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Factors Involved in Epidemiology of Cancer

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Commentary

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DESCRIPTION

Cancer epidemiology is the study of cancer-related factors in order to deduce possible trends and causes. Cancer epidemiology is the study of the causes of cancer as well as the identification and development of better treatments. This field of study must deal with lead time bias and length time bias. The concept of lead time bias is that early diagnosis may artificially inflate cancer survival statistics without actually improving the disease's natural history. The concept of length bias is that slower growing, more indolent tumours are more likely to be diagnosed by screening tests, but improvements in diagnosing more cases of indolent cancer may not translate into better patient outcomes after screening programmes are implemented. Over diagnosis, the tendency of screening tests to diagnose diseases that may not actually affect the patient's longevity is a related concern.

This is especially true for prostate cancer and PSA screening. Some cancer researchers argue that negative cancer clinical trials lack statistical power to detect a treatment benefit. This could be because fewer patients than expected enrolled in the study.

Risk Factors

Age is the most significant risk factor. Cancer researcher Robert A. Weinberg believes that "if we lived long enough, we would all get cancer sooner or later." The increase in cancer rates between prehistoric times and people who died in England between 1901 and 1905 is largely due to increased lifespans. Although there is a well-documented increase in cancer risk with age, the age-related patterns of cancer are complex. Some cancers, such as testicular cancer, have early-life incidence peaks for unknown reasons. Furthermore, the rate of age-related increase in cancer incidence varies by cancer type, with prostate cancer incidence increasing much faster than brain cancer. It has been proposed that the age distribution of cancer incidence can be viewed as the probability distribution of obtaining required number of driver events at the specified age.

More than a third of cancer deaths worldwide (and approximately 75%-80% of cancer deaths in the US) are caused by potentially modifiable risk factors.

The following are the most important modifiable risk factors in the world:

- Tobacco use, which is strongly linked to lung cancer, mouth cancer, and throat cancer.
- Alcohol use, which is linked to a small increase in oral, esophageal, breast, liver, and other cancers.
- Low diet in fruits and vegetables.
- Lack of physical activity, which has been linked to an increased risk of colon, chest, and possibly other cancers.
- Obesity is linked to colon, chest, endometrial, and possibly other cancers.

Men are twice as likely as women to have a modifiable risk factor for cancer. Exogenous hormone use (e.g., hormone replacement therapy causes chest cancer), exposure to ionizing radiation and ultraviolet radiation, and certain occupational and chemical exposures are all known to affect cancer risk (either positively or negatively). Every year, at least 200,000 people die from cancer related to their job. Millions of workers are at risk of developing cancers like pleural and peritoneal mesothelioma from inhaling asbestos fibers, or leukemia from benzene exposure at work. Millions of workers are at risk of developing cancers like pleural and peritoneal mesothelioma from inhaling asbestos fibers, or leukemia from benzene exposure at work. Currently, the developed world accounts for the majority of cancer deaths caused by occupational risk factors. It is estimated that occupational exposure causes 20,000 cancer deaths and 40,000 new cases of cancer in the United States each year.