The Bagnall Centre for Integrated Healthcare

First Bagnall Centre for Integrated Healthcare Conference

Lifestyle and cancer: How closely are they related?

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Introduction

Lifestyle feels as modern an ‘acquisition’ as the smart phone or the tablet computer. The medical profession has seized the term and now uses it to cover a combination of our work life balance, diet and exercise. The link between our state of health, our diet and the amount of exercise we take is strong and well documented. Beyond these familiar components of lifestyle focused on our physical wellbeing, expansion of the concept to include the mind more directly is now entering the agendas of healthcare professionals and policy makers. The promise of a truly holistic approach to health and wellbeing is emerging.

For healthcare professionals and patients alike, cutting through the noise in this area and accessing the best evidence-based practice can be such a struggle that patients do not benefit from treatments that would help them. At this one-day conference, experts focused on an expanded concept of lifestyle in relation to cancer risk and recovery. This report summarises important insights discussed, including certain counter-intuitive findings detailed in Myth Busters.

Cancer in 2017 – a major cause of morbidity and mortality with advances in conventional care delivering incremental improvement in outlook for many patients

Cancer remains one of the most devastating diagnoses patients can receive, despite the improvements in outlook that have been achieved through advances in conventional medical treatment in recent decades. On average we have a 50% lifetime risk of being affected by some form of cancer but the good news is that modern treatments have transformed prognosis from an acute to a chronic condition for many of us. However, cancer remains a major cause of morbidity and mortality. Over 40% of cases are preventable, and outcomes can be improved by complementing medical treatment with lifestyle improvements.

Evidence for the role of diet and exercise in cancer risk is strengthening

Mr Thomas Ind (Head of Gynaecological Oncology, Royal Marsden and St George’s Hospital, London) has made a special study of endometrial cancer and has drawn lessons from this form of the disease and its causation. ‘Endometrial cancer (EC) is the most common form of gynaecological cancer and the surprising insight of recent years has been the understanding that EC is caused by obesity’.

In the past (early 1990s) the disease was linked to the use of unopposed oestrogens (oestrogen therapy alone without progesterone). However, during the past 20 years the incidence of EC has continued to rise.

The growing evidence suggests that cases presenting these days are due to obesity with the link being as strong as that between cervical cancer and HPV infection. The increase in EC tracks the increase in obesity during this period. Mr Ind provided a reason for the link. 'The effect of adipose tissue in the obese individual is to increase the amount of free circulating oestrogens which are able to drive growth of endometrial tissue, eventually leading to cancer', he explained.

This understanding suggests that endometrial cancer is preventable. The World Cancer Fund reports that in the UK at least 75% of cases could be prevented.

Endometrial cancer itself is treatable but is that the end of the story? According to Mr Ind, '…endometrial cancer is a symptom of metabolic syndrome, the combination of obesity, hypertension and diabetes. Although as a surgeon I can treat the endometrial cancer rather effectively, the outlook for the individual is more due to the underlying metabolic syndrome. Many of my patients find it difficult to accept the link between their obesity and the fact that they have cancer, in the same way that smokers who develop lung cancer see the connection. But the understanding is important because the risk of recurrence of the cancer is reduced if weight loss can be achieved and maintained'.

Appropriate exercise can have an anti-cancer effect

The 'story' that exercise can reduce the risk of developing cancer has been well covered in recent years, but how can exercise benefit us in this way, and importantly, how much do we need to do? Professor Robert Thomas (Consultant Oncologist, Bedford and Addenbrooke's Cambridge University Hospitals, Visiting Professor of Applied Biological & Exercise Science, Coventry University, Chair of the Exercise Expert Advisory Committee for Macmillan Cancer Support) shared findings from studies including those undertaken as part of the Primrose Oncology Lifestyle Research Unit.

Physical exercise produces biochemical changes both directly and indirectly.

Directly, exercise:

- Improves insulin sensitivity (Lowers IGF-1)
- Lowers sex hormones
- Enhances antioxidant enzyme production
- Improves DNA repair P53
- Is anti-inflammatory

Indirectly, exercise:

- Reduces weight and elevates mood
- Increases light exposure and increases vitamin D

What is an optimum exercise regime? Professor Thomas noted: '3 -4 hours per week of moderate exercise reduces absolute risk of cancer by 15%, slows progression, reduces relapse rate and improves the chance of cure'.

Understanding of the role of diet in cancer and health is becoming more sophisticated

Of all the lifestyle guidance available, much of it is dietary advice. The task of identifying the best dietary regime for an individual is difficult. Professor Thomas focused on two areas of research; processed sugar and the gut microbiome. Insights gained are providing answers to help us adapt our diet to reduce our risk of cancer and many other disorders, and to promote health and wellbeing.

What's the problem with sugar?

Processed sugar has usurped the reputation once played by fat as the most toxic ingredient in our diet. Beyond the well-known role of sugar in promoting obesity, recent research points to its more pernicious role in disease, notably metabolic syndrome – the combination of obesity, hypertension and diabetes – and cancer.

Professor Thomas described sugar as a 'killer' and a direct cause of cancer. The effect of chronic and massive energy surges caused by sugar intake is to increase several biochemicals (notably insulin growth factor (IGF) and pro-inflammatory molecules) which drive cell proliferation and cancer growth. A chronic state of inflammation which is promoted by high sugar intake has been linked to many chronic medical conditions. The Western diet has a relatively high inflammatory index of 4.67. This compares with lower indices of -3.95 (Mediterranean) and -5.54 (Macrobiotic).

What are the benefits of probiotics?

Probiotics are bacteria which provide certain health benefits when consumed in the diet. The earliest reference goes back 100 years to the use of yoghurt; the useful bacteria in the yoghurt were believed to replace harmful gut microbes. The reasons for the development of an unhealthy gut microbiome and its role in many chronic disorders is a hot research topic in biomedicine. (Note that probiotics should not be confused with prebiotics, which are substances that help the growth of beneficial microbes.) Professor Thomas discussed two major properties of probiotics: improved immunity and reduced chronic inflammation. The benefits are widespread:

Gut benefits:

- Reduced risk of antibiotic-induced and travellers' diarrhoea
- Reduced risk of lactose or gluten intolerance
- Reduced risk of bowel cancer
- Better response to immune therapies
- Better absorption of polyphenols (see below)

Outside the gut:

- Reduced risk of hospital acquired infection
- Reduced risk of Parkinson's/Dementia
- Reduced risk of Osteoporosis
- Increased resistance to colds/fatigue
- Improved athletic performance

What are the best sources of probiotics? They are found in a variety of natural and readily available foods, most notably fermented products such as sauerkraut, kimchi, kefir and natto. Other than naturally occurring sources, probiotic-containing products are available, such as Actimel.

What do we know about polyphenols and health?

Polyphenols are substances found in plants and are often also referred to as flavonoids or anti-oxidants based on one of their effects. It has been suggested that the anti-cancer effect of polyphenols works by enhancing the antioxidant enzymes in the body. Some polyphenols can also have a weak hormone like effect (see Myth Busters).

At the Conference, research into four polyphenols was presented:

- Epigallocatechin gallate – found in green tea
- Curcuminoids – yellow pigment of curcumin
- Ellagic acid – found in pomegranate seeds
- Iothiocyanate – found in broccoli

These ingredients have been formulated into a capsule – PomiT – for clinical testing and currently available to consumers. Some of the research presented by Professor Thomas showed that Pomi-T significantly reduces the rise in Prostate Specific Antigen in men diagnosed with prostate cancer compared to a control group of men who took a placebo version of Pomi-T.

Chronic stress not proven to cause cancer but can reduce quality of life during recovery

Being 'under stress' for lengthy periods seems to be an inescapable part of modern lifestyle, but what does the term mean medically? Dr Mark Chambers (Former GP and NLP Master Practitioner, Sudbury, UK) explained that stress is a concept borrowed from physics and engineering and means a force that tends to deform a system which responds by showing strain. Humans (and other animals) evolved a complex response to deal with the stress of predators, called the 'flight or fight response'. The signs of this response are familiar: increase in heart rate and blood pressure, heightened alertness and sweating – adaptations to prepare to deal with a serious threat. Resolution of the response comes via a relaxation response. Dr Chambers explained '…the stresses of modern life can also trigger these and other physiological responses. With neither flight nor fight generally being appropriate options for us, the heightened state is maintained and not resolved through relaxation. Eventually, the body becomes exhausted and susceptible to disease'.

The way the term stress is commonly used seems a little subjective, so how do healthcare professionals assess it in individuals? The key hormone of the stress response is cortisol. Normally, levels wax and wane over a 24-hour period (circadian rhythm), being lowest at night and rising before we get up in the morning. Chronic stress is associated with persistently elevated cortisol levels which do not follow the natural circadian rhythm. Excessive cortisol and other hormones can bring about long-term changes in brain structures. Dr Chambers explained '…an important brain structure involved in the stress response is the amygdala. The amygdala responds to perceived threats by initiating the stress response, which is mediated via hormones, including a rise in cortisol levels. The human amygdala can sustain this state of hyper-arousal indefinitely. We are the only animal that can do this.'

Although living in a high state of stress is undesirable and intuitively makes us feel that it exerts a negative effect on our physical health, what is the link between stress and health, particularly cancer? Dr Chambers noted that although evidence of a causal link between stress and development of cancer is weak, chronic stress is associated with unhealthy behaviours such as smoking, over-eating and excessive alcohol intake. In addition, animal studies show that psychological stress can promote the growth of an existing tumour, possibly via another stress hormone, noradrenaline. The benefits of stress reduction come from improved mental health and reduced symptoms related to cancer and its treatment.

What strategies are recommended to reduce the harmful effects of prolonged stress on health and cancer in particular? A large number of strategies are available which either reduce contributors to stress (smoking, excessive alcohol intake, poor diet), or help an individual make positive improvements in their lives (seeking emotional and social support, relaxation exercises, stress management and meditation). Dr Chambers emphasised that these are the same changes recommended to prevent or deal with a broad range of chronic disorders linked to lifestyle. One approach to mental training receiving increased attention is mindfulness and Dr Chambers explained the background of this discipline which is rooted in ancient meditation practices. He explained '…mindfulness practice has been specifically tailored to stress-reduction. The aim is to produce a state of alert, focused relaxation achieved by paying attention to thoughts and sensations without judgement, with focus in the present moment.'

20 years of medical research has demonstrated that mindfulness practice has many benefits including: reduced anxiety, improved management of chronic pain, improved control of eczema and psoriasis and hypertension and improved immune function.

The mind can affect our immune function response

The work of investigators over the past 40 years has identified an intimate relationship between mental processes and the immune system.

The immune system is not only responsible for dealing with infection but normally prevents development and progression of cancer.

Dr Chambers cited a summary of 20 studies which found that regular mindfulness practice had several effects on the immune system including reduction in markers of inflammation. Recently a link between a positive attitude and improved benefit from flu vaccination was found. This is in line with a study presented by Dr Chambers which revealed that mindfulness training boosted antibodies in vaccinated individuals compared to a control vaccinated group which did not receive such training.

For both patients and healthcare professionals, the evaluation of the evidence for lifestyle claims poses particular difficulties

Assessing the medical claims for many lifestyle interventions has particular difficulties. In her presentation, Dr Kathleen Thompson (clinician specialising in pharmaceutical research) discussed the various types of evidence and their merits in proving the effectiveness of medicines and lifestyle on illnesses and health. Prior to the spread of the scientific method she explained that reliance was placed on personal experience and folklore. Today medicines are assessed in laboratory studies, animal studies and human studies. Dr Thompson cautioned '…favourable outcomes from the first two types of study should not be used as the basis for considering a treatment safe and effective for human use. In order to make that rather large step, extensive human clinical studies are performed in which the therapy under test is compared, ideally to a placebo, or, if a placebo study is not in the patient's best interests, such as in cancer, to current standard of care.'

These expensive studies are generally funded by pharmaceutical companies. Resources required to perform such 'gold standard' assessment of non-pharmaceutical medicines such as plant-based treatment are usually not available due to cost, but more limited studies can still give an indication of benefit. Lifestyle interventions are generally assessed by observational studies. These can be misinterpreted due to confounding factors and thus need to be interpreted carefully. Dr Thompson gave various tips on how to assess the quality and reliability of 'evidence' reported on the internet and in the media.

Cancer survivors share common lifestyle approaches

The variability in outcomes with cancer therapy is striking but is it a matter of luck or are there behaviours patients can adopt to improve their chances of staying in remission? Dr Jo Lee gave a personal perspective on dealing with cancer from her vantage point as a GP and a patient.

A Personal Perspective on Lifestyle Approaches to Cancer by Dr Jo Lee, GP and Life Coach

I am a GP with personal experience of developing cancer, despite having no family history of the disease, and no significant risk factors such as genetic susceptibility or damage from smoking, alcohol, HPV or sunburn. In time I came to recognise that my own emotional health needed some attention and found personal life coaching to be extremely helpful. By taking time to notice, accept, express and use my emotions I was able to begin to make decisions about my life that were more in line with my own values. Doing this has resulted in positive effects on my overall wellbeing.

My personal experiences inspired me to co-found LYLAC (Live Your Life After Cancer) a coaching programme which helps individuals and groups to look at all aspects of their life after a cancer experience, so that they can address the factors that are most problematic in their own lives – which may be mental, physical, spiritual, and/or emotional. People are able to use their experience as a catalyst for positive change, and the benefits of this are borne out by our course evaluations, in which people consistently report improved confidence and the ability to begin to move forward in their lives after cancer.

We all know that the reasons for cancer developing in any individual are complex and often unknown, and we also know that in every case there may be factors that played a part in the development of cancer which can be changed, so that the chance of recurrence may be reduced. I strongly believe that while medical treatment is ever improving, each individual is best placed to investigate and explore options that might improve their overall well-being and their chance of long term recovery.

In addition to recommending the well-researched dietary- and exercise-based interventions that can improve outcomes in cancer, I now encourage all of my patients and coaching clients to also consider the status and quality of all the elements of their life – including general health, relationships, leisure and relaxation, work, finance, spiritual wellbeing, personal development and sense of purpose in life. I also believe that whatever the prognosis in a particular individual's case we must always take care how we speak to people about their cancer and their prognosis, so that we ensure there is always space for hope and personal exploration.

An important text I recommend is Radical Remissions, by Dr Kelly Turner. This book describes her work interviewing people who had made amazing recoveries from what had been thought to be terminal cancer, during which she uncovered many lifestyle factors that people cited as being instrumental in their recovery – the same lifestyle factors quoted above.

In summary, it is clear that when an individual makes positive changes in any area of their life this has the potential to improve their quantity of life, as well as being beneficial for their quality of life.

What is the availability of mind training on the NHS?

Within the NHS the use of techniques broadly described as mind training is currently patchy, according to Dr Reinhard Kowalski, Consultant Psychologist and Psychotherapist, Chesham. Although not a mainstream treatment, mindfulness training is now recommended by the National Institute for Health and Care Excellence (NICE) as a way to prevent depression in people who have had three or more bouts of depression in the past.

Assessment of the benefits of mindfulness training for other groups of individuals is ongoing, but is the technique suitable for all? In response to this question, Dr Kowalski remarked that mindfulness training is a powerful technique and some individuals, such as those who have experienced trauma, might be contra-indicated. He advocates considering the needs of each individual when prescribing a particular approach to mind training.

As cancer becomes a survivable and chronic condition, an increasing number of patients are likely to be managed in general practice. What are the implications of this trend? During discussion a view emerged that GPs will need, as part of their continuing medical education, to learn how to review evidence for mind training and lifestyle interventions in order to meet the needs of this growing patient population. Beyond cancer, it is envisaged that mind training will benefit a far larger proportion of patients with unmet needs despite use of current mainstream treatments. However, it was noted that in the NHS, the time available and the fragmented system works against such a holistic approach to patient care.

Myth Busters

Myth: Patients with hormone-response tumours (notably breast cancer) should avoid products containing phytoestrogens.

Reality: Phytoestrogens bind weakly to oestrogen receptors resulting in blocking of receptors to action of the body's own oestrogen.

Myth: Sugar in the form of natural fruit is safe.

Reality: Sugar as part of whole fruit is released gradually into the bloodstream, avoiding the spikes that can stress the body’s glucose control system and eventually predisposing to diabetes. However, ‘loose’ fruit sugar such as that taken in a smoothie leads to rapid release.

Statistics alert. Headline claim: ‘Treatment X reduces risk of cancer recurrence by 44%’.

Reality: If the risk of recurrence without treatment is only 9% and with treatment, 5%, the reduction in risk is 4%. The larger and more dramatic figure in the headline of 44% is called the relative risk reduction, calculated by dividing 9% by 4%. So, although the risk of recurrence is nearly halved,

the size of the original risk should also be considered. (Example presented by Dr Kathleen Thompson.)

Conclusions

- The range of complementary health interventions and their acceptance by mainstream medical community is growing.
- Evidence for benefits in particular disorders is variable.
- Important to distinguish between prevention and treatment of cancer when reviewing evidence.
- Overriding strategy behind the holistic health approach, including lifestyle improvement, is the promotion of wellbeing, defined as more than the absence of disease, and disease prevention.
- Successful application of the holistic approach could alleviate the crisis in public healthcare systems such as the NHS, reducing the growing gap between patient need and resources available.
- Adhering to lifestyle interventions requires significant effort by individuals and successful outcomes depend on a long-term partnership with a patient's healthcare professionals. This requires a different model of healthcare and wellbeing compared to the current system based on relatively high technology interventions alone.

About the author

David Bennett is a consultant in the rare diseases sector and is a public representative for a variety of NHS organisations. He has no commercial relationship with the Bagnall Centre and received no fee for producing this article.

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