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Plenary Lecture

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The causes of cancer

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The aim will be to review the main causes of death from cancer. Worldwide, there are about 8 million cancer deaths a year, of which half involve just four major anatomic sites: lung (1.3 million deaths), stomach (1.0 million), upper aerodigestive tract (0.9 million, chiefly oesophagus) and liver (0.7 million). Hence, these four diseases and their major causes (particularly, tobacco and hepatitis B) are the key to reducing cancer death rates. Cancers of these four major sites are rarely curable, but each is, at least in principle, largely preventable, as is shown by the wide geographic variation in their age-standardised mortality rates. Indeed, avoidable causes are already known for 2 million of these 4 million deaths, since chronic infection with the hepatitis B virus (which is vaccine-preventable) is a cause of most liver cancer deaths, and tobacco is a cause of most lung cancer deaths (and of some of the deaths from cancers of the mouth, oesophagus, stomach and liver).

Of the remaining 4 million cancer deaths, half involve just six additional sites (0.6 million intestine, 0.4 million breast, 0.3 million prostate, 0.3 million uterus, 0.2 million pancreas, and 0.2 million bladder), all of which show wide geographic variation, indicating avoidability. In addition, major causes of some of these six types of cancer are already known to include hormonal factors (breast, prostate), papilloma viruses (cervix uteri) or tobacco (pancreas, bladder).

In total, tobacco is probably responsible for about 20% of all cancer deaths, and this percentage is still rising. Apart from the increasing effects of tobacco, however, there is no generalised increase in the age-standardised death rates from cancer. Successful surgery already contributes massively to the cure of many types of cancer, and where it can be afforded it is one of the most important ways of reducing cancer death rates. Other worthwhile treatments exist, but are of more limited value. On present knowledge, therefore, the most important strategies for reducing death from cancer are tobacco control, hepatitis B control and timely surgery (together with research to find out how to do better in the future).