Primary Liver Cancer

Understanding your diagnosis

When you first hear that you have cancer, you may feel alone and afraid. You may be overwhelmed by the large amount of information you have to take in and the decisions you need to make.

All I could hear was ‘cancer.’ I heard my doctor say something like, ‘We’re going to try and get the surgery done as soon as possible.’ I didn’t hear one word after that.

The introductory information in this brochure can help you and your family take the first steps in learning about primary liver cancer.* A better understanding may give you a sense of control and help you work with your healthcare team to choose the best care for you.

For more information

The information in this brochure provides an introduction to primary liver cancer. More in-depth information is available on cancer.ca. You can also call our Cancer Information Service at 1-888-939-3333 to learn more about cancer, diagnosis, treatment, support and the services we offer.

* This brochure is about primary liver cancer. Secondary liver cancer (also called metastatic liver cancer), which begins somewhere else in the body and spreads to the liver, is not discussed in this brochure. For information on secondary liver cancer, contact our Cancer Information Service at 1-888-939-3333.
What is cancer?

Cancer is a disease that starts in our cells. Our bodies are made up of trillions of cells, grouped together to form tissues and organs such as muscles and bones, the lungs and the liver. Genes inside each cell order it to grow, work, reproduce and die. Normally, our cells obey these orders and we remain healthy.

But sometimes the instructions in some cells get mixed up, causing them to behave abnormally. These cells grow and divide uncontrollably. After a while, groups of abnormal cells form lumps, or tumours.

Tumours can be either benign (non-cancerous) or malignant (cancerous). Benign tumour cells stay in one place in the body and are not usually life-threatening. Malignant tumour cells are able to invade nearby tissues and spread to other parts of the body. It’s important to find and treat malignant tumours as early as possible. In most cases, finding cancer early increases the chances of successful treatment.

Cancer cells that spread to other parts of the body are called metastases. The first sign that a malignant tumour has spread (metastasized) is often swelling of nearby lymph nodes, but cancer can spread to almost any part of the body.

Cancers are named after the part of the body where they start. For example, cancer that starts in the liver but spreads to the lungs is called primary liver cancer with lung metastases.
Primary liver cancer starts in the cells, bile ducts, blood vessels or connective tissue of the liver. It’s not very common. Primary liver cancer is different from cancer that starts somewhere else in the body and spreads to the liver (called secondary liver cancer or metastatic liver cancer).

The liver is one of the largest organs in the body. It’s in the upper part of the abdomen on the right-hand side and is protected by the lower ribs. The liver has 2 parts, called lobes - the right lobe and the smaller left lobe.

The liver has many important functions that keep you healthy. The liver:

- makes enzymes and bile that help digest food
- stores energy, vitamins and minerals and releases them into the blood when they’re needed
- makes proteins that help the blood clot to stop bleeding from a cut or injury
- cleans the blood by removing harmful materials, such as alcohol and waste products
- regulates the level of some of the natural chemicals in your body, such as cholesterol
The liver gets its supply of blood from 2 places. The hepatic artery carries blood that is rich in oxygen from the lungs and heart to the liver. The portal vein carries blood that is rich in nutrients from the intestines to the liver.

Most primary liver cancers begin in liver cells (called hepatocytes). When primary liver cancer starts here, it is called hepatocellular carcinoma. Cancer can also start in the cells of the bile ducts, and that cancer is called cholangiocarcinoma. The bile ducts are tubes that carry bile from the liver to the gallbladder. The gallbladder stores bile until it is needed for digestion. The information in this brochure is about hepatocellular cancer, but cholangiocarcinoma is often treated the same way.

**Diagnosing primary liver cancer**

Your doctor may suspect you have primary liver cancer after taking your medical history and doing a physical examination. Your doctor will feel your stomach area (abdomen and pelvis) to check the liver, spleen and nearby organs for any lumps or changes in their shape or size. The doctor will also check for an abnormal buildup of fluid in the abdomen and examine your skin and eyes for yellowing (signs of jaundice). To confirm the diagnosis, your doctor will arrange special tests. These tests may also be used to “stage” the cancer and help plan treatment.
Symptoms of primary liver cancer: Primary liver cancer may not cause any signs or symptoms in its early stages. But as the cancer grows, some people may have pain in the upper abdomen on the right side. This is because the liver has become enlarged. The pain may extend to the back and up to the right shoulder.

Other common symptoms include:
- a lump or mass under the ribs on the right side
- weight loss
- fatigue
- weakness, nausea or vomiting
- loss of appetite
- feeling full after a small meal

Other health problems can cause some of the same symptoms. Your doctor will do one or more of the following tests to make a diagnosis.

Blood tests: Blood is taken and studied to see if the different types of blood cells are normal in number and how they look. The results show how well your organs are working and may suggest whether or not you have cancer. A liver function test will show how well your liver is working. Another test measures how long your blood takes to clot. Your blood may also be tested for proteins called tumour markers. Liver cancer cells make a tumour marker called alpha-fetoprotein (AFP). High levels of AFP may be a sign of cancer.
**Imaging studies:** Imaging studies allow tissues, organs and bones to be looked at in more detail. Using x-rays, ultrasounds, CT scans, MRIs or bone scans, your healthcare team can get a picture of the size of the tumour and see if it has spread. These tests are usually painless and do not require an anesthetic.

You may have a special x-ray called an arteriogram (also called an angiogram). A dye is injected into an artery in the groin. The dye passes into the blood vessels in the liver, which helps the doctor see them more clearly.

**Biopsy:** A biopsy may be necessary to make a definite diagnosis of cancer. Cells are removed from the body and checked under a microscope. If the cells are cancerous, they may be studied further to see how fast they’re growing. There are different ways to do a biopsy.

For a core needle biopsy, your doctor inserts a needle through a cut in the abdomen to remove a sample of tissue.

A fine needle aspiration uses a thin needle to remove a small amount of tissue from the abnormal area in the liver.

For both types of liver biopsy, the doctor may use ultrasound or CT images to help guide the needle. A local anesthetic (freezing) will be used to numb the area. After a liver biopsy, you may need to stay in the hospital for a couple of hours or possibly overnight because there is a risk of bleeding afterwards.
**Laparoscopy:** For a laparoscopy, your doctor inserts a thin, flexible tube with a light and camera at the end into a small cut in the abdomen. Your doctor will look at the liver and other internal organs in the area and take several small biopsy samples. A laparoscopy may be done with only a local anesthetic, but more often, it’s done in the hospital under a general anesthetic (you will be unconscious).

**Further testing:** Your doctor may order more tests to find out if the cancer has spread and to help plan your treatment.

**Will I be okay?**

Most people with cancer want to know what to expect. Can they be cured?

A prognosis is your doctor’s best estimate of how cancer will affect you and how it will respond to treatment. A prognosis looks at many factors, including:

- the type, stage and grade of cancer
- the location of the tumour and whether it has spread
- your age, sex and overall health

Even with all this information, it can still be very hard for your doctor to say exactly what will happen. Each person’s situation is different.

Your doctor is the only person who can give a prognosis. Ask your doctor about the factors that affect your prognosis and what they mean for you.
**Staging**

Once a definite diagnosis of cancer has been made, the cancer is given a stage. The cancer stage describes the tumour size and how well the liver is working. This helps you and your healthcare team decide what sort of treatment would be best.

For primary liver cancer, there are 5 stages.* Stage A is divided into 4 subgroups.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>0</td>
<td>There is 1 tumour less than 2 cm and normal liver function.</td>
</tr>
<tr>
<td>A1</td>
<td>There is 1 tumour less than 5 cm and normal liver function.</td>
</tr>
<tr>
<td>A2</td>
<td>There is 1 tumour less than 5 cm and increased pressure in the veins of the liver.</td>
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<tr>
<td>A3</td>
<td>There is 1 tumour less than 5 cm that increases pressure in the veins of the liver and affects liver function.</td>
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<tr>
<td>A4</td>
<td>There are 3 tumours, all less than 3 cm.</td>
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<tr>
<td>B</td>
<td>Multiple large tumours cause mild liver damage.</td>
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<tr>
<td>C</td>
<td>The tumour has invaded the blood vessels or the cancer has spread to other parts of the body and there is mild liver damage.</td>
</tr>
<tr>
<td>D</td>
<td>There is severe liver damage.</td>
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* This table summarizes the stages of primary liver cancer according to the Barcelona Clinic Liver Cancer (BCLC) system. For more in-depth information, visit cancer.ca.
Treatments for primary liver cancer

Your healthcare team will consider your general health and the type and stage of the cancer to recommend what treatments will be best for you. For primary liver cancer, the choice of treatment also depends on:

• the condition of the liver
• the number, size and location of tumours
• whether or not the cancer has spread outside the liver

You will work together with your healthcare team to make the final treatment choices. Talk to them if you have questions or concerns.

Treatments affect everyone in different ways. It’s hard to predict which side effects you may have. Your healthcare team will tell you what to expect – which side effects to report right away and which ones can wait until your next appointment. If you notice any side effects or symptoms that you did not expect, talk to a member of your healthcare team as soon as possible.

Patients often worry about the side effects of cancer treatment. However, side effects can often be well managed and even prevented with medicine. Be open with your healthcare team. Tell them your concerns and ask questions. They can help you get the care and information you need.

For primary liver cancer, you might receive one or more of the following treatments.
**Surgery**: Surgery is the most effective treatment for cancer that has not spread outside the liver and when the tumour can be completely removed by surgery (localized resectable). Surgery is done under a general anesthetic (you will be unconscious), and you may need to stay in the hospital for several days after the surgery.

The type of liver surgery you have depends on the tumour’s location and size and on the number of tumours in the liver. The type of surgery also depends on how well the liver is working.

For a partial hepatectomy, the surgeon removes the tumour from inside the liver and some of the tissue around the tumour. This type of surgery may be used if the cancer has not spread outside the liver and the remaining liver tissue is healthy. If the operation removes a whole lobe of the liver, it is called a lobectomy. The liver has an amazing ability to repair itself. Even if up to three-quarters of the liver is removed, it will start to re-grow quickly and may be back to normal size within a few weeks.

Sometimes, a total hepatectomy with a liver transplant is possible. For this surgery, the transplant surgeon removes the entire liver and replaces it with a healthy liver or liver lobe from a suitable donor. A liver transplant can be done only if the disease in the liver is limited and has not spread outside the liver.

After surgery you may have some pain or nausea, or you may not feel like eating. These side effects are temporary and can be controlled.
If you have a liver transplant, you may need to stay in the hospital for several weeks. Your healthcare team will check for signs of how well your body is accepting the new liver. You may need drugs to prevent your body from rejecting the new liver. These drugs may cause puffiness in the face, high blood pressure or an increase in body hair.

**Cryosurgery**: Cryosurgery destroys cancer cells by freezing them. Cryosurgery may be used to treat primary liver tumours that cannot be removed by surgery (are unresectable) and have not spread outside the liver.

Fever is a very common side effect of cryosurgery for up to 5 days after treatment.

**Radiofrequency ablation**: Radiofrequency ablation (RFA) uses a high-frequency electrical current to heat the cancer cells and destroy them. The doctor inserts a special needle containing tiny electrodes directly through the skin of the abdomen. Ultrasound or CT images may be used to help the doctor guide the needle. A local anesthetic is used to numb the area. RFA can also be done through an incision in the abdomen. This is done in the hospital under a general anesthetic (you will be unconscious).

RFA may be used to treat small tumours that cannot be removed by surgery.

After RFA, you may have a fever and some nausea. These side effects are temporary and can be controlled.
Percutaneous ethanol injection (PEI): For this type of treatment, ethanol is injected directly into the tumour to destroy cancer cells. The doctor inserts a needle guided by ultrasound or CT images through the skin into the tumour. A local anesthetic is used to numb the area. PEI may be used to treat small tumours that cannot be removed by surgery. If the tumour grows again, the treatment can be repeated.

You may have a fever and pain after the injection. These side effects go away soon after treatment and may be prevented with medication.

Chemotherapy: Chemotherapy may be given as pills or by injection. Chemotherapy drugs stop cancer cells from growing and spreading, but they also damage healthy cells. Although healthy cells can recover over time, you may experience side effects like nausea, vomiting, loss of appetite, fatigue, hair loss and an increased risk of infection.

For primary liver cancer, it may be possible to inject chemotherapy drugs directly into a tumour to destroy the cancer cells. Chemotherapy drugs can also be injected directly into the hepatic artery that supplies blood to the liver. The drugs flow into the blood vessels that lead to the tumour and destroy the cancer cells. This is called hepatic artery infusion.

Sometimes a combination of blocking agents and chemotherapy drugs is injected into the liver artery. The doctor first injects a chemotherapy drug into the artery to
destroy the cancer cells and then uses tiny particles to block the flow of blood through the artery. These blocking agents stop the tumour’s blood supply. This is called chemoembolization. It requires a short hospital stay.

There are fewer side effects with both chemoembolization and hepatic arterial infusion than with standard chemotherapy because only a small amount of the drug reaches other parts of the body. Any side effects that develop, such as fever, go away soon after treatment.

**Radiation therapy**: Radiation therapy is sometimes used to relieve pain and control the symptoms of advanced primary liver cancer.

In external beam radiation therapy, a large machine is used to carefully aim a beam of radiation at the tumour. The radiation damages the cells in the path of the beam – normal cells as well as cancer cells.

Radiation therapy to the abdomen may cause nausea, vomiting or diarrhea. You may feel more tired than usual or notice changes to the skin (it may be red or tender) where the treatment was given. These side effects are from damage to normal cells. The side effects usually go away when the treatment period is over and the normal cells repair themselves.

For more information on treatment, you may want to read our booklets *Chemotherapy and Other Drug Therapies* and *Radiation Therapy*.
Clinical treatment trials: Clinical treatment trials investigate new approaches to treating cancer, such as new drugs, new types of treatments or combinations of existing treatments. They are closely monitored to make sure that they are safe for the participants. Ask your doctor if there is a clinical trial suitable as a treatment option for you. You may benefit and so may future cancer patients.

Our booklet Clinical Trials has more information, including how to find a clinical trial.

Complementary therapies: Complementary therapies – for example, massage therapy or acupuncture – are used together with conventional cancer treatments, often to help ease tension and stress as well as other side effects of treatment. They don’t treat the cancer itself. More research is needed to understand if these therapies are effective and how they work.

Alternative therapies are used instead of conventional treatments. Alternative therapies haven’t been tested enough for safety or effectiveness. Using alternative treatments alone for cancer may have serious health effects.

If you’re thinking about using a complementary or alternative therapy, find out as much as you can about the therapy and talk to your healthcare team. It’s possible that the therapy might interfere with test results or other treatments.

Our booklet Complementary Therapies has more information.
**Side effects of treatment:** Some cancer treatments cause side effects, such as fatigue, hair loss or nausea. Because treatments affect everyone differently, it’s hard to predict which side effects – if any – you may have.

Side effects can often be well managed and even prevented. If you’re worried about side effects, tell your healthcare team about your concerns and ask questions. They can tell you which side effects you should report right away and which ones can wait until your next appointment.

If you notice any side effects or symptoms that you didn’t expect, talk to a member of your healthcare team as soon as possible. They’ll help you get the care and information you need.

**After treatment**

Follow-up care helps you and your healthcare team monitor your progress and your recovery from treatment. At first, your follow-up care may be managed by one of the specialists from your healthcare team. Later on, it may be managed by your family doctor.

The schedule of follow-up visits is different for each person. You might see your doctor more often in the first year after treatment and less often after that. After treatment has ended, you should report new symptoms and symptoms that don’t go away to your doctor without waiting for your next scheduled appointment.
Self-image and sexuality: It’s natural to be concerned about the effects of primary liver cancer and its treatment on your self-image. You may be worried about how your body looks after treatment, about having sex with a partner or that you may be rejected. It may help to talk about these feelings with someone you trust. Your doctor can also refer you to specialists and counsellors who can help you with the emotional side effects of primary liver cancer treatment.

Our booklet Sexuality and Cancer has more detailed information.

The end of cancer treatment may bring mixed emotions. You may be glad the treatments are over and look forward to returning to your normal activities. But you might feel anxious as well. If you’re worried about the end of your treatment, talk to your healthcare team. They’re there to help you through this transition period.
Our booklet *Living with Cancer* has more detailed information and resources.

Many sources of help are available for people with cancer and for their caregivers.

**Your healthcare team:** If you need practical help or emotional support, members of your healthcare team may be able to suggest services in your community or refer you to cancer centre staff or mental health professionals.

**Family and friends:** People closest to you can be very supportive. Accept offers of help. When someone says, “Let me know how I can help,” tell them what they can do. Maybe they can run errands, cook a meal or give you a ride to your doctor’s office.

**People who’ve had similar experiences:** Talking with and learning from others who’ve had similar experiences can be helpful. Consider visiting a support group or talking with a cancer survivor in person, over the telephone or online. Try more than one option to see which one works best for you.
Yourself: Coping well with cancer doesn’t mean that you have to be happy or cheerful all the time. But it can mean looking after yourself by finding relaxing, enjoyable activities that refresh you mentally, spiritually or physically. Take some time to find coping strategies to help you through this experience. You may also want to talk to a counsellor for more help.

Talking to someone who’s been there
If you would like to talk to someone who’s had a similar cancer experience, we can help. Let us connect you with a volunteer who can listen, provide hope, offer encouragement and share ideas for coping – all from the unique perspective of someone who’s “been there.”

To find out more about what’s available in your area, you can:
• Call us toll-free Monday to Friday at 1-888-939-3333 (TTY 1-866-786-3934).
• Email info@cis.cancer.ca.
• Visit cancer.ca.

Want to connect with someone online?
If you’d like to connect with someone online, join our online community, CancerConnection.ca. There are discussions and groups that may interest you, and you’ll find caring, supportive people there.
What causes primary liver cancer?

There is no single cause of primary liver cancer, but some factors increase the risk of developing it. Some people can develop primary liver cancer without any risk factors, while others who have these factors do not get it.

Risk factors for primary liver cancer include:

- cirrhosis – scarring of the liver caused by hepatitis, heavy alcohol drinking over a long period of time or some genetic conditions
- chronic liver infection (hepatitis B or hepatitis C)
- heavy alcohol use
- tobacco use
- exposure to aflatoxin – a food mould in poorly stored nuts and grains (commonly found in Africa and Asia)
- exposure to thorium dioxide – a chemical that was used for x-rays in the past
- being exposed at work to vinyl chloride
- some metabolic disorders, such as hemochromatosis (when the liver stores too much iron)
- taking birth control pills for more than 5 years
- infection with Opisthorchis viverrini – a parasite that infects the liver (common in parts of Africa and Asia)
- primary sclerosing cholangitis – a disease of the bile ducts
- non-alcoholic steatohepatitis (non-alcoholic fatty liver disease)
- being exposed at work to plutonium
- diabetes
- obesity
Canadian Cancer Society
We’re here for you.

When you have questions about treatment, diagnosis, care or services, we will help you find answers.

Call our toll-free number 1 888 939-3333.

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Ask a trained cancer information specialist your questions about cancer. Call us or email info@cis.cancer.ca.

Connect with people online to join discussions, get support and help others. Visit CancerConnection.ca.

Browse Canada’s most trusted online source of information on all types of cancer. Visit cancer.ca.

Our services are free and confidential. Many are available in other languages through interpreters.

Tell us what you think
Email cancerinfo@cancer.ca and tell us how we can make this publication better.
What we do

The Canadian Cancer Society fights cancer by:

• doing everything we can to prevent cancer
• funding research to outsmart cancer
• empowering, informing and supporting Canadians living with cancer
• advocating for public policies to improve the health of Canadians
• rallying Canadians to get involved in the fight against cancer

Contact us for up-to-date information about cancer and our services or to make a donation.