



# Understanding Cancer in the Liver

A guide for people affected by primary liver cancer or secondary cancer in the liver

Cancer  
information

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*Understanding Cancer in the Liver* is reviewed approximately every two years. Check the publication date above to ensure this copy is up to date.

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### Note to reader

Always consult your doctor about matters that affect your health. This booklet is intended as a general introduction to the topic and should not be seen as a substitute for medical, legal or financial advice. You should obtain independent advice relevant to your specific situation from appropriate professionals, and you may wish to discuss issues raised in this book with them.

All care is taken to ensure that the information in this booklet is accurate at the time of publication. Please note that information on cancer, including the diagnosis, treatment and prevention of cancer, is constantly being updated and revised by medical professionals and the research community. Cancer Council Australia and its members exclude all liability for any injury, loss or damage incurred by use of or reliance on the information provided in this booklet.

### Cancer Council

Cancer Council is Australia's peak non-government cancer control organisation. Through the eight state and territory Cancer Councils, we provide a broad range of programs and services to help improve the quality of life of people living with cancer, their families and friends. Cancer Councils also invest heavily in research and prevention. To make a donation and help us beat cancer, visit [cancer.org.au](http://cancer.org.au) or call your local Cancer Council.



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# About this booklet

This booklet has been prepared to help you understand more about cancer that affects the liver. Many people feel shocked and upset when told they have primary liver cancer or secondary cancer in the liver. We hope this booklet helps you, your family and friends understand how cancer in the liver is diagnosed and treated. We also include information about support services.

We cannot give advice about the best treatment for you. You need to discuss this with your doctors. However, this information may answer some of your questions and help you think about what to ask your treatment team (see page 62 for a question checklist).

This booklet does not need to be read from cover to cover – just read the parts that are useful to you. Some medical terms that may be unfamiliar are explained in the glossary (see pages 63–67). You may like to pass this booklet to family and friends for their information.

## How this booklet was developed

This information was developed with help from a range of health professionals and people affected by cancer. It is based on international clinical practice guidelines for liver cancer and secondary cancer in the liver.<sup>1</sup>

If you or your family have any questions, call Cancer Council **13 11 20**. We can send you more information and connect you with support services in your area. You can also visit your local Cancer Council website (see back cover).



**Cancer  
Council**  
**13 11 20**

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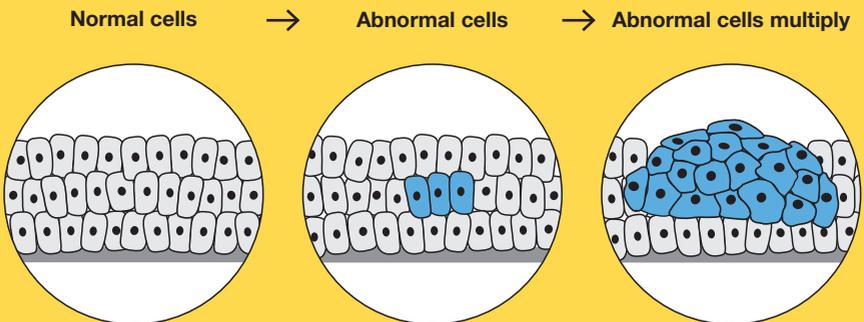
# What is cancer?

Cancer is a disease of the cells. Cells are the body's basic building blocks – they make up tissues and organs. The body constantly makes new cells to help us grow, replace worn-out tissue and heal injuries.

Normally, cells multiply and die in an orderly way, so that each new cell replaces one lost. Sometimes, however, cells become abnormal and keep growing. In solid cancers, such as liver cancer, the abnormal cells form a mass or lump called a tumour. In some cancers, such as leukaemia, the abnormal cells build up in the blood.

Not all tumours are cancer. Benign tumours tend to grow slowly and usually don't move into other parts of the body or turn into

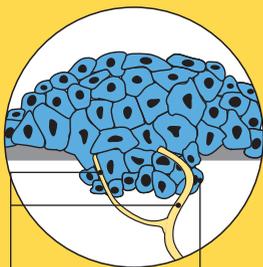
## How cancer starts



cancer. Cancerous tumours, also known as malignant tumours, have the potential to spread. They may invade nearby tissue, destroying normal cells. The cancer cells can break away and travel through the bloodstream or lymph vessels to other parts of the body.

The cancer that first develops is called the primary cancer. It is considered localised if it has not spread to other parts of the body. If the primary cancer cells grow and form another tumour at a new site, it is called a secondary cancer or metastasis. Secondary cancer in the liver keeps the name of the original cancer. For example, bowel cancer that spreads to the liver is still called metastatic bowel cancer, even when the person has symptoms caused by cancer in the liver.

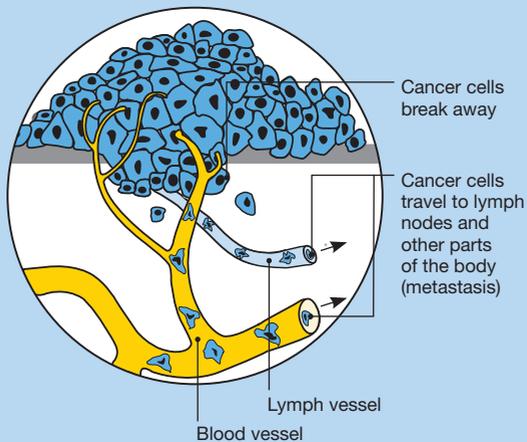
→ **Malignant cancer**



Grows own  
blood vessels  
(angiogenesis)

Invades  
surrounding  
tissue

**How cancer spreads**





## The liver

The liver is the largest organ inside the body. It is part of the digestive system and is found next to the stomach on the right side of the abdomen under the ribs. The gall bladder sits under the liver, and the pancreas sits under the stomach. These organs work together to help the body process food.

The two main sections of the liver are the right and left lobes. Blood flows into the liver from the hepatic artery and the portal vein. Blood in the hepatic artery comes from the heart and carries oxygen, while blood in the portal vein comes from the stomach and carries nutrients and substances such as medicines or alcohol to the liver.

The liver does many important jobs. These include:

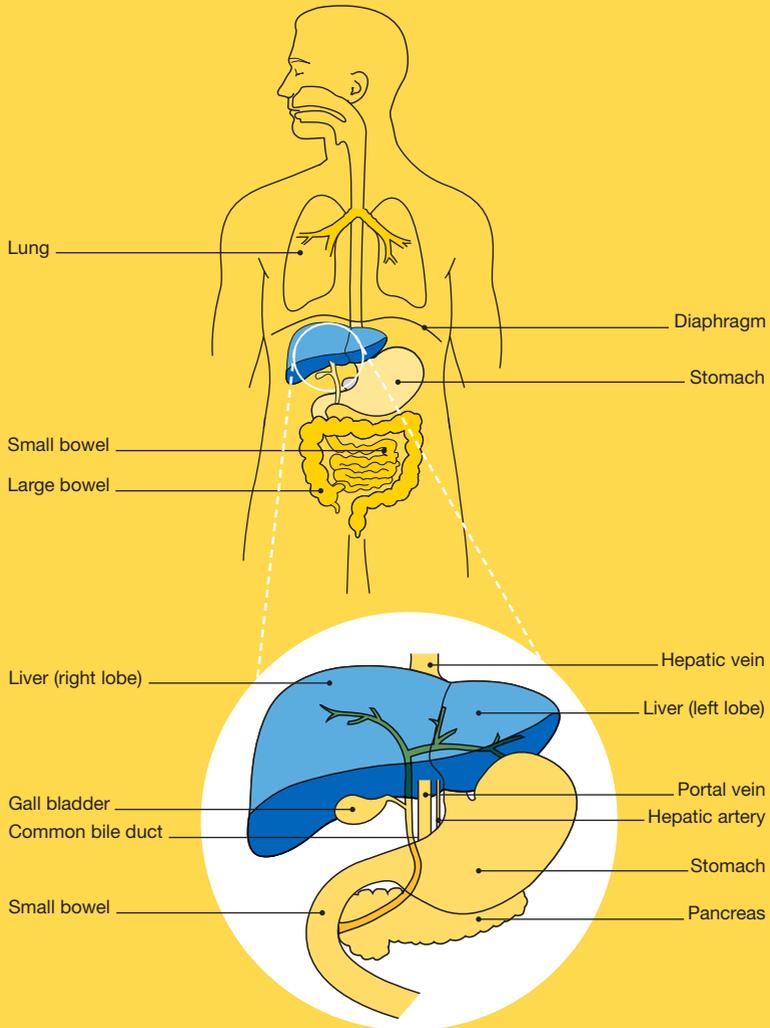
- breaking down drugs and alcohol, and getting rid of toxins
- producing bile to help dissolve fat so it can be easily digested
- storing and releasing sugars (glucose) as needed
- storing nutrients
- making proteins to help blood clot and to balance fluid in the body.

Unlike other internal organs, a healthy liver can usually repair itself if injured. It can continue to function even when only a small part is working and may grow back to its normal size in 6–8 weeks.



Bile is made in the liver and stored in the gall bladder. A series of tubes called bile ducts carry bile between the liver and gall bladder. The common bile duct carries bile from the liver and gall bladder to the bowel, where it helps to break down fats.

## The digestive system



Front view shown



# Primary liver cancer

This chapter discusses symptoms, risk factors, diagnosis and treatment for primary liver cancer. For information about managing symptoms, see pages 48–52.

## Q: What is primary liver cancer?

**A:** Primary liver cancer is a malignant tumour that starts in the liver. The main type of primary liver cancer that can affect adults is hepatocellular carcinoma (HCC). HCC starts in the hepatocytes, the liver's main cell type, and is also known as hepatoma. This chapter focuses on HCC.

A less common type of liver cancer can start in the bile ducts that connect the liver to the bowel and gall bladder. This is known as cholangiocarcinoma or bile duct cancer (see page 29).

A very rare type of liver cancer that starts in the blood vessels is known as angiosarcoma. Hepatoblastoma is a form of liver cancer that affects only young children and is also very rare.

## Q: How common is liver cancer?

**A:** In Australia, about 1900 people are diagnosed with primary liver cancer each year, with almost three times as many men as women affected.<sup>2</sup>

HCC most often develops in people with underlying liver disease caused by obesity, drinking too much alcohol or infection with hepatitis B or C. It is common in Asia, the

Pacific Islands and Africa due to high rates of hepatitis B infection. In Australia, HCC is more common in migrants from Vietnam, China, Taiwan, Hong Kong and Korea – countries where there is a higher rate of hepatitis B infection.

## Q: What are the symptoms?

**A:** Liver cancer often doesn't cause any symptoms in the early stages, but they may appear as the cancer grows or spreads.

Symptoms of HCC can include:

- weakness and tiredness (fatigue)
- pain in the abdomen, or in the right shoulder
- appetite loss and feeling sick (nausea)
- unexplained weight loss
- yellowing of the skin and eyes (jaundice)
- dark urine and pale bowel motions
- itchy skin
- a swollen abdomen caused by fluid build-up (ascites)
- fever.

These symptoms can also be caused by other conditions, but see your doctor if you are concerned.



For an overview of what to expect during all stages of your cancer care, visit [cancerpathways.org.au/optimal-care-pathways/liver-cancer](https://cancerpathways.org.au/optimal-care-pathways/liver-cancer). This is a short guide to what is recommended, from diagnosis to treatment and beyond.

## Q: What are the risk factors for primary liver cancer?

**A:** The main type of primary liver cancer, HCC, is most often related to long-term (chronic) infection caused by the hepatitis B or C virus. See the opposite page for more information. Talk to your doctor if you are concerned about the link between hepatitis and liver cancer.

Liver scarring (cirrhosis) can also increase a person's risk of developing HCC. The scar tissue blocks the flow of blood through the liver and slows the processing of nutrients, hormones, drugs and naturally produced toxins. It also slows the liver's production of proteins and other substances.

Cirrhosis may develop slowly over months or years. It can be caused by a number of factors, including:

- hepatitis B or C
- fatty liver disease – often related to a high-carbohydrate diet, being overweight or obese, drinking too much alcohol, or having type 2 diabetes
- alcohol consumption (with or without fatty liver disease)
- type 2 diabetes (with or without fatty liver disease)
- genetic disorders such as iron overload (haemochromatosis) or low levels of a particular protein that can cause tissue in the lungs and liver to break down (alpha-1 antitrypsin deficiency).

Smoking tobacco also increases a person's risk of developing HCC. People with more than one risk factor for HCC have an increased risk of developing the disease.

## Link between hepatitis and liver cancer

Worldwide, about 8 in 10 cases of HCC can be linked to infection with the hepatitis B or C virus.

Hepatitis B and C spread through contact with infected blood, semen or other body fluids. This can occur during sex with an infected partner, or by sharing personal items, such as razors, toothbrushes or needles, with an infected person. The most common way hepatitis B spreads is from mother to baby during birth.

When a person has hepatitis, the virus attaches to the liver cells (hepatocytes) and starts multiplying. The body's immune system then attacks the virus, causing liver inflammation. If the hepatitis infection lasts more than six months (chronic infection), this inflammation may lead to liver scarring (cirrhosis) that can increase the risk of developing liver cancer.

To limit the spread of hepatitis B and the rate of primary liver cancer, all at-risk people should be vaccinated against the virus.

At-risk people include:

- migrants from South-East Asia, Africa and the Pacific Islands
- sexually active partners of individuals with hepatitis B
- people living in a household with someone with hepatitis B
- recipients of blood products
- infants and children (these are vaccinated as part of Australia's National Immunisation Program).

If you are already infected with hepatitis B, vaccination won't help but you will have regular tests to ensure you don't develop liver problems. If you do have signs of liver damage from hepatitis B, you will be offered antiviral medicines to help manage the effects of the infection and prevent further liver damage.

New antiviral medicines can cure hepatitis C in most people. This lowers the risk of developing liver cancer but does not eliminate it. Even after successful hepatitis treatment, people with cirrhosis need long-term monitoring.

## Q: Which health professionals will I see?

**A:** Your general practitioner (GP) will usually arrange the first tests to assess your symptoms. If these tests do not rule out cancer, you will be referred to a specialist. For primary liver cancer, this specialist is likely to be a liver specialist such as a hepatologist, gastroenterologist or hepatobiliary surgeon.

### Health professionals you may see

<b>GP</b>	assists you with treatment decisions and works with your specialists to provide ongoing care
<b>gastroenterologist*</b> , <b>hepatologist*</b>	diagnose and treat disorders of the digestive system, including liver cancer; a hepatologist is a gastroenterologist specialising in liver diseases
<b>hepatobiliary surgeon*</b>	operates on the liver, gall bladder, pancreas and surrounding organs
<b>interventional radiologist*</b>	analyses x-rays and scans, and delivers some treatments for liver cancer
<b>medical oncologist*</b>	treats cancer with drug therapies such as chemotherapy, targeted therapy and immunotherapy (systemic treatment)
<b>cancer care coordinator</b>	coordinates care, liaises with MDT and supports you and your family throughout treatment; care may also be coordinated by a clinical nurse consultant (CNC), clinical nurse specialist (CNS) or hepatology nurse

The specialist will arrange further tests. If liver cancer is diagnosed, the specialist will consider treatment options. Often these will be discussed with other health professionals at what is known as a multidisciplinary team (MDT) meeting. During and after treatment for liver cancer, you will see a range of health professionals who specialise in different aspects of your care.

<b>nurse</b>	administers drugs and provides care, information and support; a hepatology nurse specialises in liver cancer
<b>physiotherapist, occupational therapist</b>	assist with physical and practical problems, including restoring movement and mobility after treatment, and recommending aids and equipment
<b>social worker</b>	links you to support services and helps you with emotional, practical or financial issues
<b>dietitian</b>	recommends an eating plan to follow while you are in treatment and recovery
<b>psychiatrist*, counsellor, psychologist</b>	help you manage your emotional response to diagnosis and treatment
<b>palliative care team</b>	work closely with your GP and cancer specialist to help control symptoms and maintain quality of life; includes palliative care specialists and nurses, as well as other health care professionals

*\* Specialist doctor*

## Diagnosis

Liver cancer is diagnosed using a number of tests. These include blood tests and imaging scans such as ultrasound, CT and MRI. In some cases, a tissue sample (biopsy) may also be tested.

### Blood tests

Blood tests cannot diagnose liver cancer on their own, but they can help doctors work out what sort of liver cancer may be present.

Samples of your blood may be sent for various tests:

**Liver function tests (LFTs)** – Blood tests can check how well your liver is working. You may have liver function tests done before, during and after treatment.

**Blood clotting tests** – These check if the liver is making proteins that help the blood to clot. Low levels increase your risk of bleeding.

**Hepatitis tests** – These check for hepatitis B and C, which can lead to primary liver cancer.

**Tumour markers** – Certain chemicals known as tumour markers are produced by cancer cells. Tumour markers can help identify some types of cancer. The most commonly measured tumour marker for HCC is alpha-fetoprotein (AFP). Sometimes the AFP level is normal even when there is liver cancer. On the other hand, a raised AFP level does not always mean cancer – conditions such as pregnancy, hepatitis and jaundice can also increase AFP levels without cancer being present.

## Imaging scans

The most common imaging scan used to look for liver cancer is an ultrasound. It's also used to monitor people with cirrhosis. Ultrasound alone cannot confirm a diagnosis of liver cancer, so you will also have one or more other scans as well.

**Ultrasound** – This scan uses soundwaves to create a picture of your organs. It is used to show if cancer is present and how large it is.

You will be asked not to eat or drink (fast) for about four hours before the ultrasound. During an ultrasound scan, you will lie on an examination table with your abdomen uncovered. A gel will be spread on your skin and a device called a transducer will be moved across your abdomen. The transducer creates soundwaves that echo when they meet something solid, such as an organ or tumour.

A computer turns the soundwaves into a picture. An ultrasound is painless, and usually takes 15–20 minutes.

If a solid lump is found, other scans will need to be done to show whether it is cancer. It is common to find non-cancerous (benign) tumours in the liver during an ultrasound.

**CT scan** – A CT (computerised tomography) scan uses x-ray beams to take many pictures of the inside of the body. A computer compiles them into one detailed cross-sectional picture.

As part of the procedure, a dye (called the contrast) will be injected into one of your veins. The contrast travels through the bloodstream

and shows up any abnormal areas. It may make you feel flushed and cause some discomfort in your abdomen. Symptoms should ease quickly, but tell the doctor if you feel unwell.

You will lie on an examination table and pass through the CT scanner, which is large and round like a doughnut. The whole procedure takes 15–20 minutes.

**MRI scan** – An MRI (magnetic resonance imaging) scan uses magnetic waves to create detailed cross-sectional pictures of organs in the body. These show the extent of the tumour and whether it is affecting the main blood vessels around the liver.

You may be injected with a dye (contrast) that highlights the organs in your body. You will then lie on an examination table inside a large metal cylinder that is open at both ends. The noisy, narrow machine makes some people feel anxious or uncomfortable (claustrophobic). If you think you may become distressed, mention it beforehand to your medical team. You may be given a mild sedative to help you relax, and you will usually be offered headphones or earplugs.

The MRI scan may take between 30 and 90 minutes.



The dye used in a CT scan can cause allergies. If you have had an allergic reaction to iodine or dyes during a previous scan, tell your medical team beforehand. You should also let them know if you're diabetic, have kidney disease or are pregnant.

“ At first, I found the MRI frightening, going into the cylinder and having to hold my breath. But now when I have this scan, I count to myself. This helps me feel more in control. ” *Robyn*

## Biopsy

A biopsy is the removal of a tissue sample for examination under a microscope in a laboratory. It is not often needed for diagnosing primary liver cancer, as scans are usually enough, particularly in people with cirrhosis. However, a biopsy may be suggested if there is still uncertainty about the diagnosis once scans have been done.

Before a liver biopsy, your blood may be tested to check it clots normally. This is because the liver has many blood vessels, and there is a risk of bleeding. A sample of cells can be collected in two ways.

**Core biopsy** – The doctor will give you a local anaesthetic to numb the area, and then pass a needle through the skin of the abdomen to remove a sample from the tumour. An ultrasound or CT is used to guide the needle to the right spot. You may need to stay in hospital for a few hours, or overnight if there is a high risk of bleeding.

**Laparoscopy** – You will need to have a general anaesthetic for this procedure. The doctor will make some small cuts in the abdomen and insert a thin tube containing a light and camera (laparoscope) to look at the liver and take samples. This procedure is done if your doctor thinks the cancer may have spread to other areas of the body. Laparoscopy is sometimes called keyhole surgery.

## Staging

The tests described on pages 15–17 will show whether the liver cancer has spread. Your doctor will also consider how well the liver is working and record this using the Child-Pugh score.

### Child-Pugh score

A scoring system for how well the liver is working based on the level of damage caused by cirrhosis.

<b>A</b>	Liver is working well and cirrhosis is less advanced.
<b>B</b>	Liver is working moderately well.
<b>C</b>	Liver is not working well and cirrhosis is advanced.

The Barcelona Clinic Liver Cancer (BCLC) system is often used to stage HCC. The categories are based on how well you can carry out daily tasks, what the tumour is like, and how well the liver is working. Knowing the stage helps your doctor work out the best treatment.

### BCLC staging system for primary liver cancer

<b>0 (very early)</b>	Single cancer less than 2 cm; Child-Pugh A
<b>A (early)</b>	Single cancer or up to 3 cancers less than 3 cm; Child-Pugh A–B
<b>B (intermediate)</b>	Many cancers in the liver; Child-Pugh A–B
<b>C (advanced)</b>	Cancer has grown into one of the main blood vessels of the liver, lymph nodes or other body organs; Child-Pugh A–B
<b>D (end-stage)</b>	Child-Pugh C with any size tumour

## Prognosis

Prognosis means the expected outcome of a disease. You may wish to discuss your prognosis with your doctor, but it is not possible for anyone to predict the exact course of the disease.

To work out your prognosis, your doctor will consider:

- test results
- the type of liver cancer
- the stage of the cancer and how fast it is growing
- whether you have cirrhosis and how well the liver is working
- how well you respond to treatment
- other factors such as your age, fitness and overall health.

The prognosis tends to be better when liver cancer is still in the early stages, but liver cancer is often found later. Doctors often use statistics when considering someone's prognosis. Statistics reflect the typical outcome of disease in large numbers of people. While statistics give doctors a general idea about a disease, they won't necessarily reflect your situation.

A liver transplant or surgery to remove the cancer (liver resection) may be an option to treat some people with primary liver cancer. Other treatments for primary liver cancer can significantly improve survival and can relieve symptoms to improve quality of life.

🗨️ It helps to focus on what is happening now, what is actually known – not all the possibilities. One step at a time. 🗨️ Sam

## Treatment

Treatment depends on the size of the cancer, whether it is contained in one part of the liver and no major blood vessels are involved, and whether you have cirrhosis. Your doctor will also consider your age, your general health and the options available at your hospital.

### HCC treatment options by stage

Most people with HCC will have thermal ablation, a treatment that uses heat to destroy the tumour, or transarterial chemoembolisation (TACE), which delivers chemotherapy directly into the cancer. Surgery is used for about 5% of people.

- **Stage 0 (very early)** – usually surgery
- **Stage A (early)** – usually ablation, TACE, surgery or transplant
- **Stage B (intermediate)** – TACE
- **Stage C (advanced)** – targeted therapy drugs or palliative treatment
- **Stage D (end-stage)** – palliative treatment or clinical trial; some people with liver failure and small tumours may be offered a liver transplant.

### Liver surgery

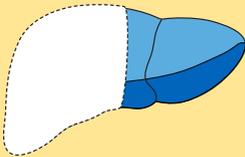
The aim of surgery is to remove the part of the liver that contains cancer. This is known as a liver resection or partial hepatectomy (see opposite). Only a small number of people with liver cancer can have this surgery as it is usually only suitable for a single tumour that has not grown into blood vessels. The liver also has to be working well because it needs to repair itself after the surgery. This means that people with no or early cirrhosis may be considered for surgery, but surgery is unlikely to be offered if you have more advanced cirrhosis.

## Types of liver resection

There are different types of liver resections depending on the size and position of the cancer. These diagrams show the front view, so the right part of the liver appears here on the left, and vice versa.

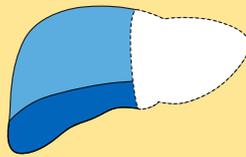
### Right hepatectomy

Removes the right part of the liver



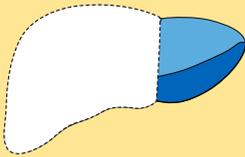
### Left hepatectomy

Removes the left part of the liver



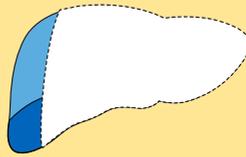
### Extended right hepatectomy

Removes most of the liver, leaving a portion on the left



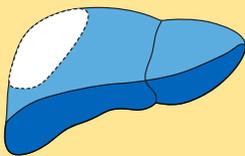
### Extended left hepatectomy

Removes most of the liver, leaving a portion on the right



### Segmentectomy

Removes a small section of the liver



Sometimes the gall bladder may also be removed, along with part of the diaphragm (the sheet of muscle that separates the chest from the abdomen).

**Surgical techniques** – Most operations for primary liver cancer are done with a large cut in the upper abdomen. This is called open surgery. However, it is now becoming more common for liver tumours to be removed with several smaller cuts (called keyhole or laparoscopic surgery). The surgeon will insert a thin tube containing a light and camera (laparoscope) into one of the cuts. A tool at the end of the laparoscope can be used to remove tissue.

People who have laparoscopic surgery usually have a shorter hospital stay, less pain and a faster recovery time. However, laparoscopic surgery is not suitable for everyone and is not available in all hospitals. Talk to your surgeon about the best option for you. Whether you have open or laparoscopic surgery, a liver resection is a major operation. You will have a general anaesthetic and the surgeon will remove the tumour as well as some healthy-looking tissue around it.

**After the surgery** – The portion of the liver that remains after the resection will start to grow, even if up to three-quarters of it has been removed. The liver will usually regrow to its normal size within a few months, although its shape may be slightly changed.

A lot of blood passes through the liver, and bleeding after surgery is a risk. Your medical team will monitor you for signs of bleeding and infection. Some people experience jaundice (yellowing of the skin and whites of the eyes). This is usually temporary and improves as the liver grows back. You will spend 5–10 days in hospital after a liver resection.

- See our *Understanding Surgery* booklet for information about recovering from surgery.

## Portal vein embolisation (PVE)

Sometimes the surgeon needs to remove so much of the liver that the remaining portion may not be able to function normally. In this case, you may have a portal vein embolisation (PVE) about 4–8 weeks before the surgery.

The portal vein carries blood from the stomach to the liver, dividing into left and right branches as it enters the liver. PVE involves blocking the branch of the portal vein that carries blood to the part of the liver that is going to be removed. This redirects the blood to the remaining part of the liver to help it grow.

PVE is performed by an interventional radiologist after discussion with the liver surgeon and is normally done under general anaesthetic. The radiologist will insert a tube through the skin into the portal vein using an ultrasound and x-ray as a guide. An x-ray dye is injected to identify the portal vein, and then the targeted branch will be blocked using tiny plastic beads, soft gelatine sponges or metal coils.

A CT scan will be performed before and after the procedure to measure the size of your liver and help your doctor work out whether surgery is possible.

## Liver transplant

A transplant involves removing the whole liver and replacing it with a healthy liver from another person (a donor). This treatment is effective for HCC, but it is generally used only in people with a single tumour or several small tumours. It is not usually recommended for cholangiocarcinoma (bile duct cancer).

To be considered for a liver transplant, you need to be reasonably fit, not smoke or take illegal drugs, and have stopped drinking alcohol for at least six months. Currently, all liver transplants in Australia are performed in public hospitals and there is no cost to you.

Donor livers are scarce and waiting for a suitable liver may take many months. During this time, the cancer may continue to grow. As a result, most people have tumour ablation (see below) or TACE (see pages 26–27) to control the cancer while they wait for a donor.

Unfortunately, in some people the cancer progresses despite treatment and a liver transplant will no longer be helpful. In this situation, you will be removed from the liver transplant waiting list and alternative treatment options will be discussed.

**Recovering from a transplant** – If you have a liver transplant, you will spend up to three weeks in hospital. It may take 3–6 months to recover and it will probably take a while to regain your energy.

You will be given drugs called immunosuppressants to stop the body rejecting the new liver. These need to be taken for the rest of your life. You will also have antibiotics to reduce the chance of infections.

## **Tumour ablation**

For tumours smaller than 3 cm, you may be offered tumour ablation. This destroys the tumour without removing it and may be the best option if you cannot have surgery or are waiting for a transplant. Ablation can be done in different ways, depending on the size, location and shape of the tumour.

**Thermal ablation** – This uses heat to destroy a tumour. The heat may come from radio waves (radiofrequency ablation) or microwaves (microwave ablation).

Thermal ablation may be done with a local anaesthetic in the x-ray department or under a general anaesthetic in the operating theatre. A fine needle is inserted into the tumour through the skin, using a CT or ultrasound scan as a guide. The radio waves or microwaves are sent into the tumour through the needle.

Treatment takes 1–2 hours, and most people stay overnight in hospital. Side effects may include pain, nausea or fever, but these can be managed with medicines.

**Alcohol injection** – This involves injecting pure alcohol into the tumour. It isn't available at all hospitals, but is used occasionally if other forms of ablation aren't possible. The needle is passed into the tumour under local anaesthetic, using an ultrasound as a guide. You could need more than one injection over several sessions. Side effects may include pain or fever, but they can be managed with medicines.

**Cryotherapy** – Also known as cryosurgery, cryotherapy kills cancer cells by freezing them. This treatment is not widely available, but is offered occasionally. Under a general anaesthetic, a cut is made in the abdomen. The doctor inserts a probe through the cut into the tumour. The probe gets very cold, which freezes and kills the cancer cells. Cryotherapy takes about 60 minutes. It usually involves a faster recovery than liver resection, but there is still a risk of bleeding and damage to the bile ducts.

## **Transarterial chemoembolisation (TACE)**

Chemotherapy is the use of drugs to kill or damage cancer cells, but traditional chemotherapy is rarely used for primary liver cancer. Instead, transarterial chemoembolisation, or TACE, delivers high doses of chemotherapy directly to the tumour (see opposite). It is usually used for people who can't have surgery or are waiting for a liver transplant. A CT or MRI scan will be done about six weeks after the TACE procedure to see how well the treatment has worked.

**Side effects of TACE** – It is common to have a fever the day after TACE, but this usually passes quickly. You may feel some pain, which can be controlled with medicines. Some people may feel tired or report flu-like symptoms for up to a week afterwards.

## **Radiation therapy: SIRT and SBRT**

Radiation therapy is not often used to treat primary liver cancer. However, two techniques may be offered in specific cases.

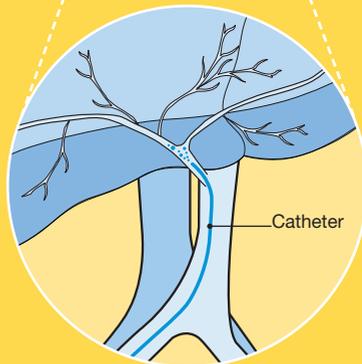
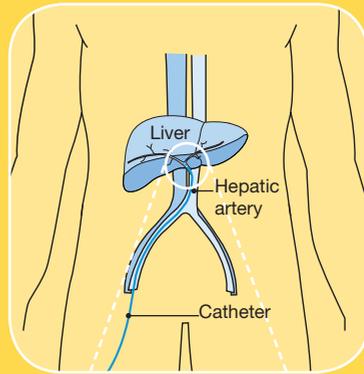
**SIRT** – Also known as radioembolisation, selective internal radiation therapy (SIRT) is a type of internal radiation therapy that precisely targets cancers in the liver. SIRT may be offered for HCC when the tumours can't be removed with surgery. See pages 41–43.

**SBRT** – Some centres offer a form of external radiation therapy called stereotactic body radiation therapy (SBRT). You will lie on an examination table, and a machine will deliver a few high doses of radiation very precisely to the liver. SBRT may be offered to some people with small HCC tumours that can't be removed with surgery. Check costs as this procedure may not be covered by Medicare.

## TACE step by step

Transarterial chemoembolisation (TACE) delivers chemotherapy directly to a tumour while blocking its blood supply (embolisation). It is performed by an interventional radiologist.

1. Before TACE, you will have a local anaesthetic and possibly a sedative to help you relax.
2. A small cut will be made in the groin, then a plastic tube called a catheter will be passed through the cut and into the hepatic artery.
3. The chemotherapy drugs are injected into the liver through the catheter. Tiny plastic beads or soft, gelatine sponges are also injected to block the blood supply to the cancer. This may make the cancer shrink or stop growing. In some cases, beads that contain chemotherapy are given at the same time.
4. After TACE, you will have to remain lying down for about four hours. You may also need to stay in hospital overnight or for a few days.



## Targeted therapy drugs

People who have advanced HCC or are on a clinical trial may be offered a targeted therapy drug. These drugs attack specific particles within cancer cells that allow cancer to grow.

The drug sorafenib (brand name Nexavar) is the first targeted therapy drug approved for treatment of advanced HCC. It is taken by mouth, usually as two tablets twice a day. Your doctor will explain how to take it, and will adjust the dose if necessary.

The side effects of sorafenib may include skin rash, diarrhoea, fatigue and high blood pressure. These can usually be managed without having to completely stop treatment. It is important to have a plan for managing any side effects before starting treatment, and to stay in regular touch with your treatment team.

Generally, targeted therapy drugs are continued for as long as there is benefit. If liver cancer progresses despite treatment with sorafenib, your doctor may suggest another targeted therapy, but the cost may not be covered by Medicare. You might also be able to join a clinical trial to access new drugs.



Drug treatment for advanced HCC is changing quickly and new treatments may become available in the near future. These may include immunotherapy drugs, which stimulate the body's immune system to fight cancer. You can discuss the latest options with your treating specialist.

## Cholangiocarcinoma (bile duct cancer)

Cholangiocarcinoma is an uncommon form of primary liver cancer, making up 10–15% of all primary liver cancers worldwide. It starts in the cells lining the ducts that carry bile between the liver, gall bladder and bowel. The symptoms are similar to those of HCC (see page 9).

**Risk factors** – The main risk factor for cholangiocarcinoma is long-term inflammation of the bile ducts. This may be caused by the same liver problems that can lead to HCC, such as hepatitis and fatty liver disease. It can also be caused by conditions such as primary sclerosing cholangitis (a liver condition) or ulcerative colitis (a bowel condition).

**Diagnosis** – The main tests are ultrasound and MRI (see pages 15–16). In some cases, you may have a special MRI called a magnetic resonance cholangiopancreatography (MRCP), which shows bile ducts in more detail. Another option is an endoscopic retrograde cholangiopancreatography (ERCP). This uses a thin

tube with a light and camera (endoscope) to examine the bile ducts, and can also insert a stent (see page 49). Blood tests may check for a tumour marker called CA 19-9, which is raised in some people with cholangiocarcinoma.

**Staging** – Cholangiocarcinoma is staged using the TNM system. This gives a number to the size of the tumour (T), how many lymph nodes are affected (N), and how far the cancer has spread, or metastasised, to distant parts of the body (M).

**Treatment** – Some people may have surgery to remove part of the liver (see pages 20–21) or to insert a stent (see page 49). Chemotherapy is a common treatment. This uses drugs to kill or damage cancer cells so they cannot grow or spread, and is usually given by drip into a vein. External beam radiation therapy (EBRT) may be used for advanced cholangiocarcinoma. This uses radiation to kill or damage cancer cells. SIRT, an internal radiation therapy (see pages 41–43), may be an option.

## Palliative treatment

If primary liver cancer is advanced at diagnosis or returns after initial treatment, your doctor will discuss palliative treatment for symptoms caused by the cancer.

Palliative treatment aims to manage the symptoms without trying to cure the disease. It can be used at any stage of advanced cancer to improve quality of life. It is not just for people who are about to die and does not mean giving up hope. Rather, it is about living for as long as possible in the most satisfying way you can.

As well as slowing the spread of cancer, palliative treatment can relieve pain and other symptoms. Treatment may include chemotherapy, targeted therapy, other medicines or stent placement (see page 49).

Palliative treatment is one aspect of palliative care, in which a team of health professionals aim to meet your physical, practical, emotional, spiritual and social needs. The team also provides support to families and carers.

➤ See our booklets *Understanding Palliative Care* and *Living with Advanced Cancer*.

“ I'd like people with advanced cancer to know that there are a myriad of services. You only have to ask; you are not alone. ” Pat



## Key points about primary liver cancer

### What it is

Primary liver cancer is cancer that starts in the liver. The main type is hepatocellular carcinoma (HCC). A less common type is cholangiocarcinoma (bile duct cancer).

### Tests

The main tests are blood tests and imaging scans, such as an ultrasound, CT or MRI scan. Other tests are not always needed, but may include a biopsy to check a tissue sample.

### Staging

To work out the stage of the liver cancer, your doctor will consider the test results as well as how well the liver is working (Child-Pugh score). HCC is often staged using the Barcelona Clinic Liver Cancer (BCLC) staging system.

### Most common treatments

- Thermal ablation uses heat from radio waves or microwaves to destroy the tumour.
- Transarterial chemoembolisation (TACE) puts high doses of chemotherapy into the liver.

### Other treatments

- Surgery known as liver resection removes part of the liver. A transplant replaces the liver with a healthy one from a donor.
- Other types of tumour ablation use alcohol injection or freezing to destroy small tumours.
- Specialised radiation therapy techniques (SIRT or SBRT) treat the cancer with targeted radiation.
- The targeted therapy drug sorafenib attacks specific particles within cancer cells.



## Secondary cancer in the liver

This chapter discusses symptoms, risk factors, diagnosis and treatment for secondary cancer in the liver. For information about managing symptoms, see pages 48–52.

### Q: What is secondary cancer in the liver?

**A:** Secondary cancer in the liver is a cancer that started in another part of the body, but has now spread (metastasised) to the liver. This means it is advanced cancer. Secondary cancer in the liver is much more common than primary liver cancer in Australia.

Many cancers can spread to the liver. The most likely cancer to spread to the liver is bowel cancer. This is because the blood supply from the small bowel is connected to the liver through the portal vein. Melanoma and cancer in the breast, oesophagus, stomach, pancreas, ovary, kidney or lung can also spread to the liver.

Secondary cancer in the liver may be diagnosed:

- at the same time as the original cancer (called the primary cancer)
- soon after the primary cancer is found
- months or years after the primary cancer has been treated
- before the primary cancer is found
- when tests can't find where the cancer started – this is known as cancer of unknown primary (CUP).

If you have secondary cancer in the liver, it may be useful to read Cancer Council's booklets about the primary cancer type or CUP.

## Q: What are the symptoms?

**A:** Secondary cancer in the liver often has no symptoms if the tumours are small. As the cancer grows, symptoms can include:

- weakness and tiredness (fatigue)
- pain in the upper right side of the abdomen or right shoulder
- severe pain in the abdomen
- appetite loss and feeling sick (nausea)
- unexplained weight loss
- yellowing of the skin and eyes (jaundice)
- dark urine and pale bowel motions
- itchy skin
- a swollen abdomen (ascites)
- fever.

## Q: Which health professionals will I see?

**A:** If you have not yet been diagnosed with cancer, your general practitioner (GP) will arrange the first tests to assess your symptoms. If these tests do not rule out cancer, you will usually be referred to a specialist. For secondary cancer in the liver, you are likely to see a doctor who specialises in the original cancer (e.g. a colorectal surgeon or medical oncologist for bowel cancer).

The specialist will arrange further tests and consider treatment options. Often the treatment options will be discussed with other health professionals at what is known as a multidisciplinary team (MDT) meeting. During and after treatment, you will see a range of health professionals who specialise in different aspects of your care – see the table on pages 12–13.

## Diagnosis

Secondary cancer in the liver is diagnosed using several tests. These include blood tests and imaging scans.

### Blood tests

Blood tests cannot diagnose secondary cancer in the liver on their own, but they can give doctors more information about the cancer. Samples of your blood may be tested to check how well the liver is working and to see if the liver is making proteins to help the blood clot.

### Imaging scans

You are likely to have a number of imaging scans to check the size of the cancer.

**Common tests** – The most common imaging scan used to check the liver is an ultrasound. You will also need to have CT and/or MRI scans. See pages 15–16 for a description of these tests.

**PET-CT scan** – Some people may also be offered a specialised test called a PET-CT scan. This is a positron emission tomography (PET) scan combined with a CT scan (see pages 15–16). It produces a three-dimensional colour image that may show where cancers are in the body. This test is available only at some major hospitals and may not be funded by Medicare. It is occasionally used for secondary cancer in the liver that has spread from the bowel or from a melanoma.

For the PET scan, you will be injected in the arm with a glucose solution containing a small amount of radioactive material. It takes 30–90 minutes for the solution to go through your body. During this

time, you will be asked to sit quietly. Your whole body will then be scanned for raised levels of radioactive glucose. Cancer cells show up brighter on the scan pictures because they are more active and take up more of the glucose solution than normal cells do.

## Biopsy

A tissue sample (biopsy) may be used to confirm a diagnosis of secondary cancer in the liver. The sample may be removed with a needle (core biopsy) or with a small surgical procedure (laparoscopy). See page 17 for more information. The biopsy is examined under a microscope in a laboratory.

## Tests to find the primary cancer

If the tests listed above show you have secondary cancer in the liver, the next step is to work out where in the body the cancer started. This may be clear if you have been treated for cancer in the past; otherwise, you will need further tests.

Some people have an examination of the bowel (colonoscopy), the stomach (endoscopy) and, for women, the breasts (mammogram). You may also have a blood test to check for particular chemicals produced by cancer cells. These are known as tumour markers and they relate to the primary cancer – for example, bowel cancer sometimes produces a tumour marker called carcinoembryonic antigen (CEA). A urine test can show whether the kidneys and bladder are working properly.

Sometimes, even after several tests, the primary cancer can't be found. This is called cancer of unknown primary (CUP).

## Staging

Staging is the process of working out how far a cancer has spread in the body.

Because it has spread from another part of the body, secondary cancer in the liver is considered advanced cancer. It will be given a stage using the system for the original cancer – for example, if it started in the bowel, it will be staged using a system called TNM (tumour–nodes–metastasis). For more information, see the Cancer Council booklet on the original cancer.

## Prognosis

Prognosis means the expected outcome of a disease. You may wish to discuss your prognosis with your doctor, but it is not possible for anyone to predict the exact course of the disease.

To work out your prognosis, your doctor will consider:

- test results
- the type of cancer
- the size of the cancer
- how fast the cancer is growing
- how well you respond to treatment
- other factors such as your age, fitness and overall health.

Doctors often use numbers (statistics) when considering someone's prognosis. Statistics reflect the typical outcome of disease in large numbers of people. While statistics give doctors a general idea about a disease, they won't necessarily reflect your situation.

Although most cases of secondary cancer in the liver can't be cured, surgery and other treatments can keep many cancers under control for months or even many years. Whatever the prognosis, palliative treatment can relieve symptoms, such as pain, to improve quality of life. It can be used at any stage of advanced cancer. Read more about palliative treatment on page 30.

➤ See our *Living with Advanced Cancer* booklet.

## Treatment

The aim of treatment for secondary cancer in the liver is to control or shrink the cancer and improve quality of life. The types of treatment suitable for you will depend on the location of the original cancer, the size and number of tumours, and your age and general health.

The main treatments for secondary cancer in the liver are chemotherapy or a combination of surgery and chemotherapy. You may also be having treatment for the primary cancer or be offered palliative treatment.

## Chemotherapy

Chemotherapy is the use of drugs to kill, shrink or slow the growth of tumours.

The type of drugs used will depend on where in the body the cancer first started. For example, if you have cancer of the breast that has spread to the liver, you will have chemotherapy designed to treat breast cancer. You will probably have a combination of two or three chemotherapy drugs.

Chemotherapy may be used at different times:

- before surgery, to shrink the secondary cancer in the liver and make it easier to remove – this is called neoadjuvant chemotherapy
- after surgery, to get rid of any remaining cancer cells – this is known as adjuvant chemotherapy
- to slow down cancer growth and reduce symptoms such as pain – this may be called palliative treatment (see page 30).

Chemotherapy is usually given as a course of drugs over a few months. The drugs may be injected into a vein (given intravenously) or taken by mouth as tablets.

**Side effects of chemotherapy** – Chemotherapy drugs circulate in the whole body and can affect normal, healthy cells as well as cancer cells. This can cause a range of side effects. Depending on the type of chemotherapy drug used, side effects may include: nausea; loss of appetite; tiredness; hair loss; skin changes; tingling or numbness in fingers and toes (peripheral neuropathy); and mouth sores.

People react to chemotherapy differently – some people have few side effects, while others have more. Most side effects are temporary, and there are ways to prevent or manage them.

▶ See our *Understanding Chemotherapy* booklet.



During chemotherapy, you will have a higher risk of bleeding or getting an infection. If you develop a temperature over 38°C, contact your doctor or go to the emergency department.

## Liver surgery

The aim of surgery is to remove the part of the liver that contains cancer. This is known as liver resection or partial hepatectomy. It is the most effective treatment, but it is only possible if there is enough healthy liver and the cancer hasn't spread to other parts of the body where it can't be removed (such as the bones). Some people need surgery for both the secondary cancer in the liver and the primary cancer. These operations may be done separately or at the same time.

A liver resection is a major operation. You will have a general anaesthetic and the surgeon will remove the tumour as well as some healthy-looking tissue around it. The operation may be done as open surgery (with one large cut) or as keyhole or laparoscopic surgery (with several smaller cuts) – see page 22 for more information.

**Types of liver resections** – Depending on the cancer's size and position, the liver resection may be called a right or left hepatectomy (removes the right or left part of the liver), extended right or left hepatectomy (removes most of the liver), or segmentectomy (removes a small section of the liver). Sometimes the gall bladder may also be removed, along with part of the muscle that separates the chest from the abdomen (the diaphragm). See the diagrams on page 21.

**After the surgery** – The liver can repair itself easily if it is not damaged already. The part of the liver that remains after resection will start to grow, even if up to three-quarters of it is removed. The liver will usually regrow to its normal size within a few months, although its shape may be slightly changed. When a very large amount of the liver needs to be removed, you may need a procedure

called a portal vein embolisation (PVE) 4–8 weeks before the surgery (see page 23 for more information).

Because a lot of blood passes through the liver, bleeding after surgery is a risk. Your medical team will monitor you for signs of bleeding and infection.

Some people experience jaundice (yellowing of the skin and whites of the eyes) after a liver resection. This is usually temporary and improves as the liver grows back.

You will spend 5–10 days in hospital after a liver resection.

- ▶ See our *Understanding Surgery* booklet for more information about recovery after surgery.

### Two-stage surgery

People with tumours in both lobes of the liver sometimes need surgery that is carried out in two stages with a waiting period between them.

**Stage 1** – The tumours are removed from one lobe of the liver (partial hepatectomy). Sometimes this surgery is combined with tumour ablation (see pages 24–25) or removal of the original cancer.

**Waiting period** – After the first surgery, you will need to wait two months to allow your body to recover and the liver to regrow. Before you have the second operation, the size of your liver will be checked.

**Stage 2** – If enough of the liver has regrown, the tumours in the second lobe of the liver will be removed with another partial hepatectomy.

## Radiation therapy

Also known as radiotherapy, radiation therapy uses targeted radiation to treat cancer. The radiation is usually in the form of x-ray beams. Conventional external beam radiation therapy is not often used for secondary cancer in the liver, but two specialised forms of radiation therapy may be offered in some cases.

**SIRT** – The most common use of radiation therapy for secondary cancer in the liver is selective internal radiation therapy (SIRT). This precisely targets cancers in the liver with high doses of radiation placed in tiny radioactive beads. See the table on the next two pages for an explanation of the process.

SIRT may be offered for bowel cancer and other cancers that have spread to the liver when the tumours can't be removed with surgery. It's often used if there are many small tumours throughout the liver.

SIRT is not available in all hospitals. If you don't have private health insurance that covers this treatment, you may need to pay for it yourself. Talk to your doctor about SIRT and the costs involved.

**SBRT** – Some specialised centres offer a form of external radiation therapy called stereotactic body radiation therapy (SBRT).

For SBRT, you will lie on an examination table and a machine will deliver a few high doses of radiation very precisely to the liver.

SBRT may be offered to some people with small secondary tumours in the liver. Check costs as it may not be covered by Medicare.

## Understanding the selective internal radiation therapy (SIRT) process

Also called radioembolisation, SIRT is a treatment that can deliver high doses of radiation therapy to a liver tumour while causing little damage to normal liver tissue. It uses tiny radioactive beads known by the brand name SIR-Spheres. The procedure is performed by an interventional radiologist.

1

### Before treatment (work-up day)

- You will have a number of tests, including blood tests and a test called an angiogram, as well as a trial run (simulation) of the treatment.
- For the angiogram, you will have a local or general anaesthetic. The interventional radiologist will make a small cut in the groin area and insert a thin plastic tube (catheter) into a blood vessel. The tube will be pushed up into the artery that feeds the liver (hepatic artery). A small amount of dye will be passed through the catheter into the bloodstream. On an x-ray, the dye shows the blood vessels in the liver and helps to map where the radioactive beads need to go.
- For the simulation, some tiny spheres similar in size to the SIR-Spheres will be inserted through the catheter to check how the SIR-Spheres will behave.
- The angiogram and simulation procedure take about 45 minutes and you will be observed for 3–4 hours afterwards. You may also have CT and lung scans, which take about an hour.
- If the results of these tests are good, you will have treatment 1–2 weeks later.

## 2

**During treatment  
(delivery day)**

- On the day of treatment, you will have another angiogram.
- The interventional radiologist will make a cut in the groin area and pass a catheter through to the hepatic artery.
- The SIR-Spheres will be inserted through the catheter into the hepatic artery. These beads can then deliver radiation directly to the tumour.
- The procedure takes about an hour. You will be monitored closely for 3–4 hours before being taken to a general ward, where you will recover overnight.

## 3

**After treatment**

- After treatment, you may experience flu-like symptoms, nausea, pain and fever.
- These side effects can be treated with medicines, and you usually can go home within 24 hours.
- The SIR-Spheres will slowly release their radiation into the tumour over the next week or so. This means you may need to take particular precautions, such as avoiding close physical contact with children or pregnant women during this time. The interventional radiologist will explain any precautions to you.

## Targeted therapy drugs

New drugs known as targeted therapy attack specific particles (molecules) in cancer cells to stop their growth or reduce the size of the tumour. These drugs are sometimes used to treat secondary cancers in the liver from bowel or breast cancer. They may be used after or together with other treatments.

Side effects of targeted therapy vary depending on the drugs used, but often include high blood pressure and diarrhoea. Talk to your doctor about managing side effects.

- ▶ See our *Understanding Bowel Cancer* booklet or *Understanding Breast Cancer* booklet.

## Palliative treatment

Because secondary cancer in the liver is advanced cancer, your doctor is likely to discuss palliative treatment for symptoms caused by the cancer. Palliative treatment aims to manage the symptoms without trying to cure the disease. It can be used at any stage of advanced cancer to improve quality of life.

As well as slowing the spread of cancer, palliative treatment can relieve pain and help manage other symptoms. Treatment may include chemotherapy, targeted therapy, other medicines, radiation therapy or stenting. Palliative treatment is one aspect of palliative care, in which a team of health professionals aim to meet your physical, practical, emotional, spiritual and social needs. The team also provides support to families and carers.

- ▶ See our booklets *Understanding Palliative Care* and *Living with Advanced Cancer*.



## Key points about secondary cancer in the liver

### What it is

Secondary cancer in the liver is cancer that has spread to the liver from another part of the body. Many types of cancer can spread to the liver, but bowel cancer is the most common.

### Tests

The main tests are blood tests and imaging scans, such as an ultrasound, CT or MRI scan. Other tests are not always needed, but may include a specialised scan called a PET-CT, a biopsy to check a tissue sample, and tests to look for the original cancer.

### Most common treatments

- Chemotherapy uses drugs to kill, shrink or slow the growth of tumours. It may be given before or after surgery, or on its own.
- Liver resection is surgery to remove the part of the liver with cancer.

### Other treatments

- Selective internal radiation therapy (SIRT) delivers radioactive beads directly into the liver.
- A special form of external beam radiation therapy known as stereotactic body radiation therapy (SBRT) delivers targeted doses of radiation to the liver.
- Targeted therapy drugs may be available to treat some secondary cancers in the liver.
- Palliative treatment can relieve pain and other symptoms of advanced cancer.



# Making treatment decisions

Sometimes it is difficult to decide on the type of treatment to have. You may feel that everything is happening too fast, or you might be anxious to get started. Check with your specialist how soon treatment should begin – often it won't affect the success of the treatment to wait a while. Ask them to explain the options, and take as much time as you can before making a decision.

**Know your options** – Understanding the disease, the available treatments, possible side effects and any extra costs can help you weigh up the options and make a well-informed decision. Check if the specialist is part of a multidisciplinary team (see page 13) and if the treatment centre is the most appropriate one for you – you may be able to have treatment closer to home, or it might be worth travelling to a centre that specialises in a particular treatment.

**Record the details** – When your doctor first tells you that you have cancer, you may not remember everything you are told. Taking notes or recording the discussion can help. It is a good idea to have a family member or friend go with you to appointments to join in the discussion, take notes or simply listen.

**Ask questions** – If you are confused or want to check anything, it is important to ask your specialist questions. Try to prepare a list before appointments (see page 62 for suggestions). If you have a lot of questions, you could talk to a cancer care coordinator or nurse.

**Consider a second opinion** – You may want to get a second opinion from another specialist to confirm or clarify your specialist's recommendations or reassure you that you have explored all of

your options. Specialists are used to people doing this. Your GP or specialist can refer you to another specialist and send your initial results to that person. You can get a second opinion even if you have started treatment or still want to be treated by your first doctor. You might decide you would prefer to be treated by the second specialist.

**It's your decision** – Adults have the right to accept or refuse any treatment that they are offered. For example, some people with advanced cancer choose treatment that has significant side effects even if it gives only a small benefit for a short period of time. Others decide to focus their treatment on quality of life. You may want to discuss your decision with the treatment team, GP, family and friends.

► See our *Cancer Care and Your Rights* booklet.

### Should I join a clinical trial?

Your doctor or nurse may suggest you take part in a clinical trial.

Doctors run clinical trials to test new or modified treatments and ways of diagnosing disease to see if they are better than current methods. For example, if you join a randomised trial for a new treatment, you will be chosen at random to receive either the best existing treatment or the modified new treatment. Over the years, trials have improved treatments

and led to better outcomes for people diagnosed with cancer.

You may find it helpful to talk to your specialist, clinical trials nurse or GP, or to get a second opinion. If you decide to take part in a clinical trial, you can withdraw at any time. For more information, visit [australiancancertrials.gov.au](http://australiancancertrials.gov.au).

► See our *Understanding Clinical Trials and Research* booklet.



# Managing symptoms

Both primary and secondary cancer in the liver can cause various symptoms, but there are ways to manage them. With advanced cancer, the palliative care team may be involved in managing symptoms.

## Jaundice

One of the jobs of the liver is to process bilirubin, a yellow pigment that is formed when red blood cells in the body break down.

Normally, the bilirubin passes through the bile duct to the bowel and then passes out of the body in stools (faeces).

With liver cancer, bilirubin sometimes builds up in the blood. This can be because the cancer has blocked a bile duct, the liver is not working properly (progressive liver function failure), or the liver has been replaced by widespread tumour.

The build-up of bilirubin in the blood is known as jaundice. It can cause yellowish skin and whites of the eyes, itchiness, pale stools or dark urine.

Jaundice can sometimes be relieved by unblocking the bile duct with a tiny tube called a stent (see opposite for how stents are inserted). Stenting is not always recommended in advanced cancer.

The itching caused by jaundice is often worse at night. It can be relieved to some degree by keeping your skin moisturised. Try to avoid alcohol, spicy food, hot baths and direct sunlight, which can make the itching worse. Medicine can be prescribed if the itching continues and is uncomfortable.

## How stents are inserted

A stent can be placed in your liver to clear a blocked bile duct and relieve symptoms of jaundice. The earlier the stent is inserted, the less severe the symptoms. Stenting can be done in two ways.

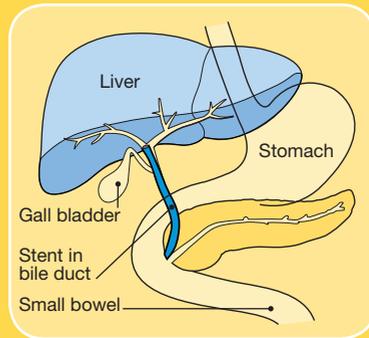
### Endoscopic stent placement

This is done as a day procedure. You will have a local anaesthetic and possibly a sedative to help you relax.

A gastroenterologist or surgeon will insert a long, flexible tube with a camera and light on the end (endoscope) through your mouth, stomach and small bowel into the bile duct. Pictures show up on a screen so the doctor can see where to put the stent. The stent is put in using the endoscope, which is then removed.

Recovery from an endoscopic stent placement is fairly fast. Your throat may feel sore for a short time and you may need to stay in hospital overnight.

After the procedure, the bile duct may become infected and the pancreas may become inflamed – your doctor will talk to you about what can be done if this occurs.



### Percutaneous stent placement

Sometimes a stent cannot be inserted using an endoscope so it is placed through the skin, using ultrasound and x-rays for guidance. This requires a small operation.

The operation may be done under general anaesthetic or heavy sedation, and you will usually stay in hospital overnight. You may have a small plastic tube (drain) coming out through the skin for some days. This lets fluid drain from the area.

## Poor appetite and weight loss

Because the liver plays a key role in the digestive system (see page 6), cirrhosis and cancer in the liver can both cause you to lose your appetite and you may lose weight. Chemotherapy, radiation therapy and other cancer treatments can also have an impact, especially if you experience side effects such as nausea and vomiting, mouth ulcers, and taste and smell changes.

The tips below can help you prevent or manage appetite changes and weight loss after a diagnosis of liver cancer.



### How to stay well nourished

- Snack during the day – eat 5–6 small meals rather than three large ones each day.
- Ask your family and friends to cook for you and offer you food throughout the day.
- Keep a selection of snacks handy, e.g. in your bag or car.
- Try eating different foods. Your taste and tolerance for some foods may have changed and may continue to change.
- Ask your dietitian how you can increase your energy and protein intake.
- Eat when you feel hungry or crave certain foods, but be careful not to become too full by eating too quickly.
- Ensure you have room for nourishing food – avoid filling up on liquids at mealtimes, unless it's a hearty soup.
- Prevent dehydration by drinking liquids between meals (e.g. 30–60 minutes before or after meals).
- See our *Nutrition and Cancer* booklet for more information and recipes.

## Pain

In some people, liver cancer can cause pain, particularly in the upper right area of the abdomen. This usually only happens in more advanced cases.

Pain associated with liver cancer can be managed with pain medicines. These may be mild, like paracetamol; moderate, like codeine; or strong and opioid-based, like morphine. Radiation therapy, chemotherapy or surgery may also provide relief by reducing the size of a liver tumour that is causing pain.



### How to cope with pain

- Keep track of your pain in a symptom diary and try to describe it – what the pain feels like, how intense it is, exactly where it is, where it comes from and travels to, how long it lasts, and if it goes away with a specific pain medicine or with any other therapy, such as a heat pack.
- Allow a few days for your body to adjust to the dose of pain medicine and for any drowsiness to improve.
- Let your doctor know if you have vivid dreams, nausea or other side effects after taking a strong pain medicine such as morphine. Adjusting the dose may help, or you can try other methods of pain relief.
- Use a laxative regularly to prevent or relieve constipation from codeine or morphine.
- Take pain medicine regularly as prescribed, even when you're not in pain. It's better to stay on top of the pain.
- See our *Overcoming Cancer Pain* booklet for more information on managing pain.

## Fluid build-up

Ascites is when fluid builds up in the abdomen. Chronic cirrhosis can increase pressure in the blood vessels inside the liver, forcing fluid to leak into the abdomen. Ascites can also be caused by the cancer itself blocking lymph vessels or producing extra fluid. The build-up of fluid causes swelling and pressure in the abdomen. This can be uncomfortable and may make you feel breathless.

A procedure called paracentesis or ascitic tap can provide relief. The skin on the abdomen is numbed with a local anaesthetic. Using ultrasound images as a guide, a radiologist inserts a thin needle and plastic tube into the abdomen. The tube is connected to a drainage bag outside your body. It will take a few hours for all the fluid to drain into the bag, and then the tube will be removed from your abdomen.

Water tablets (diuretics) are sometimes prescribed before and/or after paracentesis to slow down the build-up of fluid.

## Confusion

Chronic liver disease may cause toxic substances to build up in the blood, which can affect brain function. This is known as hepatic encephalopathy and it can lead to confusion or disorientation and, in severe cases, coma. It is important not to drive if you have any symptoms of this condition, and for carers to be aware that these symptoms can develop. Hepatic encephalopathy can be frightening for carers and family members, but it can be controlled with medicines. Talk to the health care team if you are concerned.



# Looking after yourself

Cancer can cause physical and emotional strain, so it's important to look after your wellbeing. Cancer Council has free booklets and programs to help you during and after treatment. Call 13 11 20 to find out more, or visit your local Cancer Council website (see back cover).

**Eating well** – Healthy food can help you cope with treatment and side effects. A dietitian can help you manage any special dietary needs or eating problems, and choose the best foods for your situation.

➤ See our *Nutrition and Cancer* booklet.

**Staying active** – Physical activity can reduce tiredness, improve circulation and lift mood. The right exercise for you depends on what you are used to, how you feel, and your doctor's advice.

➤ See our *Exercise for People Living with Cancer* booklet.

**Complementary therapies** – Complementary therapies are designed to be used alongside conventional medical treatments. Therapies such as massage, relaxation and acupuncture can increase your sense of control, decrease stress and anxiety, and improve your mood. Let your doctor know about any therapies you are using or thinking about trying, as some may not be safe or evidence-based.

➤ See our *Understanding Complementary Therapies* booklet.



Alternative therapies are therapies used instead of conventional medical treatments. These are unlikely to be scientifically tested and may prevent successful treatment of the cancer. Cancer Council does not recommend the use of alternative therapies as a cancer treatment.

**Work and money** – Cancer can change your financial situation, especially if you have extra medical expenses or need to stop working. Getting professional financial advice and talking to your employer can give you peace of mind. You can also check with a social worker or Cancer Council whether any financial assistance is available to you.

➤ See our *Cancer and Your Finances* and *Cancer, Work & You* booklets.

**Relationships** – Having cancer can affect your relationships with family, friends and colleagues in different ways. Cancer is stressful, tiring and upsetting, and this may strain relationships. It may also result in positive changes to your values, priorities or outlook on life. Give yourself time to adjust to what's happening, and do the same for those around you. It may help to discuss your feelings with each other.

➤ See our *Emotions and Cancer* booklet.

**Sexuality** – Cancer can affect your sexuality in physical and emotional ways. The impact of these changes depends on many factors, such as treatment and side effects, your self-confidence, and if you have a partner. Although sexual intercourse may not always be possible, closeness and sharing can still be part of your relationship.

➤ See our *Sexuality, Intimacy and Cancer* booklet.

**Contraception and fertility** – If you can have sex, you may need to use certain types of contraception to protect your partner or avoid pregnancy for a time. Your doctor will explain what precautions to take. They will also tell you if treatment will affect your fertility permanently or temporarily. If having children is important to you, discuss the options with your doctor before starting treatment.

➤ See our *Fertility and Cancer* booklet.



# Life after treatment

For most people, the cancer experience doesn't end on the last day of treatment. Life after cancer treatment can present its own challenges. You may have mixed feelings when treatment ends, and worry that every ache and pain means the cancer is coming back.

Some people say that they feel pressure to return to “normal life”. It is important to allow yourself time to adjust to the physical and emotional changes, and establish a new daily routine at your own pace. Your family and friends may also need time to adjust.

Cancer Council 13 11 20 can help you connect with other people who have had cancer, and provide you with information about the emotional and practical aspects of living well after cancer.

► See Cancer Council's *Living Well After Cancer* booklet.

## Dealing with feelings of sadness

If you have continued feelings of sadness, have trouble getting up in the morning or have lost motivation to do things that previously gave you pleasure, you may be experiencing depression. This is quite common among people who have had cancer.

Talk to your GP, as counselling or medication – even for a short time – may help. Some people

can get a Medicare rebate for sessions with a psychologist. Ask your doctor if you are eligible. Cancer Council may also run a counselling program in your area.

For information about coping with depression and anxiety, call **beyondblue** on **1300 22 46 36** or visit **beyondblue.org.au**. For 24-hour crisis support, call Lifeline **13 11 14** or visit **lifeline.org.au**.

## Follow-up appointments

After treatment ends, you will have regular appointments to monitor your health, manage any long-term side effects and check that the cancer hasn't come back or spread.

During these check-ups, you will usually have a physical examination and you may have blood tests, x-rays or scans. You will also be able to discuss how you're feeling and mention any concerns you may have.

When a follow-up appointment or test is approaching, many people find that they think more about the cancer and may feel anxious. Talk to your treatment team or call Cancer Council 13 11 20 if you are finding it hard to manage this anxiety.

Check-ups will become less frequent if you have no further problems. Between follow-up appointments, let your doctor know immediately of any symptoms or health problems.

## What if the cancer returns?

For some people, primary liver cancer does come back after treatment, which is known as a recurrence. The cancer can come back in the liver, in nearby organs or in other parts of the body. This is why it's important to have regular check-ups.

You may be offered more treatment – the options are described on pages 20–30 and may include chemotherapy and surgery. Treatment will depend on the type of cancer you have, where it has spread, your general health and the treatments you have had before.

## When cancer won't go away

For many people with primary liver cancer or secondary cancer in the liver, the cancer cannot be cured. This can be frightening. Talking to your health care team can help you understand your situation.

Palliative treatments (see pages 30 and 44) may stop further cancer growth and allow you to continue doing the things you enjoy for several months or years. However, facing the fact that the cancer cannot be cured can be very distressing.

You can call Cancer Council 13 11 20 for support and information or talk to the social worker or spiritual care practitioner (such as a chaplain) at your hospital or treatment centre.

▶ You may find our *Facing End of Life* booklet helpful at this time.

“ There is still a life to be lived and pleasures to be found and disappointments to be had. Living with advanced cancer is a different life, not just a journey towards death. ” Julie



## Seeking support

A cancer diagnosis can affect every aspect of your life. You will probably experience a range of emotions – fear, sadness, anxiety, anger and frustration are all common reactions. Cancer also often creates practical and financial issues.

There are many sources of support and information to help you, your family and carers navigate all stages of the cancer experience, including:

- information about cancer and its treatment (see page 60)
- benefits and programs to ease the financial impact of cancer treatment
- home care services, such as Meals on Wheels, visiting nurses and home help
- aids and appliances
- support groups and programs
- counselling services.

The availability of services may vary depending on where you live, and some services will be free but others might have a cost.

To find good sources of support and information, you can talk to the social worker or nurse at your hospital or treatment centre, or get in touch with Cancer Council 13 11 20.

“ My family members don't really understand what it's like to have cancer thrown at you, but in my support group, I don't feel like I have to explain. ” Sam

## Support from Cancer Council

Cancer Council offers a range of services to support people affected by cancer, their families and friends. Services may vary depending on where you live.

### Cancer Council 13 11 20

Trained professionals will answer any questions you have about your situation and link you to services in your area (see inside back cover).



### Information resources

Cancer Council produces booklets and fact sheets on over 25 types of cancer, as well as treatments, emotional and practical issues, and recovery. Call **13 11 20** or visit your local Cancer Council website (see back cover).

### Practical help

Your local Cancer Council can help you find services or offer guidance to manage the practical impact of a cancer diagnosis. This may include access to transport and accommodation services.



### Legal and financial support

If you need advice on legal or financial issues, we can refer you to qualified professionals. These services are free for people who can't afford to pay. Financial assistance may also be available. Call Cancer Council **13 11 20** to ask if you are eligible.

### Peer support services

You might find it helpful to share your thoughts and experiences with other people affected by cancer. Cancer Council can link you with individuals or support groups by phone, in person, or online. Call **13 11 20** or visit [cancercouncil.com.au/OC](http://cancercouncil.com.au/OC).



## Useful websites

You can find many useful resources online, but not all websites are reliable. These websites are good sources of support and information.

### Australian

Cancer Council Australia	<a href="http://cancer.org.au">cancer.org.au</a>
Cancer Australia	<a href="http://canceraustralia.gov.au">canceraustralia.gov.au</a>
Cancer Council Online Community	<a href="http://cancercouncil.com.au/OC">cancercouncil.com.au/OC</a>
Optimal Care Pathways	<a href="http://cancerpathways.org.au">cancerpathways.org.au</a>
Australian Cancer Trials	<a href="http://australiancancertrials.gov.au">australiancancertrials.gov.au</a>
Carer Gateway	<a href="http://carergateway.gov.au">carergateway.gov.au</a>
Carers Australia	<a href="http://carersaustralia.com.au">carersaustralia.com.au</a>
Department of Health	<a href="http://health.gov.au">health.gov.au</a>
Department of Human Services (including Centrelink and Medicare)	<a href="http://humanservices.gov.au">humanservices.gov.au</a>
Healthdirect Australia	<a href="http://healthdirect.gov.au">healthdirect.gov.au</a>
Australian Liver Foundation	<a href="http://liver.org.au">liver.org.au</a>
GI Cancer Institute	<a href="http://gicancer.org.au">gicancer.org.au</a>
Haemochromatosis Australia	<a href="http://haemochromatosis.org.au">haemochromatosis.org.au</a>
Hepatitis Australia	<a href="http://hepatitisaustralia.com">hepatitisaustralia.com</a>
Pancare Foundation	<a href="http://pancare.org.au">pancare.org.au</a>

### International

American Cancer Society	<a href="http://cancer.org">cancer.org</a>
Cancer Research UK	<a href="http://cancerresearchuk.org">cancerresearchuk.org</a>
Macmillan Cancer Support (UK)	<a href="http://macmillan.org.uk">macmillan.org.uk</a>



# Caring for someone with cancer

You may be reading this booklet because you are caring for someone with cancer. What this means for you will vary depending on the situation. Being a carer can bring a sense of satisfaction, but it can also be challenging and stressful.

It is important to look after your own physical and emotional wellbeing. Give yourself some time out and share your concerns with somebody neutral such as a counsellor or your doctor, or try calling Cancer Council 13 11 20. There is a wide range of support available to help you with both the practical and emotional aspects of your caring role.

**Support services** – Support services such as Meals on Wheels, home help or visiting nurses can help you in your caring role. You can find local services, as well as information and resources, through the Carer Gateway. Call 1800 422 737 or visit [carergateway.gov.au](http://carergateway.gov.au).

**Support groups and programs** – Many cancer support groups and cancer education programs are open to carers as well as to people with cancer. Support groups and programs offer the chance to share experiences and ways of coping.

**Carers Associations** – Carers Australia works with the Carers Associations in each state and territory to provide information and services to carers. Call 1800 242 636 or visit [carersaustralia.com.au](http://carersaustralia.com.au).

**Cancer Council** – You can call Cancer Council 13 11 20 or visit your local Cancer Council website to find out more about carers' services.

➤ See our *Caring for Someone with Cancer* booklet.



# Question checklist

Asking your doctor questions will help you make an informed choice. You may want to include some of the questions below in your own list.

## Diagnosis

- What type of liver cancer do I have? Is it a primary or secondary cancer?
- Has the cancer spread? If so, where has it spread? How fast is it growing?
- Are the latest tests and treatments for this cancer available in this hospital?
- Will a multidisciplinary team be involved in my care?
- Are there clinical guidelines for this type of cancer?

## Treatment

- What treatment do you recommend? What is the aim of the treatment?
- Are there other treatment choices for me? If not, why not?
- If I don't have the treatment, what should I expect?
- How long do I have to make a decision?
- I'm thinking of getting a second opinion. Can you recommend anyone?
- How long will treatment take? Will I have to stay in hospital?
- Are there any out-of-pocket expenses not covered by Medicare or my private health cover? Can the cost be reduced if I can't afford it?
- How will we know if the treatment is working?
- Are there any clinical trials or research studies I could join?

## Side effects

- What are the risks and possible side effects of each treatment?
- Will I have a lot of pain? What will be done about this?
- Can I work, drive and do my normal activities while having treatment?
- Will the treatment affect my sex life and fertility?
- Should I change my diet or physical activity during or after treatment?
- Are there any complementary therapies that might help me?

## After treatment

- How frequently will I need check-ups after treatment?
- If the cancer returns, how will I know? What treatments could I have?



# Glossary

## **adjuvant therapy**

A treatment given with or shortly after the main treatment to enhance the main treatment's effectiveness.

## **advanced cancer**

Cancer that is unlikely to be cured. It may be limited to its original site (primary cancer) or may have spread to other parts of the body (secondary or metastatic cancer).

## **alcohol injection**

A type of tumour ablation treatment that directs pure alcohol into a tumour to destroy the cancer cells.

## **alpha-fetoprotein (AFP)**

A chemical found in the bloodstream of some people with liver cancer. Doctors may monitor levels of AFP through blood tests to see how successful treatment has been.

## **angiogram**

An x-ray image of blood vessels.

## **angiosarcoma**

A rare type of primary liver cancer that starts in the blood vessels.

## **ascites**

Fluid build-up in the abdomen, making it swollen and bloated.

## **Barcelona Clinic Liver Cancer (BCLC) staging system**

A set of criteria to guide management of hepatocellular carcinoma (HCC).

## **benign**

Not cancerous or malignant.

## **bile**

A substance produced by the liver and stored in the gall bladder. It helps the digestive system break down fats from food.

## **bile duct**

One of a series of tubes that carries bile between the liver and the gall bladder and to the bowel. See also common bile duct.

## **biopsy**

The removal of a small sample of tissue from the body for examination under a microscope to help diagnose a disease.

## **bowel**

The long, tube-shaped organ in the abdomen that is part of the digestive tract. The bowel has two main parts: the small bowel and large bowel.

## **cancer of unknown primary (CUP)**

A secondary cancer that is found in the body, but the place where the cancer first started growing (the primary site) cannot be determined.

## **carcinoembryonic antigen (CEA)**

A protein found in the blood of some people with bowel cancer.

## **chemotherapy**

A cancer treatment that uses drugs to kill cancer cells or slow their growth. May be given alone or in combination with other treatments.

## **Child-Pugh score**

A scoring system used to measure how well the liver is working based on the level of damage caused by cirrhosis.

## **cholangiocarcinoma**

Primary liver cancer that starts in the cells lining the bile ducts. Also called bile duct cancer.

## **cirrhosis**

A condition in which healthy liver cells are replaced by scar tissue.

**clinical trial**

A research study that tests new treatments.

**colonoscopy**

An examination of the large bowel with a camera on a flexible tube (endoscope), which is passed through the anus.

**common bile duct**

The tube through which bile travels from the liver and gall bladder to the bowel.

**core biopsy**

A procedure in which tissue is removed from an organ or lymph node using a wide needle.

**cryotherapy**

The process of inserting a probe into a tumour to freeze and destroy cancer cells. Also called cryosurgery.

**CT scan**

Computerised tomography scan. This scan uses x-rays to create cross-sectional pictures of the body.

**embolisation**

Cutting off the blood supply to a cancer by blocking the blood vessels.

**endoscope**

A thin, flexible tube with a light and camera on the end.

**endoscopic retrograde****cholangiopancreatography (ERCP)**

A procedure that uses an endoscope to examine the pancreas and bile ducts.

**endoscopic stent placement**

The use of an endoscope to put a small, thin tube into a bile duct to unblock it.

**endoscopy**

A type of internal examination or diagnostic test. A thin, flexible tube

with a light and camera (endoscope) is used to examine the inside of the body.

**fatty liver disease**

A build-up of fats in the liver that can damage the organ.

**gastroenterologist**

A specialist doctor who diagnoses and treats disorders of the digestive system.

**haemochromatosis**

A condition that causes the body to absorb more iron than usual from food.

**hemihépatectomy**

Surgery to remove one lobe of the liver.

**hépatectomy**

Surgery to remove all or part of the liver.

**hépatic artery**

The main blood vessel carrying blood from the heart to the liver.

**hépatic encephalopathy**

A build-up of toxins in the body, which can affect brain function.

**hépatitis**

Inflammation in the liver, usually caused by a virus.

**hépatobiliary surgeon**

A surgeon who specialises in surgery to the liver and surrounding organs.

**hépatocellular carcinoma (HCC)**

A type of primary liver cancer that starts in the main cells in the liver, which are called hepatocytes. HCC is the most common type of primary liver cancer.

**hépatologist**

A gastroenterologist who has further specialised in diseases of the gall bladder and liver.

### **immunosuppressant**

A medicine that reduces the actions of the immune system.

### **interventional radiologist**

A doctor who specialises in using imaging scans to diagnose cancer and delivers some treatments.

### **jaundice**

A condition caused by high levels of a substance called bilirubin in the blood, which can occur when the bile ducts are blocked or the liver is not working properly. Jaundice causes yellow, itchy skin; the whites of the eyes to turn yellow; pale stools; and dark urine.

### **laparoscopy**

Surgery done through small cuts in the abdomen using a tiny viewing instrument called a laparoscope. Also known as keyhole surgery.

### **liver**

A large organ in the top right of the abdomen. The liver plays a key role in metabolism, digestion, detoxification and removal of substances from the body.

### **liver cancer**

Cancer in the liver. Usually used to refer to cancer that started in the liver (primary liver cancer). Sometimes used for cancer that spreads to the liver from elsewhere in the body (secondary cancer in the liver).

### **liver function test (LFT)**

A blood test to see how well the liver is working.

### **lymphatic system**

A network of tissues, capillaries, vessels, ducts and nodes that removes excess

fluid from tissues, absorbs fatty acids, transports fat and produces immune cells. Includes the bone marrow, spleen, thymus and lymph nodes.

### **lymph nodes**

Small structures that collect and destroy bacteria and viruses. Also known as lymph glands.

### **malignant**

Cancerous. Malignant cells can spread (metastasise) and eventually cause death if they cannot be treated.

### **mammogram**

An x-ray of the breast to detect cancer.

### **metastasis (plural: metastases)**

Cancer that has spread from a primary cancer in another part of the body. Also called secondary cancer.

### **MRI scan**

Magnetic resonance imaging scan. A scan that uses magnetism and radio waves to take detailed cross-sectional pictures of the body.

### **palliative treatment**

Medical treatment for people with advanced cancer to help them manage pain and other symptoms of cancer. Treatment may include radiation therapy, chemotherapy or other therapies. It is often an important part of palliative care.

### **pancreas**

An organ in the digestive system. The pancreas produces insulin and some of the enzymes needed to digest food.

### **partial hepatectomy**

Surgery to remove part of the liver; may include removal of the gall bladder.

### **percutaneous stent placement**

Placing a tube (stent) through the skin to unblock the bile duct and relieve jaundice.

### **PET-CT scan**

Positron emission tomography scan combined with CT scan. In a PET scan, a person is injected with a small amount of radioactive glucose solution. This makes cancerous areas show up brighter on the scan.

### **portal vein**

A blood vessel carrying blood from the stomach and small bowel to the liver.

### **primary cancer**

The original cancer. Cells from the primary cancer may break away and be carried to other parts of the body, where secondary cancers may form.

### **primary liver cancer**

Cancer that started in the liver.

### **primary site**

The part of the body where the cancer first developed.

### **prognosis**

The expected outcome of a person's disease.

### **radiation therapy**

The use of targeted radiation to kill or damage cancer cells so they cannot grow, multiply or spread. The radiation is usually in the form of x-ray beams. Also called radiotherapy.

### **resectable**

Able to be surgically removed.

### **resection**

Surgical removal of a portion of any part of the body.

### **secondary cancer**

See metastasis.

### **secondary cancer in the liver**

Cancer that started in another part of the body, but has spread (metastasised) to the liver.

### **segmentectomy**

Surgery to remove a small section of an organ.

### **selective internal radiation therapy (SIRT)**

A type of internal radiation therapy used to treat liver tumours. Also called radioembolisation.

### **side effect**

Unintended effect of a drug or treatment. Most side effects can be managed.

### **SIR-Spheres**

Radioactive beads that are inserted into the liver in selective internal radiation therapy (SIRT).

### **stage**

The extent of a cancer and whether the disease has spread from the original site to other parts of the body.

### **stent**

A tube placed into a blocked organ to create a passage for substances to pass through.

### **stereotactic body radiation therapy (SBRT)**

A specialised form of external beam radiation therapy that can deliver a few high doses of radiation very precisely.

### **targeted therapy**

Treatment that attacks specific particles (molecules) within cells that allow cancer to grow and spread.

**tissue**

A collection of cells of similar type that make up an organ or structure in the body.

**transarterial chemoembolisation (TACE)**

A treatment that injects chemotherapy directly into a tumour. This closes off the blood vessels so the cancer is starved of oxygen and nutrients.

**transplant**

When a diseased organ is removed and replaced by a healthy organ that has been given by a donor.

**tumour**

A new or abnormal growth of tissue in the body. A tumour may be benign (not cancer) or malignant (cancer).

**tumour ablation**

Treatment that focuses directly on a tumour with the aim of destroying it but not actually removing it from the body.

**tumour marker**

Chemical produced by cancer cells and released into the blood. It may suggest the presence of a tumour in the body. Markers can be found by testing blood or tumour samples.

**two-stage hepatectomy**

When a tumour is surgically removed from one lobe of the liver, then after a period of recovery and liver regrowth, another tumour is surgically removed from the other lobe of the liver.

**type 2 diabetes**

When the body doesn't produce enough insulin or does not use it properly.

**ultrasound**

A scan that uses soundwaves to create a picture of part of the body. It can be used to measure the size and position of a tumour.

**unresectable**

Not able to be surgically removed. Also called irresectable or non-resectable.

**Can't find a word here?**

For more cancer-related words, visit:

- [cancercouncil.com.au/words](http://cancercouncil.com.au/words)
- [cancervic.org.au/glossary](http://cancervic.org.au/glossary)
- [cancersa.org.au/glossary](http://cancersa.org.au/glossary)

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1. C Verslype et al., "Hepatocellular carcinoma: ESMO-ESDO Clinical Practice Guidelines for diagnosis, treatment and follow-up", *Annals of Oncology*, vol. 23, suppl. 7, 2012, pp. vii41–vii48.
2. Australian Institute of Health and Welfare (AIHW), *Australian Cancer Incidence and Mortality (ACIM) books: Liver cancer*, AIHW, Canberra, December 2017.



## How you can help

At Cancer Council, we're dedicated to improving cancer control. As well as funding millions of dollars in cancer research every year, we advocate for the highest quality care for cancer patients and their families. We create cancer-smart communities by educating people about cancer, its prevention and early detection. We offer a range of practical and support services for people and families affected by cancer. All these programs would not be possible without community support, great and small.

**Join a Cancer Council event:** Join one of our community fundraising events such as Daffodil Day, Australia's Biggest Morning Tea, Relay For Life, Girls' Night In and Pink Ribbon Day, or hold your own fundraiser or become a volunteer.

**Make a donation:** Any gift, large or small, makes a meaningful contribution to our work in supporting people with cancer and their families now and in the future.

**Buy Cancer Council sun protection products:** Every purchase helps you prevent cancer and contribute financially to our goals.

**Help us speak out for a cancer-smart community:** We are a leading advocate for cancer prevention and improved patient services. You can help us speak out on important cancer issues and help us improve cancer awareness by living and promoting a cancer-smart lifestyle.

**Join a research study:** Cancer Council funds and carries out research investigating the causes, management, outcomes and impacts of different cancers. You may be able to join a study.

To find out more about how you, your family and friends can help, please call your local Cancer Council.



# Cancer Council 13 11 20

Being diagnosed with cancer can be overwhelming. At Cancer Council, we understand it isn't just about the treatment or prognosis. Having cancer affects the way you live, work and think. It can also affect our most important relationships.

When disruption and change happen in our lives, talking to someone who understands can make a big difference. Cancer Council has been providing information and support to people affected by cancer for over 50 years.

Calling 13 11 20 gives you access to trustworthy information that is relevant to you. Our cancer nurses are available to answer your questions and link you to services in your area, such as transport, accommodation and home help. We can also help with other matters, such as legal and financial advice.

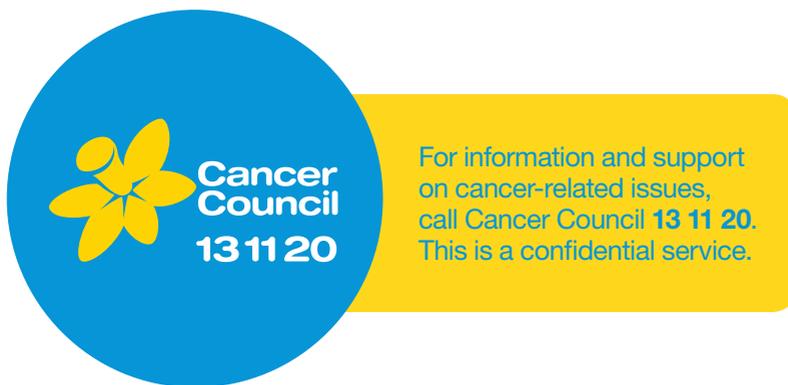
If you are finding it hard to navigate through the health care system, or just need someone to listen to your immediate concerns, call 13 11 20 and find out how we can support you, your family and friends.

Cancer Council services and programs vary in each area.  
13 11 20 is charged at a local call rate throughout Australia (except from mobiles).



**If you need information in a language other than English, an interpreting service is available. Call 13 14 50.**

**If you are deaf, or have a hearing or speech impairment, you can contact us through the National Relay Service. [www.relayservice.gov.au](http://www.relayservice.gov.au)**



## Visit your local Cancer Council website

**Cancer Council ACT**  
actcancer.org

**Cancer Council NSW**  
cancercouncil.com.au

**Cancer Council NT**  
nt.cancer.org.au

**Cancer Council Queensland**  
cancerqld.org.au

**Cancer Council SA**  
cancersa.org.au

**Cancer Council Tasmania**  
cancertas.org.au

**Cancer Council Victoria**  
cancervic.org.au

**Cancer Council WA**  
cancerwa.asn.au

**Cancer Council Australia**  
cancer.org.au

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To support Cancer Council, call your local Cancer Council or visit your local website.*