Bile Duct Cancer Causes, Risk Factors, and Prevention

Learn about the risk factors for bile duct cancer and what you might be able to do to help lower your risk.

Risk Factors

A risk factor is anything that affects your chance of getting a disease such as cancer. Learn more about the risk factors for bile duct cancer.

- Bile Duct Risk Factors
- What Causes Bile Duct Cancer?

Prevention

There's no way to completely prevent cancer. But there are things you can do that might help lower your risk. Learn more.

- Can Bile Duct Cancer Be Prevented?

Risk Factors for Bile Duct Cancer

Scientists have found a few risk factors that make a person more likely to develop bile duct cancer.

A risk factor is anything that affects your chance of getting a disease like cancer. Different cancers have different risk factors. Some risk factors, like smoking, can be changed. Others, like your age or family history, can't be changed.

But having a risk factor, or even many risk factors, does not mean that a person will get the disease. And many people who get the disease have few or no known risk factors

Learn more about the risk factors for bile duct cancer and if there are things you can do that might help lower your risk.

Certain diseases of the liver or bile ducts

Certain conditions of the liver or bile ducts have been found to either cause bile duct cancer or to increase the risk of developing it.

Primary sclerosing cholangitis (PSC)

Primary sclerosing cholangitis (PSC) is a condition in which inflammation of the bile ducts (cholangitis) leads to the formation of scar tissue (sclerosis). The cause of the inflammation is not usually known. Many people with PSC also have inflammation of the large intestine, called **ulcerative colitis**.

Bile duct stones

Bile duct stones (hepatolithiasis) are a lot like gallstones, but much smaller. They can also cause inflammation that increases the risk of bile duct cancer.

Choledochal cyst disease

Choledochal cyst disease is a rare condition which some people are born with. It causes bile-filled sacs along the bile ducts. (Choledochal means having to do with the common bile duct.) If not treated, the bile sitting in these sacs causes inflammation of the duct walls. The cells of the duct wall may undergo pre-cancerous changes. Over time, these changes can progress to bile duct cancer.

Liver fluke infections

Liver fluke infections can happen when you eat raw or undercooked fish that is infected with these tiny parasitic worms. In humans, liver flukes live in the bile ducts and can cause bile duct cancer. There are several types of liver flukes. The ones most closely related to bile duct cancer risk are *Clonorchis sinensis* and *Opisthorchis viverrini.*

Liver fluke infection is rare in the US, but it is more common in some Southeast Asian countries. It can also affect people who travel to Asia.

Abnormal bile duct anatomy

Some people have abnormalities where the bile duct and pancreatic duct normally meet.This can allow digestive juices from the pancreas to reflux (flow back) into the bile ducts. This backward flow keeps the bile from moving through the bile ducts the way it should. People with these abnormalities are at higher risk of bile duct cancer.

Cirrhosis

Cirrhosis is damage to the liver caused by scar tissue. Cirrhosis can be caused by irritants like alcohol and diseases like hepatitis or non-alcoholic fatty liver disease. Studies have found it increases the risk of bile duct cancer.

Hepatitis B or hepatitis C

Infection with hepatitis B virus or hepatitis C virus appears to be associated with increased risk for bile duct cancers. This may be in part because long-term infections with these viruses can also lead to cirrhosis.

Inflammatory bowel disease

Inflammatory bowel disease includes ulcerative colitis and Crohn’s disease. People with these diseases have an increased risk of bile duct cancer.

Genetic Disorders

Genetic disorders are gene-related changes that you are born with. Lynch syndrome, BAP1 tumor predisposition syndrome, cystic fibrosis, and multiple biliary papillomatosis are genetic disorders associated with an increased risk of bile duct cancer.

Older age

Older people are more likely than younger people to get bile duct cancer. Most people diagnosed with bile duct cancer are in their 60s or 70s.

Ethnicity and geography

In the US, the risk of bile duct cancer is highest among Hispanic Americans. Worldwide, bile duct cancer is much more common in Southeast Asia and China, largely because of the high rate of infection with liver flukes in these areas.

Obesity

Being overweight or obese[1] can increase the risk of cancers of the gallbladder and bile ducts. This could be because obesity increases the risk of gallstones and bile duct stones, as well as the risk of non-alcoholic fatty liver disease. But there may be other ways that being overweight can lead to bile duct cancers, such as changes in certain hormones.

Exposure to Thorotrast

A radioactive substance called **Thorotrast** (thorium dioxide) was used as a contrast agent for x-rays until the 1950s, when its production and use was banned. It was found to increase the risk for bile duct cancer, as well as other types of liver cancer.

Diabetes

People with diabetes (type 1 or type 2) have been found to have a higher risk of bile duct cancer. It's unclear whether this is because of high levels of blood sugar or because of other diabetes-associated issues such as obesity or high cholesterol.

Alcohol

People who drink alcohol[2] are more likely to get intrahepatic bile duct cancer. The risk is higher in those who have liver problems from drinking alcohol.

Other possible risk factors

Studies have found other factors may also increase the risk of bile duct cancer. But for these factors, the link to bile duct cancer risk is not as clear.

Other possible risk factors include:

- Smoking[3]
- Chronic pancreatitis (long-term inflammation of the pancreas)
- Infection with HIV[4] (the virus that causes AIDS)
- Exposure to asbestos[5]
- Exposure to radon[6] or other radioactive chemicals
- Exposure to dioxin, nitrosamines, or polychlorinated biphenyls (PCBs). People who work in rubber plants and automotive industries may be exposed more often to these chemicals.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/diet-physical-activity/body-weight-and-cancer-risk.html
2. www.cancer.org/cancer/risk-prevention/diet-physical-activity/alcohol-use-and-cancer.html
3. www.cancer.org/cancer/risk-prevention/tobacco/health-risks-of-tobacco/health-risks-of-smoking-tobacco.html
4. www.cancer.org/cancer/risk-prevention/infections/hiv-infection-aids.html
5. www.cancer.org/cancer/risk-prevention/chemicals/asbestos.html
6. www.cancer.org/cancer/risk-prevention/radiation-exposure/radon.html

References

Abou-Alfa GK, Jarnagin W, Lowery M, D'Angelica M, Brown K, Ludwig E, Covey A, Kemeny N, Goodman KA, Shia J, O'Reilly EM. Liver and bile duct cancer. In: Neiderhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, PA. Elsevier; 2014:1373-1395.

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Hepatobiliary Cancers. v.4. 2024. Accessed at https://www.nccn.org/professionals/physician_gls/pdf/btc.pdf on September 15, 2024.Patel T, Borad MJ. Carcinoma of the biliary tree. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 10th ed. Philadelphia, PA. Lippincott Williams & Wilkins; 2015:715-735.

Petrick JL, Campbell PT, Koshiol J, et al. Tobacco, alcohol use and risk of hepatocellular carcinoma and intrahepatic cholangiocarcinoma: The Liver Cancer Pooling Project. *Br J Cancer*. 2018;118(7):1005-1012.

Petrick JL, Yang B, Altekruse SF, et al. Risk factors for intrahepatic and extrahepatic cholangiocarcinoma in the United States: A population-based study in SEER-Medicare. *PLoS One*. 2017:12(10).

Walpole S, Pritchard AL, Cebulla CM, et al. Comprehensive study of the clinical phenotype of germline BAP1 variant-carrying families worldwide. *J Natl Cancer Inst.* 2018;110(12):1328-1341. doi:10.1093/jnci/djy171.

Yamada A, Komaki Y, Komaki F, Micic D, Zullow S, Sakuraba A. Risk of gastrointestinal cancers in patients with cystic fibrosis: a systematic review and meta-analysis. Lancet Oncol. 2018 Jun;19(6):758-767. doi: 10.1016/S1470-2045(18)30188-8. Epub 2018 Apr 26. PMID: 29706374.

Yeung YP, AhChong K, Chung CK, Chun AY. Biliary papillomatosis: report of seven cases and review of English literature. J Hepatobiliary Pancreat Surg. 2003;10(5):390-5. doi: 10.1007/s00534-002-0837-0. PMID: 14598142.

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What Causes Bile Duct Cancer?

We don't know the exact cause of most bile duct cancers, but we do know some of the risk factors that make a person more likely to develop these cancers.

There seems to be a link between bile duct cancer and things that irritate and inflame the bile ducts, whether it's bile duct stones, infection with a parasite, or something else.

Scientists are starting to understand how inflammation might lead to certain changes in the DNA of cells, making them grow out of control and form cancers. DNA is the chemical in each of our cells that makes up our genes (the instructions for how our cells function).

- Genes that control when cells grow, divide into new cells, and die are called **oncogenes**.
- Genes that slow down cell division or cause cells to die at the right time are called **tumor suppressor genes**.

Cancers can be caused by DNA changes (mutations) that turn on oncogenes or turn off tumor suppressor genes. Changes in many different genes are usually needed for a cell to become cancer.

We usually look like our parents because they are the source of our DNA. But DNA affects more than how we look. Some people inherit DNA mutations from their parents that greatly increase their risk for certain cancers.

There are few known genetically inherited disorders that are associated with higher risk for bile duct cancer. Gene mutations related to bile duct cancers are usually acquired during life rather than inherited. For example, acquired changes in the *TP53* tumor suppressor gene are found in most bile duct cancers. Other genes that may play a role in bile duct cancers include *KRAS*, *HER2,* and *ALK*.

Some of the gene changes that lead to bile duct cancer might be caused by inflammation. But sometimes the cause of these changes is not known. Many gene changes might just be random events that sometimes happen inside a cell, without having an outside cause.

References

Abou-Alfa GK, Jarnagin W, Lowery M, D'Angelica M, Brown K, Ludwig E, Covey A, Kemeny N, Goodman KA, Shia J, O'Reilly EM. Liver and bile duct cancer. In: Neiderhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, PA. Elsevier; 2014:1373-1395.

National Cancer Institute. Bile Duct Cancer (Cholangiocarcinoma) Symptoms, Tests, Prognosis, and Stages (PDQ®)–Patient Version. May 24, 2024. Accessed at www.cancer.gov/types/liver/patient/about-bile-duct-cancer-pdq on August 19, 2024.Patel T, Borad MJ. Carcinoma of the biliary tree. In: DeVita VT, Lawrence TS,

Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 10th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2015:715-735.

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Can Bile Duct Cancer Be Prevented?

There's no known way to prevent most bile duct cancers in the US. Many of the known risk factors for bile duct cancer, such as age, ethnicity, and bile duct abnormalities, are beyond our control. However, there are things you can do that might help lower your risk.

Diet and physical activity

Getting to and staying at a healthy weight is one important way you might be able to reduce your risk of bile duct cancer, as well as many other types of cancer.

The American Cancer Society recommends that people try to stay at a healthy weight, keep physically active, and follow a healthy eating pattern. This includes eating plenty of fruits, vegetables, and whole grains, and limiting or avoiding red and processed meats, sugary drinks, and highly processed foods.

Learn more: American Cancer Society Guidelines for Diet and Physical Activity for Cancer Prevention[1].

Other ways to reduce your risk

Other ways you might be able to reduce your risk of bile duct cancer include:

- **Get vaccinated:** Get vaccinated against the hepatitis B virus (HBV) to prevent infection with the virus and the cirrhosis it can cause.
- **Prevent infections:** Take precautions to avoid blood-borne or sexually transmitted infections like HBV, hepatitis C, and other viruses that can cause cirrhosis.

- **Treat hepatitis:** Treat hepatitis infections (such as B and C) to help prevent cirrhosis.
- **Avoid or limit alcohol**[2]: If you do drink, have no more than 1 drink per day for women or 2 drinks per day for men.
- **Quit (or don't start) smoking.** (Learn more[3].)
- **Avoid exposure to chemicals:** Protect yourself against exposure to certain chemicals (see Risk Factors for Bile Duct Cancer).
- **Take precautions when you travel:** If you travel to parts of the world where liver flukes are common, drink only purified water and eat only foods that have been thoroughly cooked.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/diet-physical-activity/acs-guidelines-nutrition-physical-activity-cancer-prevention.html
2. www.cancer.org/cancer/risk-prevention/diet-physical-activity/alcohol-use-and-cancer.html
3. www.cancer.org/cancer/risk-prevention/tobacco/guide-quitting-smoking.html

References

Abou-Alfa GK, Jarnagin W, Lowery M, et al. Liver and bile duct cancer. In: Neiderhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. Abeloff's Clinical Oncology. 5th ed. Philadelphia, PA: Elsevier; 2014:1373-1395.

Patel T, Borad MJ. Carcinoma of the biliary tree. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 10th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2015:715-735.

Razumilava N, Gores GJ. Cholangiocarcinoma. Lancet. 2014 Jun 21;383(9935):2168-79. doi: 10.1016/S0140-6736(13)61903-0. Epub 2014 Feb 26. PMID: 24581682; PMCID: PMC4069226.

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Written by

The American Cancer Society medical and editorial content team (https://www.cancer.org/cancer/acs-medical-content-and-news-staff.html)

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