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# Bile Duct Cancer Early Detection, Diagnosis, and Staging

Know the signs and symptoms of bile duct cancer. Find out how bile duct cancer is tested for, diagnosed, and staged.

## Detection and Diagnosis

Finding cancer early, when it's small and before it has spread, often allows for more treatment options. Some early cancers may have signs and symptoms that can be noticed, but that's not always the case.

- [Can Bile Duct Cancer Be Found Early?](#)
- [Signs and Symptoms of Bile Duct Cancer](#)
- [Tests for Bile Duct Cancer](#)

## Stages and Outlook (Prognosis)

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and the likely response to treatment.

- [Bile Duct Cancer Stages](#)
- [Survival Rates for Bile Duct Cancer](#)

## Questions to Ask About Bile Duct Cancer

Here are some questions you can ask your cancer care team to help you better understand your bile duct cancer and treatment options.

- [Questions to Ask About Bile Duct Cancer](#)

## Can Bile Duct Cancer Be Found Early?

Only a small number of bile duct cancers are found before they have spread too far to be removed by surgery.

The bile ducts are deep inside the body, so small tumors can't be seen or felt during routine physical exams. There are no blood tests or other tests that can reliably detect bile duct cancers early enough to be useful as screening tests. (Screening is testing for cancer in people without any symptoms.) Because of this, most bile duct cancers are found only after the cancer has grown enough to cause signs or symptoms. The most common symptom is jaundice, a yellowing of the skin and eyes, which is caused by a blocked bile duct.

### 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.

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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*. 10<sup>th</sup> ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2015:715-735.

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# Signs and Symptoms of Bile Duct Cancer

Bile duct cancer does not usually cause signs or symptoms until later in the course of the disease, but sometimes symptoms can appear sooner and lead to an early diagnosis. If the cancer is diagnosed at an early stage, [treatment](#)<sup>1</sup> might work better.

- [Jaundice](#)
- [Itching](#)
- [Light-colored/greasy stools](#)
- [Dark urine](#)
- [Abdominal \(belly\) pain](#)
- [Loss of appetite/weight loss](#)
- [Fever](#)
- [Nausea and vomiting](#)

When bile duct cancer does cause symptoms, it's usually because a bile duct is blocked. Symptoms tend to depend on whether the cancer is in ducts inside the liver (intrahepatic) or in ducts outside the liver (extrahepatic), and include:

## Jaundice

Normally, bile is made by the liver and released into the intestine. Jaundice occurs when the liver can't get rid of bile, which contains a greenish-yellow chemical called **bilirubin**. As a result, bilirubin backs up into the bloodstream and settles in different parts of the body. Jaundice can often be seen as a yellowing of the skin and in the white part of the eyes.

Jaundice is the most common symptom of bile duct cancer, but most of the time, jaundice isn't caused by cancer. It's more often caused by hepatitis (inflammation of the liver) or a gallstone that has traveled to the bile duct. But whenever jaundice occurs, a doctor should be seen right away.

## Itching

Excess bilirubin in the skin can also cause itching. Most people with bile duct cancer notice itching.

## Light-colored/greasy stools

Bilirubin contributes to the brown color of bowel movements, so if it doesn't reach the intestines, the color of a person's stool might be lighter.

If the cancer blocks the release of bile and pancreatic juices into the intestine, a person might not be able to digest fatty foods. The undigested fat can also cause stools to be unusually pale. They might also be bulky, greasy, and float in the toilet.

## Dark urine

When bilirubin levels in the blood get high, it can also come out in the urine and turn it dark.

## Abdominal (belly) pain

Early bile duct cancers seldom cause pain, but bigger tumors may cause belly pain, especially below the ribs on the right side.

## Loss of appetite/weight loss

People with bile duct cancer may not feel hungry and may lose weight without trying to do so.

## Fever

Some people with bile duct cancer develop fevers.

## Nausea and vomiting

These are not common symptoms of bile duct cancer, but they may occur in people who develop an infection (cholangitis) as a result of bile duct blockage. These symptoms are often seen along with a fever.

**Keep in mind: Bile duct cancer is rare. These symptoms are far more likely to be caused by something other than bile duct cancer.** For example, people with gallstones have many of these same symptoms. And there are many far more common causes of belly pain than bile duct cancer. Also, hepatitis (an inflamed liver most often caused by infection with a virus) is a much more common cause of jaundice.

Still, if you have any of these problems, it's important to see a doctor right away so the

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## Tests for Bile Duct Cancer

If there's reason to suspect that you might have bile duct cancer, your doctor will want to take your complete medical history to check for risk factors and to learn more about your symptoms.

A physical exam is done to look for signs of bile duct cancer or other health problems. If

## Imaging tests

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(laparoscopic ultrasound).

If there's a tumor, the doctor might be able to see how far it has grown and spread, which can help in planning for surgery. Ultrasound may be able to show if nearby lymph nodes are enlarged, which can be a sign that cancer has reached them. Needle biopsies of suspicious areas might be done.

### **Multi-detector computed tomography (MDCT) scan**

A MDCT scan uses x-rays to make detailed cross-sectional images of your body. It can be used to:

- Help diagnose bile duct cancer by showing tumors in the area.
- Help stage the cancer (find out how far it has spread). CT scans can show the organs near the bile duct (especially the liver), as well as lymph nodes and distant organs where cancer might have spread to.
- Guide a biopsy needle into a suspected tumor. This is called a **CT-guided needle biopsy**. To do it, you stay on the CT scanning table while the doctor advances a biopsy needle through your skin and toward the mass. CT scans are repeated until the needle is inside the mass. A small amount of tissue (a sample) is then taken out through the needle.



A cholangiogram is an imaging test that looks at the bile ducts to see if they're blocked, narrowed, or dilated (widened). This can help show if someone might have a tumor that's blocking a duct. It can also be used to help plan surgery. There are several types of cholangiograms, each of which has different pros and cons.

**Magnetic resonance cholangiopancreatography (MRCP):**

## Laparoscopy

Laparoscopy is a type of surgery. The doctor puts a thin tube with a light and a small video camera on the end (a laparoscope) through a small incision (cut) in the front of your belly to look at the bile ducts, gallbladder, liver, and other nearby organs and tissues. (Sometimes more than one cut is made.) This is typically done in the operating room while drugs are used to put you into a deep sleep and not feel pain (general anesthesia) during the surgery.

Laparoscopy can help doctors plan surgery or other treatments, and can help determine the stage (extent) of the cancer. If needed, doctors can also use special instruments put in through the incisions to take out biopsy samples for testing.

## Cholangioscopy

This procedure can be done during an ERCP (see above). The doctor passes a very thin fiber-optic tube with a tiny camera on the end down through the larger tube used for the ERCP. From there it can be maneuvered into the bile ducts. This lets the doctor see any blockages, stones, or tumors and even biopsy them.

## Biopsy

Imaging tests might suggest that a bile duct cancer is present, but in many cases, samples of bile duct cells or tissue is removed (biopsied) and looked at with a microscope to be sure of the diagnosis. mholangight sshow camnd e operatict cancer,ctor see

**During cholangioscopy:** Biopsy specimens can also be taken during cholangioscopy. This test lets the doctor see the inside surface of the bile duct and take samples of suspicious areas.

**Needle biopsy:** For this test, a thin, hollow needle is put through the skin and into the tumor without making a cut in the skin. (The skin is numbed first with a local anesthetic.) The needle is usually guided into place using ultrasound or CT scans. When the images show that the needle is in the tumor, cells and/or fluid are drawn into the needle and sent to the lab to be tested.

In most cases, this is done as a fine needle aspiration (FNA) biopsy, which uses a very thin needle attached to a syringe to suck out (aspirate) a sample of cells. Sometimes, the FNA doesn't get enough cells for a definite diagnosis, so a core needle biopsy, which uses a slightly larger needle to get a bigger sample, may be done.

### Lab tests of biopsy samples

Along with looking at the biopsy samples with a microscope to see if they contain cancer cells, other lab tests might be done on the samples as well.

For example, cancer cells in the biopsy samples (or surgery samples) might be tested for certain gene or protein changes (sometimes called genotyping or molecular profiling), such as changes in the *FGFR2*, *NTRK*, *IDH1*, and *BRAF* genes. This can help determine if certain [targeted drugs](#)<sup>4</sup> might be helpful in treating the cancer.

For more on biopsies and how samples are tested, see [Testing Biopsy and Cytology Specimens for Cancer](#)<sup>5</sup>.

### Hyperlinks

1. [www.cancer.org/cancer/diagnosis-staging/tests.html](http://www.cancer.org/cancer/diagnosis-staging/tests.html)
2. [www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/imaging-radiology-tests-for-cancer.html](http://www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/imaging-radiology-tests-for-cancer.html)

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## Bile Duct Cancer Stages

The stage of a cancer describes how much cancer is in the body. It helps determine how serious the cancer is and how best to [treat](#)<sup>1</sup> it. Doctors also use a cancer's stage when talking about survival statistics.

The stage of a bile duct cancer is determined by the results of the physical exam, imaging and other tests, and by the results of [surgery](#)<sup>2</sup> if it has been done.

- [The American Joint Committee on Cancer \(AJCC\) TNM system](#)
- [Resectable versus unresectable](#)
- [More information](#)

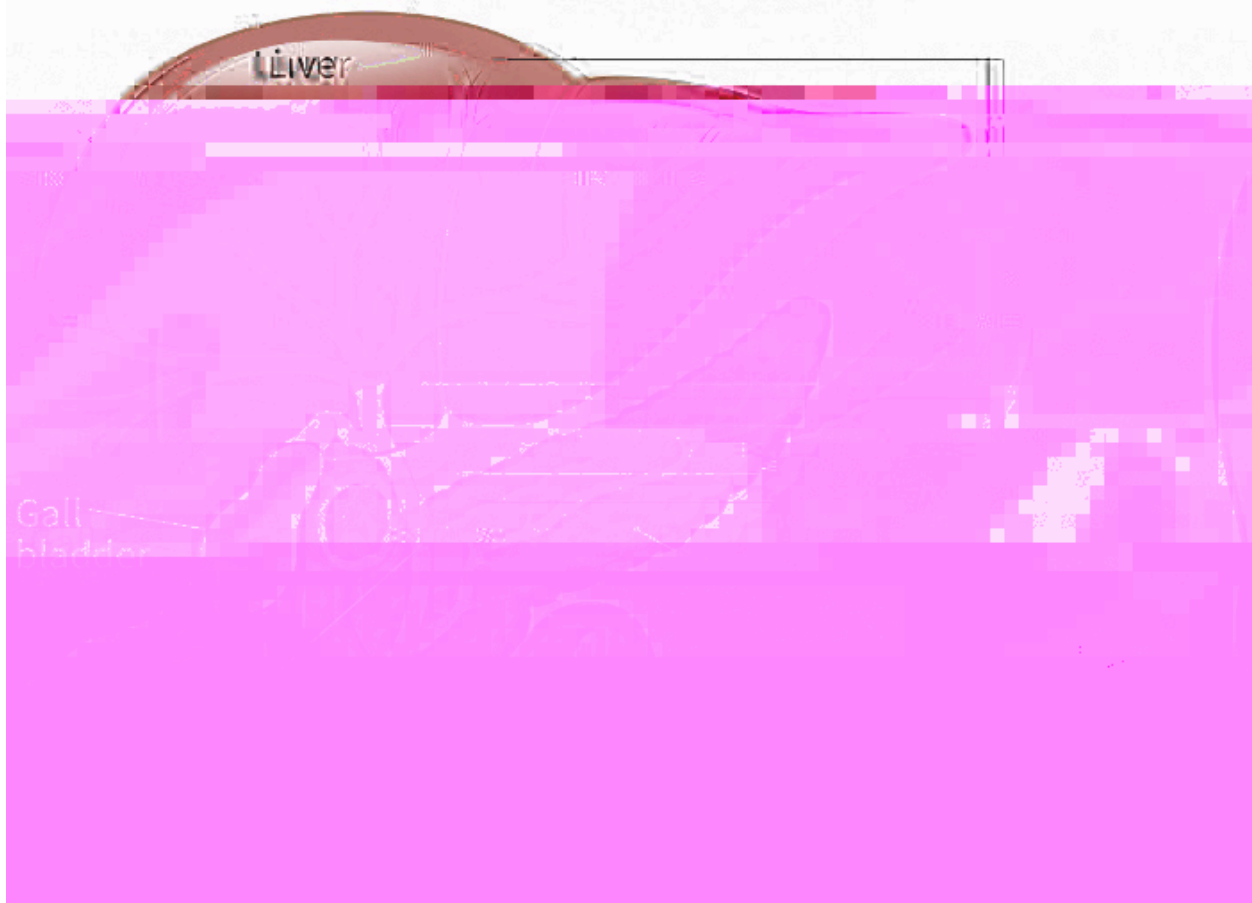
### The American Joint Committee on Cancer (AJCC) TNM system

A staging system is a standard way for the cancer care team to sum up the extent of a cancer. The main system used to describe the stages of bile duct cancer is the American Joint Committee on Cancer (AJCC) TNM system. There are actually 3 different staging systems for bile duct cancers, depending on where they start:

- [Intrahepatic bile duct cancers](#) (those starting within the liver)
- [Perihilar \(hilar\) bile duct cancers](#) (those starting in the hilum, the area just outside

the liver)

- **Distal bile duct cancers** (those starting farther down the bile duct system)



Nearly all bile duct cancers start in the innermost layer of the wall of the bile duct, called the

- **Resectable** cancers are those that doctors believe can be removed completely by surgery.
- **Unresectable** cancers have spread too far or are in too difficult a place to be removed entirely by surgery.

In general terms, most stage 0, I, and II cancers and possibly some stage III cancers are resectable, while most stage III and IV tumors are unresectable. But this depends on other factors, too, such as the size and location of the cancer and whether a person is healthy enough for surgery.

## More information

For more detailed staging information based on the type of bile duct cancer, choose an option below.

### [Staging of Intrahepatic Bile Duct Cancers](#)

Determining the stage of bile duct cancer helps doctors decide how to treat it. Learn how intrahepatic bile duct cancer is staged.

### [Staging of Perihilar Bile Duct Cancers](#)

Determining the stage of bile duct cancer helps doctors decide how to treat it. Learn how perihilar bile duct cancer is staged.

### [Staging of Distal Bile Duct Cancers](#)

Determining the stage of bile duct cancer helps doctors decide how to treat it. Learn how distal bile duct cancer is staged.

## Hyperlinks

1. [www.cancer.org/cancer/types/bile-duct-cancer/treating.html](http://www.cancer.org/cancer/types/bile-duct-cancer/treating.html)
2. [www.cancer.org/cancer/types/bile-duct-cancer/treating/surgery.html](http://www.cancer.org/cancer/types/bile-duct-cancer/treating/surgery.html)
3. [www.cancer.org/cancer/types/bile-duct-cancer/treating/surgery.html](http://www.cancer.org/cancer/types/bile-duct-cancer/treating/surgery.html)

## References

<sup>4</sup>American Joint Committee on Cancer. *AJCC Cancer Staging Manual*. 7th ed. New York, NY: Springer; 2010: 201-205; 295-325.

Last Revised: July 3, 2018







II	T2	The tumor has grown into nearby blood vessels, <b>OR</b> there are 2 or more tumors, which may or may not have grown into nearby blood vessels (T2).
	N0 M0	The cancer has not spread to nearby lymph nodes (N0) or to distant sites (M0).
IIIA	T3	The cancer has grown through the visceral peritoneum (the outer lining of organs in the abdomen) (T3).
	N0 M0	The cancer has not spread to nearby lymph nodes (N0) or to distant sites (M0).
IIIB	T4	The cancer has grown directly into nearby structures outside of the liver (T4).
	N0 M0	The cancer has not spread to nearby lymph nodes (N0) or to distant sites (M0).
	OR	
	Any T	The cancer is any size and might or might not be growing outside the bile duct (Any T) and has spread to nearby lymph nodes (N1). It has not spread to distant sites (M0).
	N1 M0	
IV	Any T	The cancer is any size and may or may not be growing outside the bile duct (Any T). It may or may not have spread to nearby lymph nodes (Any N). It has spread to distant organs such as the bones or lungs (M1).
	Any N M1	

\*The T categories are described in the table above, except for:

- **TX:** Main tumor cannot be assessed due to lack of information.
- **T0:** No sign of a primary tumor.

The N categories are described in the table above, except for:

- **NX:** Nearby lymph nodes cannot be assessed due to lack of information.



# **Staging of Perihilar Bile Duct Cancers**

## How is the stage determined?

The staging system most often used for perihilar bile duct cancer is the American Joint Committee on Cancer (AJCC) **TNM** system, which is based on 3 key pieces of information:

- The extent (size) of the main **tumor (T)**: Has the cancer grown through the bile duct or reached nearby structures or organs?
- The spread to nearby lymph **nodes (N)**: Has the cancer spread to nearby lymph nodes?
- The spread (**metastasis**) to distant sites (**M**): Has the cancer spread to distant lymph nodes or distant organs such as the bones, lungs, or peritoneum (the lining of the abdomen [belly])?

The system described below is the most recent AJCC system, effective January 2018. It's used only for **perihilar bile duct cancers** (those starting in the hilum, just outside the liver). Staging systems for cancers starting in other parts of the bile ducts are described in:

- [Intrahepatic Bile Duct Cancer Stages](#) (for cancers starting in bile ducts within the liver)
- [Distal Bile Duct Cancer Stages](#) (for cancers starting farther down the bile duct)

Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced.

Once a person's T, N, and M categories have been determined, this information is combined in a process called **stage grouping** to assign an overall stage. For more on this, see [Cancer Staging](#)<sup>2</sup>.

Perihilar bile duct cancer is typically given a **clinical stage** based on the results of a physical exam, biopsy, and imaging tests (described in [Tests for Bile Duct Cancer](#)). If surgery is done, the **pathologic stage** (also called the **surgical stage**) is determined by examining the tissue removed during the operation.

Cancer staging can be complex, so ask your doctor to explain it to you in a way you understand.

## Stages of perihilar bile duct cancer



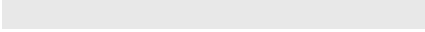
	<b>N2</b>	to 4 or more nearby lymph nodes (N2).
	<b>M0</b>	It has not spread to distant sites (M0).
<b>IVB</b>	<b>Any T</b> <b>Any N</b> <b>M1</b>	The cancer is any size and may or may not be growing outside the bile duct or into nearby blood vessels (Any T). It may or may not have spread to nearby lymph nodes (Any N).  It has spread to distant organs such as the bones, lungs, or distant parts of the liver (M1).

\*The T

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## Staging of Distal Bile Duct Cancers

After a person is diagnosed with distal bile duct cancer, doctors will try to figure out if it has spread, and if so, how far. This process is called **staging**. The stage of a cancer describes how much cancer is in the body. It helps determine how serious the cancer is and how best to [treat](#)<sup>1</sup> it. Doctors also use a cancer's stage when talking about survival statistics.



outside the liver)

Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced.

Once a person's T, N, and M categories have been determined, this information is combined in a process called **stage grouping** to assign an overall stage. For more on this, see [Cancer Staging](#)<sup>2</sup>.

Distal bile duct cancer is typically given a **clinical stage** based on the results of a physical exam, biopsy, and imaging tests (described in [Tests for Bile Duct Cancer](#)). If surgery is done, the **pathologic stage** (also called the **surgical stage**) is determined by examining the tissue removed during the operation.

Cancer staging can be complex, so ask your doctor to explain it to you in a way you understand.

## Stages of distal bile duct cancer

AJCC Stage	Stage grouping	Stage description*
0	Tis N0 M0	

	OR	
	<b>T1</b> <b>N1</b> <b>M0</b>	The cancer has grown less than 5 mm (about 1/5 of an inch) into the bile duct wall (T1) and has spread to 1 to 3 nearby lymph nodes (N1).  It has not spread to distant sites (M0).
<b>IIB</b>	<b>T3</b> <b>N0</b> <b>M0</b>	The cancer has grown more than 12 mm (about 1/2 inch) into the bile duct wall (T3).  It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
	OR	
	<b>T2 or T3</b> <b>N1</b> <b>M0</b>	The cancer has grown 5 mm (about 1/5 of an inch) or more into the bile duct wall (T2 or T3) and has spread to 1 to 3 nearby lymph nodes (N1).  It has not spread to distant sites (M0).
<b>IIIA</b>	<b>T1, T2, or T3</b> <b>N2</b> <b>M0</b>	The cancer has grown to any depth into the bile duct wall (T1, T2, or T3) and to 4 or more nearby lymph nodes (N2).  It has not spread to distant sites (M0).
<b>IIIB</b>	<b>T4</b> <b>Any N</b> <b>M0</b>	The cancer is growing into nearby blood vessels (the celiac artery or its branches, the superior mesenteric artery, and/or the common hepatic artery) (T4). The cancer may or may not have spread to nearby lymph nodes (Any N).  It has not spread to distant sites (M0).
<b>IV</b>	<b>Any T</b> <b>Any N</b> <b>M1</b>	The cancer has grown to any depth within the bile duct wall and may or may not be growing into nearby blood vessels (Any T). It may or may not have spread to nearby lymph nodes (any N).  It has spread to distant organs such as the liver, lungs, or peritoneum (inner lining of the abdomen [belly]) (M1).

\*The T categories are described in the table above, except for:



- TX: Main tumor cannot be assessed due to lack of information.

The N categories are described in the table above, except for:

- NX: Nearby lymph nodes cannot be assessed due to lack of information.

## Hyperlinks

1. [www.cancer.org/cancer/types/bile-duct-cancer/treating.html](http://www.cancer.org/cancer/types/bile-duct-cancer/treating.html)
2. [www.cancer.org/cancer/diagnosis-staging/staging.html](http://www.cancer.org/cancer/diagnosis-staging/staging.html)

## References

American Joint Committee on Cancer. Distal Bile Duct. In: *AJCC Cancer Staging Manual*. 8th ed. New York, NY: Springer; 2017: 317-325.

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# Survival Rates for Bile Duct Cancer

Survival rates can give you an idea of what percentage of people with the same type and stage of cancer are still alive a certain amount of time (usually 5 years) after they were diagnosed. They can't tell you how long you will live, but they may help give you a better understanding of how likely it is that your treatment will be successful.

- [What is a 5-year relative survival rate?](#)
- [Where do these numbers come from?](#)
- [5-year relative survival rates for bile duct cancer](#)
- [Understanding the numbers](#)

**Keep in mind that survival rates are estimates and are often based on previous**



Regional	9%
Distant	3%
All SEER stages combined	9%

### ***Extrahepatic bile duct cancers (those starting outside the liver)***

(This includes both perihilar and distal bile duct cancers.)

<b>SEER stage</b>	<b>5-year relative survival rate</b>
Localized	18%
Regional	18%
Distant	2%
All SEER stages combined	11%

\*SEER= Surveillance, Epidemiology, and End Results

## **Understanding the numbers**

- **These numbers apply only to the stage of the cancer when it is first diagnosed.** They do not apply later on if the cancer grows, spreads, or comes back after treatment.
- **These numbers don't take everything into account.** Survival rates are grouped based on how far the cancer has spread. But other factors, such as your age and overall health, and how well the cancer responds to treatment, can also affect your outlook.
- **People now being diagnosed with bile duct cancer may have a better outlook than these numbers show.** Treatments improve over time, and these numbers are based on people who were diagnosed and treated at least five years earlier.

## **References**

SEER\*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute. Accessed at <https://seer.cancer.gov/explorer/> on February 23, 2023.

Last Revised: March 1, 2023



1. [www.cancer.org/cancer/managing-cancer/finding-care/seeking-a-second-opinion.html](http://www.cancer.org/cancer/managing-cancer/finding-care/seeking-a-second-opinion.html)
2. [www.cancer.org/cancer/types/bile-duct-cancer/treating.html](http://www.cancer.org/cancer/types/bile-duct-cancer/treating.html)
3. [www.cancer.org/cancer/types/bile-duct-cancer/treating/surgery.html](http://www.cancer.org/cancer/types/bile-duct-cancer/treating/surgery.html)
4. [www.cancer.org/cancer/types/bile-duct-cancer/after-treatment.html](http://www.cancer.org/cancer/types/bile-duct-cancer/after-treatment.html)
5. [www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html](http://www.cancer.org/cancer/managing-cancer/making-treatment-decisions/clinical-trials.html)
6. [www.cancer.org/cancer/managing-cancer/finding-care/health-professionals-associated-with-cancer-care.html](http://www.cancer.org/cancer/managing-cancer/finding-care/health-professionals-associated-with-cancer-care.html)  
[www.cancer.org/cancer/managing-cancer/finding-care/the-doctor-patient-relationship.html](http://www.cancer.org/cancer/managing-cancer/finding-care/the-doctor-patient-relationship.html)