



The Burden of Liver and Intrahepatic Bile Duct Cancer in Rhode Island

Prepared by the Rhode Island Cancer Registry (RICR), October 2020

OVERVIEW: Liver and Intrahepatic Bile Duct Cancer (Liver Cancer)

Cancers in the liver and intrahepatic bile duct and related deaths have risen steadily among Rhode Island males and females between 1995 and 2017 (*Figure 1.1 and 1.2*).^{1,2} According to United States cancer statistics, the incidence of newly diagnosed liver cancer has tripled, and deaths attributed to liver cancer have more than doubled since the 1980s.³

Liver cancer is more common among males; Rhode Island males were three times more likely than females to develop liver cancer (*Figure 1.1 and 1.2*). Over the last 10 years, liver cancer was the 11th most commonly diagnosed cancer and the 5th leading cause of cancer deaths among males.

Figure 1.1 Trend of Liver Cancer Incidence and Mortality among Rhode Island Males, RICR 1995-2017

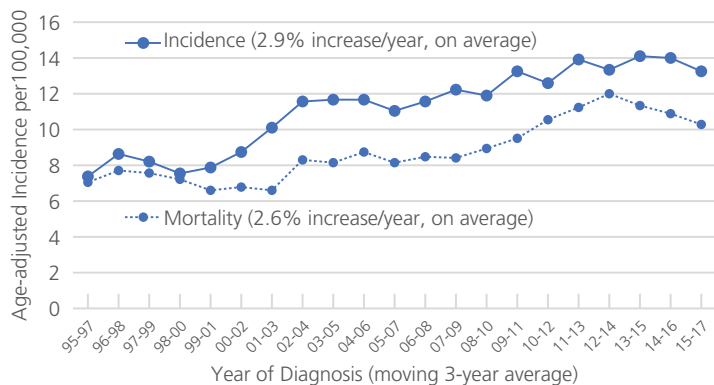
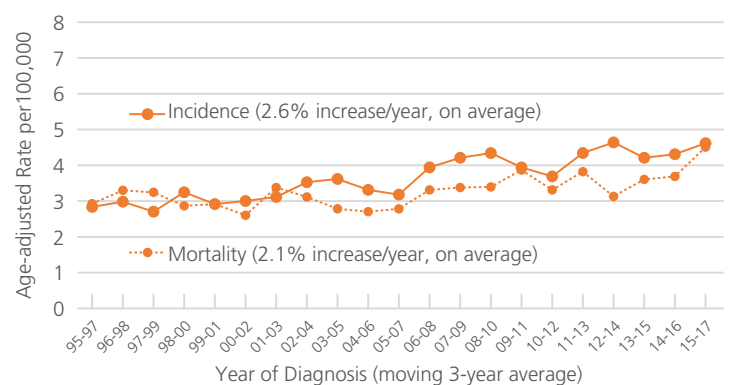


Figure 1.2 Trend of Liver Cancer Incidence and Mortality among Rhode Island Females, RICR 1995-2017



*Rates are per 100,000 and age-adjusted to the 2000 US Standard Population (19 age groups - Census P25-1130)

Note: Of liver and intrahepatic bile duct cancers diagnosed among Rhode Islanders, approximately 70% are hepatocellular carcinoma (HCC) and 17% are cholangiocarcinoma (bile duct cancer).¹

Racial and Ethnic Differences in Liver Cancer Incidence and Mortality

In Rhode Island, the largest proportion of liver cancer cases and deaths are found in the non-Hispanic white population, which is also the largest racial and ethnic segment of the state's population. For all racial and ethnic subgroups, newly diagnosed cases and cancer deaths increased from an earlier 11 year-period (1996-2006) to the most recent 11 years studied (2007-2017) (*Table 1 & 2*). In the United States, the liver cancer burden is greatest among those who claim Asian/ Pacific Islander heritage.⁴ However, because the Rhode Island Asian/ Pacific Islander population reflects small numbers of people and small numbers of associated liver cancers, valid comparisons with national case rates and with other in-state racial and ethnic groups are not feasible.

Table 1. Liver Cancer Cases in Males and Females by Race/Ethnicity, RICR 1996-2017¹

Years	Non-Hispanic White	Non-Hispanic Black	Hispanic	Other	Total
1996-2006	639 (84%)	26 (3%)	61 (8%)	38 (5%)	764
2007-2017	950 (80%)	64 (5%)	106 (9%)	61 (5%)	1181

Table 2. Liver Cancer Deaths in Males and Females by Race/Ethnicity, RICR 1996-2017²

Years	Non-Hispanic White	Non-Hispanic Black	Hispanic	Other	Total
1996-2006	552 (85%)	32 (5%)	34 (5%)	28 (4%)	646
2007-2017	800 (84%)	50 (5%)	64 (7%)	40 (4%)	954

Age and Staging at Liver Cancer Diagnosis

Liver cancers are most likely diagnosed at age 50 and older (**Figure 2**). During years 2013-2017, the average age at diagnosis for males in Rhode Island was 65 years old, while the average age for females was 68 years old. The National Cancer Institute’s SEER (Surveillance, Epidemiology, and End Results) Program tracks cancer survival time using data from cancer patients across the nation. SEER data show that the younger a patient is when diagnosed with a primary liver cancer, the longer their average survival time.⁵ However, regardless of age at cancer diagnosis, five-year relative survival rate for liver cancer is very low: 20% among those aged 50-64 years, and 12% among people ages 65 and older.

Recently (2013-2017), 45% of liver cancers diagnosed in Rhode Island residents were reported as localized at initial diagnosis; more than half (55%) were diagnosed at regional, distant (metastatic) or unknown stages (**Figure 3**). Unlike more common cancers (such as breast or prostate cancer), even when liver cancers are diagnosed with early stage of disease, a survival chance is quite low (31% of five-year relative survival rate). When liver cancers are diagnosed at later stages (when they have regionally spread or metastasized), the 5-year survival rates drop to 11% and 3%, respectively.⁵

Figure 2. Age at Liver Cancer Diagnosis, RICR 2013-2017 (n=596)

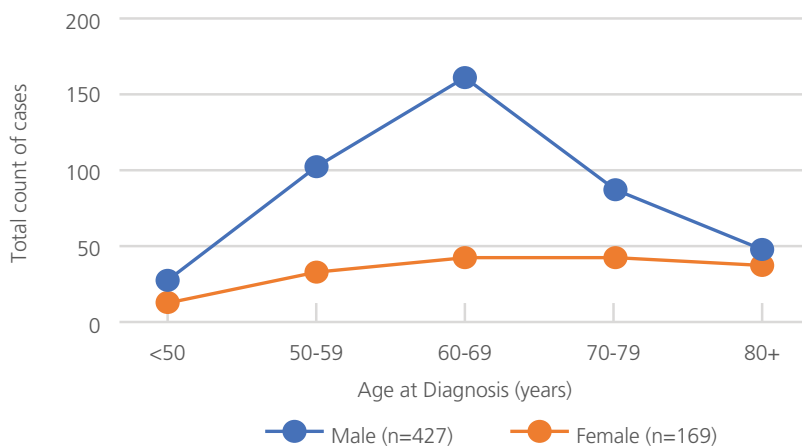
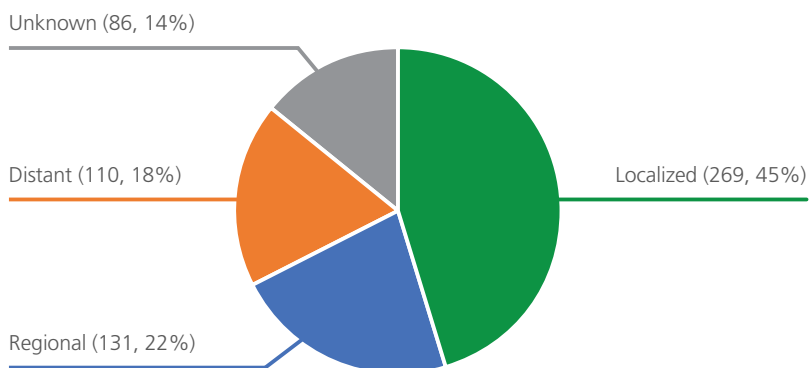


Figure 3. Staging at Liver Cancer Diagnosis,* RICR 2013-2017 (n=596)



* In the localized stage, the cancer is confined to a primary site. In the regional stage, the cancer has spread to regional lymph nodes and in the distant stage it has metastasized.

Risk Factors Associated with Liver Cancer

Most, but not all, patients who are diagnosed with liver cancer have liver cirrhosis caused by chronic viral hepatitis (HBV, hepatitis B virus; or HCV, hepatitis C virus), heavy consumption of alcoholic beverages, and/or non-alcoholic fatty liver disease. Table 3 summarizes major risk factors linked to liver cancer.

Table 3. Major Risk Factors of Liver Cancer⁶

Risk Factor:	Description:
Chronic Hepatitis B and/or Hepatitis C infection	Viral infection that causes inflammation of the liver and cirrhosis - a disease resulting in damage to liver cells, which are then replaced by scar tissue. In the U.S., infection with HCV is more common, while in Asia and developing countries HBV is more common.
Heavy alcohol use, tobacco use, and/or obesity	These are modifiable risk factors that may increase risks of cirrhosis and liver cancer.
Environmental and chemical exposure to substances: aflatoxins and anabolic steroids	Aflatoxins are carcinogens made by fungi that contaminate peanuts, wheat, rice and other foods. Long-term exposure to aflatoxins is a major risk factor for liver cancer; however, it is more common in less developed and warmer countries than in the United States. Anabolic steroids are male hormones taken to increase muscle mass. Long-term use of these steroids can increase liver cancer risk.
Sex	HCC, the most common liver cancer, is much more common in men than in women. Fibrolamellar HCC is more common in women. Behaviors relating to other risk factors (e.g., alcohol use and smoking) are the most likely reasons for gender differences.
Race/ Ethnicity	In the United States, Asian/ Pacific Islanders have the highest rates of liver cancer, followed by Hispanics, Native Americans, African Americans, and Non-Hispanic Whites. Most liver cancers are actually secondary or metastatic disease, meaning that these tumors actually started in another organ such as the pancreas, colon, stomach, or lung, and then spread (metastasize) to the liver. In Asia and Africa, primary liver cancer is more prevalent.

References

- ¹ Rhode Island Cancer Data (extracted July 2020). Rhode Island Cancer Registry.
- ² Rhode Island Vital Records & CDC National Center for Health Statistics. (extracted and analyzed using SEER*Stat software v8.4.7, July 2020)
- ³ American Cancer Society. Cancer Facts & Figures 2020. <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2020/cancer-facts-and-figures-2020.pdf>
- ⁴ National Cancer Institute SEER Program. SEER Cancer Statistics Review, 1975-2017. https://seer.cancer.gov/csr/1975_2017/
- ⁵ Liver and Intrahepatic Bile Duct Cancer SEER Survival Rates by Time Since Diagnosis, 2000-2016. National Cancer Institute SEER Program. <https://seer.cancer.gov/explorer/application.html>
- ⁶ American Cancer Society. Liver Cancer Risk Factors. <https://www.cancer.org/cancer/liver-cancer/causes-risks-prevention/risk-factors.html>



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