

## One Third of Cancers Caused By Life Style Choices

One third of all cancers are caused by 4 common lifestyle factors — tobacco, diet, alcohol, and obesity.

This finding comes from a detailed review of lifestyle and environmental factors. Researchers calculated the fraction of cancers that can be attributed to each of these factors. The huge study was [published as a supplement](#) to the December issue of the *British Journal of Cancer*.

"This is the most comprehensive review of cancer and lifestyle undertaken to date," said lead author Max Parkin, MD, professor of epidemiology at Queen Mary University, London, United Kingdom. He was speaking at a press conference held by Cancer Research UK, which sponsored the review.

The review was based on the most recent data available; researchers based their 2010 estimates on British incidence figures from 1993 to 2007. The team then calculated the proportion of cancers that could be attributed to 1 of 14 factors: smoking tobacco, drinking alcohol, lack of fruit and vegetables, lack of fiber, eating red and processed meat, too much salt, being overweight or obese, lack of physical exercise, ionizing radiation, ultraviolet radiation, occupational exposure (e.g., asbestos), infections (e.g., human papillomavirus [HPV]), and — specifically for women — postmenopausal hormone replacement therapy and lack of breast-feeding.

"Many people believe that cancer is down to fate or is 'in the genes,' and that it is the luck of the draw whether they get it," Dr. Parkin said. However, he added, "looking at the evidence, it's clear that about 40% of all cancers are caused by things we mostly have the power to change."

The figure is 45% in men and 40% in women; that difference was mostly accounted for by breast cancer in women, Dr. Parkin noted.

In the United Kingdom, this means that around 134,000 cancers annually could be prevented — just over 100,000 of these cases were attributed to tobacco, unhealthy diets,

<b>Cancers in Men</b>	
<b>Risk Factor</b>	<b>Cancers Attributed to Risk Factor (%)</b>
<b>Tobacco</b>	23.0
<b>Lack of fruit and vegetables</b>	6.1
<b>Occupational exposure</b>	4.9
<b>Alcohol</b>	4.6
<b>Overweight and obesity</b>	4.1
<b>Excessive sun exposure and sunbeds</b>	3.5
<b>Cancers in Women</b>	
<b>Risk Factor</b>	<b>Cancers Attributed to Risk Factor (%)</b>
<b>Tobacco</b>	15.6
<b>Overweight and obesity</b>	6.9
<b>Infections (e.g., HPV)</b>	3.7
<b>Excessive sun exposure and sunbeds</b>	3.6
<b>Lack of fruit and vegetables</b>	3.4
<b>Alcohol</b>	3.3

alcohol, and excess weight. Smoking was by far the most important factor, accounting on its own for 60,000 cancers in the United Kingdom each year, or 1 in 5 of all cancers diagnosed, Dr. Parkin emphasized.

Several findings in the review were rather surprising, he said.

"We didn't expect to find that eating fruit and vegetables would prove to be so important in protecting men against cancer," he said. "And for women, we didn't expect being overweight to have a greater effect than alcohol."

The measure used in this review was the population-attributable fraction. Some of the lifestyle factors studied overlap one another, so the percentages add up to more than 100%, Dr. Parkin noted. In lung cancer, for example, the population-attributable fraction for tobacco was 85%, for occupation factors was 13.2%, for lack of fruit and vegetables was 9%, and for ionizing radiation was 4.7%.

In combination, these lifestyle factors account for 89.2% of cases of lung cancer, and just over 10% of lung cancers are not linked to any of these factors, he explained. However, a healthy lifestyle is still no guarantee that you can reduce the risk of getting cancer, he said. "There is always a chance element. While we can modify the probabilities, we can't remove that chance element," he said.

"The vast majority of lung cancer can be prevented," said Sara Hiom, information officer for Cancer Research UK. Although nationwide antismoking campaigns have been very effective at reducing the number of people who smoke, the decline has leveled off and is now at a constant 22% of the population. "We must try to drive this down further, and especially prevent young people from taking up the habit," she said. Cancer Research UK is considering how to publicize the fact that other cancers, in addition to lung cancer, can be caused by smoking; the charity is also working with the British government on an initiative for plain packaging of tobacco.

Cancer Research UK is also working on ways to emphasize messages about diet, excess weight, and the importance of physical activity, she told journalists. About one quarter of the population in the United Kingdom is now overweight, she noted. The charity has been running a major "sun smart" campaign to tackle the increase in malignant melanoma seen in recent years, emphasizing the risk for cancer from sudden extreme sun exposure among pale Caucasians, the so-called holiday "sunshine binge."

Dr. Parkin noted that any prevention strategies must be "reasonable." For example, the review considered no alcohol intake as the optimum, but it is not realistic to encourage everyone to stop drinking; in any case, there is some evidence to suggest that a small amount of alcohol has cardiovascular benefits. Overall, however, following healthy lifestyle options will reduce the risk for other diseases in addition to cancer, he said.

In an introduction to the supplement, Sir Richard Peto, FRS, from Oxford University, United Kingdom, points out that controlling the 4 lifestyle factors that contribute most to cancers —

tobacco, alcohol, diet, and obesity — would also substantially reduce the burden of other noncommunicable diseases, particularly cardiovascular, diabetic, renal, and hepatic disease.

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