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Preventing Cancers of the Breast and Colon by How We Choose to Live Every Day

**Professor Tim Byers,
Professor of Epidemiology and Associate Dean at the
Colorado School of Public Health, Denver, Colorado, USA**

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Report by Jennifer Trueland

Small changes made to our day-to-day lives can reduce our chances of getting cancers of the breast and colon, said epidemiologist Professor Tim Byers. The evidence is there to show that losing even a modest amount of weight, making better dietary choices and doing a little exercise helps.

There is no one “cause” of cancer, said Professor Byers. Much like a car accident, various factors – such as the state of the car, road (environment), the driver or individual, or even bad luck – can contribute. Our genes – those that we are born with and mutations throughout life – are implicated, but so are other things, including the choices we make about diet and behaviours. Professor Byers looked in detail at two cancers that are common in Scotland: colorectal cancer and cancer of the breast. In particular, he discussed risk factors and prevention strategies. Breast cancer accounts for 28 per cent of cancers in women. Survival rates have improved greatly over the last 20 years, due to better treatments and earlier diagnosis, rather than to lower incidence. There are a number of risk factors, including age, menstrual history (the earlier you start and later you stop menstruating, the greater the risk); pregnancy history, including number of children and age at first pregnancy; an inherited genotype and exogenous hormones – such as those in HRT (hormone replacement therapy). Nutrition is also an important factor, however, accounting for some 40 per cent of risk.

Obesity and alcohol are both associated with higher risk of breast cancer, while physical activity is associated with lower risk. Height is also a risk factor (with taller women more at risk) which suggests that early nutritional behaviour might be implicated. The probable reasons or mechanisms for these associations are oestrogens (hormones), inflammation and early life growth factors. The overall message, however, is that the fatter you are, the more likely you are to get breast cancer – and although the UK isn’t yet quite as fat as the US, if we try hard we could catch up, said Professor Byers.

The World Health Organisation estimates that 15–20 per cent of cancers are caused by obesity and lack of physical activity. Obesity may, he said, be the most important of all the nutritional factors for cancer, affecting many sites and hitting both men and women. It is, however, preventable if we modify our behaviours.

A number of players are likely to be implicated in the relationship between obesity and breast cancer – certainly oestrogens and probably factors related to inflammation such as cytokines and insulin. Obesity in itself may, as Professor Byers put it, be an “innocent bystander” in all this, but he doesn’t think so. Hormones are probably implicated in more way than one – with both exogenous oestrogen (from HRT) and endogenous oestrogen (from being obese) being associated with oestrogen receptor-positive breast cancers. Oestrogen circulating in the body, regardless of the source, increases the risk of breast cancer.

A number of studies have shown us that weight loss reduces cancer risk. Importantly, this doesn’t need to be a huge amount of weight. Professor Byers said that people could be discouraged at the thought of losing 80 kilos, and therefore give up, but that even modest weight loss had an impact. There is, he said, plenty of evidence that nutritional factors can prevent breast cancer in

the first place, but this has little impact on people's behaviour. This contrasts with the situation after someone has been diagnosed with cancer, where there have been few studies suggesting that good nutrition prevents recurrence, but there is great motivation – and much commercial interest – for behaviour change. Recurrence risk for breast cancer is, however, affected by obesity, even when survivors are taking Tamoxifen. The risk of cancer coming back is a third higher in those who are obese than in those of normal weight, in all ages and in all tumour types. Even a seven per cent weight loss is enough to lower that risk – modest levels of weight loss can make a difference, he said.

Professor Byers described a number of trials where different interventions were used in breast cancer survivors and the most striking was where weight loss was greatest. Other factors – such as a high fruit and veg diet which did not result in weight loss – did not reduce (or raise) the risk of the cancer coming back. Other studies also suggest that weight loss can reduce the level of inflammatory factors in the body, which may also help prevent recurrence.

Alcohol is a tricky one, he said. The evidence is that drinking even moderate amounts increases the risk of developing breast cancer but, equally, drinking one or two drinks per day can protect against cardiovascular disease. There is no evidence, however, that alcohol can reduce the risk of cancer of any site, although it does increase the risks of several, including cancer of the oral cavity, oesophagus, liver and pancreas and, of course, breast. People have to weigh up their own individual risks and make their choice accordingly, he said. Mammography – leading to early detection – has also led to a reduction in mortality of 20–30 per cent, which shows the value of screening.

Turning to colorectal cancer, again he showed that mortality was dropping in Scotland, as with the rest of the developed world. Colorectal cancer accounts for 12 per cent of all cancers in women and 15 per cent in men. There are known risk factors for colorectal cancer: obesity, physical inactivity, a diet low in fruit and vegetables and cereals, and high in red meats. Taken together, these factors account for 40 per cent of risk.

People who eat more fruit and vegetables have less cancer, he said, with risks reduced in cancers of the lung, bladder, ovary and others, including colorectal cancers. Red meats and processed meats, however, are associated with higher risks of colon cancer, possibly because of the way they are cooked, the iron content or, in the case of processed meats, chemicals from the processing itself. Like breast cancer, inflammation (eg cytokines, insulin) could well be a mechanism linking obesity in colorectal cancer.

Professor Byers discussed in some detail the impact of physical activity on cancer risk. It can be hard to disentangle the role of exercise as, of course, it can help reduce weight in itself. But it also appears to have independent benefits. In other words, even people who are overweight or obese can cut their risk of cancer if they take exercise. Importantly this doesn't have to involve running marathons; even getting off the couch can help, he said.

The ways to reduce colorectal cancer, then, include exercise, weight control, reducing red meat and increasing fruit and vegetable intake, and using preventative drugs such as calcium or aspirin.

Removing adenomas (the polyps which could grow into cancer), is also an important preventative measure and reduces mortality. Indeed, screening can reduce mortality by 20–60 per cent. Professor Byers concluded by summing up the main changes which, if made to day-to-day living, lower the risk of getting cancer. These are: maintaining a healthy weight throughout life; balancing what you eat with exercise; avoiding excessive weight gain; and achieving and maintaining a healthy weight if you are currently overweight or obese. Physical activity is important – adults should engage in at least 30 minutes of moderate or vigorous physical activity on at least five days a week, and 45–60 minutes is preferable.

On diet, people should watch their portion size, eat a variety of fruit and vegetables, choose whole grains, limit consumption of processed and red meats and, if drinking alcohol, do so in moderation.

Questions

Questions ranged from the advisability of soya in the diet of people who have survived breast cancer to the role of policy makers in encouraging healthy lifestyles.

There were two questions about the role of soy, particularly in the diets of breast cancer survivors. Professor Byers said he felt it was not advisable for women who had oestrogen receptor-positive breast cancer to eat much soya, although it was “okay” for the general population, he said. He was particularly concerned about women on new drugs which lower the amount of oestrogen in the body (aromatase inhibitors) because their cells could be “wide-open” to the effects of dietary oestrogen (such as that found in soy).

Asked about the impact of vitamin D on cancer risk, Professor Byers said it might be a “small player” (in comparison to major factors such as body weight and physical activity) but that there was controversy about what constituted adequate levels of the vitamin. Similarly, he said he was not a believer in curative powers of so-called “superfruits” such as blueberries. By all means eat “colourful” food, but it won’t be shrinking polyps.

Asked about the impact of shift-working on cancer rates, he said that although it could be a stressor, he did not believe that this caused cancer. If you asked women what they believed caused their breast cancer, they often said stress, but studies hadn’t backed this up. The perception could arise because people think that stress is a “bad thing” psychologically speaking, so if they get a “bad” disease, then they look for something “bad” – stress – to explain it.

Asked about the speed with which breast cancer risk reduces after weight loss, Professor Byers said we are reaching a paradigm shift in how we look at cancer. Previously it was thought that development of cancer was a long process but trials have shown otherwise – for instance, trials in the use of beta-carotene supposedly to prevent lung cancer (it actually had the opposite effect) showed that it led to lung cancer within two years. It could be that we have cancers or potential cancers in our bodies which might or might not develop into disease. For example, we know from post-mortem examinations that lots of men have cancer of the prostate but that it hasn’t grown into a problem.

One member of the audience, who was recently treated after bowel screening picked up a problem, asked about the value of such programmes. Professor Byers said that direct visualisation of the inside of the bowel was the best screening method because it picked up the polyps which could be removed before they developed into cancers. Screening for blood is more of an end-point because the cancer is already there. He said a forthcoming study on lung cancer would suggest value in screening of smokers and ex-smokers, but that it had “huge cost implications”.

Asked about what governments and other policy makers could do to encourage healthy lifestyles – for example, by designing cities which were good to walk in – he said there could be issues with people not wanting to be told what to do, but that while people want to live independently, we want them to be independently healthy.

Vote of Thanks

Thanking the speaker, Scottish Cancer Foundation Director Dr David Brewster said that if a lecture’s success was judged by the “volume and range” of questions it stimulated in the audience, Professor Byers had certainly succeeded. The challenge will now be to review our own lifestyles, he said.