



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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Introduction

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 understand how cancer in the liver is diagnosed and treated, but we cannot give advice about the best treatment for you. You need to discuss this with your doctors. However, we hope this information will answer some of your questions and help you think about other questions to ask your treatment team.

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. You may also like to pass this booklet to your family and friends for their information.

How this booklet was developed

This information was developed with help from a range of health professionals and people affected by cancer. It is based on international clinical practice guidelines for liver cancer and secondary cancer in the liver.^{1,2}

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. Turn to the last page of this book for more details.



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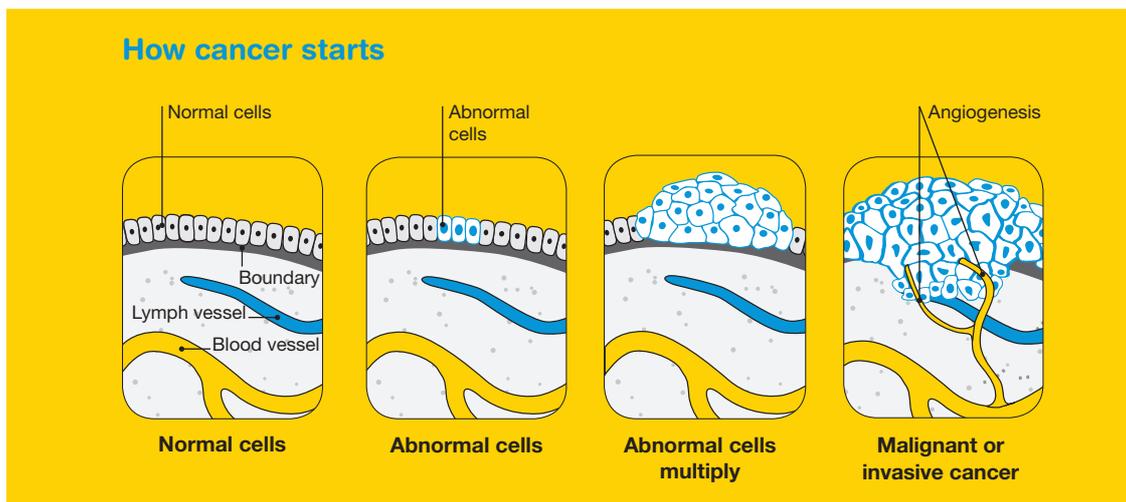
What is cancer?

Cancer is a disease of the cells, which are the body's basic building blocks. 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.

Sometimes cells don't grow, divide and die in the usual way. This may cause blood or lymph fluid in the body to become abnormal, or form a lump called a tumour. A tumour can be benign or malignant.

Benign tumour – Cells are confined to one area and are not able to spread to other parts of the body. This is not cancer.

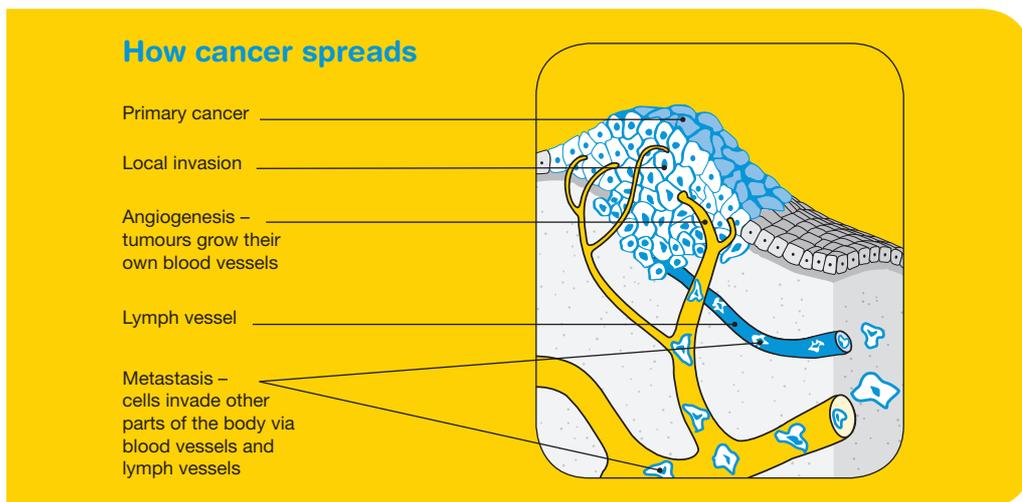
Malignant tumour – This is made up of cancerous cells, which have the ability to spread by travelling through the bloodstream or lymphatic system (lymph fluid).



Primary cancer refers to the first mass of cancer cells (tumour) that has grown in an organ or tissue. The tumour is limited to its original site, such as the liver. This is known as localised cancer.

If cancer cells from the primary site move through the body's bloodstream or lymph vessels to a new site, they can multiply and form other malignant tumours (metastases). This is known as secondary or metastatic cancer. Secondary cancer keeps the name of the original, primary cancer. For example, bowel cancer that spreads to the liver is still called metastatic bowel cancer, even when the person has symptoms caused by cancer in the liver.

Advanced cancer usually cannot be cured. However, it can often be treated to slow the growth and ongoing spread of the cancer.





The liver

The liver is the largest organ in the body, and is part of the digestive system. It is found on the right side of the abdomen, next to the stomach. It is under the ribs, just beneath the right lung and the diaphragm. The diaphragm is a sheet of muscle that separates the chest from the abdomen.

The liver is made up of two sections: the right and left lobes. Blood flows into the liver from the hepatic artery and the portal vein. Blood from the hepatic artery carries oxygen, while blood from the portal vein carries nutrients and waste products (toxins).

The liver performs several important functions including:

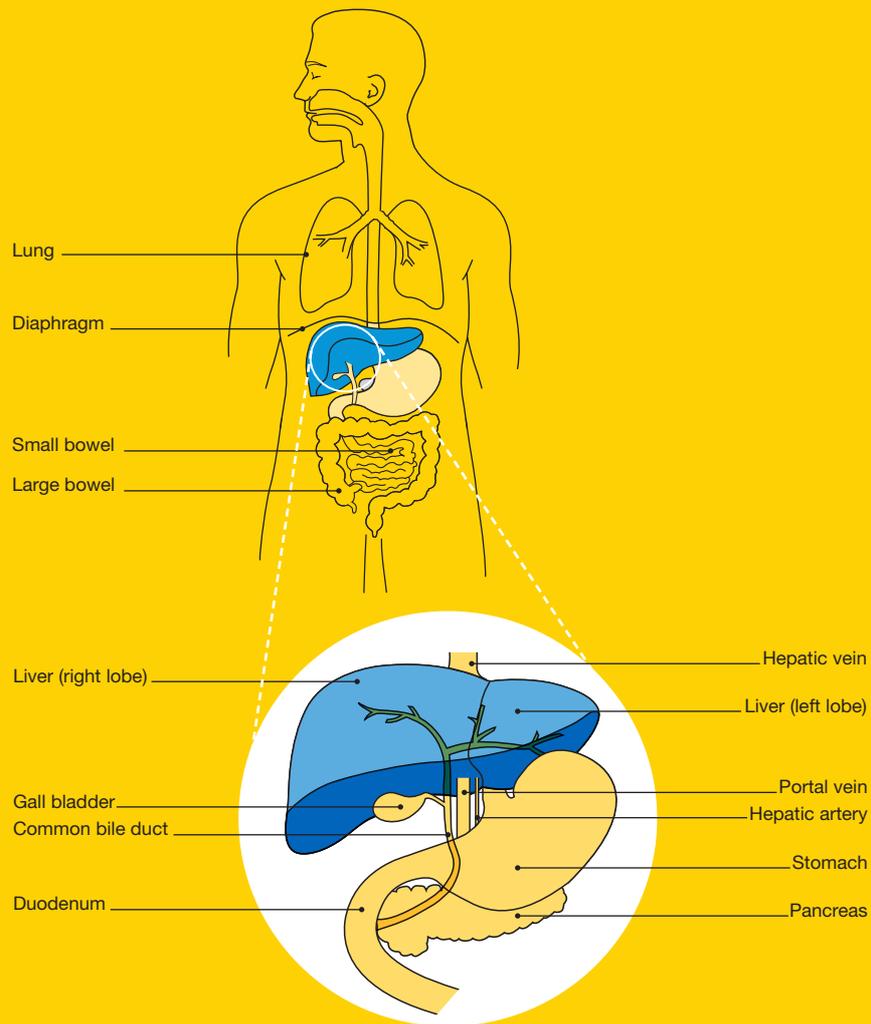
- producing bile to help dissolve fat so it can be easily digested
- storing and releasing glucose as needed
- storing nutrients
- making proteins needed for fluid balance and making protein to help the blood to clot
- breaking down substances, such as alcohol and drugs, and getting rid of waste products.

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



Bile is made in the liver and stored in the gall bladder. It is carried by the bile duct to the bowel, where it helps to break down fats.

The digestive system





Key questions

Q: What is primary liver cancer?

A: This is when a malignant tumour starts in the liver. There are different types of primary liver cancer:

- **Hepatocellular carcinoma (HCC)** – starts in the hepatocytes, the main cell type in the liver. HCC, also called hepatoma, is the most common type of primary liver cancer.
- **Cholangiocarcinoma** – starts in the cells lining the bile duct, which connects the liver to the bowel and the gall bladder. It is also called bile duct cancer.
- **Angiosarcoma** – a rare type of liver cancer starting in the blood vessels. It usually occurs in people over 70.

Q: How is secondary cancer in the liver different?

A: This is a secondary cancer that started in another part of the body, but has now spread (metastasised) to the liver. Because it is a secondary cancer, it is considered advanced cancer.

Most cancers can spread to the liver. However, the most likely cancer to spread to the liver is bowel cancer. This is because the blood supply from the bowel is connected to the liver through the portal vein.

Although less common, melanoma and cancer in the breast, oesophagus, stomach, pancreas, ovary, kidney or lung can also spread to the liver.

Secondary cancer in the liver is sometimes found at the same time as the primary cancer. However, it can also be diagnosed soon after the primary cancer, or it may be diagnosed months or years after someone has been treated for primary cancer.

It could also be diagnosed before the primary cancer is found. Sometimes tests can't find where the cancer started – this is called cancer of unknown primary (CUP).

If you have secondary cancer in the liver, it may be useful to read information about the primary cancer, or about CUP if the primary cancer is unknown. Call 13 11 20 for free booklets about different types of cancer, or visit your local Cancer Council website to download digital versions.

Q: How common is cancer in the liver?

A: Primary liver cancer – This is one of the less common cancers in Australia. About 1600 people are diagnosed with it every year. It is more than twice as common in men, and the average age at diagnosis is 67.³

Primary liver cancer is becoming more common, mainly because the rate of hepatitis infection is increasing, and more people are developing serious damage from fatty liver disease. See the box on page 12 for an explanation of the link between hepatitis and liver cancer.

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

Secondary cancer in the liver – It is estimated that about 28,000 people are diagnosed in Australia every year.

Q: What are the symptoms?

A: Primary liver cancer – This doesn't tend to cause symptoms in the early stages, but they may appear as the cancer grows or becomes advanced.

Secondary cancer in the liver – The symptoms are similar to people with primary liver cancer.

Symptoms can include:

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

Q: What are the risk factors?

A: Primary liver cancer – In most cases, primary liver cancer is related to long-term (chronic) infection caused by the hepatitis B or C virus.

Other causes of primary liver cancer aren't always known, but some factors that increase the risk include:

- liver scarring (cirrhosis) – from hepatitis B or C, alcohol, fatty liver disease, or genetic disorders such as iron overload (haemochromatosis) or alpha-1 antitrypsin deficiency
- type 2 diabetes
- drinking too much alcohol
- eating a high-fat diet and/or being overweight or obese
- smoking tobacco
- exposure to certain chemicals or substances (such as aflatoxins or vinyl chloride).

Secondary cancer in the liver – It's not known why cancer spreads from where it started to other organs such as the liver.

What is cirrhosis?

This is a type of liver damage where healthy liver tissue is replaced with scar tissue. The scar tissue blocks the flow of blood through the liver and slows the processing of nutrients, hormones, drugs

and naturally produced toxins. It also slows the production of proteins and other substances made by the liver.

Cirrhosis can develop over months or years.

Link between hepatitis and liver cancer

About 8 in 10 HCC cases worldwide can be linked to chronic hepatitis B infection.

Both hepatitis B and C are spread by contact with infected blood, semen or other body fluids. This can occur through sex with an infected partner or sharing personal items, such as razors, toothbrushes or needles, with an infected person.

The most common way that hepatitis B is spread is during birth, from mother to baby. If hepatitis is acquired in infancy or early childhood, it can lead to chronic hepatitis infection.

Chronic infection with hepatitis B affects the liver cells (hepatocytes). This stimulates the body's immune system to attack the virus. The immune response causes liver inflammation, which can lead to ongoing damage that can cause liver cancer.

Primary liver cancer is more common in people with high rates of infection with hepatitis B or C virus. To reduce the spread of hepatitis B and the incidence of primary liver cancer, all at-risk people should be vaccinated against the virus. These include:

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

If you are already infected with the virus, vaccination is not effective and you need regular tests to ensure you don't develop health problems, including liver cancer. If you are concerned about hepatitis, talk to your doctor.

Q: Which health professionals will I see?

A: Your general practitioner (GP) will usually arrange the first tests to assess your symptoms. If these tests don't rule out cancer, you'll be referred to a specialist, who will organise further tests and advise you about treatment options.

A range of health professionals will work as a multidisciplinary team (MDT) to treat you. The table on the next page lists the health professionals in your MDT.

The health professionals you see will depend on whether you have primary liver cancer or secondary cancer in the liver.

If you live in a regional or rural area, you may need to travel for treatment. Every state and territory has a scheme that provides financial help to people who need to travel long distances to access specialist medical treatment not available in their local area. To apply, contact the relevant state or territory government department. For more details, talk to the hospital social worker or call Cancer Council 13 11 20.

Your GP can be kept up to date with all your test results and treatment. They can answer questions you have in between appointments with specialists.

🗣️ Calling 13 11 20 after I was diagnosed helped me take in the new information. 🗣️ *Luisa*

Health professional	Role
hepatobiliary surgeon*	a doctor who specialises in surgery of the liver and its surrounding organs
gastroenterologist*	diagnoses liver cancer and specialises in the digestive system and its disorders
hepatologist*	a gastroenterologist who specialises in diseases of the liver
medical oncologist*	prescribes and coordinates the course of chemotherapy
interventional radiologist*	uses imaging scans to diagnose cancer, and delivers some treatments
cancer care coordinator or clinical nurse consultant (CNC)	coordinates your care, liaises with other members of the MDT and supports you and your family throughout treatment
nurses	administer drugs, including chemotherapy, and provide care, information and support throughout your treatment
dietitian	recommends an eating plan to follow while you are in treatment and recovery
social worker	links you to support services and helps you with emotional or practical issues
clinical psychiatrist*, counsellor, psychologist	provide emotional support and help manage feelings of depression and anxiety
physiotherapist, occupational therapist	assist with physical and practical problems
palliative care specialists* and nurses	work closely with GP and oncologists to help control symptoms and manage quality of life when cancer is advanced

**Specialist doctor*



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. Check with your doctor how soon your treatment should start, and take as much time as you can before making a decision.

Understanding the disease, the available treatments and possible side effects can help you weigh up the pros and cons of different treatments and make a well-informed decision that's based on your personal values. You may also want to discuss the options with your doctor, friends and family.

You have the right to accept or refuse any treatment offered. Some people with more advanced cancer choose treatment even if it offers only a small benefit for a short period of time. Others want to make sure the benefits outweigh the side effects so that they have the best possible quality of life.

Talking with doctors

When your doctor first tells you that you have cancer, you may not remember the details about what you are told. Taking notes or recording the discussion may help. Many people like to have a family member or friend go with them to take part in the discussion, take notes or simply listen.

If you are confused or want clarification, you can ask for further explanation – see page 62 for a list of suggested questions. If you have several questions, you may want to talk to a nurse or ask the office manager if it is possible to book a longer appointment.

A second opinion

You may want to get a second opinion from another specialist to confirm or clarify your doctor's recommendations or reassure you that you have explored all of your options. Specialists are used to people doing this.

Your doctor 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.

Taking part in 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. For some people with secondary liver cancer, participation in a clinical trial may be a way to access new therapies.

It may be helpful to talk to your specialist or clinical trials nurse, or get a second opinion. If you decide to take part, you can withdraw at any time. For more information, call Cancer Council 13 11 20 for a free copy of *Understanding Clinical Trials and Research*, or visit australiancancertrials.gov.au.

Primary liver cancer

This chapter explains how primary liver cancer is diagnosed, monitored and treated. For introductory information about primary liver cancer, including its symptoms and causes, see the *Key questions* chapter on pages 8–14.

Diagnosis

Primary liver cancer is diagnosed using several tests. These include blood tests and scans. A tissue examination (biopsy) is rarely done.

Blood tests

Liver function tests – Several blood tests can check how well your liver is working. You may also have liver function tests done before, during and after treatment.

Blood clotting test – This checks if the liver is making proteins that help the blood to clot. Low levels increase your risk of bleeding.

Hepatitis – This checks for hepatitis B or C.

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

Ultrasound

An ultrasound is the most common scan used to look for primary liver cancer. It's often used to monitor people with cirrhosis.

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

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

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

If a solid lump is found, the scan will help show whether it is cancer. Non-cancerous (benign) tumours in the liver can also be found during an ultrasound. These occur in about 4 out of 10 people.



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

CT scan

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

As part of the procedure, a dye (called the contrast) will be injected into one of your veins. The contrast travels through the bloodstream and shows up any abnormal areas. It may make you feel flushed and cause some discomfort in your abdomen. Symptoms should ease quickly, but tell the doctor if you feel unwell.

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

MRI scan

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

You may be injected with a dye (contrast) that highlights the organs in your body. You will then lie on an examination table inside a large metal tube that is open at both ends. The noisy, narrow machine makes some people feel anxious or uncomfortable (claustrophobic). If you think you may become distressed, mention it beforehand to your medical team. You may be given a mild sedative to help you relax, and you will usually be offered headphones or earplugs. The MRI scan may take between 30 and 90 minutes.

Endoscopic retrograde cholangiopancreatography (ERCP)

If bile duct cancer is suspected, an ERCP is used to look at the bile duct in more detail. This procedure may also be used to unblock the bile duct. You will be sedated and a thin, flexible tube with a light and camera on the end (endoscope) will be passed down your mouth and throat, through the stomach and into the small bowel. A dye is injected to show up any abnormal areas.

If there is a blockage, a small tube called a stent will be inserted to keep the bile duct open. See pages 33–34 for further details.

Biopsy

A biopsy is the removal of a tissue sample for examination under a microscope in a laboratory. This procedure is not always necessary for primary liver cancer, as diagnosis may be possible with scans and blood tests. If you are able to have surgery or a transplant (see pages 25–27), you will not need a biopsy. A biopsy may be used in the following circumstances:

- for people without liver cirrhosis, or for people who have cirrhosis but who have other inconclusive or abnormal test results
- before surgery or other treatment, if there is uncertainty about the diagnosis.

There is a small risk that the biopsy could spread the cancer along the path of the biopsy needle. Before a biopsy, your blood may be tested to check it clots normally. This is because the liver contains many blood vessels, and there is a risk of bleeding. A sample of cells can be collected in two ways.

Core biopsy – A needle is passed through the skin of the abdomen into the tumour to remove a sample. Local anaesthetic is used to numb the area. An ultrasound is used to guide the needle to the right spot. Afterwards, you may need to stay in hospital for a few hours, or overnight if there is a high risk of bleeding.

Laparoscopy – Small cuts are made in the abdomen, and a thin tube containing a light and a camera (a laparoscope) is inserted to look at the liver. Carbon dioxide or air gas is used to increase the size of your abdomen to make it easier for the surgeon to see. Samples are taken and the cut is closed with stitches. This procedure is done if your doctor thinks the cancer may be in other areas of the body. Laparoscopy is sometimes called keyhole surgery.

ICG test

An indocyanine green (ICG) test may be done for people who have primary liver cancer and cirrhosis. The test helps surgeons assess how well the liver is working and determine if surgery is a treatment option.

During an ICG test, green dye is injected into the bloodstream. A probe is placed on a finger to measure how quickly the liver clears

the dye from the bloodstream. This takes 15 minutes.

If the dye is cleared quickly, this shows that the liver is working well. However, if it is slow, it may be too risky to remove parts of the liver. In this case, the medical team will discuss other available treatment options.

Staging

The tests described on pages 17–21 help the doctors decide how far the cancer has spread. This is called staging. Knowing the stage helps your health care team recommend the best treatment for you. They will also consider how well the liver is working. Several staging systems are used for liver cancer. The Barcelona Clinic Liver Cancer (BCLC) staging system is commonly used, and is described below. The categories are based on a combination of how well you can carry out daily tasks (performance status), tumour characteristics, and how well the liver is working (Child-Pugh score).

BCLC staging system for primary liver cancer

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

Child-Pugh score

A scoring system used in the BCLC staging system. It assesses how well the liver is working by measuring 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 and treatment options with your doctor, but it is not possible for any doctor to predict the exact course of the disease. Liver cancer can often be effectively treated, especially if found before it spreads outside the liver.

To work out your prognosis, your doctor will consider:

- test results
- the type of liver cancer
- 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.

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

A liver transplant or surgical resection (removal of the diseased section of the liver) may be an option to treat some people with primary liver cancer. These procedures may offer the chance of a cure. Other treatments for primary liver cancer can relieve symptoms such as pain 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

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

Treatment options by type of primary liver cancer

Hepatocellular carcinoma (HCC)	<p>The main treatments for HCC use heat to destroy the tumour (thermal ablation) or deliver chemotherapy directly into the cancer (transarterial chemoembolisation or TACE). Surgery is used for about 5% of people.</p> <ul style="list-style-type: none">• Stage 0 (very early) – usually treated with surgery• Stage A (early) – usually treated with surgery, ablation, transplant or TACE• Stage B (intermediate) – TACE• Stage C (advanced) – targeted therapies or palliative treatment• Stage D (end-stage) – palliative treatment
Cholangiocarcinoma (bile duct cancer)	<p>This is usually treated with surgery, chemotherapy, radiotherapy and stenting.</p>
Angiosarcoma	<p>This is usually treated with surgery and TACE.</p>

Surgery

The aim of surgery (resection) is to remove the part of the liver that contains cancer.

Surgery is only suitable for a single tumour that has not grown into blood vessels. While surgery is the best option for treating primary liver cancer, the liver will need to be working well. People with early cirrhosis may be considered for surgery, but the liver of people with more advanced cirrhosis is probably not healthy enough for surgery.

The surgeon will consider surgery if liver cancer has not spread beyond the liver, and if you don't have cirrhosis. The type of liver surgery you have depends on the size and position of the tumour(s). You may have one of the following surgeries:

- **partial hepatectomy** – removes part of the liver
- **segmentectomy** – removes a small section of the liver.

Surgery is done under general anaesthetic. The surgeon will remove the tumour and some tissue around the tumour. The liver can repair itself easily if it is not damaged already. The portion 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 return to normal size within a few months, although its shape may be slightly changed.

A lot of blood passes through the liver, and bleeding after surgery is a risk factor. Your medical team will monitor you for signs of bleeding and infection. For more information on recovering from surgery, see pages 51–53.

Two-stage surgery

People with tumours in both lobes of the liver sometimes need surgery that is carried out in two stages.

First stage – The tumours are removed from one lobe of the liver (partial hepatectomy). Sometimes this operation is combined with tumour ablation (see page 28).

Second stage – You will need to wait two months to allow your body time to recover and the liver to regrow. Before you have the second operation, the size of your liver will be checked. If enough of the liver has regrown, the tumours in the second lobe will be removed with another partial hepatectomy.

How the surgery is done

Most operations for primary liver cancer are done with a large cut in the upper abdomen. This is called open surgery.

It is now becoming more common for liver tumours to be removed with several smaller cuts (called keyhole or laparoscopic surgery).

The surgeon will insert a tiny telescope (laparoscope) into one of the cuts and will

remove tissue with the tool at the end of the laparoscope.

People who have laparoscopic surgery usually have a shorter hospital stay, less pain and a faster recovery time.

However, laparoscopic surgery is not suitable for everyone and is not available in all hospitals. Talk to your surgeon about the best option for you.

Liver transplant

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

To be considered for a liver transplant, you need to be in good health and not smoke or take illegal drugs, and you must have stopped drinking alcohol.

Donor livers are scarce, and waiting for a suitable liver may take many months or years. During this time, the cancer may continue to grow. As a result, most people have tumour ablation or TACE (see pages 28–29) to control the cancer while they wait for a donor.

Recovering from a transplant

If you have a liver transplant, it may take 3–6 months to recover. You will probably find it takes a while to regain your energy. You will also be given drugs called immunosuppressants to prevent the body from rejecting the new liver. You will need to take immunosuppressants for the rest of your life. You will be given antibiotics to reduce the chance of infections. See the *After surgery* chapter on pages 51–53 for more details.

Currently, there is no cost for having a liver transplant in Australia when it is performed in a public hospital.



Tumour ablation

Tumour ablation destroys a tumour without removing it. It's used to treat tumours smaller than 3 cm in size. It 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. A CT or ultrasound scan guides a fine needle through the skin and into the tumour. Radio waves or microwaves are passed through the needle and into the tumour. This is done in the x-ray department or operating theatre while you are under local or general anaesthetic. Treatment takes 1–2 hours, and most people stay overnight in hospital. Side effects, which may include pain, nausea or fever, 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. Treatment is given through a needle that is passed into the tumour under local anaesthetic, using an ultrasound as a guide. You may be given more than one injection over several sessions. Side effects may include pain or fever, but these side effects can be managed with medicines.

Cryotherapy (or cryosurgery) – This treatment kills cancer cells by freezing them, but it is not widely available. You will be given a general anaesthetic for this procedure, then a cut will be made in your abdomen. The doctor will insert 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, and recovery is similar to recovery from surgery (see pages 51–53).

Transarterial chemoembolisation (TACE)

Chemoembolisation, or TACE, is a combination of chemotherapy (see next page) and a procedure called embolisation. It involves injecting high doses of chemotherapy drugs directly into the liver to cut off the blood supply to a tumour. TACE is usually used for people who cannot have surgery. It is performed by an interventional radiologist.

Before TACE, you will be given a local anaesthetic and possibly medicine (a sedative) to help you relax. A small cut will be made in the groin, and a plastic tube called a catheter is passed through the cut and into a blood vessel called the hepatic artery. This artery takes blood to the liver.

The chemotherapy drugs are injected into the liver through the catheter. Tiny plastic beads or soft, gelatine sponges may also be injected to block the blood supply to the cancer. This makes the cancer shrink or stop growing. In some cases, beads that contain chemotherapy are given at the same time.

After TACE, you will need to remain lying down for about four hours. You may also need to stay in hospital overnight or for a few days. The treatment may be repeated, if needed. It is okay to be around children and pregnant women once you leave hospital.

Side effects of TACE

After TACE, it is common to develop a fever the next day, but this usually passes quickly. You may feel some pain, but this can be controlled with pain medicines.

Chemotherapy

Chemotherapy is the use of drugs to kill, shrink or slow the growth of tumours. It is used alone, or as part of TACE (see previous page).

With any type of liver cancer, you may have chemotherapy:

- after other treatment, such as cryotherapy or surgery, to get rid of any remaining cancer cells (adjuvant chemotherapy)
- to slow down cancer growth and control symptoms such as pain (palliative treatment – see page 34).

Chemotherapy is not suitable for people with jaundice, as the liver may not cope with the drugs. People with advanced HCC are not usually offered chemotherapy, but it would depend on their overall health, liver function, and whether they have advanced cirrhosis.

You will have chemotherapy as a course of drugs over several weeks or months. It may be given into a vein, through a drip, or by mouth as tablets.

Side effects of chemotherapy

These will depend on the drugs used. They may include nausea; loss of appetite; tiredness; hair loss; skin changes; tingling or numbness in fingers and toes; mouth sores; and an increased risk of developing infections.

Most side effects are temporary, and there are ways to prevent or manage them. To find out more, call Cancer Council 13 11 20 and ask for a copy of *Understanding Chemotherapy*, or download a digital version from your local Cancer Council website.

Targeted therapies

New drugs known as targeted therapies attack specific particles (molecules) in cancer cells to stop or slow their growth or reduce the size of the tumour. Targeted therapies may be recommended for people with advanced liver cancer or as part of a clinical trial.

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

Radiotherapy

Radiotherapy uses x-rays, gamma cells, electron beams or protons to kill cancer cells or injure them so they cannot multiply. It may be used to treat bile duct cancer.

During a radiotherapy session, you will lie on an examination table and a machine will direct the radiotherapy towards your body. The treatment is painless and can't be seen or felt. Radiotherapy is usually given daily from Monday to Friday for several weeks.

Side effects of radiotherapy

People react to treatment differently; some have few side effects, while others have many. Most side effects are temporary and disappear a few weeks or months after treatment.

Common side effects include feeling tired; diarrhoea; needing to pass urine more often and burning when you pass urine (cystitis); and a slight reddening to the skin around the treatment site.

Radioembolisation (selective internal radiation therapy or SIRT)

Radioembolisation (also known as selective internal radiation therapy or SIRT) targets cancers in the liver with high doses of radiotherapy placed in tiny radioactive beads. It is performed by an interventional radiologist.

SIRT is used for HCC and bile duct cancer when the tumours can't be removed with surgery. It's often used if there are many small tumours throughout the liver.

Before treatment (work-up day) – You will have a number of tests, including an angiogram and a simulation of the treatment. An angiogram shows up the blood vessels in the liver and helps to map where the radioactive beads need to go. This test takes 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 about 1–2 weeks later.

During treatment (delivery day) – You will have another angiogram. A cut will be made in the groin area and a catheter will be passed through to the hepatic artery. The tiny radioactive



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

beads, which are known as SIR-Spheres®, are then inserted directly into the artery supplying the liver tumour. These beads can deliver a high dose of radiation directly to the tumour while causing little damage to normal liver tissue. The procedure takes about an hour and you will be monitored closely for 3–4 hours before being taken to a general ward, where you will recover overnight.

Side effects of SIRT

These can include flu-like symptoms, nausea, pain and fever. Side effects can be treated with medication, and you usually can go home within 24 hours.

Endoscopic stent placement

Sometimes cancer in the liver can obstruct the bile ducts, particularly if it started in the ducts. If this happens, bile builds up in the liver and can cause jaundice symptoms, such as yellowish skin, itchiness, pale stools or dark urine.

Your doctor may recommend that a thin tube (stent) is placed in the liver to drain the bile and ease your symptoms. The earlier the stent is inserted, the less severe the symptoms.

Endoscopic stent placement is done as a day procedure. You will have a local anaesthetic and possibly a sedative to reduce discomfort. A gastroenterologist or a 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 of the area show up on a screen so that the doctor can see where to place the stent. The stent is inserted through the endoscope, which is then removed.

Recovery from endoscopic stent placement is fairly fast. Your throat may feel slightly sore for a short time and you may be kept in hospital overnight. Jaundice usually disappears over 2–3 weeks. There is a risk of infection of the bile duct and inflammation of the pancreas after stent placement – your doctor can give you more information.

Palliative treatment

Palliative treatment helps improve people's quality of life by alleviating symptoms of cancer, when it's not possible to cure the disease. It is particularly important for people with advanced cancer, however, it can be used at any stage of cancer. It is not just for people who are about to die and does not mean giving up hope. Rather, it is about living for as long as possible in the most satisfying way you can.

As well as slowing the spread of cancer, palliative treatment can relieve pain and help manage other symptoms. Treatment may include chemotherapy, stent placement or medication.

Palliative treatment is one aspect of palliative care, in which a team of health professionals aim to meet your physical, emotional, practical and spiritual needs. The team also provides support to families and carers. For more information, visit your local Cancer Council website, or call 13 11 20 for free copies of *Understanding Palliative Care* and *Living with Advanced Cancer*.



Key points

- The most common treatments for primary liver cancer are tumour ablation and transarterial chemoembolisation (TACE).
- Surgery is used to remove tumours that are small and easy to reach and haven't spread widely throughout the liver.
- Some people with primary liver cancer are able to have a transplant, but it can take many months before a donor becomes available.
- After surgery, you will need several days in hospital to recover. You will be monitored closely during this time.
- Tumour ablation destroys a tumour without removing it. It includes thermal ablation to heat the tumour (using radio waves or microwaves), cryotherapy to freeze the tumour, or alcohol injection.
- Transarterial chemoembolisation or TACE is a combination of chemotherapy and a procedure called embolisation. It involves injecting high doses of chemotherapy directly into the tumour. This cuts off the blood supply to the tumour.
- Chemotherapy uses drugs to kill or slow the growth of cancer cells. It is given into a vein or as tablets.
- Other treatments for cancer in the liver include targeted therapies and selective internal radiation therapy (SIRT). These are also used when tumours can't be surgically removed.
- Palliative treatment helps improve quality of life by reducing symptoms. Chemotherapy drugs and stent placement may be used as palliative treatment.



Secondary cancer in the liver

This chapter explains how secondary cancer in the liver is diagnosed and treated. For introductory information about secondary cancer in the liver, including its symptoms and causes, see the *Key questions* chapter on pages 8–14.

Diagnosis

Secondary cancer in the liver is diagnosed using several tests. These include blood tests and scans. A tissue examination (biopsy) is rarely done.

CT scan

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

As part of the procedure, a dye (called the contrast) will be injected into one of your veins. The contrast travels through the bloodstream and shows up any abnormal areas. It may make you feel flushed and cause some discomfort in your abdomen. Symptoms should ease quickly, but tell the doctor if you feel unwell.



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

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

MRI scan

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

You may be injected with a dye (contrast) that highlights the organs in your body. You will then lie on an examination table that slides into a large metal tube that is open at both ends. The noisy, narrow machine makes some people feel anxious or uncomfortable (claustrophobic). If you think you may become distressed, mention it beforehand to your medical team. You may be given a mild sedative to help you relax or you might be able to bring someone into the room with you for support. You will usually be offered headphones or earplugs. The MRI scan may take between 30 and 90 minutes.

PET-CT scan

A positron emission tomography (PET) scan combined with a CT scan (see opposite) is a specialised imaging test available at some major metropolitan hospitals. It produces a three-dimensional colour image that may show where cancers are in the body.

A PET-CT scan is most commonly used for secondary cancer in the liver that has spread from the bowel or from a melanoma.

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

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



During a PET scan, you will be exposed to radioactive material, but the dose is low and generally not harmful. The nuclear medicine staff who perform the scan will discuss this with you.

Ultrasound

This scan uses soundwaves to create a picture of the inside of your liver and its blood supply.

You will be asked to not eat or drink (fast) for about four hours before the ultrasound. During an ultrasound scan, you will lie on an examination table with your abdomen uncovered. A gel will be spread on your skin and a device called a transducer will be moved across your abdomen. The transducer creates soundwaves that echo when they meet something solid, such as an organ or tumour. A computer turns the soundwaves into a picture. An ultrasound is painless, and usually takes 15–20 minutes.

Biopsy

A biopsy is the removal of a tissue sample for examination under a microscope. This procedure is not commonly done for secondary cancer in the liver, but it may be done before surgery or other treatment if the diagnosis isn't clear.

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

Fine needle aspiration (FNA) – A thin needle is passed through the skin of your abdomen into the tumour and a sample is removed so it can be examined under a microscope. Local anaesthetic is used to numb the area. An ultrasound helps to guide the needle to the right spot. Afterwards, you will stay in hospital for a few hours, or overnight if there is a high risk of bleeding.

Core biopsy – This procedure is similar to a fine needle aspiration, but the specimen and needle are larger and the results are more reliable. This procedure also means the liver can be checked for cirrhosis.

Laparoscopy – Small cuts are made in the abdomen, and a thin tube containing a light and a camera (a laparoscope) is inserted to look at the liver. Carbon dioxide or air gas is used to increase the size of your abdomen to make it easier for the surgeon to see. Samples are taken and the cut is closed with stitches. This procedure is done if your doctor thinks the cancer may be in other areas of the body. Laparoscopy is sometimes called keyhole surgery.

Further tests

If the tests described on pages 36–39 show you have secondary cancer in the liver, you may need further tests to work out where the primary cancer started.

Some people have:

- an examination of the bowel (colonoscopy), the stomach (endoscopy) and, for women, the breasts (mammogram)
- blood tests to measure the level of tumour markers such as carcinoembryonic antigen (CEA)
- a urine test to check the kidneys or bladder.

In other cases, it will be clear where the primary cancer began, as you may have been treated for cancer in the past. This is common for people who have previously been diagnosed with bowel cancer. Sometimes, even after several tests, the primary cancer can't be found. This is called cancer of unknown primary (CUP).

Staging

Working out whether the cancer has spread from the primary cancer site – and if so, how far – is called staging. Knowing the stage helps your health care team recommend the best treatment for you.

Staging is based on how far from the original tumour site the cancer has travelled. Because secondary cancer in the liver is cancer that has spread from a primary location (for example, the bowel) to a distant organ (the liver), it is considered to be the most advanced 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 any doctor to predict the exact course of your disease. To work out your prognosis, your doctor will consider:

- test results
- the type of cancer, where it is in the body, and the rate of growth
- how well you respond to treatment
- other factors such as your age, fitness and overall health.

Although most cases of secondary cancer in the liver can't be cured, treatment can keep some cancers under control for months or years. For more information call Cancer Council 13 11 20 for a copy of *Living with Advanced Cancer*, or download a digital version from your local website. 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. See page 47.

Treatment

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

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

Chemotherapy

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

The type of drugs used will depend on where in the body the primary cancer started. For example, if you have cancer of the breast that has spread to the liver, you'll have chemotherapy designed to treat breast cancer.

You will probably have a combination of two or three chemotherapy drugs.

Chemotherapy may be used at different times:

- before surgery, to shrink the secondary cancer and make it easier to remove (neoadjuvant chemotherapy)
- after surgery, to get rid of any remaining cancer cells (adjuvant chemotherapy)
- to slow down cancer growth and reduce symptoms such as pain (palliative treatment – see page 47).

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



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.

Side effects of chemotherapy

Chemotherapy drugs circulate in the whole body and can affect normal, healthy cells as well as cancer cells. Common side effects include nausea; loss of appetite; tiredness; hair loss; skin changes; tingling or numbness in fingers and toes; and mouth sores.

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

To find out more, call Cancer Council 13 11 20 and ask for a copy of *Understanding Chemotherapy*, or download a digital version from your local Cancer Council website.

Surgery

The aim of surgery (resection) is to remove the part of the liver that contains cancer. This is the most effective treatment, but it is not always possible. Surgery may be 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. The amount of liver removed depends on the size and position of the tumour(s). You may have one of the following surgeries:

- **partial hepatectomy** – removes part of the liver
- **hemihepatectomy** – removes a whole lobe of the liver
- **segmentectomy** – removes a small section of the liver.

The gall bladder may also be taken out, as it is attached to the liver between the right and left lobes. Occasionally, part of the diaphragm muscle may also be removed.

The liver can repair itself easily if it is not damaged already. The portion 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 normal size within a few months, although its shape may be slightly changed.

After surgery, 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. For more information on recovering from surgery, see pages 51–53.

Two-stage surgery

People with tumours in both lobes of the liver sometimes need surgery that is carried out in two stages.

First stage – The tumours are removed from one lobe of the liver (partial hepatectomy). Sometimes this operation is combined with tumour ablation (see page 28) or removal of the primary tumour.

Second stage – You will need to wait two months to allow your body to recover and the liver to regrow. Before you have the second operation, the size of your liver will be checked. If enough of the liver has regrown, the tumours in the second lobe will be removed with another partial hepatectomy.

How the surgery is done

Most operations for secondary cancer in the liver are done with a large cut in the upper abdomen. This is known as open surgery.

However, it is becoming more common for liver tumours to be removed with several smaller cuts (keyhole or laparoscopic surgery). The surgeon will insert

a tiny camera (laparoscope) into one of the cuts.

People who have laparoscopic surgery usually have a shorter hospital stay, less pain and a faster recovery time. However, laparoscopic surgery is not available in all hospitals. Talk to your surgeon about the most suitable option for you.

Targeted therapies

New drugs known as targeted therapies attack specific particles (molecules) in cancer cells to stop their growth or reduce the size of the tumour.

Targeted therapies are sometimes used to treat secondaries from bowel or breast cancer. If you were first treated for bowel cancer, you might have bevacizumab (Avastin®) or cetuximab. If you were first treated for breast cancer, you may be given the drug trastuzumab (Herceptin®). Targeted therapies may be used after or together with other treatments for secondary cancer in the liver.

Side effects of targeted therapies vary depending on the drugs used. The most common side effects include high blood pressure and diarrhoea. Talk to your doctor about managing side effects.

Radioembolisation (selective internal radiation therapy or SIRT)

Radioembolisation (also known as selective internal radiation therapy or SIRT) is a combination of internal radiotherapy and a procedure called embolisation. It involves placing high doses of radiotherapy in the form of radioactive beads directly into the liver. It is performed by an interventional radiologist.

SIRT is used 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.

Before treatment (work-up day) – You will have a number of tests, including an angiogram and a simulation of the treatment. An angiogram shows up the blood vessels in the liver and helps to map where the radioactive beads need to go.

This test takes 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 about 1–2 weeks later.

During treatment (delivery day) – You will have another angiogram. A cut will be made in the groin area and a catheter will be passed through to the hepatic artery. The tiny radioactive beads, which are known as SIR-Spheres®, are then inserted directly into the artery supplying the liver tumour. These beads can deliver a high dose of radiation directly while causing little damage to normal liver tissue.

The procedure takes about an hour and you will be monitored closely for 3–4 hours before being taken to a general ward, where you will recover overnight.

Side effects of SIRT

These can include flu-like symptoms, nausea, pain and fever. Side effects can be treated with medication, and you usually can go home within 24 hours.

Palliative treatment

Palliative treatment helps to improve people's quality of life by reducing symptoms of cancer without trying to cure the disease. It is particularly important for people with secondary cancer. However, it is not just for end-of-life care and it can be used at different stages of cancer.

As well as slowing the spread of cancer, palliative treatment can relieve pain and help manage other symptoms. The treatment may include radiotherapy, chemotherapy, targeted therapies or other types of medication.

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

For more information, visit your local Cancer Council website, or call 13 11 20 for free copies of *Understanding Palliative Care* and *Living with Advanced Cancer*.

Managing symptoms

There are ways to relieve symptoms such as pain, swelling and jaundice. The palliative care team may also be involved in managing your symptoms.

Ascites – This is when fluid builds up in your abdomen. It causes swelling and pressure, which can be uncomfortable and make you feel breathless. A procedure called paracentesis or ascitic tap can provide relief. The skin on the abdomen is numbed with a local anaesthetic, and a thin needle is inserted into the abdomen and connected to a drainage bag outside your body. This fluid drains into the bag over a few hours. A water tablet (diuretic) is sometimes prescribed to slow down the build-up of fluid.

Pain – This can be managed with treatment and/or pain medicine. Treatment can include chemotherapy, radiotherapy or steroids.

Jaundice – This is caused when the cancer blocks the bile duct. Bile builds up, turning your skin and whites of the eyes yellow. Jaundice can be relieved by unblocking the bile duct with a tiny tube called a stent. See opposite for a description of the different types of stents.

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

Bile duct obstruction

Sometimes secondary cancer in the liver can obstruct the bile ducts, particularly if it started in the ducts. Bile builds up in the liver and can cause symptoms of jaundice, such as yellowish skin, itchiness, pale stools or dark urine.

You may have a thin tube (stent) placed in your liver to drain the bile and ease your symptoms. The earlier the stent is inserted, the less severe the symptoms. This can be done in two ways.

Endoscopic stent placement – This is done as a day procedure. You will have a local anaesthetic and possibly a sedative to reduce discomfort.

A gastroenterologist or a surgeon inserts 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 of the area show up on a screen so that the doctor can see where to place the stent. The stent is put in via the endoscope, which is then removed.

Recovery from an endoscopic stent placement is fairly fast. Your throat may feel slightly sore for a short time and you may need to stay in hospital overnight. After the procedure, there is a risk of the bile duct becoming infected and the pancreas becoming inflamed – your doctor will talk to you about what can be done.

Percutaneous stent placement – Sometimes a stent cannot be placed through an endoscope so it is placed through the skin in a procedure similar to a small operation. This may be done under general anaesthetic or heavy sedation, and usually requires an overnight stay in hospital.



Key points

- Several different tests are used to diagnose secondary cancer in the liver.
- Imaging tests such as CT, MRI and PET-CT scans may be used to create pictures of the inside of the body.
- CT and MRI scans involve an injection of dye into the body, followed by a scan.
- A biopsy is when tissue is removed for examination under a microscope. This is not done very often, but may be needed if other test results aren't clear.
- To work out where the primary cancer started, you may also have tests such as a colonoscopy, endoscopy or mammogram. Some people also have blood tests to look for tumour markers.
- All of these tests will help your doctor work out the best treatment options for you and whether it may be possible to try to cure the cancer.
- Your doctor may talk to you about your prognosis. This is the expected outcome of your illness, but no-one can predict exactly what will happen to you.
- Most cancers are assigned a stage to describe how much cancer there is and whether it has spread. As secondary cancer in the liver has spread from a primary location, it is considered to be the most advanced stage.



After surgery

Recovering in hospital

After surgery for either primary liver cancer or secondary cancer in the liver, you will wake up in a recovery room near the operating theatre. You will then be taken back to your bed on the hospital ward. The following is a list of what to expect.

Drips and drains – Different tubes will be in place to drain post-operative fluids, urine and bile. You will also have a drip (intravenous tube) giving you fluids and nourishment, as you may not be able to eat or drink for a few days. When you are able to eat, you will be given clear fluids first, then solid foods.

Pain relief – After an operation, it is common to feel some pain, but this can be controlled. Medicine may be given through an injection close to the spine (epidural) or through a patient-controlled analgesia (PCA) system. The PCA machine allows you to self-administer a measured dose of pain relief by pressing a button.

Let your doctor or nurse know if you are in pain so they can adjust the medicine or dose. Do not wait until the pain is severe. Everyone's pain tolerance is different and medicine will be used to make you as comfortable as possible. Managing your pain will help you to recover and move around more quickly.

Length of hospital stay – You will spend 5–10 days in hospital after a partial hepatectomy, and up to three weeks in hospital following a transplant. If you have a laparoscopy, the recovery time is shorter – you may be able to return to your usual activities within a week. Drips and drains are removed before you leave hospital.

Recovering at home

Most people who have surgery for cancer in the liver will feel better within six weeks, but recovery may take longer for some people. The following tips may help during your recovery.



Mobility

A physiotherapist can help with your recovery by giving you exercises to improve your breathing, strength and ability to walk (mobility).

Exercise

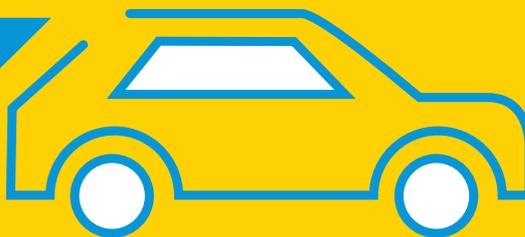
Talk to your doctor about starting to exercise. Begin with gentle exercise such as walking and build up to more vigorous exercise, depending on how active you were before the surgery. Call Cancer Council **13 11 20** for a copy of *Exercise for People Living with Cancer*.

Check-ups

After you return home, you will need frequent check-ups to monitor your health and the success of the surgery. Your doctor will tell you how often you should have check-ups.

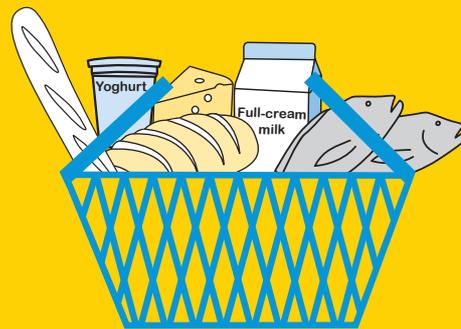
Driving

Your medical team will tell you how long you should avoid driving, which will usually be a few weeks.



Wound care

If you have an incision, follow your health care team's instructions about cleaning the wound. Contact your doctor if it becomes red, hot or inflamed.



Nutrition

Eat high-protein and high-energy foods to maintain your weight. Call Cancer Council **13 11 20** for a copy of *Nutrition and Cancer* and to find out more about these foods.

Alcohol

Avoid alcohol for at least a month and only drink alcohol in moderation after this time. If you have cirrhosis or a transplant, you must stop drinking alcohol. Your medical team will talk to you about this.

Fatigue

You will probably feel quite tired and weak after the operation, but this should improve within a few weeks.





Looking after yourself

Cancer can cause physical and emotional strain. It is important to try to look after your wellbeing as much as possible.

Nutrition – Eating healthy food can help you cope with treatment and side effects. A dietitian can help you manage special dietary needs or eating problems, and choose the best foods for your situation. Call Cancer Council 13 11 20 for a free copy of the *Nutrition and Cancer* booklet, or download a digital version from your local Cancer Council website.

Staying active – Physical activity may help to reduce tiredness, improve circulation and lift your mood. The amount and type of exercise you do depends on what you are used to, how you feel, and your doctor's advice. Cancer Council's *Exercise for People Living with Cancer* booklet provides more information about the benefits of exercise, and outlines simple exercises that you may want to try.

Complementary therapies – These therapies are used with conventional medical treatments. You may have therapies such as massage, relaxation and acupuncture to 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.

Alternative therapies are used instead of conventional medical treatments. These therapies, such as coffee enemas and magnet therapy, can be harmful. For more information, call 13 11 20 for a free copy of the *Understanding Complementary Therapies* booklet, or download it from your local Cancer Council website.

Relationships with others

Having cancer can affect your relationships with family, friends and colleagues. This may be because cancer is stressful, tiring and upsetting, or as a result of more positive changes to your values, priorities, or outlook on life.

Give yourself time to adjust to what's happening, and do the same for others. People may deal with the cancer in different ways, for example, by being overly positive, playing down fears, or keeping a distance. It may be helpful to discuss your feelings with each other.

Sexuality, intimacy and fertility

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.

If you are able to have sex, you will need to use contraception to protect your partner or avoid pregnancy for a period of time. Your doctor can also tell you if treatment will affect your fertility permanently or temporarily. If having children is important to you, talk to your doctor before starting treatment.

Call **13 11 20** for free copies of *Sexuality, Intimacy and Cancer*, *Fertility and Cancer* and *Emotions and Cancer*, or download the booklets from your local Cancer Council website.



Life after treatment

For most people, the cancer experience doesn't end on the last day of treatment. Life after cancer 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', but they don't want life to return to how it was before cancer. Take some time to adjust to the physical and emotional changes, and re-establish a new daily routine at your own pace.

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.

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 are able to get a Medicare rebate for sessions with a psychologist. Ask your doctor if you are eligible. Your local Cancer Council may also run a counselling program.

The organisation [beyondblue](http://beyondblue.org.au) has information about coping with depression and anxiety.

Go to beyondblue.org.au or call **1300 22 4636** to order a fact sheet.

Follow-up appointments

After your treatment, you will need regular check-ups to confirm that the cancer hasn't come back.

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

You may be offered more treatment – the options are described on pages 24–34 and may include surgery and chemotherapy. Treatment will depend on the type of cancer you have, where it has spread, your general health and the treatments you have had before.

When cancer won't go away

For many people with primary liver cancer or secondary cancer in the liver, the cancer cannot be cured. This can be frightening. Talking to your health care team can help you understand your situation. Palliative treatments may stop further cancer growth and allow you to continue doing the things you enjoy for several months or years. However, facing the fact that you may die from the cancer can be very distressing. If you would like to read more information about this, Cancer Council's booklet *Facing End of Life* may be helpful.



Seeking support

Cancer may cause you to experience a range of emotions, such as fear, sadness, anxiety, anger or frustration. It can also cause practical and financial problems.

Practical and financial help

There are many services that can help deal with practical or financial problems caused by the cancer. Benefits, pensions and programs can help pay for prescription medicines, transport costs or utility bills. Home care services, aids and appliances can also be arranged to help make life easier.

Ask the hospital social worker which services are available in your local area and if you are eligible to receive them.

If you need legal or financial advice, you should talk to a qualified professional about your situation. Cancer Council offers free legal and financial services in some states and territories for people who can't afford to pay – call 13 11 20 to ask if you are eligible.

Talk to someone who's been there

Coming into contact with other people who have had similar experiences to you can be beneficial. You may feel supported and relieved to know that others understand what you are going through and that you are not alone.

People often feel they can speak openly and share tips with others who have gone through a similar experience.

In a support setting, you may feel comfortable talking about your diagnosis and treatment, relationships with friends and family, and hopes and fears for the future. Some people say they can be even more open and honest because they aren't trying to protect their loved ones.

Types of support

There are many ways to connect with others for mutual support and to share information. These include:

- **face-to-face support groups** – often held in community centres or hospitals
- **telephone support groups** – facilitated by trained counsellors
- **peer support programs** – match you with someone who has had a similar cancer experience, e.g. Cancer Connect
- **online forums** – such as cancerconnections.com.au.

Talk to your nurse, social worker or Cancer Council 13 11 20 about what is available in your area.

“ 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*



Caring for someone with cancer

You may be reading this booklet because you are caring for someone with cancer. Being a carer can be stressful and cause you much anxiety. Try to look after yourself – give yourself some time out and share your worries and concerns with somebody neutral, such as a counsellor or your doctor.

Many cancer support groups and cancer education programs are open to carers, as well as people with cancer. Support groups and programs can offer an opportunity to share experiences and ways of coping.

Support services such as Home Help, Meals on Wheels or visiting nurses can help you in your caring role. There are also many groups and organisations that provide information and support, such as Carers Australia, the national body representing carers in Australia. Carers Australia works with the Carers Associations in each of the states and territories. Phone 1800 242 636 or visit carersaustralia.com.au. Call Cancer Council 13 11 20 to find out more about carers' services and to get a copy of the *Caring for Someone with Cancer* booklet.

Hepatic encephalopathy

Chronic liver disease may cause toxic substances to build up in the blood, which can affect brain function. This leads to confusion or disorientation and, in severe cases, coma. Hepatic encephalopathy can be frightening for carers and family members. Talk to the health care team if you are concerned.



Useful websites

The internet has many useful resources, although not all websites are reliable. The websites listed below are good sources of support and information.

Australian

Cancer Council Australia.....	cancer.org.au
Cancer Australia.....	canceraustralia.gov.au
Carer Gateway.....	carergateway.gov.au
Carers Australia.....	carersaustralia.com.au
beyondblue.....	beyondblue.org.au
Department of Health.....	health.gov.au
healthdirect Australia.....	healthdirect.gov.au
Australian Liver Foundation.....	liver.org.au
Haemochromatosis Australia.....	haemochromatosis.org.au
Hepatitis Australia.....	hepatitisaustralia.com
Liver Foundation of Western Australia.....	liverfoundation.org.au
Pancare Foundation.....	pancare.org.au

International

American Cancer Society.....	cancer.org
Cancer Research UK.....	cancerresearchuk.org
Macmillan Cancer Support (UK).....	macmillan.org.uk
National Cancer Institute (US).....	cancer.gov



Question checklist

You may find this checklist helpful when thinking about the questions you want to ask your doctor about your disease and treatment. If your doctor gives you answers that you don't understand, ask for clarification.

- What type of liver cancer do I have? Is it a primary cancer or a secondary cancer?
- How far has the cancer spread? How fast is it growing?
- What treatment do you recommend and why?
- Are there other treatment choices for me? If not, why not?
- What are the risks and possible side effects of each treatment?
- How long will treatment take? Will I have to stay in hospital?
- How much will treatment cost? How can the cost be reduced?
- Will I have a lot of pain with the treatment? What will be done about this?
- Are the latest tests and treatments for this type of cancer available in this hospital?
- Are there any clinical trials or research studies I could join?
- How frequently will I need check-ups after treatment?
- Who should I go to for my check-up appointments?
- Are there any complementary therapies that might help me?
- Should I change my diet during or after treatment?
- If the cancer comes back, how will I know?



Glossary

adjuvant therapy

A treatment given with or shortly after another treatment to enhance its effectiveness.

advanced cancer

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

aflatoxin

Mould found on peanuts and some other foods that can cause primary liver cancer.

alcohol injection

A type of tumour ablation treatment that directs ethanol 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 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

Collection of fluid in the abdomen.

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.

biopsy

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

bowel

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

cancer of unknown primary (CUP)

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

carcinoembryonic antigen (CEA)

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

chemotherapy

The use of cytotoxic drugs to treat cancer by killing cancer cells or slowing their growth. May be given alone or in combination with other treatments.

Child-Pugh score

A scoring system used to measure the severity of chronic liver disease, including cirrhosis.

cholangiocarcinoma

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

cirrhosis

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

clinical trial

A research study that tests new and better treatments.

colonoscopy

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

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 a picture of the inside of the body.

embolisation

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

endoscopic retrograde cholangiopancreatography (ERCP)

A procedure used to examine the bile duct. The doctor injects dye into the organs and creates x-ray pictures of the organs.

endoscopic stent placement

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

fine needle aspiration (FNA)

A type of biopsy where a thin needle is inserted into a lump to extract cells.

gastroenterologist

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

haemochromatosis

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

hepatectomy

Surgery to remove all or part of the liver. Removing part of the liver is called a partial hepatectomy. Removing a whole lobe is called a hemihepatectomy. Removing a small section is called a segmentectomy.

hepatic artery

The main blood vessel carrying blood to the artery.

hepatic encephalopathy

A build-up of toxins in the body, which can lead to brain damage.

hepatitis

Inflammation in the liver, usually caused by a virus.

hepatobiliary surgeon

A surgeon who specialises in surgery to the liver and surrounding organs, such as the gall bladder.

hepatocellular carcinoma (HCC)

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

is the most common type of primary liver cancer.

hepatologist

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

ICG test

A test using dye injected into the blood to see how well the liver is working. The dye is called indocyanine green (ICG).

immunosuppressant

A medicine that reduces the actions of the immune system.

interventional radiologist

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

jaundice

A condition caused by increased amounts of bile in the blood, which occurs when the bile ducts are blocked. Jaundice causes yellow, itchy skin; the white of the eyes to turn yellow; pale stools; and dark urine.

laparoscopy

Surgery done through small cuts in the abdomen using a laparoscope for viewing. Also called keyhole surgery.

liver

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

liver cancer

Cancer in the liver. Usually refers

to cancer that started in the liver (primary liver cancer). May be used to refer to cancer that spread to the liver from somewhere else in the body (secondary cancer in the liver).

liver cirrhosis

See cirrhosis.

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 tissues, capillaries, vessels, ducts and nodes that removes excess fluid from tissues; absorbs fatty acids and transports fat; and produces immune cells. Includes the bone marrow, spleen, thymus and lymph nodes.

lymph nodes

Small, bean-shaped structures that form part of the lymphatic system. They collect and destroy bacteria and viruses. Also called lymph glands.

malignant

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

mammogram

An x-ray of the breast to detect cancer.

metastasis (plural: metastases)

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

MRI scan

Magnetic resonance imaging scan.

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

palliative treatment

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

pancreas

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

patient-controlled analgesia (PCA) system

An intravenous system that allows a person to administer a measured dose of pain relief by pressing a button.

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 making cancerous areas show up brighter.

primary cancer

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

primary liver cancer

Cancer that started in the liver.

primary site

The part of the body where the cancer first developed.

prognosis

The predicted outcome of a person's disease.

radiotherapy

The use of radiation, such as x-rays, gamma cells, electron beams or protons, to kill cancer cells or injure them so they cannot grow and multiply. It is sometimes used to control pain. Also called radiation therapy.

resectable

Able to be surgically removed.

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.

selective internal radiation therapy (SIRT)

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

side effect

Unintended effect of a drug or treatment.

SIR-Spheres®

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

stage

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

stent

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

targeted therapy

Treatment that attacks specific

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

tissue

A collection of cells that make up a part of the body.

transarterial chemoembolisation (TACE)

Chemotherapy is injected directly into a tumour and the blood vessels are closed off so the cancer is starved of oxygen and nutrients.

transplant

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

tumour

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

tumour ablation

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

tumour markers

Chemical produced by cancer cells and released into the blood. These may suggest the presence of a tumour

in the body. The 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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1. C Verslype et al., 'Hepatocellular carcinoma: ESMO–ESDO Clinical Practice Guidelines for diagnosis, treatment and follow-up', *Annals of Oncology*, vol. 23, suppl. 7, 2012, pp. vii41–vii48.
2. C Verslype et al., 'Liver Cancer: a guide for patients – Information based on ESMO Clinical Practice Guidelines – v.2014.1. esmo.org/content/download/6615/115103/file/EN-Liver-Cancer-Guide-for-Patients.pdf [date accessed: 21/3/2016].
3. Australian Institute of Health and Welfare (AIHW), *Australian Cancer Incidence and Mortality (ACIM) books: Liver cancer*, AIHW, Canberra, 2016.



How you can help

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

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

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

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

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

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

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



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.

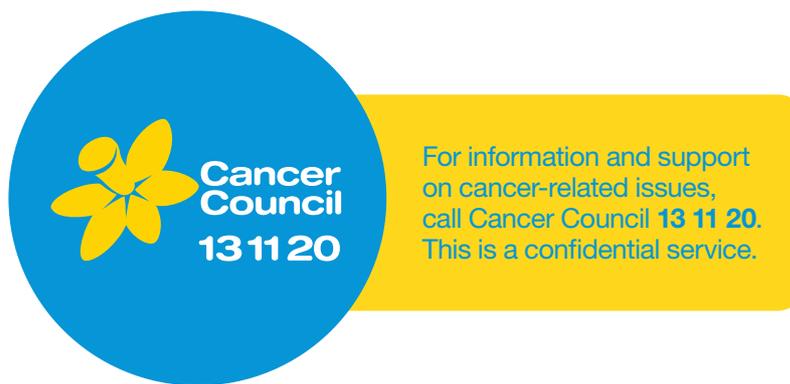
Cancer Council services and programs vary in each area.
13 11 20 is charged at a local call rate throughout Australia (except from mobiles).



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, 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.*