

Annual Report to the Nation on the Status of Cancer, 1975–2012, Featuring the Increasing Incidence of Liver Cancer: Questions and Answers

What is the purpose of this report, and who created it?

The Annual Report to the Nation on the Status of Cancer, 1975–2012, provides a regular update on cancer incidence (new cases) and mortality (death) rates.

The American Cancer Society (ACS), the Centers for Disease Control and Prevention (CDC), the National Cancer Institute (NCI), and the North American Association of Central Cancer Registries (NAACCR) have worked together since 1998 to produce this report.

This year's special feature highlights the increase in incidence and mortality from liver cancer. It emphasizes the importance of public health efforts to prevent, identify, and treat hepatitis B and C infections and to reduce other risk factors for liver cancer.

What are the sources of the data?

In the report, mortality data come from death certificate information reported to state vital statistics offices. CDC combines and processes the mortality data from the entire U.S. through the National Vital Statistics System. Death rates in this report were calculated for all cancer sites combined, for childhood cancers, and for the most common cancers among men and women.

Information on new cases of cancer was compiled from data provided to NAACCR by population-based registries that participate in CDC's National Program of Cancer Registries (NPCR) and/or NCI's Surveillance, Epidemiology, and End Results (SEER) program. For estimating long-term (1992–2012) incidence trends in this report for all racial and ethnic groups combined, the authors used data from SEER-13 registries covering 14 percent of the population. Data from combined NPCR and SEER registries were used to estimate cancer incidence rates and 5- and 10-year trends for each of the five major racial and ethnic groups (white, black, Asian/Pacific Islander, American Indian/Alaska Native, and Hispanic). Together, NPCR and SEER registries cover 97 percent of the population for 2008–2012 and 92 percent for 2003–2012.

Which reporting periods were chosen as a main focus of the report?

The period from 1992–2012 was used to provide perspective on long-term cancer incidence trends. Incidence data were calculated for five- (2008–2012) and 10-year (2003–2012) periods for all racial and ethnic groups combined and for a 10-year (2003–2012) period for each of the five major racial and ethnic groups. The period from 1975–2012 was chosen to provide perspective on long-term mortality trends. Five-year (2008–2012) and 10-year (2003–2012) death rates were examined for each of the five major racial and ethnic groups.

What is detailed in the special feature section of this year's report?

In this year's special feature section, the authors note that despite successful reductions in incidence and mortality from the most common cancers, some cancers are showing unfavorable trends. Liver cancer death rates are increasing at the highest rate of all cancer sites among men and women.

Hepatocellular carcinoma (HCC) is the most common histologic type of primary liver cancer, and trends in this type of liver cancer are affected by changing prevalence in risk factors. In the U.S., a critical risk factor for HCC is hepatitis C virus (HCV) infection. Incidence of new HCV infection was highest in the 1960s to 1980s, before the virus was discovered and routine testing of the blood supply became possible; in the absence of HCV testing and treatment, about 7 in 10 infected persons remain infected for life and, as the years go by, are at increasing risk for liver cancer. Accordingly, there is higher incidence of liver cancer among people born between 1945 and 1965 (47 to 67 years of age in 2012). This report provides evidence of increased burden of liver cancer in this

subgroup, and also details additional risk factors for liver cancer such as diabetes mellitus type 2 and other causes of liver disease.

Update on Incidence and Mortality Trends for All Cancer Sites Combined and the Most Common Cancers

What is happening with cancer incidence trends overall?

Incidence rates represent the number of reported new cases over a period of time per 100,000 people in the general population. From 2003–2012, age-adjusted incidence rates for all people decreased, on average, by 0.7 percent per year. Among men, overall cancer incidence decreased an average of 1.4 percent per year during 2003–2012, though incidence rates remained stable overall in women during the same time period.

During set time periods between 1992 and 2012, cancer incidence rates decreased among men over each time period, but at different rates. Cancer incidence rates increased slightly for women (0.8 percent per year) from 1992–1998, then remained stable. Among children in both the 0–14 and 0–19 age groups, incidence rates increased at 0.8 percent per year from 1992 to 2012.

From 2003–2012, incidence rates for 7 of the 17 most common cancers in men decreased: prostate, colon and rectum (colorectal), lung and bronchus (lung), stomach, larynx, urinary bladder (bladder), and brain and other nervous system (brain), whereas incidence rates for 8 cancers among men increased: thyroid, liver, myeloma, melanoma of the skin (melanoma), kidney and renal pelvis (kidney), leukemia, pancreas, and oral cavity and pharynx.

Of cancer incidence rates that declined in men, there was a striking decrease of an average of 6.6 percent per year during 2008–2012 for prostate cancer.

Among women during the same time period, 6 of the 18 most common cancers decreased in incidence rates: colorectal, cervix uteri (cervix), lung, bladder, ovary, and stomach. However, incidence rates of 8 of the most common cancers in women increased: thyroid, liver, corpus and uterus, NOS (uterus), kidney, pancreas, melanoma, leukemia, and myeloma.

Note that findings are presented for the top 17 cancers among men and top 18 cancers among women. Cancer represents over a hundred different types of diseases, based on where it occurs in the body, as well as the biological features of the tumor.

Even if incidence rates remain stable or decline, the number of people diagnosed with cancer and living after a diagnosis (survivors) will continue to rise due to an aging and growing population in this country.

What is happening with cancer mortality trends overall?

Analysis of long-term trends (1975–2012) shows that overall cancer death rates have generally decreased since the early 1990s for adults and the 1970s for children. From 2003 to 2012, death rates continued to decline by an average of 1.5 percent per year for adults, 1.3 percent per year for children ages 0 to 14 years, and 2 percent per year for children ages 0 to 19 years.

Among men, death rates declined overall from 2003–2012 by an average of 1.8 percent per year. Declines in death rates among men were observed for cancers of the prostate (3.5 percent per year), stomach (3.3 percent per year), larynx (2.5 percent per year), colorectal (2.9 percent per year), lung (2.7 percent per year), and for non-Hodgkin lymphoma (2.2 percent per year). The largest increase in death rates over the 2003–2012 time period for men was in liver cancer, with a 2.8 percent per year increase.

Among women, death rates declined overall from 2003–2012 by 1.4 percent per year. Notable declines in death rates in women included for non-Hodgkin lymphoma (3.1 percent per year), colorectal cancer (2.9 percent per year), cancers of the stomach (2.6 percent per year), ovary (2.0 percent per year), breast (1.9 percent per year), and lung (1.4 percent per year). The largest increase in death rates over the 2003–2012 time period for women was in liver cancer, as well, with a 2.2 percent per year increase.

What impact could screening rates be making on incidence and death rates?

Decreases in both incidence and mortality of cancer, and specifically deaths due to the most common cancers (female breast, prostate, lung, and colorectal) may indicate the effects of changes in screening practices. Comprehensive public health tobacco-control strategies are an important contributing factor to decreases in lung cancer incidence and mortality for both men and women. Lung cancer death rates declined in both men and women over the period 2003–2012 potentially due to declines in smoking rates. Currently, the United States Preventive Services Task Force (USPSTF) recommends regular screening with computed tomography for former or current heavy smokers between the ages of 55 and 80 years old.

Strong evidence exists that screening for colorectal cancer reduces both incidence and mortality of the disease. Colorectal cancer incidence and death rates have continued to decline. However, a recent report on colorectal cancer screening showed that 28 percent of U.S. adults were not up to date with one of the colorectal cancer screening tests recommended by USPSTF. Observed declines in incidence rates are promising, but if screening rates drop, then there is the chance that fewer colorectal cancers will be prevented or caught early, leading to the potential for higher mortality and incidence in the future.

Advances in early detection and treatment continue to contribute to the decreasing breast cancer mortality for some age groups. Not all racial and ethnic groups benefit equally, though. Black women have higher breast cancer death rates than white women, despite lower incidence rates. Breast cancer subtypes could be a contributing factor. Last year's Annual Report to the Nation on the Status of Cancer covered breast cancer subtypes.

The ongoing decrease in prostate cancer incidence most likely reflects the continued reduction in testing for prostate-specific antigen (PSA). Monitoring of incidence and death rates in the coming years will be important for ensuring a balance between reducing unnecessary testing and ensuring early diagnosis of aggressive cases of prostate cancer.

Liver Cancer

Who is at risk for liver cancer?

A major risk factor is [hepatitis C virus \(HCV\) infection](#). The incidence of new HCV infection was highest in 1960–1980s, before the virus was discovered and preventive measures could be taken. While risk of liver cancer for all people increases with age up to age 85, there has been a significant increase in liver cancer incidence rates among people born 1945–1965, likely due to high rates of chronic HCV infection in this group. About 22 percent of the most common histological type of liver cancer is attributed to HCV. Among persons born 1945–1965, rates of hepatitis C were highest among non-Hispanic whites, non-Hispanic blacks, and Hispanics.

Cirrhosis, or scarring of the liver, is also a precursor to liver cancer. In addition to those with HCV or hepatitis B virus (HBV) infection, those at risk of cirrhosis include people with a history of liver disease, history of heavy alcohol use, and some rare genetic disorders. Approximately 8 to 16 percent of liver cancer deaths in the country were reported to be attributed to alcohol overuse. Increasing evidence suggests that risk factors like type 2 diabetes mellitus and obesity are important contributing factors to cirrhosis and potential liver cancer.

Does liver cancer affect men and women equally?

No. Men have nearly a threefold higher liver cancer rate than women do. In 2012, the last year of available data, 28,012 people were diagnosed with liver cancer in the United States (excluding Nevada). Of these, 20,207 were men and 7,805 were women. Men died from liver cancer in 2012 at nearly double the rate of women, with 15,563 deaths among men and 7,409 among women.

Does liver cancer affect all racial and ethnic groups equally?

No. For both men and women, liver cancer incidence rates were highest among non-Hispanic American Indian/Alaska Natives, followed by non-Hispanic Asian/Pacific Islanders and Hispanics. The dominant liver cancer-related virus among Asian/Pacific Islanders is HBV, and is more common among Asians than among other racial groups, especially Asians who were born outside the country. However, with the advent of hepatitis B [vaccination](#), fewer cases of HBV are anticipated in the future. In the near term, though, unvaccinated adults from Asian/Pacific Island countries are at increased risk. CDC and the USPSTF recommend HBV testing for persons born in Asia and Africa. HBV testing and subsequent therapy is associated with a 50–80 percent reduction in the risk for liver cancer.

What can be done to reduce incidence and mortality rates of liver cancer?

CDC and the USPSTF recommend one-time testing for HCV for people born from 1945–1965 (baby boomers). Those who test positive should be referred for appropriate care and treatment to prevent HCV-related liver disease including liver cancer. Cures of HCV are associated with a 75 percent reduction in risk for liver cancer.

Other strategies for reducing the burden of liver cancer include promoting hepatitis B vaccination, establishing and implementing public health initiatives aimed at reducing unhealthy behaviors such as [smoking](#) and [excessive alcohol use](#), and promoting healthy eating and physical activity to reduce [obesity](#).

Reference:

Ryerson AB, et al. Annual report to the nation on the status of cancer, 1975–2012, featuring the increasing incidence of liver cancer. March 2016. *Cancer*.