



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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13 11 20



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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 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 liver cancer. It is based on international clinical practice guidelines for liver cancer.¹

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 cancer.

How cancer starts

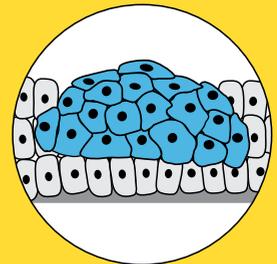
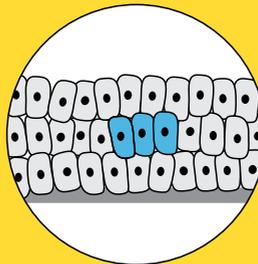
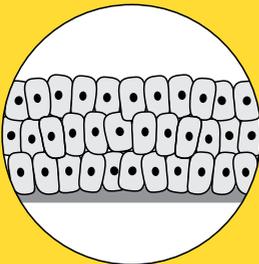
Normal cells



Abnormal cells



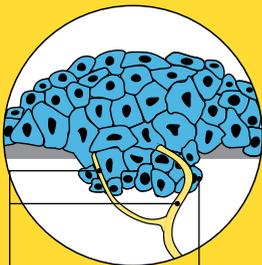
Abnormal cells multiply



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 cancer 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. A metastasis keeps the name of the original cancer. For example, bowel cancer that has spread to the liver is called metastatic bowel cancer, even though the main symptoms may be coming from the liver.

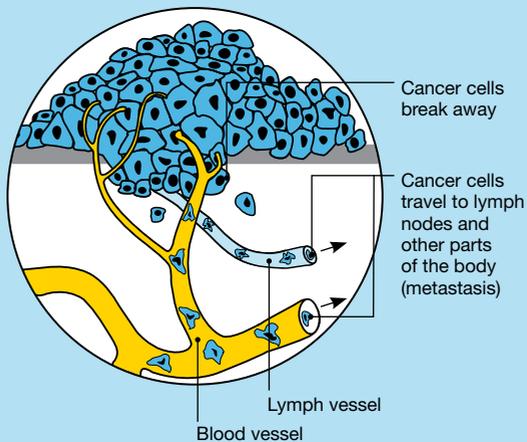
→ **Malignant cancer**



Grows own blood vessels (angiogenesis)

Invades surrounding tissue

How cancer spreads



Cancer cells break away

Cancer cells travel to lymph nodes and other parts of the body (metastasis)

Lymph vessel

Blood vessel



The liver

The liver is the largest organ inside the body. It is found above the stomach on the right side of the abdomen (belly) under the ribs. The gall bladder sits under the liver, and the pancreas sits under the stomach. These organs are all part of the digestive system. They work together to help the body break down food and turn it into energy.

The liver has two main sections: 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. Blood in the portal vein comes from the digestive organs and carries nutrients and substances such as medicines to the liver.

The liver does many important jobs. These include:

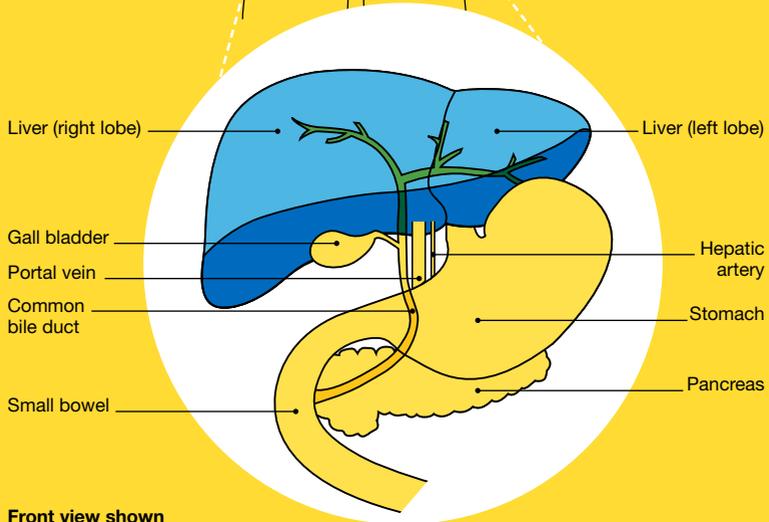
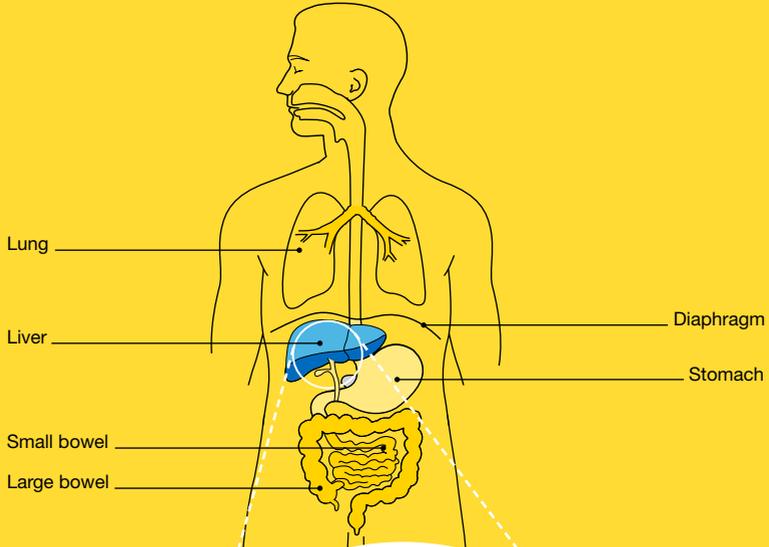
- breaking down drugs and alcohol, and getting rid of toxins
- producing bile to help dissolve fat so it can be easily digested
- storing and releasing sugars (glucose) as needed
- storing nutrients
- making proteins to help blood clot and to balance fluid in the body.

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



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

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 secondary cancer in the liver, see pages 32–45, and for information about managing some common 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 most common type of primary liver cancer in adults is hepatocellular carcinoma (HCC). HCC starts in the hepatocytes, the main type of liver cell. This chapter focuses on HCC.

Less common types of primary liver cancer include:

- **cholangiocarcinoma or bile duct cancer** – starts in the bile ducts (see page 29)
- **angiosarcoma** – a very rare type of liver cancer that starts in the blood vessels
- **hepatoblastoma** – a very rare form of liver cancer that affects only young children.

Q: How common is primary liver cancer?

A: In Australia, about 2100 people are diagnosed with primary liver cancer each year, with almost three times more men than women affected.² The rate of primary liver cancer in Australia has doubled since 1999, which is possibly due to increasing rates of obesity, type 2 diabetes, hepatitis B and C infections, and an ageing population.

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

A: HCC most often develops in people with underlying liver disease (cirrhosis). In cirrhosis, healthy liver cells are replaced by scar tissue, which stops the liver working properly.

Causes of cirrhosis include long-term (chronic) infection with the hepatitis B or C virus (see page 10), drinking too much alcohol, fatty liver disease due to obesity, type 2 diabetes, and having too much iron in the body (haemochromatosis). Cirrhosis may develop slowly over months or years.

It is increasingly common for patients to develop HCC without cirrhosis. This is often associated with non-alcoholic fatty liver disease, obesity, type 2 diabetes and hepatitis B infection. Other factors that increase the risk of HCC are smoking tobacco, being overweight or having a family history of HCC. People with several risk factors have an increased risk of developing HCC.

HCC is most 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 countries with a higher rate of hepatitis B infection.



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

The link between viral hepatitis and HCC

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 happen during unprotected 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.

Viral hepatitis infects the liver cells (hepatocytes). When the body's immune system attacks the virus, the liver becomes inflamed. In some people, the virus is cleared by the immune system. If the infection lasts more than six months (chronic infection), this inflammation may lead to liver scarring (cirrhosis) that can increase the risk of developing primary 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:

- people from South-East Asia, Africa and the Pacific Islands
- sexually active partners of people with hepatitis B
- people living in a household with someone with hepatitis B
- people receiving blood transfusions
- people who inject drugs.

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

There is no vaccine to prevent infection with the hepatitis C virus. New antiviral medicines can cure hepatitis C in most people. This lowers the risk of developing primary liver cancer but does not eliminate it.

Even after successful hepatitis treatment, people with cirrhosis need to manage their health and have regular check-ups.

Q: What are the symptoms?

A: Liver cancer often doesn't cause any symptoms in the early stages, but symptoms may appear as the cancer grows or spreads. Symptoms of HCC can include:

- weakness and tiredness (fatigue)
- pain in the abdomen or right shoulder
- appetite loss and feeling sick (nausea)
- unexplained weight loss
- yellowing of the skin and eyes (jaundice)
- dark urine and pale faeces (poo)
- 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.

Mike's story

My diagnosis of advanced primary liver cancer was a huge shock. Everything happened so quickly – one minute I was on holiday in the USA, the next I was back in Australia having surgery.

It all came on suddenly when I couldn't hold any food down for a few days. When my skin turned bright yellow I thought that this

was getting a bit serious. I was also losing a lot of weight.

When I got home, my general practitioner (GP) arranged some tests. About 10 days later, the specialist rang me and I went into hospital that week for surgery to remove a third of my liver, as well as my gall bladder and spleen.

Q: Which health professionals will I see?

A: 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 primary liver cancer, this is likely to be a liver specialist such as a hepatologist, gastroenterologist or hepatobiliary surgeon. The specialist will arrange further tests.

Health professionals you may see

hepatobiliary surgeon*	operates on the liver, gall bladder, pancreas and surrounding organs
gastroenterologist*, hepatologist*	diagnose and treat disorders of the digestive system, including liver cancer; a hepatologist is a gastroenterologist specialising in liver diseases
interventional radiologist*	analyses x-rays and scans, may also perform a biopsy under ultrasound or CT and deliver some treatments
medical oncologist*	treats cancer with drug therapies such as chemotherapy, targeted therapy and immunotherapy (systemic treatment)
radiation oncologist*	treats cancer by prescribing and overseeing a course of radiation therapy
cancer care coordinator	coordinates your care, liaises with other members of the MDT and supports you and your family throughout treatment; care may also be coordinated by a clinical nurse consultant (CNC) or clinical nurse specialist (CNS)

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, you will see a range of health professionals who specialise in different aspects of your care. Primary liver cancer is challenging to treat and it is recommended that you are treated in a specialist treatment centre (see page 46).

nurse	administers drugs and provides care, information and support; a hepatology nurse specialises in liver cancer
physiotherapist, occupational therapist	assist with physical and practical problems, including restoring movement and mobility after treatment, and recommending aids and equipment
social worker	links you to support services and helps you with emotional, practical and financial issues
psychiatrist*, counsellor, psychologist	help you manage your emotional response to diagnosis and treatment
dietitian	recommends an eating plan to follow while you are in treatment and recovery
palliative care team	works closely with your GP and cancer team 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

Primary liver cancer may be diagnosed using a number of tests. These include blood tests and imaging scans. In some cases, a tissue sample (biopsy) may also be tested.

Blood tests

Blood tests cannot diagnose primary 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 the following 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 – Some blood tests look for proteins produced by cancer cells. These proteins are called tumour markers. Many people with HCC have higher levels of the tumour marker alpha-fetoprotein (AFP). Other conditions such as pregnancy, hepatitis and jaundice can also raise the level of AFP in the bloodstream, and some people with HCC have normal levels. The level of AFP may tell your doctor more about the cancer and how well treatment is working.

Imaging scans

Tests that create pictures of the inside of the body are known as imaging scans. Ultrasound is commonly used to look for primary liver cancer and also to monitor people with cirrhosis. Ultrasound alone cannot confirm a diagnosis of liver cancer, so you will also have one or more other scans.

Ultrasound – You will be asked not to eat or drink (fast) for about four hours before the ultrasound. You will lie on your back for the procedure. A gel will be spread onto your abdomen and a small device called a transducer will be moved across the area. The transducer creates soundwaves that echo when they meet something solid, such as an organ or tumour. A computer turns these echoes into pictures. An ultrasound is painless, and usually takes 15–20 minutes.

An ultrasound is used to show if there is a tumour in the liver and how large it is. 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 create detailed, cross-sectional pictures of the inside of your body. It helps show the features of the tumour in the liver. It may also show if the disease has spread beyond the liver.

Before the scan, a liquid dye (called contrast) is injected into one of your veins. This helps ensure that anything unusual can be seen more clearly. The dye may make you feel flushed and cause some

discomfort in your abdomen. These reactions should go away quickly, but tell the doctor if you feel unwell.

The CT scanner is large and round like a doughnut. You will need to lie still on a table while the scanner moves around you. The scan itself is painless and only takes a few minutes, but getting ready for it can take 10–30 minutes.

MRI scan – An MRI (magnetic resonance imaging) scan uses a powerful magnet and radio waves to create detailed cross-sectional pictures of the liver and nearby organs. An MRI is used to show the size of the tumour and whether it is affecting the main blood vessels around the liver.

Before the scan, you may be injected with a dye (contrast) that highlights the organs in your body. During the scan, you will lie on an examination table that slides into a large metal tube that is open at both ends. Lying within the noisy, narrow machine makes some people feel anxious or uncomfortable (claustrophobic). If you think you may become distressed, mention this beforehand to your doctor or nurse. 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.



Before having scans, tell the doctor if you have any allergies or have had a reaction to contrast during previous scans. You should also let them know if you have diabetes or 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*

Tissue sampling (biopsy)

A biopsy is when doctors remove a sample of cells or tissue from the affected area, and a pathologist examines the sample under a microscope to see if it contains cancer cells.

A biopsy 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 the diagnosis is still not clear after the 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. If you are taking blood-thinning medicines talk to your doctor about whether you need to stop taking them in the days or weeks before the biopsy.

The sample of cells is usually collected with a 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 of tissue from the tumour. An ultrasound or CT helps the doctor 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.

Staging primary liver cancer

The stage of a cancer describes how large it is, where it is and whether it has spread in the body. Knowing the stage of the liver cancer helps doctors plan the best treatment for you.

Barcelona Clinic Liver Cancer (BCLC) staging system

The BCLC system is often used to stage HCC. The stages are based on how well you can carry out daily tasks, what the tumour is like and how well the liver is working. Your doctor will record how well the liver is working using the Child–Pugh score (see table below).

0 (very early)	single tumour less than 2 cm; Child–Pugh A
A (early)	single tumour greater than 2 cm or up to 3 tumours less than 3 cm; Child–Pugh A–B
B (intermediate)	many tumours in the liver; Child–Pugh A–B
C (advanced)	the tumour has grown into one of the main blood vessels of the liver, or spread to the lymph nodes or other body organs; Child–Pugh A–B
D (end-stage)	Child–Pugh C with any size tumour

Child–Pugh score

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

A	liver is working well and cirrhosis is less advanced
B	liver is working moderately well
C	liver is not working well and cirrhosis is advanced

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.

Discussing your prognosis and thinking about the future can be challenging and stressful. It is important to know that although the statistics for liver cancer can be frightening, they are an average and may not apply to your situation. Talk to your doctor about how to interpret any statistics that you come across.

The prognosis tends to be better when liver cancer is still in the early stages, but liver cancer is often found later. 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 for primary liver cancer

Treatment for HCC depends on the size of the cancer, how far it has spread within the liver and the body, whether any 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.

Overview of HCC treatment

HCC that only involves the liver can be treated with a variety of options including surgery, liver transplant, thermal ablation (a treatment that uses heat to destroy the tumour), transarterial chemoembolisation or TACE (a treatment that delivers chemotherapy directly into the cancer), and radiation therapy. Your doctor will suggest different treatments depending on the health of your liver tissue, the number of tumours and your general fitness.

If the cancer has spread beyond the liver you may be able to have targeted therapy drugs. Sometimes if the liver is too sick from cirrhosis, you will have palliative treatment to manage symptoms.

Liver surgery

The aim of surgery is to remove all the cancer from the liver, as well as a margin of healthy tissue. This is known as a liver resection or partial hepatectomy. Your surgeon will talk to you about the most appropriate surgery for you, as well as the risks and any possible complications.

Who it's suitable for – Only a small number of people with liver cancer can have this surgery and it is usually done in specialist centres. The liver 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 it is unlikely that people with more advanced cirrhosis will be offered surgery.

Types of surgery – 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).

How the surgery is done – If you have a liver resection, it will be carried out in hospital under a general anaesthetic. Most operations for primary liver cancer are done through a large cut in the upper abdomen. This is called open surgery.

Some liver tumours are removed using keyhole (laparoscopic) surgery. The surgeon will make a few small cuts in the abdomen, then insert a tiny instrument with a light and camera (laparoscope) into one of the cuts. The surgeon inserts tools into the other cuts to remove the cancerous tissue, using images from the camera as a guide.

People who have laparoscopic surgery usually have a shorter stay in hospital, 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.

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

- bleeding is a risk because a lot of blood passes through the liver – 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 (see also page 48)
 - most people will need a high level of care – you will spend 5–10 days in hospital after a liver resection and it is common to spend some time in the high dependency unit or intensive care unit before moving to a standard room.
- See our *Understanding Surgery* booklet for information about recovering from surgery.

Portal vein embolisation (PVE)

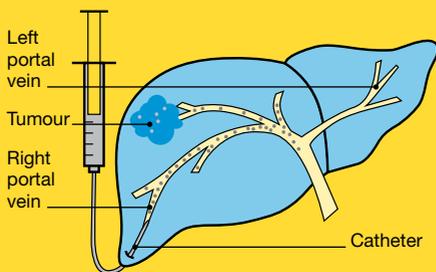
Sometimes the surgeon needs to remove so much of the liver that the remaining portion may not be large enough to recover. In this case, you may have a portal vein embolisation (PVE) about 4–8 weeks before the liver resection (see illustration on opposite page). A PVE is performed by an interventional radiologist after discussion with the liver surgeon and is normally done under general anaesthetic.

Liver transplant

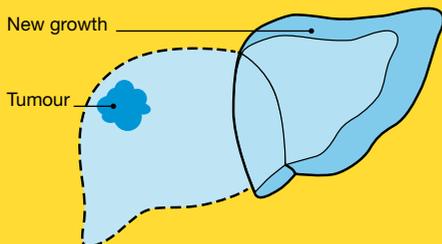
A transplant involves removing the whole liver and replacing it with a healthy liver from another person (a donor). This treatment is effective for HCC, but it is generally used only in people with a single tumour or several small tumours.

How a portal vein embolisation (PVE) is done

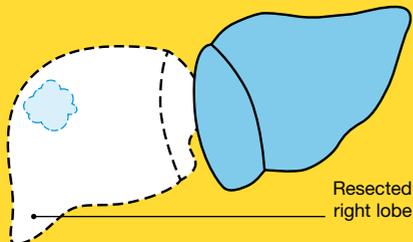
The portal vein divides into left and right branches as it enters the liver. A PVE blocks the branch of the portal vein that carries blood to the part of the liver that is going to be surgically removed. This means the other part of the liver will get bigger.



1. The interventional radiologist inserts a tube (catheter) through the skin into the portal vein under ultrasound guidance. A dye is injected to identify the portal vein, and then the targeted branch will be blocked with tiny plastic beads, soft gelatine sponges or metal coils.



2. Blood is redirected to the part of the liver that will be kept to help it grow.



Front view shown

3. After 4–8 weeks, you will have a CT scan to measure the size of your liver. If the liver has grown enough to safely do a liver resection, the surgeon will remove the part of the liver with the tumour.

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 for in-hospital services. You will usually have to pay for medicines you take at home.

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 possible. In this situation, you will be removed from the liver transplant waiting list and your doctor will discuss alternative treatment options.

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 time 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 may need a short course of 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). Using an ultrasound or CT scan as a guide, the doctor inserts a fine needle through the abdomen into the liver tumour. The needle sends out radio waves or microwaves that produce heat and destroy the cancer cells.

Thermal ablation may be done using a local anaesthetic in the x-ray department or under a general anaesthetic in the operating theatre. 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. 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)

Traditional chemotherapy (see page 37) is rarely used for primary liver cancer. Instead, transarterial chemoembolisation, or TACE, is used to deliver high doses of chemotherapy directly to the tumour (see opposite page). It is usually given to people who can't have surgery or ablation, or are waiting for a liver transplant.

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

Radiation therapy

Radiation therapy is emerging as a treatment option for primary liver cancer. Two techniques may be offered in specific cases.

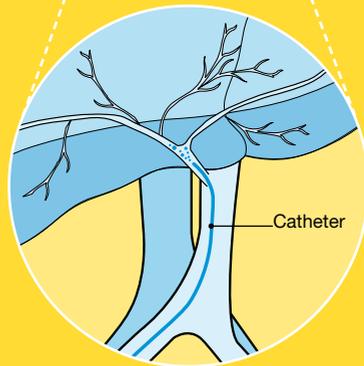
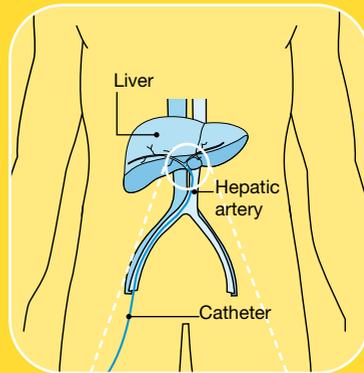
SIRT – Selective internal radiation therapy (SIRT) may be offered for HCC when the tumours can't be removed with surgery or to shrink tumours before surgery or a liver transplant. See pages 41–43 for more information about SIRT.

SBRT – Some cancer centres offer a form of external radiation therapy called stereotactic body radiation therapy (SBRT). You will lie on a treatment table and a machine will deliver tightly focused beams of high-dose radiation precisely onto the tumour from many different angles. SBRT may be offered to people with HCC tumours that can't be removed with surgery or treated with tumour ablation or TACE. SBRT may also be offered to people to shrink tumours while they are waiting for a liver transplant.

TACE step by step

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

- 1.** Before TACE, you will have a local anaesthetic and possibly a sedative to help you relax.
- 2.** The interventional radiologist will make a small cut in the groin, then pass a plastic tube called a catheter 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.
- 5.** You will have a CT or MRI scan about six weeks after the procedure to see how well the treatment has worked.



Targeted therapy

This is a type of drug treatment that attacks specific features of cancer cells to stop the cancer growing and spreading. People who have advanced HCC and meet certain criteria may be offered targeted therapy drugs such as sorafenib or lenvatinib. These are given as tablets that you swallow. Your doctor will explain how to take them.

The side effects of sorafenib and lenvatinib 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. Your treatment team will monitor you while you are taking targeted therapy drugs.

Generally, targeted therapy is continued for as long as there is benefit. If liver cancer progresses despite treatment with sorafenib or lenvatinib, your doctor may suggest another targeted therapy, but the cost may not be subsidised by the Pharmaceutical Benefits Scheme. You might also be able to join a clinical trial to access new drugs (see page 47).

- See our *Understanding Targeted Therapy* fact sheet or listen to our “New Cancer Treatments” podcast episode.



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 may also be able to get new drugs through clinical trials (see page 47). Talk to your doctor about the latest developments and whether there are any suitable clinical trials for you.

Bile duct cancer (cholangiocarcinoma)

Bile duct cancer 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. Symptoms are similar to those of HCC (see page 11).

Risk factors – The main risk factor for bile duct cancer 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. Other risk factors include exposure to certain chemicals in the printing industry, or having inflammatory bowel disease or liver conditions such as primary sclerosing cholangitis which can cause scar tissue in the bile ducts.

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 or 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 bile duct cancer.

Staging – Bile duct cancer 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 20–22) 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 through a drip into a vein. External beam radiation therapy may be used for advanced bile duct cancer. This uses radiation to kill or damage cancer cells. SIRT, an internal radiation therapy (see pages 41–43), may be an option. Rarely, some people may be able to have a liver transplant (see page 22).

Palliative treatment

If primary liver cancer is advanced when it is first diagnosed or returns after initial treatment, your doctor will discuss palliative treatment for any symptoms caused by the cancer.

Palliative treatment aims to help maintain a person's quality of life by managing the symptoms of cancer without trying to cure the disease. It can help at any stage of advanced liver cancer. It is not just for people at the end of their life and does not mean giving up hope. Rather, it is about living as fully and comfortably as possible.

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 insertion of a stent (see page 49).

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

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

“ 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 bile duct cancer (cholangiocarcinoma).

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.

Treatments

- Surgery known as liver resection removes part of the liver. You may have a procedure called a portal vein embolisation before a liver resection.
- A transplant replaces the liver with a healthy liver from another person (donor).
- Tumour ablation uses heat, alcohol injection or freezing to destroy small tumours.
- Transarterial chemoembolisation (TACE) puts high doses of chemotherapy into the liver.
- Specialised radiation therapy techniques (SIRT or SBRT) treat the cancer with targeted radiation.
- Targeted therapy drugs attack specific features of cancer cells to stop the cancer growing.
- Palliative treatment can relieve pain and other symptoms of advanced cancer.



Secondary cancer in the liver

This chapter discusses symptoms, risk factors, diagnosis and treatment for secondary cancer in the liver. For information about primary cancer in the liver, see pages 8–31, and for information about managing some common symptoms, see pages 48–52.

Q: What is secondary cancer in the liver?

A: Secondary cancer in the liver is 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 common cancer that spreads to the liver is bowel cancer. This is because the blood supply from the 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 (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, you may find it useful to read our booklet 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 faeces (poo)
 - 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 a 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 – A PET (positron emission tomography) scan combined with a CT scan is a specialised imaging test. The two scans provide more detailed and accurate information about where some cancers are in the body. A PET–CT scan is occasionally used for secondary cancer in the liver that has spread from the bowel or from a melanoma. Medicare does not subsidise this scan for all cancers. If this test is recommended, check with your doctor what you will have to pay.

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

Occasionally, a tissue sample (biopsy) may be needed to confirm a diagnosis of secondary cancer in the liver. The sample is usually removed with a needle (core biopsy, see page 17). A pathologist will look at the tissue under a microscope to check for signs of disease.

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

Depending on where your doctor thinks the primary cancer started, you may have:

- an examination of the bowel (colonoscopy), stomach (endoscopy) or breasts (mammogram)
- a urine test to show whether the kidneys and bladder are working properly
- 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).

Staging

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

Because the cancer 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 primary cancer – for example, if it started in the bowel, it will often be staged using a system called TNM (tumour–nodes–metastasis). For more information, see the Cancer Council booklet on the primary 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 specific 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 44.

➤ 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 treatment for secondary cancer in the liver is 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 uses drugs to kill, shrink or slow the growth of cancer cells. The type of drugs you are given 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.

Most people receive a combination of two or three chemotherapy drugs. Depending on the aim of treatment, chemotherapy may be given as a short course over a few months or it may be given as a

longer course over many months or years. Your doctor will talk to you about how long your treatment will last. The drugs may be injected into a vein (given intravenously) and/or swallowed as tablets.

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 44).

Side effects of chemotherapy – Chemotherapy drugs circulate throughout the 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, numbness or pain 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 can be an 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 21 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).

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 pages 22–23 for more information). After surgery:

- bleeding is a risk because a lot of blood passes through the liver – 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 (see also page 48)
 - most people will need a high level of care – you will spend 5–10 days in hospital after a liver resection and it is common to spend some time in the high dependency unit or intensive care unit before moving to a standard room.
- See our *Understanding Surgery* booklet.

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 1–2 months to allow your body to recover and the liver to regrow. You may have a portal vein embolisation during this time to improve the part of the liver that will remain after stage 2. Before you have the second operation, you will have a CT scan to check the size of your liver.
stage 2	If enough of the liver has regrown, you will have another partial hepatectomy to remove the tumours in the second lobe of the liver.

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 type of radiation therapy used for secondary cancer in the liver is selective internal radiation therapy (SIRT). 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 cancer centres offer a form of external radiation therapy called stereotactic body radiation therapy (SBRT). You will lie on a treatment table and a machine will deliver tightly focused beams of high-dose radiation precisely onto the tumour from many different angles. SBRT may be offered to some people with small secondary tumours in the liver. Side effects after treatment may include fatigue, nausea and abdominal discomfort. SBRT is sometimes called stereotactic ablative body radiation therapy (SABR).

➤ See our *Understanding Radiation Therapy* booklet.

Understanding the selective internal radiation therapy (SIRT) process

Also called radioembolisation, SIRT is a treatment that precisely targets cancers in the liver with high doses of radiation while causing little damage to normal liver tissue. It uses tiny radioactive beads known by the brand name SIR-Spheres.

SIRT can be given as a single treatment to the whole liver or separate treatments to the right and left lobes.

The procedure is done 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.
- The radiation from the microspheres damages the cancer cells and their blood supply. This means the cancers can't get the nutrients they need and they shrink.
- You may need to take some safety precautions, such as avoiding close physical contact with children or pregnant women for at least a week. The interventional radiologist will explain any precautions to you.



Immunotherapy drugs may be available to treat some types of primary cancer that have spread to the liver. You may also be able to get new drugs through clinical trials (see page 47). Talk to your doctor about the latest developments and whether there are any options suitable for you.

Targeted therapy

This is a type of drug treatment that attacks specific features of cancer cells to stop the cancer growing and spreading. Targeted therapy 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 may include high blood pressure, rash, diarrhoea, and sore hands and feet. Talk to your doctor about managing side effects.

- See our *Understanding Bowel Cancer* or *Understanding Breast Cancer* booklets and our *Understanding Targeted Therapy* fact sheet.

Palliative treatment

Because secondary cancer in the liver is advanced cancer, your doctor is likely to discuss palliative treatment. This aims to help maintain a person's quality of life by managing the symptoms of cancer without trying to cure the disease. It can help at any stage of advanced cancer.

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, emotional, cultural, spiritual and social needs. The team also provides support to families and carers.

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



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 – as it may not affect the success of the treatment to wait a short time. Ask them to explain the options, and take what time 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 can help or you might like to ask if you can record the discussion. It is a good idea to have a family member or friend go with you to appointments to join in the discussion, write 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 and listen to our “Making Treatment Decisions” podcast episode.

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.

- ▶ 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 formed when red blood cells in the body break down. Normally, the bilirubin passes from the liver, through the bile duct to the bowel, and then out of the body in faeces (poo).

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, itchy skin, pale faeces or dark urine.

Jaundice can sometimes be relieved by unblocking the bile duct with a small tube made of plastic or metal called a stent (see *How stents are inserted* on opposite page). Symptoms of jaundice usually go away 2–3 weeks after the stent is 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. Your doctor can prescribe medicine if the itching continues and is uncomfortable.

How stents are inserted

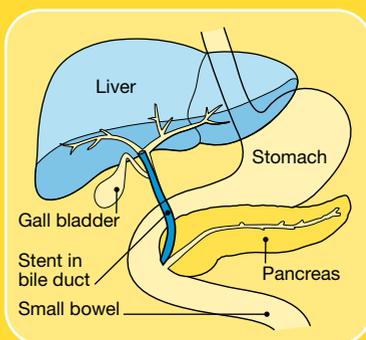
A stent can be placed in your liver to open a blocked bile duct and relieve symptoms of jaundice. The earlier the stent is inserted, the less severe the symptoms. Stenting can be done in two ways.

Endoscopic stent placement

You may have the procedure as day surgery or you may need to stay in hospital overnight. You will have a local anaesthetic and may have 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 the blockage is and where to put the stent. The stent is put into the bile duct 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. There is a risk that 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 of the abdomen, 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.

During and after treatment, it's important to make sure you are eating and drinking enough. 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. Some people may have an injection of local anaesthetic to numb the nerve sending the pain signals (nerve block).



How to cope with pain

- Keep track of your pain in a symptom diary. Try to describe 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.

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. Your doctor will numb the skin on the abdomen 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 with 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. Carers need to be aware that these symptoms can develop, so they can help identify that something is not quite right. 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 notice any of these symptoms.



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 explain how to 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 our *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 Beyond Blue on **1300 22 4636** or visit beyondblue.org.au. For 24-hour crisis support, call Lifeline **13 11 14** or visit lifeline.org.au.

“ I went to the specialist every three months for five years. I was very nervous about the results every time and it took a while for me to feel confident that treatment had been successful. ” Mike

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. You may also find it helpful to read our *Emotions and Cancer* booklet.

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. Talking to your health care team can help you understand your situation and plan for your future care. 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.

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 *Living with Advanced Cancer* and *Facing End of Life* booklets helpful at this time. You can also listen to *The Thing About Advanced Cancer* podcast series.

“ 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
- access to 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.



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	cancer.org.au
Cancer Council Online Community	cancercouncil.com.au/OC
Cancer Council podcasts	cancercouncil.com.au/podcasts
Australian Cancer Trials	australiancancertrials.gov.au
Australian Liver Foundation	liver.org.au
Cancer Australia	canceraustralia.gov.au
Carer Gateway	carergateway.gov.au
Carers Australia	carersaustralia.com.au
Department of Health	health.gov.au
GI Cancer Institute	gicancer.org.au
Haemochromatosis Australia	haemochromatosis.org.au
Healthdirect Australia	healthdirect.gov.au
Hepatitis Australia	hepatitisaustralia.com
Optimal Care Pathways	cancerpathways.org.au
Pancare Foundation	pancare.org.au
Services Australia (including Centrelink and Medicare)	servicesaustralia.gov.au
International	
American Cancer Society	cancer.org
Cancer Research UK	cancerresearchuk.org
Macmillan Cancer Support (UK)	macmillan.org.uk



Caring for someone with cancer

You may be reading this booklet because you are caring for someone with liver 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 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.

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 provides information and advocacy for carers, and is the national peak body representing them to the Australian Government. Visit 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 or listen to our “Cancer Affects the Carer Too” podcast episode.



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



Glossary

abdomen

The part of the body between the chest and hips, which contains the stomach, spleen, pancreas, liver, gall bladder, bowel, bladder and kidneys. Also known as the belly.

ablation

Inserting needles or probes into the cancer to destroy cancer cells with heat, cold or alcohol.

adjuvant therapy

A treatment given after the main treatment to lower the risk that the cancer will come back.

advanced cancer

Cancer that is unlikely to be cured. In most cases, the cancer has spread to other parts of the body (secondary or metastatic cancer). Treatment can often still control the cancer and manage symptoms.

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 from the gall bladder through the liver to the bowel. See also common bile duct.

biopsy

The removal of a 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 diagnosis given when doctors find a secondary cancer in the body, but tests don't show where the cancer first started growing (the primary site).

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 approaches to prevention, screening, diagnosis or treatment, to see if they are better than current 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 type of biopsy where a tissue sample is removed with a wide needle for examination under a microscope.

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 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 duct to unblock it. Often used to unblock the bile duct and reduce symptoms of jaundice.

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.

haemochromatosis

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

hepatectomy

Surgery to remove all or part of the liver.

hepatic artery

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

hepatic encephalopathy

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

hepatitis

Inflammation in the liver, usually caused by a virus.

hepatoblastoma

A rare type of primary liver cancer that affects young children.

hepatocellular carcinoma (HCC)

A type of primary liver cancer that starts in the main cells in the liver (hepatocytes). HCC is the most common type of primary liver cancer.

hepatocyte

The main cell type in the liver; makes up about 60% of the liver.

immunosuppressant

A medicine that reduces the actions of the immune system.

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 faeces (poo); and dark urine.

laparoscopy/laparoscopic surgery

Surgery done through small cuts in the abdomen using a thin viewing instrument called a laparoscope. Also called keyhole surgery or minimally invasive surgery.

liver

A large organ in the top right side of the abdomen. The liver plays a key role in cleaning the blood and helping digestion.

liver cancer

Cancer in the liver. Usually refers to cancer that started in the liver (primary liver cancer). May also refer to cancer that spread to the liver from somewhere else in the body (secondary cancer in the liver).

liver function test (LFT)

A blood test to see how well the

liver is working before, during and after treatment.

lymphatic system

A network of vessels, nodes and organs 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, bean-shaped structures found in groups throughout the body. They help protect the body against disease and infection. Also called lymph glands.

malignant

Cancerous. Malignant cells can spread (metastasis) 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 magnetic fields 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 physical and emotional symptoms. Treatment may include radiation therapy, chemotherapy or other therapies. It is an important part of palliative care.

pancreas

An organ in the digestive and endocrine systems. 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 brighter on the scan.

portal vein

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

portal vein embolisation (PVE)

A procedure to block the vein supplying blood to one part of the liver, so that the other part of the liver will grow.

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.

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 from the body.

resection

Surgical removal of part or all of a diseased organ or tumour.

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 metal or plastic 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

Drugs that attack 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 on or 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
- cancervic.org.au/glossary
- cancersa.org.au/glossary

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2. Australian Institute of Health and Welfare (AIHW), *Cancer Data in Australia; Australian Cancer Incidence and Mortality (ACIM) books: liver cancer*, AIHW, Canberra, 2018.



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 other Pink events, 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.

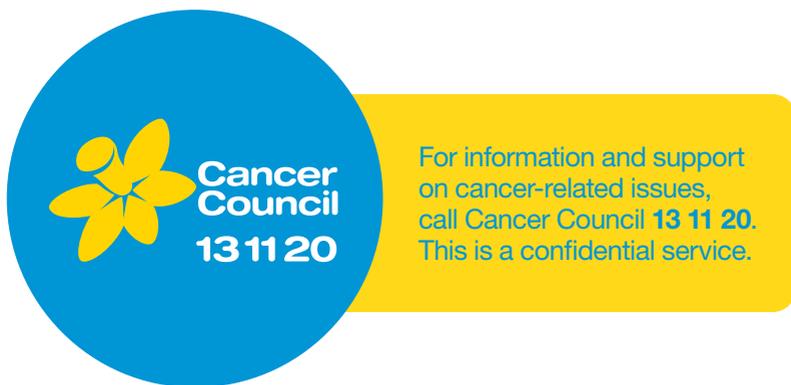
If you are finding it hard to navigate through the health care system, or just need someone to listen to your immediate concerns, call 13 11 20 and find out how we can support you, your family and friends.

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



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.*