Minister said smokeless tobacco was responsible for 80 per cent of mouth cancers.

According to the Global Adult Tobacco Survey carried out in 2009-2010, 35 per cent of adults use tobacco in some or the other, and among them, 26 per cent adults use smokeless tobacco and nine per cent were smokers.

# **Stress**

## **Chronic Stress**

### **Chronic Stress of Cancer Causes Accelerated Telomere Shortening (Med India: 5.4.2011)**

Results of a study presented at the AACR 102nd Annual Meeting 2011, held here April 2-6, lend credence to the idea that improving quality of life affects stress-related biological markers and possibly the health of people with cancer.

Researchers know that telomeres shorten and deteriorate with aging, but they are learning that stress also affects telomere length.

"We are trying to understand the interconnections between the mind and the body; that is, how does the diagnosis and treatment of cancer impact patients not only psychologically, but also physiologically and how can we improve their outcome. Cancer drives a chronic stress response in some patients," said Edward Nelson, M.D., division chief of hematology/oncology at the University of California, Irvine.

Just as aglets prevent a shoelace from unraveling or fraying, telomeres are structures on the ends of chromosomes that protect the chromosome from deteriorating, breaking apart or joining with other chromosomes, which can lead to mutations. Chromosomal rearrangements are seen in cancers and provided a biological reason to investigate this link, according Nelson.

"For this study, we wanted to know if chronic stress was associated with accelerated telomere shortening in cancer patients, and if a psychosocial intervention that modulates the stress response could also modulate telomere length," he said.

In this retrospective study, the researchers took biological samples from 31 women with cervical cancer who had been randomized to one of two groups - those who received six counseling sessions by telephone and those who received usual care without counseling.

## **Stress hampers**

### **Stress hampers intestinal bacteria making immune system inactive (New Kerala: 13.4.2011)**

A new research has indicated that stress not only sends the human immune system into overdrive - but it can also wreak havoc on the trillions of bacteria that work and thrive inside our digestive system.

Michael Bailey, an assistant professor of dentistry and member of the Institute for Behavioral Medicine Research at Ohio State University and colleagues turned to mice to better understand the roles that bacteria play in immune balance. They ran a series of experiments using a common stressor for these animals.

From the intestinal samples, Bailey's team could determine the relative proportion of at least 30 types of bacteria residing there.

Compared to the control mice, the stressed animals showed two marked differences: The proportion of one important type of bacteria in the gut - Bacteroides - fell by 20 to 25 percent while another type - Clostridium - increased a similar amount. Also, levels of the two biomarkers, IL-6 and MCP-1, jumped 10-fold in the stressed mice, compared to controls.

The researchers then treated stressed mice with broad-spectrum antibiotics that could kill as much as 90 percent of the intestinal bacteria for a short period. When they again looked at the two immune biomarkers in the stressed mice, they saw only a doubling of IL-6 and MCP-1 - an increase only one-fifth as much.

"We know now that if we knock the population of bacteria down with antibiotics, we don't have the same innate immune response," said Bailey.

"That showed that the bacteria are involved in the ability of stress to prime the innate immune system," added Bailey.

He said that the research shows that some of the changes in systemic immunity in the body can be influenced by changes in these bacterial colonies, a result that reinforces the idea that they have a broader effect on the immune response.



The study is detailed in the current issue of the journal Brain, Behavior and Immunity.

## **Stress and Depression**

### **Stress and Depression Are Associated With Shorter Survival in Head and Neck Cancer Patients (Science Daily: 29.4.2011)**

Studies have shown that stress can affect the immune system and weaken the body's defense against infection and disease. In cancer patients this stress can also affect a tumor's ability to grow and spread. However, the biological mechanisms that underlie such associations are not well understood. Now, researchers at Fox Chase Cancer Center find that poor psychosocial functioning is associated with greater vascular endothelial growth factor (VEGF) expression--a signaling protein that not only stimulates tumor growth, but is also associated with shorter disease-free survival in head and neck cancer patients.

"There is research showing that high VEGF expression in other cancers, such as ovarian, is associated with psychosocial factors," says Carolyn Fang, Ph.D., Co-Leader of the Cancer Prevention and Control Program at Fox Chase, who will be presenting the study at the 32nd Annual Meeting & Scientific Sessions of the Society of Behavioral Medicine on April 28th. "This information coupled with what we already know about VEGF promoting tumor aggressiveness and poorer prognosis in head and neck cancer patients, certainly gave us a reason to look at this biomarker."

VEGF not only plays a pivotal role in angiogenesis, but it is also regulated by stress hormones and key cytokines--a category of signaling molecules used extensively in intercellular communication.

In the current study, Fang and colleagues looked at 37 newly diagnosed, pre-surgical head and neck cancer patients, to see if psychosocial functioning, such as perceived stress and depressive factors, was associated with VEGF, a biological pathway relating to patient outcomes. The patients were predominantly male (70.3%), and approximately 57-years-old, with primary tumor sites of the oral cavity (65.9%), larynx (19.9%), and oropharynx (13.5%). Over 40% of them were classified as having early-stage disease.

Each patient was given a psychosocial questionnaire to complete prior to treatment, which required them to answer questions about social support, depression, and perceived stress. In addition, VEGF expression in tumor tissue obtained during surgery was evaluated using immunohistochemistry--a process that helps detect the presence of specific proteins in cells or tissues.

"Our analysis indicated that higher levels of perceived stress and depressive symptoms were associated with greater VEGF expression in the tumor tissue of these patients" says Fang. Greater VEGF expression was, in turn, associated with shorter disease-free survival among patients.

The associations between psychosocial functioning and VEGF were strong among early-stage patients, but were less apparent among late-stage patients.

"It's possible that in early stage disease, psychosocial stress makes patients more susceptible to cancer-related death, while in patients with advanced disease, other factors become more important in determining outcome," says Miriam N. Lango, M.D., Medical Director of Speech Pathology Service and Attending Surgeon in Head and Neck Oncology at Fox Chase. "In patients with advanced cancers, psychosocial interventions may have less of an impact since these cancers are inherently more aggressive."

In the near-term, Fang and her colleagues hope to expand the study to look at a larger sample of patients and to incorporate other signaling pathways that are relevant to cancer, like EGFR, which researchers involved in Fox Chase's Keystone Program in Head and Neck Cancer are already exploring.

"The next step is to conduct a longitudinal study that would allow us to examine patient psychosocial functioning in conjunction with biomarkers of disease aggressiveness and survival from pre-treatment through post-treatment and beyond, which would give us a more complete picture of how these factors may contribute to patient outcomes," Carolyn adds.

## **Stress**

### **Stress in pregnancy 'results in unruly, hot-tempered kids' (new Kerala: 9. 5. 2011)**

A new study has found that mothers-to-be who are stressed out are more likely to have unruly, hot-tempered children.

Researchers discovered a strong link between mental pressures on the mother in the first months of a child's life and the youngster's behaviour when of school age, reports the Daily Mail.

It is thought that high levels of stress hormones in the womb affect the delicate development of the unborn baby's brain.

The research, which tracked thousands of babies from the womb to school, found the hormones raise the odds of a child experiencing attention deficit hyperactivity disorder and other behavioural problems.

Alina Rodriguez of the Institute of Psychiatry, King's College London, and her colleagues studied more than 1,700 mothers and their children.

They found that mothers who were stressed in pregnancy, or had suffered a relationship breakdown or bereavement were more likely to suffer from ADHD and have other emotional problems, such as hot tempers.

And they found it more difficult to get along with other children.

But Rodriguez urged pregnant women not to be alarmed by the risk, saying: "It is really important to put it into perspective and to go about your business and try to relax, get support from different people and do things that make you feel good."

## **Stressful childhood**

### **Stressful childhood may lead to shortening of telomeres (New Kerala; 19.5.2011)**

Researchers claim that stress suffered during childhood has deeper implications, which show at a later stage.

According to a study of children from Romanian orphanages, the effects of childhood stress could be visible in the DNA on growing up, reports Nature.

It is now proved that children who spent their early years in state-run Romanian orphanages have shorter telomeres than the ones who grew up in foster families.

Biologically, telomeres get slightly shorter each time a chromosome replicates during cell division. However, it has now emerged that stress may also result in their shortening.

Resultantly, shorter telomeres may propel diseases in adults ranging from diabetes to dementia.

The study was initiated at a time when orphanages were still common in Romania and a foster care system was especially established for this project.

Researchers analysed 136 orphans aged between 6-30 months, half of whom were assigned to foster families and the other half remained in orphanages.

They measured the length of the telomeres from DNA samples of the children when they were 6-10 years old and found that kids who stayed in the orphanage for longer had shorter telomeres compared to their peers in foster care.

"It shows that being in institutional care affects children right down to the molecular level," said Stacy Drury, clinical psychiatrist of Tulane University in New Orleans, Louisiana.

The study is published in *Molecular Psychiatry*<sup>1</sup>.

## **Hypertension**

### **Studies Call Attention To Impact Of Lifestyle Variations On Hypertension (Medical News Today: 24.5.2011)**

Evidence continues to build that lifestyle modifications help control blood pressure (BP) levels. Data evaluating the consumption of coffee and alcohol and the impact of low fitness levels will be presented at the American Society of Hypertension, Inc.'s 26th Annual Scientific Meeting and Exposition (ASH 2011) and will be featured in the May 22 ASH press briefing.

"It's critical that we fully understand how lifestyle factors impact the ability of patients and physicians to screen, diagnosis, and treat high blood pressure," explains ASH press briefing moderator Lawrence J. Appel, MD, MPH, Professor of Medicine, Epidemiology and International Health (Human Nutrition) Director, Welch Center for Prevention, Epidemiology, and Clinical Research Johns Hopkins Medical Institutions. "As we continue to develop our understanding of how diet and exercise choices impact hypertension, including the nuances among specific patient populations, we are gathering evidence to help us best counsel and advise our patients."

Studies highlighted in the press briefing include:

Effect of Coffee on Blood Pressure and Cardiovascular Disease among Hypertensive Individuals: Meta-Analysis

Studies have shown that it is possible for caffeine to cause a short, but dramatic increase in your BP, even if you don't have high BP. A new meta-analysis shows that, among hypertensive individuals, caffeine intake of 1.5 - 2 cups produces an acute increase in BP, which lasts for at least three hours. However, present evidence does not support an association between longer-term coffee consumption and increased BP or increased risk of cardiovascular disease among patients with HBP.

In five trials, the administration of 200-300 mg caffeine (the content of 1.5-2 cups of filtered coffee) produced a mean increase of 8.2 mm Hg (95% confidence interval [IC] 6.2-10 mm Hg) in systolic BP and of 5.6 mm Hg (95% CI 4.2-6.9 mm Hg) in diastolic BP. The increase in BP was observed in the first hour after caffeine intake and lasted for at least three hours. In six trials on the longer-term effect (1 week) of coffee, there was no increase in BP when comparing caffeine versus placebo, coffee versus a caffeine-free diet, or coffee versus decaffeinated coffee.

"These results have clinical implications for the control of hypertensive patients. Because caffeine intake acutely increases blood pressure, hypertensive patients with uncontrolled blood pressure should avoid consuming large doses of caffeine. Also, the consumption of caffeine in the hours before measuring blood pressure may elevate the reading and give the erroneous impression that blood pressure is poorly controlled," explains lead study author, Esther Lopez-Garcia, PhD, Department of Preventive Medicine and Public Health, Autonoma University of Madrid, Spain. "Finally, in well-controlled hypertensive patients, there is no evidence to justify avoidance of habitual caffeine consumption and healthcare providers should emphasize other lifestyle modifications, such as maintaining weight control, increasing physical activity, and stopping smoking."

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Alcohol Consumption and the Risk of Hypertension: A Systematic Review and Meta-Analysis. The Risk for Hypertension Increases Linearly with Alcohol Consumption in Men

Drinking too much alcohol can raise BP to unhealthy levels, especially among men. The meta-analysis evaluated a total of 16 prospective studies, which included 158,142 men and 314,258 women. Among men, a linear dose-response relationship between alcohol intake and risk of development of hypertension was noted. As compared to non-drinkers, men consuming < 10g/day of alcohol had a relative risk (RR) of 1.006, those consuming 10-20 g/day had a RR of 1.091, and those consuming > 30g/day had a RR of 1.416. Among women, the meta-analysis indicated protective effects at < 10g/day (RR -0.867)

and 10-20g/day (RR - 0.904) of alcohol consumption, while the risk increased in women consuming > 30g/day (RR - 1.188). The risk of hypertension significantly increases with consumption of more than 30g/day in men in women alike.

"For patients, especially men, it's very important to ask about alcohol consumption and to recommend moderation when trying to maintain blood pressure control," explains Agarwal, MD, MPH, Department of Medicine, St. Luke's-Roosevelt Hospital, Columbia University College of Physicians and Surgeons.

Excessive Blood Pressure Elevation during Exercise Correlates with Low Fitness among Normotensive Firefighters. Lower Fitness is Associated with a Higher Risk of an Exaggerated Blood Pressure Response

Surprisingly, the leading cause of on- duty death among US firefighters (40% of cases) is coronary heart disease (CHD), rather than burns or smoke inhalation. The strain of suppressing a fire is associated with a markedly increased risk of cardiovascular mortality as compared to non-emergency duties and firefighters with low cardiorespiratory fitness are at increased risk for cardiovascular death. A study examined the prevalence of peak exercise hypertension among firefighters who do not have hypertension to see whether it correlates with low cardiorespiratory fitness.

The study evaluated 691 firefighters without hypertension and found that 14% (93) had an exaggerated BP response to exercise and 31.1% of the "exaggerated BP" firefighters were in a low fitness group, compared to 18% in the normal responders ( $p=0.016$ ). Only 13.5% of "exaggerated BP" group had high fitness (third quartile) compared to 30.6% in the normal responders ( $p=0.0024$ ). Thus, lower fitness is associated with a higher risk of an exaggerated BP response.

"Firefighters present a unique opportunity to evaluate the role of fitness and its association with high blood pressure at peak exercise ," explains lead study author, Adi Leiba, MD, MHA, Fellow, Nephrology and Hypertension, Sheba Medical Center, Israel Clinical Instructor, Mount Auburn Hospital, Harvard Medical School, Boston, MA. "This data is important because it provides further evidence that improved fitness helps control blood pressure spikes, including those spikes during exercise and stress."

## **Stress**

### **Men suffer more stress than women in heavy traffic (The Tribune: 25.5.2011)**

London: A new research has shown that a man's stress levels rise an amazing seven times higher than a woman's while stuck in heavy traffic. Psychologists commissioned by a satnav firm carried out tests on volunteers for a rise in stress chemicals in their saliva while caught up in a traffic jam, reports the Daily Express. The levels for women in the study increased by 8.7 per cent, but for men they shot up by a worrying 60 per cent. That could put pressure on the heart and can cause dizziness and breathing problems. Yet, remarkably, many had no idea that they were suffering from the effects of stress. Two-thirds of the women and half of the men said they did not feel any stress after 20 minutes in heavy traffic - even though the readings proved they did have a stress response. Almost half of all adults commute to work by car on a daily basis and those who are exposed to constant traffic jams could fall ill with stress-related problems.

## **Stress**

### **Stress May Increase Risk for Alzheimer's Disease (science aily: 27.5.2011)**

Protein deposits in nerve cells are a typical feature of Alzheimer's disease: the excessive alteration of the tau protein through the addition of phosphate groups -- a process known as hyperphosphorylation -- causes the protein in the cells to aggregate into clumps. As a result, nerve cells die, particularly in the hippocampus, a part of the brain that plays an important role in learning and memory, as well as in the prefrontal cortex which regulates higher cognitive functions

Fewer than ten percent of Alzheimer cases have a genetic basis. The factors that contribute to the rest of the cases are largely unknown. Following up on epidemiological studies, scientists at the Max Planck Institute of Psychiatry hypothesized that adverse life events (stress) may be one trigger of Alzheimer's disease.

In cooperation with colleagues at the University of Minho in Braga, Portugal, the Munich-based researchers have now shown that stress, and the hormones released during stress, can accelerate the development of Alzheimer disease-like biochemical and behavioural pathology. They found increased hyperphosphorylation of tau protein in the hippocampus and prefrontal cortex of rats that has been subjected to stress (e.g. overcrowding, placement on a vibrating platform) for one hour daily over a period of one month. Animals showing these changes in tau also showed deficits in memories that depended on an intact hippocampus; also, animals with abnormally hyperphosphorylated tau were impaired in behavioural flexibility, a function that requires proper functioning of the prefrontal cortex.

These results complement previous demonstrations by the scientists that stress leads to the formation of beta-amyloid, another protein implicated in Alzheimer's disease. "Our findings show that stress hormones and stress can cause changes in the tau protein like those that arise in Alzheimer's disease," explains Osborne Almeida from the Max Planck Institute of Psychiatry.

The next challenge will be to see how applicable the results obtained in animals are to the development of non-familial forms of Alzheimer's disease. "Viewing stress as a trigger of Alzheimer's disease offers exciting new research possibilities aimed at preventing and delaying this severe disease. Moreover, since vulnerability to major depression is known to be increased by stress, it will be interesting to know the role of molecules such as beta-amyloid and tau in the onset and progress of this condition," says Osborne Almeida.



## **Vaccines**

### **AIDS vaccine**

#### **Promising target for AIDS vaccine identified (New Kerala: 1.4.2011)**

A new research by Dana-Farber Cancer Institute scientists have indicated that a section of the AIDS virus's protein envelope once considered an improbable target for a vaccine now appears to be one of the most promising.

The section, a twisting strand of protein known as the V3 loop, is an attractive vaccine target because immune system antibodies aimed at the loop may offer protection against multiple genetic subtypes of HIV-1, the virus that causes AIDS.

This is a key prerequisite of any AIDS vaccine because the viruses mutate rapidly and by now comprise millions of different strains that are grouped into different genetic subtypes, or "clades."

In the study, the investigators injected a monoclonal antibody -- a preparation of millions of identical antibodies that fight viral infection -- into Asian monkeys known as macaques.

The antibody came from a person infected with a specific clade of HIV-1. The macaques were then exposed to virus of a different clade.

The investigators knew that the antibody would latch onto a portion of the virus's V3 loop, potentially barring the virus from invading nearby cells, but they did not know whether it would prevent infection from a separate subtype of the virus.

The results were striking: All the treated monkeys were protected from infection by the monkey form of HIV-1, known as SHIV.

Monkeys exposed to the virus without receiving the monoclonal antibody, by contrast, became heavily infected.

"This is the first time a monoclonal antibody made against an AIDS virus of one clade has provided complete protection against an AIDS virus of a different clade in animal models," said senior author Ruth Ruprecht, of Dana-Farber.

"Previous studies have shown that such neutralizing antibodies can protect macaques from infection within one clade; but as more clades of the AIDS virus evolve, it has been unclear whether such antibodies could shield across different clades and prevent infection. Now we have an answer," she added.

The antibody treatment technique used in the study is unlikely to confer long-term protection against HIV-1 because the infected antibodies do not remain active in the body for very long.

The value of the study is that it demonstrates that antibodies directed against the V3 loop of one clade of HIV-1 can create an immune system shield against another clade.

The researchers' findings are published online in the Public Library of Science journal PLoS One.

### **Nasal Spray Vaccines**

#### **Nasal Spray Vaccines More Effective against Flu, Says Research (Med India: 13.4.2011)**

Research presented at the Society for General Microbiology's Spring Conference in Harrogate says that nasal vaccines that effectively protect against flu, pneumonia and even bioterrorism agents such as *Yersinia pestis* that causes the plague, could soon be a possibility.

Professor Dennis Metzger describes how including a natural immune chemical with standard vaccines can boost their protective effect when delivered through the nose.

The respiratory tract is a major entry site for various viral and bacterial pathogens. However there are few approved vaccines that can provide optimal protection against them due to the low immune response at mucosal surfaces such as the nasal passage.

Combining standard vaccines for respiratory pathogens with the immune chemical, interleukin-12 (IL-12) and delivering them intranasally to mice has been shown to induce high levels of protection. Vaccines against various respiratory pathogens were tested, including influenza virus, pneumococcal bacteria and *Yersinia pestis* - a Category A Biothreat. IL-12 is a natural immune chemical, known as a cytokine. It is a powerful

stimulator of the immune response through its interactions with other immune chemicals and the white blood cells that produce them.

Professor Metzger from Albany Medical College, New York explains the significance of the findings. "Infectious agents still account for around 25% of deaths worldwide and the major killers are acute respiratory infections. However, it is difficult to induce immunity at the site of entry and so standard vaccines are only partially protective," he said. "Intranasal vaccination gets around this problem by inducing immunity in the pulmonary passage. This prevents initial infection as well as systemic complications". Up until now, nasal vaccination has only resulted in sufficient immune responses for very specific types of vaccine. "We now have evidence that this method could work for a wide range of vaccines when IL-12 is included in formulation," said Professor Metzger.

## **HPV vaccine**

### **HPV vaccine issue: Brinda Karat questions role of ICMR (The Hindu: 11.5.2011)**

Karat writes to Union Health Minister Ghulam Nabi Azad seeking action

Those responsible must be held accountable: Karat

Rajya Sabha member Brinda Karat has questioned the role of the Indian Council of Medical Research (ICMR) in the controversial Human Papilloma Virus (HPV) vaccine post-licensure observational study and pointed out that some officials of the institute acted as “partisans of non-governmental organisation PATH and the interests of the manufacturing companies instead of as representatives of an institution mandated to maintain as well as ensure the implementation of the highest level of ethical standards in research studies.”

In a letter to Union Health and Family Welfare Minister Ghulam Nabi Azad on the findings of the final report of the committee that was instituted to enquire into the ethical violations during the study, Ms. Karat said the experience of this study clearly showed that it was most unwise to allow an institute such as the ICMR to go into the public-private partnership mode, as was done for this project as this gave rise to a grave conflict of interest.

Ms. Karat reiterated that her complaint was not against the HPV vaccine per se but only against gross violations in the design and implementation of the project, which was substantiated by committee reports and that compromised the safety as well as the rights of children.

The issue was about the procedures followed by the Drugs Controller General of India for giving licences for import and sale of the products by the companies concerned, in violation of the regulations of Schedule Y of the Drugs and Cosmetics Act of India.

Demanding action based on the outcome of the enquiry report, Ms. Karat said those responsible must be held accountable. Strong action was required against officials at various levels starting with the ICMR. The project itself must be scrapped and in future no NGO should be allowed to take up such a project involving a large number of children. At the same time, children must be compensated for the grave violations of their rights, Ms. Karat said.

“This project was proudly proclaimed as the first of its kind by an ICMR official. Unfortunately it turns out that the first of its kind project should also be the last of its kind if the narrow agendas of the companies pushing for the sale of their vaccines in Indian market through access to public immunisation system, are not to be the driving force behind our research studies,” she said.

## **AIDS vaccine**

### **Hope for millions after new AIDS vaccine 'removed all traces of disease in monkeys'(New Kerala: 12.5.2011)**

In a promising development that could potentially help those with HIV virus and AIDS, researchers at the Oregon National Primate Research Centre have developed an experimental vaccine that helped monkeys with a form of the AIDS virus successfully control the disease for more than a year.

Louis Picker and his colleagues said Cytomegalovirus (CMV) works by priming the immune system to quickly attack the HIV virus when it first enters the body, a point at which the virus is most vulnerable

CMV enables the immune system to be constantly on the alert for HIV.

Picker said he thinks it will be possible to have a vaccine ready to test in people within three years, reports the Daily Mail.

Researchers used different versions of the vaccine against a monkey form of the Aids virus, SIV (Simian Immunodeficiency Virus) with outstanding results.

More than half the rhesus macaques treated responded to the point where even the most sensitive tests detected no signs of SIV.

To date, most of the animals have maintained control over the virus for more than a year, gradually showing no indication that they had ever been infected.

Unvaccinated monkeys infected with SIV went on to develop the monkey equivalent of Aids, caused by the collapse of their immune systems.

The findings suggest the vaccine could be effective enough to rid the body of immunodeficiency virus completely.

Conventional antiretroviral therapies are able to control HIV infection, but cannot clear the virus from its hiding places within the immune system's white blood cells.

“The next step in vaccine development is to test the vaccine candidate in clinical trials in humans. For a human vaccine, the CMV vector would be weakened sufficiently so that it does not cause illness, but will still protect against HIV,” said Picker.

CMV belongs to the herpes family of viruses, and like other members of the group never leaves the body once an infection has occurred.

‘What’s exciting about these findings is that for the first time a vaccine candidate has been able to fully control the virus in some animals,’ said Wayne Koff, chief scientific officer at the International AIDS Vaccine Initiative (IAVI), which helped fund the research.

Koff said the findings also suggested the possibility that the immune system may eventually eliminate the virus altogether.

The findings appear in the journal Nature.

## **Vaccine**

### **Vaccine against Meth Addiction (Med India: 18.5.2011)**

Scientists are reporting some success in developing a vaccine to treat methamphetamine addiction — one of the most serious drug abuse problems in the U.S. The report appears in the Journal of the American Chemical Society.

In their paper, Kim Janda of the Scripps Research Institute and his colleagues note that methamphetamine use and addiction cost the country more than \$23 billion annually due to medical and law enforcement expenses, as well as lost productivity. The drug, also called “meth” or “crystal meth,” can cause a variety of problems including cardiovascular damage and death.

Meth is highly addictive, and users in conventional behavioral treatment programs often relapse.

While the meth use and addiction has been growing at alarming rates over the past two decades, there is no approved pharmacotherapy exists for its treatment.

Immunopharmacotherapy has the potential to offer relief through highly specific antibodies that prevent drug penetration across the blood–brain barrier, thus decreasing reinforcement of the behavior.

Previously tested meth vaccines either are not effective or are very expensive. To overcome these challenges, the researchers made and tested new vaccine formulations that could potentially be effective for long periods, which would drive down costs and help prevent relapse.

## **Women Health**

### **Women Health**

#### **Women suffer from mid-life ‘mirror crisis’ Times of India: 15.4.2011)**

A new survey has revealed that middle-aged women are four times more unhappy than teenage girls with what they see in the mirror.

The study, which was carried out online by Opinion Matters in January 2011 of 1,246 women, discovered that over 90% of women aged in their 40s and 50s are so unhappy with the way they look that they suffer from what experts have dubbed “mid-life mirror angst syndrome”. Just nine percent of women over 50 felt proud of what they see in the mirror, over four times more than the 42 per cent of 16-19-year-olds who are happy with what they see and the 43% of twenty-somethings.

Changes wrought by age, combined with a youth-obsessed fashion industry, led to a dramatic drop in body confidence for women the older they get — resulting in Midlife Mirror Angst Syndrome.

“Fashion is aimed at a youthful figure — and the more mature woman can all too often find that she isn’t catered for. Psychologically, the effect is dramatic and demoralising,” the Daily Mail quoted adult behaviour psychologist Susan Quilliam as saying.

“She feels sidelined, even alienated, by the fact that her appearance does not fit the youthful norm. The result can be depression,” said Quilliam.

### **Women**

#### **Women urged to love their heart also (World Newspapers: 2.5.2011)**

Women have been urged to think of their hearts also, with a new research showing that more women die from heart attacks than men in Australia, and yet many more who are unaware they are at risk.

The study conducted by the Heart Foundation found a high level of ignorance among women when it came to heart health, reported the Sydney Morning Herald.

More than 70% of the 1763 women surveyed were unaware that heart disease is the leading killer of Australian women.

"There's just this myth around, that has been around for a long time, that heart disease is an old man's disease and it doesn't affect women to same degree," said Tony Thirlwell, the foundation's NSW chief executive.

"That's just not true," he insisted.

Smoking, being overweight or obese, lack of exercise and poor diet are contributing to the number of women with heart disease, which claims four times more lives than breast cancer each year.

Australian Bureau of Statistics figures show that women overtook men in deaths from heart attack for the first time in 2008, with 5583 deaths compared with 5537 in men.

Thirlwell said the findings were of concern given that women tended to pay more attention to their health than men.



## **Yoga and Physical Fitness Yoga**

### **Study Finds Yoga Calms Heart Pace, Cuts Anxiety (Med India: 4.4.2011)**

A new study has found that people who suffer from irregular heartbeat could see their episodes cut in half if they do yoga regularly.

Doing yoga three times a week also reduced depression and anxiety while boosting people's opinion of their own social and mental well-being, said the research presented at a New Orleans cardiology conference on Saturday.

"It appears yoga has a significant impact on helping to regulate patients' heart beat and improves their overall quality of life," said lead study author Dhanunjaya Lakkireddy, associate professor of medicine at the University of Kansas Hospital.

The study followed 49 patients who suffer from atrial fibrillation, an irregular heart rhythm condition that arises when the heart's natural electrical signals fire off in a disorganized way, causing the heart to quiver.

For the first three months of the trial, patients were allowed to engage in their usual exercise routine.

For the second three months, patients attended three yoga sessions per week with a certified instructor, and were encouraged to practice at home with an educational DVD.

All the patients in the study were new to yoga.

Researchers measured the subjects' episodes of irregular heartbeats using portable monitors and log books where the patients recorded their own symptoms.

The yoga intervention "significantly reduced" irregular heartbeat episodes by about half on average, compared to the control portion of the study when patients did their own exercises, said the study.

Depression and anxiety scores on self-reported surveys were also lower; and physical function, general health, vitality, social functioning and mental health were higher.

## **Physically Active Moms**

### **Labor Of Love: New Research Shows Physically Active Moms-To-Be Give Babies A Head Start On Heart Health (Medical News Today: 8.4.2011)**

Moms-to-be long have been told by their doctors and baby-related books and websites that staying fit during pregnancy is good for both mother and child. When it was reported a couple of years back that exercising strengthens a fetus' heart control, many pregnant women took heed and hit the ground running, literally. Some signed up for prenatal yoga classes; others found new ways to incorporate low-impact aerobic activities into their daily lives.

But, for those pregnant women out there who might not be feeling all that motivated, or anything but energized, new research being reported this week could tip the scales: It turns out that exercising during pregnancy might be the earliest intervention strategy available to you for improving your child's heart health after birth.

"It is my hope that these findings will show that efforts focused on improving health need to start during pregnancy rather than in childhood," says Linda E. May, an exercise physiologist and anatomist at Kansas City University of Medicine and Biosciences who has been heading up a series of studies on fetal heart development for the past four years. "Most of the focus today is on school-age children, but interventions should be focused long before that."

A 2008 pilot study conducted by May and her collaborators at KCUMB and the Kansas City University of Medicine found that pregnant women who exercised at least 30 minutes three times a week had fetuses with lower heart rates - a sign of heart health - during the final weeks of development.

Now the team has revealed that the fetuses' improved cardiovascular heart control is maintained one month after pregnancy, which indicates that mothers' efforts to stay active have lasting effects. The study results are to be presented this week at the Experimental Biology 2011 annual meeting in Washington, D.C.

For expectant mothers like Kelli Gifford of Katy, Texas, the idea that an extra Zumba class or lap around the park could put her baby on a path to heart health puts an extra spring in her step.

"I had been regularly exercising many hours a week for years before I got pregnant and felt no need to change anything after I became pregnant," said Gifford, who was not involved in the study. "Of course, I checked with my doctor and researched websites to make sure I wasn't causing my baby any harm, but it seemed to be the consensus to keep doing what I was doing as long as I felt OK -- and I have! I feel great and haven't been sick a day. It's been really beneficial to both me and my baby, and I hope it helps both of us long-term as well."

May's research team's latest investigation involved 61 moms-to-be and monitored maternal-fetal and infant heart function four times over the course of the study. The women's aerobic activity levels ranged from power walking to running. Some of the more active participants also lifted weights and practiced yoga.

"The system that controls heart function is known to improve with regular aerobic exercise," May says, "and improved heart control function is evidence of a healthy cardiovascular system and overall health. Not only did the mothers' exercise help maintain and improve their own health, but it set their babies up for a healthier start."

At 2:30 p.m. Sunday in Room 101 of the Walter E Washington Convention Center in D.C., May will present her findings during a 30-minute talk before the American Association of Anatomists at the Experimental Biology 2011 meeting.

The research team's work is funded by the Kansas City University of Medicine and Biosciences and the Hoglund Brain Imaging Center at the University of Kansas Medical Center (KUMC).

May's collaborators include: Kathleen Gustafson, a research assistant professor at the Hoglund Brain Imaging Center at KUMC; Henry Yeh, a statistician at KUMC; Alan Glaros, a statistician at KCUMB; and Richard Suminski, an exercise physiologist at KCUMB.

### **Moms-to-be who exercise**

### **Moms-to-be who exercise help strengthen child's heart health (The Tribune: 13.4.2011)**

A study on the benefits of exercising while pregnant has found that moms-to-be who do so help their children to have healthy hearts after birth. When it was reported a couple of years back that exercising strengthens a foetus' heart control, many pregnant women took

heed and hit the ground running, literally. Some signed up for prenatal yoga classes, while others found new ways to incorporate low-impact aerobic activities into their daily lives. Linda E. May, an exercise physiologist and anatomist at Kansas City University of Medicine and Biosciences, has been heading up a series of studies on foetal heart development for the past four years. "It is my hope that these findings will show that efforts focused on improving health need to start during pregnancy rather than in childhood," she said.

### **Diet plus Exercise**

#### **Diet plus Exercise Is More Effective for Weight Loss than Either Method Alone (Science Daily: 15.4.2011)**

Everyone knows that eating a low-fat, low-calorie diet and getting regular exercise helps shed pounds, but a new study led by researchers at Fred Hutchinson Cancer Research Center has found that when it comes to losing weight and body fat, diet and exercise are most effective when done together as compared to either strategy alone.

The results of this randomized trial, led by Anne McTiernan, M.D., Ph.D., director of the Prevention Center and a member of the Hutchinson Center's Public Health Sciences Division, were published online April 14 in *Obesity*.

The majority of women in the study who both improved their diet and exercised regularly shed an average of nearly 11 percent of their starting weight, which exceeded the study's goal of a 10 percent or more reduction in body weight.

"We were surprised at how successful the women were," McTiernan said. "Even though this degree of weight loss may not bring an obese individual to a normal weight, losing even this modest amount of weight can bring health benefits such as a reduced risk of diabetes, heart disease and cancer."

The year-long intervention involved 439 overweight-to-obese, sedentary, postmenopausal Seattle-area women, ages 50 to 75, who were randomly assigned to one of four groups:

exercise only (goal: 45 minutes of moderate-to-vigorous aerobic exercise per day, five days a week, including three days at the Hutchison Center's exercise facility);

diet only (goal: 1,200 to 2,000 calories a day, depending on starting weight, and fewer than 30 percent of daily calories from fat);

exercise and diet (with the same goals as above); and

no intervention.

"Although numerous studies have examined the effect of lifestyle interventions on weight, few have focused on postmenopausal women, a group that experiences particularly high rates of overweight and obesity," McTiernan said.

At the end of the intervention, the researchers found that the women in the exercise-only group lost, on average, 2.4 percent of their starting weight (with a mean weight loss of 4.4 pounds) as compared to an average weight loss of 8.5 percent among women in the diet-only group (with a mean weight loss of 15.8 pounds). The greatest weight loss was achieved by women who both changed their diet and exercised regularly; these women shed an average of 10.8 percent of their starting weight (with a mean weight loss of 19.8 pounds). Two-thirds of the women in this group achieved the study goal of losing at least 10 percent of their starting weight.

Body-mass index (height-to-weight ratio), waist circumference and percentage of body fat were also significantly reduced among the three intervention groups. The women who were assigned to the nonintervention control group, who did not change their diet or activity level, on average lost less than a pound -- a statistically insignificant decrease.

"This study shows that you get the biggest bang for your buck by combining a healthy weight-loss diet -- which in this case meant reducing calories by cutting fat intake and boosting the consumption of low-calorie foods -- with regular, moderate-intensity aerobic exercise," McTiernan said. "You don't need to be an athlete; walking, biking or gym cardio machines all work well. Start slowly and gradually increase to 45 minutes of activity a day, more if you are able."

In addition to promoting weight loss and preventing weight gain over time, regular exercise helps with balance, strength and fitness. "This helps older people keep active overall, which has been shown to prolong a healthy life," McTiernan said.

The study also found that the women who lost the most weight and body fat kept a food journal, writing down everything they ate and drank with the exception of water and no-calorie drinks. Other strategies associated with the most successful weight loss included preparing meals at home and eating out less often at restaurants. "Doing your own cooking gives you the most control over calories," McTiernan said.

The combined diet-plus-exercise arm of the study followed the current nutrition and physical activity recommendations by the National Institutes of Health Obesity Education Initiative Expert Panel. "Our clinical trial supports these recommendations," McTiernan said.

Despite the overwhelming evidence for the benefits of lifestyle-induced weight loss, there are still major barriers to implementing these programs, the authors wrote. To this end, McTiernan and colleagues are conducting ongoing follow up of these study participants to try to determine factors -- both psychological and behavioral -- that are associated with long-term weight-loss maintenance. "Identifying factors that help women not only lose weight but keep it off long term will help steer the development and implementation of obesity-treatment programs that have the greatest promise to impact public health," she said.

The National Cancer Institute funded the research, which also involved investigators from the University of Washington School of Medicine, the NCI Office of Cancer Survivorship, the University of British Columbia and Harvard Medical School.

## **New Medications**

### **New Medications for Chronic Brain Diseases a Possibility with Recent Research (Med India: 25.4.2011)**

A needle-in-the-haystack search through nearly 390,000 chemical compounds had led scientists to a substance that can sneak through the protective barrier surrounding the brain with effects promising for new drugs for Parkinson's and Huntington's disease. They report on the substance, which blocks formation of cholesterol in the brain, in the journal, ACS Chemical Biology.

Aleksey G. Kazantsev and colleagues previously discovered that blocking cholesterol formation in the brain could protect against some of the damage caused by chronic brain disorders like Parkinson's disease. Several other studies have suggested that too much cholesterol may kill brain cells in similar neurodegenerative diseases. So they launched a search for a so-called "small molecules" — substances ideal for developing into medicines — capable of blocking formation of cholesterol.

They describe discovery of a small molecule that blocks the activity of a key protein involved in cholesterol production. It successfully lowered cholesterol levels in isolated nerve cells and brain slices from mice. If the molecule proves to be a good target for developing new drugs, the scientists note, "it could have a broader application in other neurological conditions, such as Alzheimer's disease, for which modulation of cholesterol and other associated metabolic pathways might be of therapeutic benefit

## **Exercise**

### **Simple Exercise Improves Lung Function in Children with Cystic Fibrosis (Science Daily: 9.5.2011)**

A small Johns Hopkins Children's Center study of children and teens with cystic fibrosis (CF) shows that simple exercise, individually tailored to each patient's preference and lifestyle, can help improve lung function and overall fitness.

Frequent lung infections, breathing problems and decreased lung function are the hallmark symptoms of CF, a genetic disorder marked by a disruption in the body's ability to transport chloride in and out of cells that leads to the buildup of thick mucus in the lungs and other organs.

Because rigidly structured high-intensity exercise routines are hard to sustain over time, the Johns Hopkins team designed exercise regimens that fit easily into each patient's daily life. The researchers asked 58 children with CF, ages 6 to 16, to describe their daily routine and preferred physical activities. Based on their answers, the patients received individual exercise recommendations, including going for a stroll, taking a dance class, playing basketball in the driveway or playing with a Wii™.

Researchers compared the patients' lung function and exercise tolerance before and after the two-month program. The exercise tolerance test consisted of walking multiple 10-meter (roughly 33 feet) intervals. After completing the exercise programs, patients were able to perform seven more 10-meter walking intervals, on average, than they were before completing the exercise regimen.

All children showed small bumps in pulmonary function tests, but children who increased their exercise capacity by 10 or more walking intervals showed even more noticeable improvement (5 percent or more) in lung function scores.

On average, patients also reported improved self-image, the researchers say.

Patients with CF follow complex treatment regimens including daily medication, breathing exercises and therapy with special devices to help break up mucus in their lungs. While the benefits of exercise on overall health are well-known, many pulmonologists have shied away from formally prescribing exercise as part of the treatment plan, the investigators say.

The new Johns Hopkins Children's study may change that. Albeit preliminary, the findings suggest that patient-tailored exercise regimens can be easily incorporated into the treatment plan for patients with CF, the researchers say.

"Exercise, even when informal and unstructured, not only appears to improve lung status in children with CF, but goes a long way toward benefiting their overall health, self-perception and emotional well-being," said lead investigator Shruti Paranjape, M.D., a pediatric pulmonary specialist at Johns Hopkins.

Co-investigators on the research include Laura Barnes, B.A., formerly of Johns Hopkins and now a medical student at the University of Minnesota; and Kathryn Carson, Sc.M., of the Johns Hopkins Bloomberg School of Public Health.

## **Yoga**

### **Study Indicates Yoga Helps Breast Cancer Patients Better Than Stretching Exercises (Med India: 19.5.2011)**

A US study indicated Wednesday that breast cancer patients who practice yoga experience lower stress and improved quality of life compared to counterparts who do stretching exercises.

Researchers at the University of Texas MD Anderson Cancer Center studied 163 women with an average age of 52 who were undergoing radiation therapy for breast cancer, ranging from early onset to stage three.

The women were randomly assigned to one of three groups -- yoga, simple stretching and no instruction in either.

Those assigned to yoga or stretching practiced in one-hour sessions three times a week for the duration of the six-week radiation therapy.



At the end of their radiation treatment, they were asked to report on their own health and well-being at one, three and six months after treatment, and they also underwent tests to measure heart function and stress hormone levels.