

# Liver and Bile Duct Cancers

## Incidence and Mortality Rate Trends

Primary liver and bile duct cancers are the fifth most common cause of cancer death in men and the ninth most common cause of cancer death in women. More than 90 percent of all cases occur in people age 45 or older. Liver cancer is closely associated with hepatitis virus infections, especially hepatitis B. Almost all cases of liver cancer in the United States occur in people who first had cirrhosis, usually resulting from hepatitis B or C infection or from heavy alcohol use.

The incidence rates for these cancers have increased in people of all races and in both sexes over the past two decades; mortality rates have increased in all groups except Asians/Pacific Islanders. Men are more than twice as likely as women to develop and die from liver and bile duct cancers, and African Americans and Hispanics are almost twice as likely to develop these cancers as whites. Although, in general, Hispanics and Asians/Pacific Islanders have lower incidence rates of cancer than whites, they have much higher rates of liver cancer.

Source for incidence and mortality data: Surveillance, Epidemiology, and End Results (SEER) Program and the National Center for Health Statistics. Additional statistics and charts are available at <http://seer.cancer.gov/>.

## Trends in NCI Funding for Liver and Bile Duct Cancers Research

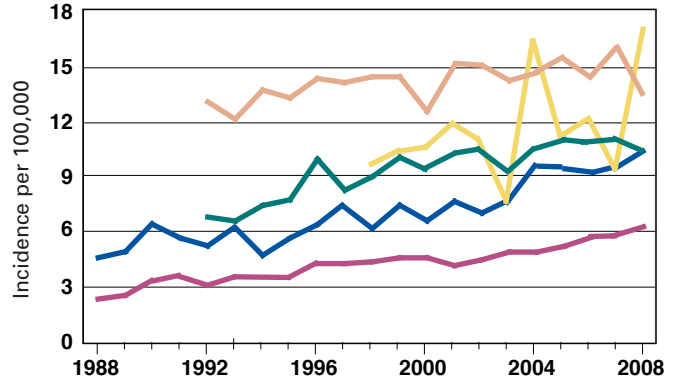
The National Cancer Institute's (NCI) investment<sup>1</sup> in liver and bile duct cancers research increased from \$63.3 million in fiscal year (FY) 2006 to \$72.6 million in FY 2010. In addition, NCI supported \$12.2 million in liver and bile duct cancers research in FY 2009 and 2010 using funding from the American Recovery and Reinvestment Act (ARRA).<sup>2</sup>

Source: NCI Office of Budget and Finance (<http://obf.cancer.gov/>).

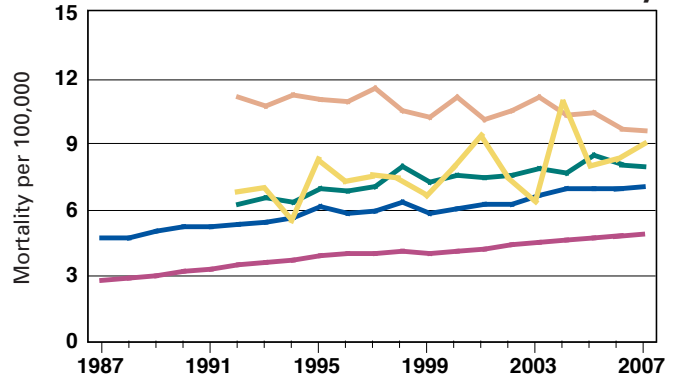
<sup>1</sup> The estimated NCI investment is based on funding associated with a broad range of peer-reviewed scientific activities. For additional information on research planning and budgeting at the National Institutes of Health (NIH), see <http://www.nih.gov/about/>.

<sup>2</sup> For more information regarding ARRA funding at NCI, see <http://www.cancer.gov/aboutnci/recovery/recoveryfunding>.

U.S. Liver and Bile Duct Cancers Incidence



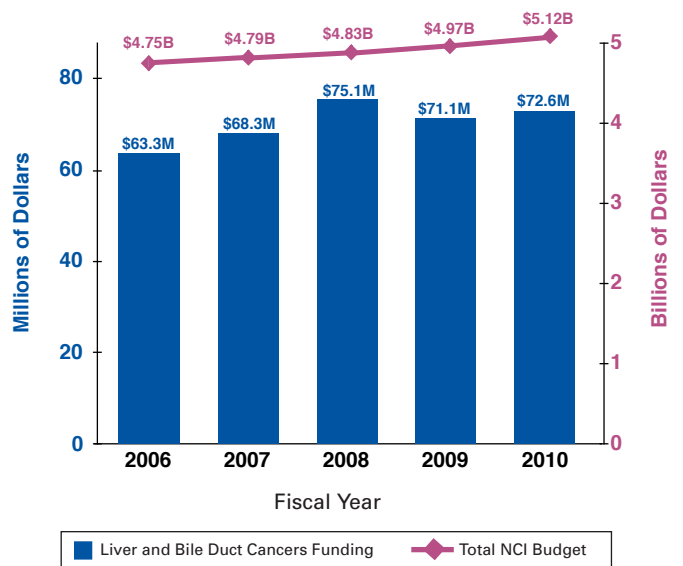
U.S. Liver and Bile Duct Cancers Mortality



Legend: Whites (pink), Hispanics\* (teal), African Americans (blue), Asians/Pacific Islanders\* (orange), American Indians/Alaska Natives\*\* (yellow)

\* Incidence and mortality data not available before 1992.  
\*\* Incidence data not available before 1998; mortality data not available before 1992.

NCI Liver and Bile Duct Cancers Research Investment



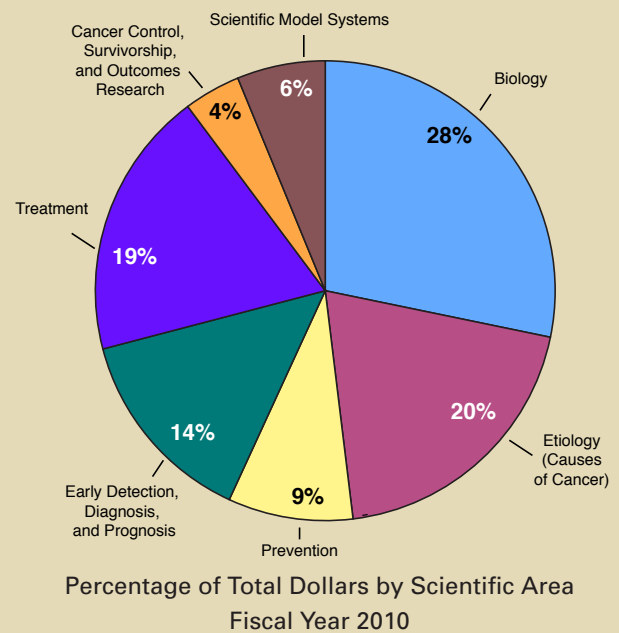
## Examples of NCI Activities Relevant to Liver and Bile Duct Cancers

- NCI's **Patterns of Care/Quality of Care (POC/QOC) Studies** evaluate the dissemination of state-of-the-art cancer therapy into community practice and work with professional organizations to develop educational or training opportunities to improve the use of state-of-the-art cancer therapy in community practice. The cancers covered by these studies include cancers of the liver. <http://healthservices.cancer.gov/surveys/poc/>
- The **Tumor Microenvironment Network (TMEN)** is exploring the role of the microenvironment—the cells, molecules, and blood vessels that surround and feed a tumor—in tumor initiation and progression. Network investigators are examining the influence of a fatty liver microenvironment on the growth of tumors. <http://tmen.nci.nih.gov/>
- The **Physical Sciences in Oncology Centers (PS-OC)** are bringing together multidisciplinary teams of oncologists, physical scientists, and engineers to address major questions and barriers in cancer research. One center is focusing on novel methods to improve diagnosis and treatment of liver cancer and liver metastasis. <http://physics.cancer.gov/>
- The **Etiology, Prevention, and Treatment of Hepatocellular Carcinoma** program supports research on the etiology of liver cancer, development of animal models, novel prevention approaches, identification of reliable predictors of disease progression, and ways to minimize the morbidity and mortality associated with this disease. <http://grants.nih.gov/grants/guide/pa-files/PAR-09-147.html>
- NCI supports studies that explore **Biomarkers of Infection-Associated Cancers**, including liver cancer. <http://grants.nih.gov/grants/guide/pa-files/PA-11-158.html>
- NCI supports early-phase clinical trials of targeted, personalized cancer regimens through the **Accelerating Clinical Trials of Novel Oncologic Pathways (ACTNOW)** program, including two trials studying treatments for

## Selected Advances in Liver and Bile Duct Cancers Research

- A preclinical study has uncovered **genetic and epigenetic signatures** that were able to predict the sensitivity of liver cancer cells to an experimental drug called zebularine and could potentially be used to determine which patients would benefit from zebularine therapy. <http://home.ccr.cancer.gov/inthejournals/anderson.asp> and <http://www.ncbi.nlm.nih.gov/pubmed/20962331>
- Results of a large study suggest that the **consumption of large amounts of red meat or saturated fat** may be associated with increased liver cancer risk. <http://www.cancer.gov/ncicancerbulletin/090710/page3#e> and <http://www.ncbi.nlm.nih.gov/pubmed/20729477>
- Researchers have discovered changes in the modification of a protein that occur during the **progression from liver cirrhosis to liver cancer**. These changes could potentially distinguish patients with cirrhosis from those with cancer. <http://www.ncbi.nlm.nih.gov/pubmed/20811639>
- Researchers have discovered that **transforming growth factor-beta can induce some liver cells grown in the laboratory to acquire stem-cell-like characteristics**, which may promote tumor growth. <http://www.ncbi.nlm.nih.gov/pubmed/20945437>

## NCI Liver Cancer Research Portfolio\*



\* Data only available for liver cancer.

Data source: The NCI Funded Research Portfolio. Only projects with assigned scientific area codes are included. A description of relevant research projects can be found on the NCI Funded Research Portfolio Web site at <http://fundedresearch.cancer.gov>

advanced liver cancer. <http://www.cancer.gov/aboutnci/recovery/recoveryfunding/actnow>

- The **What You Need to Know About™ Liver Cancer** booklet contains information about liver cancer diagnosis and staging, treatment, supportive care, and participation in research studies. Information specialists can also answer questions about cancer at 1-800-4-CANCER. <http://www.cancer.gov/cancertopics/wyntk/liver>
- The **NCI Liver Cancer Home Page** provides up-to-date information on liver cancer treatment, prevention, genetics, causes, screening, testing, and other related topics. <http://www.cancer.gov/cancertopics/types/liver/>