

hepatitis *wa*

Information about living with

# hepatitis C

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## Information about living with hepatitis C

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Prepared originally by Judith Pugh, Senior Project Officer, HepatitisWA (Inc)

### Acknowledgements

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# ABOUT HEPATITISWA

HepatitisWA (Inc) is a non-profit community-based organisation set up in 1992 by people with hepatitis C to help themselves and others affected by the virus. HepatitisWA seeks to reduce the prejudice and stigma directed against those with viral hepatitis (predominantly hepatitis C), assist those with the disease to obtain the best possible care and support, and raise awareness of the nature of the disease.

Key activity areas include the following:

- Support Services provides a friendly and confidential telephone information and support service that is staffed by trained volunteers, overseen and directed by the Information & Support Officer. Our service operates weekdays 9am-5pm. Phone (08) 9328 8538 Metro or 1800 800 070 Free call Country or email : [support@hepatitiswa.com.au](mailto:support@hepatitiswa.com.au)

Free and confidential one-to-one counselling is available by appointment.

- Information Services provide a range of information delivery options to our clients through our internet site, public meetings and newsletter for members.

HepatitisWA produces a range of resources, and stocks a small range of resources from Hepatitis Australia.

HepatitisWA's hepatitis information is posted on the internet. We encourage you to visit our internet site, inspect the electronic version of this document and provide feedback to HepatitisWA. Visit our site at [www.hepatitiswa.com.au](http://www.hepatitiswa.com.au)

- Education, Training and Workforce Development Services work with clients from a broad spectrum of community and voluntary groups, public and private sector agencies, industry and business to deliver training for those at risk of exposure to blood borne viruses, and to raise awareness of the nature of the disease and the needs of people living with hepatitis C.

Presentations or training can be requested by contacting the Education & Training Officer, Community Development Officer or the Workforce Development Officer by telephone on (08) 9227 9800 or by fax on (08) 9227 6545.

A Committee of Management forms the governing body of HepatitisWA. It comprises representatives from our membership, key stakeholders and interested health and welfare professionals. HepatitisWA employs salaried staff and maintains a small and highly valued volunteer team.

Members are invited to reflect on all areas of HepatitisWA's activities and give us feedback, and to seek representation on the Committee of Management. We are successful when our clients benefit from the use of our services, and the communities in which we operate value our contribution.

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# ABOUT HEPATITIS C

## HEPATITIS

Hepatitis means inflammation of the liver. Inflammation is the body's normal response to infection and toxic stimuli. This response occurs when not just viruses but also chemicals, too much alcohol and other drugs threaten the liver. The liver defends itself by trying to destroy or seal off viruses, dangerous substances or damaged liver tissue. This inflammatory response can protect against the infection or substance but can also cause damage in itself. There are different viruses that can cause hepatitis and each of them can result in different illnesses and need different treatments.

### What is hepatitis?

Hepatitis means inflammation of the liver. There are several types of hepatitis virus, including hepatitis A, B, and C.

### What is hepatitis C?

Hepatitis C is a viral infection that affects the liver. There is no vaccine against hepatitis C, and medical treatment is currently limited. Hepatitis C is spread by blood-to-blood contact.

### What is hepatitis B?

Hepatitis B is a viral infection that also affects the liver. Hepatitis B is preventable by vaccination. It is spread by contact with infected blood or body fluids (semen, vaginal fluids, saliva or sexual fluids).

### What is hepatitis A?

Hepatitis A is another viral infection that affects the liver. There is no specific treatment for hepatitis A but it is preventable by vaccination and good hand and food hygiene. Hepatitis A is spread through the faecal-oral route, that is, swallowing food or water contaminated with faecal material.

**Coinfection** with hepatitis A or hepatitis B (and also HIV) is likely to increase the rate at which hepatitis C disease progresses.

## HOW DOES THE HEPATITIS C VIRUS AFFECT YOUR LIVER?

The hepatitis C virus can cause lasting infection and inflammation, cirrhosis (the formation of scar tissue that replaces normal liver structure) and cancer of the liver. The immune system can damage or kill liver cells infected with the virus. However, in some people, the hepatitis C virus can replicate (make copies of itself and spread) with little damage to the liver cells and without sending alarm signals to the immune system.

Depending on the type of immune response your body makes, you can clear the virus naturally, need antiviral treatment or continue to live with the virus despite/without treatment. About 25 out of 100 infected people will clear the virus naturally without treatment but do not become immune. These people have a strong natural interferon (an antiviral protein in the body) response to fight the virus. In the remaining 75, the virus can stay in the body either causing or not causing damage depending on the individual's inflammatory response. Of these people, 8-20 will develop cirrhosis (a severe liver disease in which inflammation causes scarring and loss of liver function). Of those who develop cirrhosis, less than 5 will go on to experience liver cancer or failure. In contrast, most people will stay infected and carry the virus with little damage to their own liver cells. Unfortunately, it is not possible to predict early who is going to suffer health problems later if the infection goes untreated.

## NO LASTING IMMUNITY AFTER INFECTION

When the hepatitis C virus is not cleared, it can set up a persistent infection and escape destruction by the immune system. There are more than six different strains or types of the virus. As the virus makes copies of itself it makes mistakes and changes. These variations of the virus mean that it is able to hide from your immune system, and so hepatitis C is usually a chronic (long term) infection. ('Chronic' means long term, not 'really bad' or 'severe'). When you are infected with the virus your body makes antibodies to try to destroy it. These antibodies target specific parts of the virus but then the virus goes and changes again. This means that the antibodies that you make do **not** protect you. So you can be re-infected with the virus if you are exposed again to either the same strain or to a different strain. (It also makes it hard for scientists to make a vaccine.) A common misconception is that you can be re-infected with your own virus, for example, if you re-used your own fit (needle and syringe). You can't.

### What sort of virus is hepatitis C?

The origin of the hepatitis C virus (HCV) is not yet known. HCV was first identified in 1988, and a specific test for HCV antibodies was developed in 1989. Before then it was known as non-A, non-B hepatitis. The virus was noticed when people who had been given blood transfusions got hepatitis. Hepatitis C is spread by blood-to-blood contact. So you can get hepatitis C if an infected person's blood gets into your blood. Testing for hepatitis C became available in Australia in 1990.

The hepatitis C virus, like other viruses, is a small germ that causes an infectious disease. Hepatitis C belongs to the virus family *Flaviviridae*. Compared to some viruses and bacteria, the genetic make-up of the hepatitis C virus is relatively simple. It is a single-stranded RNA virus made up of a core of ribonucleic acid (RNA) surrounded and protected by a protein shell (with a number of proteins). The RNA core contains the genetic material or blueprint that the virus needs to grow and develop, and to make copies of itself.

Once inside your liver cells, HCV makes use of the materials that you as host supply to keep it going, and to help it make copies of itself. Your infected cells provide materials for the virus to multiply. New copies will leave the cell and invade other cells where they too will start their life cycles. The virus is believed to pass directly from liver cell to liver cell after budding from the cell surface. Receptors on the surface of your liver cells are thought to let the virus into your liver cells. Not all the steps are clearly understood because it has been difficult to grow the virus in the laboratory.

The primary target organ of HCV is the liver. However, the virus has been found in bone marrow, kidneys and white blood cells. The significance of these reservoirs of virus is not known.

## HOW HEP C CAN AFFECT YOU

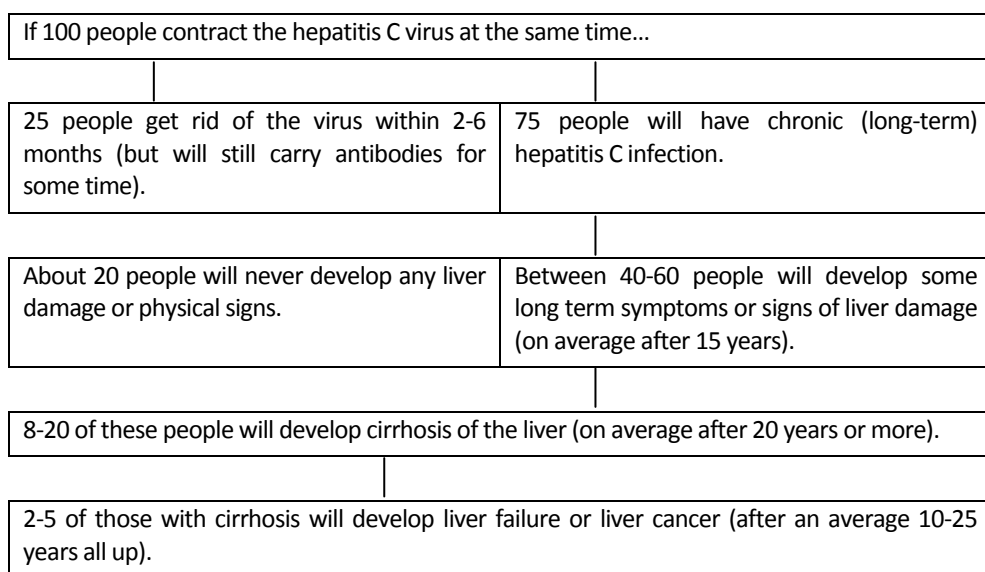
Hepatitis C is inflammation and disease of the liver from infection with the hepatitis C virus. The virus is spread by blood-to-blood contact. You can get hepatitis C if an infected person's blood comes into contact with your blood.

Your liver does many jobs. Importantly, it helps you digest and use food, and it filters and purifies your blood of harmful substances and wastes. It also makes many substances that your body needs. Most people don't notice any symptoms when first infected with hepatitis C. Some, though, will have a flu-like illness. It can take years before you notice the symptoms of hepatitis C. Symptoms can come and go and vary in severity, and are described as non-specific (see table on page 4). Nevertheless, hepatitis C can leave you feeling under the weather. But, as many people report, you do not have to alter your lifestyle in a really big way to keep well in yourself. Focusing on general health measures, a healthy diet and gentle exercise can help you overcome some of the symptoms of hepatitis C.

**ONGOING OR CHRONIC INFECTION**

Most people infected with the hepatitis C virus will not even know that they are ill, but they can still pass the virus on to someone else. About 25 out of 100 people infected will clear the virus from their bodies within two to six months of infection. Clearing the virus does not make people immune. The others will develop chronic (long-term) hepatitis and untreated, carry the virus for life. **Most, however, will have a normal life span.**

About 8-20 of these 75 people with chronic (long-term) hepatitis C will develop cirrhosis (when scar tissue replaces healthy liver tissue). The virus is slow acting, taking about 15-40 years to cause cirrhosis. Cirrhosis can lead to liver failure and a small number of the people who develop cirrhosis may go on to develop liver cancer. (Figures may vary slightly depending on the information source that you read.)



**A WORD ABOUT CHRONIC ILLNESS**

Having a chronic (long-term) illness you may be more likely to suffer from depression or anxiety. While it is normal for you to go through a period of adjustment following diagnosis of hepatitis C, if your adjustment progresses to depression the impact on your general health can be huge. If, after a couple of weeks, you are still feeling overwhelmed and unable to cope, it is important that you discuss this with your doctor.

## HOW YOU MIGHT FEEL AND WHAT TO DO

How you might feel	What to do
<ul style="list-style-type: none"> <li>Nauseous after eating fatty foods because your body's ability to make bile (which digests fats) has been affected.</li> <li>Nauseous after drinking alcohol.</li> <li>Bloated and uncomfortable (often with discomfort in your abdomen).</li> <li>Lacking an appetite because your body's ability to digest foods is affected.</li> </ul>	<p>Eat regular, well-balanced low-fat meals. Eat several small meals each day instead of one large meal.</p> <ul style="list-style-type: none"> <li>Don't skip meals. Don't fast.</li> <li>Drink plenty of fresh water.</li> <li>Go easy on junk food especially foods high in saturated fats.</li> <li>Travel with low-fat biscuit type snacks, fresh fruit like bananas or apples, and water.</li> <li>Go easy on alcohol as drinking alcohol will worsen liver damage if you have hepatitis C. So reducing the amount of alcohol that you drink each day can affect the progress of the disease. No alcohol, however, is best.</li> </ul>
<ul style="list-style-type: none"> <li>Lethargic (listless, sluggish, not having the energy on hand to get-up-and-go, run down, exhausted, worn out, finding it hard to drag yourself out of bed in the morning).</li> <li>Generally unwell (sick, ill, unhealthy, weak).</li> </ul>	<ul style="list-style-type: none"> <li>Don't let yourself get over-tired. Get plenty of regular sleep to give your liver a chance to rest (interrupted sleep is not good quality sleep, nor is drug or alcohol induced sleep good quality sleep).</li> <li>Listen to your body and take regular rest breaks, build in some quiet time. Practice relaxation techniques like meditation.</li> <li>Do some regular, gentle exercise like walking, swimming or yoga.</li> <li>When going for a walk, plan for the return journey. When going shopping, park your car in a central spot.</li> <li>Try some foods and herbs that enhance the health and function of your liver. It is important to see an accredited practitioner and let your regular doctor know, as some can be harmful (comfrey, for example).</li> <li>Ask for a hand with general housework like vacuuming, and cleaning the bathroom and kitchen. Draw up a roster with family members or friends to do just 1-2 hours housework a fortnight for you.</li> <li>Organise a 'safe house' where you can rest – close family or friends you can drop in on if you feel unwell. You may not have to use this back up very often, but it can be handy.</li> </ul>
<ul style="list-style-type: none"> <li>Stressed and not able to deal with the demands of work and your personal life. Excessive stress has been linked with physical and psychological illness as well as interpersonal difficulties.</li> <li>Feeling like everything is just too much. If managing the balance between the demands placed on you and what you have to do to meet those demands is getting too much you get stressed.</li> </ul>	<ul style="list-style-type: none"> <li>Talk with someone who has been in a similar situation. A lot of people find it's a relief to talk to someone who knows what they are going through.</li> <li>Plan your day. Pace yourself. Don't try to get everything done in the one day.</li> <li>Take some time out for yourself each day. Practice relaxation techniques.</li> <li>Try car-pooling with other workers at your workplace.</li> <li>Build in more time to get to work so that you can drive a bit slower, or if you miss the train or bus it doesn't matter so much.</li> <li>Say 'NO' to extra responsibilities at work.</li> <li>If unable to work because of ill health ask at Centrelink about your eligibility for financial support services.</li> </ul>

## TAKE A FEW DEEP BREATHS AND RELAX

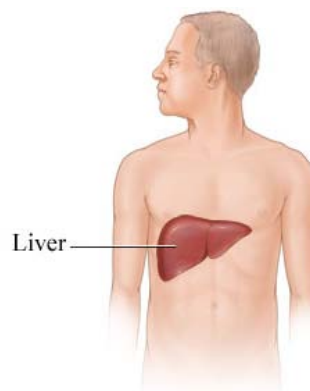
Correct breathing is the basis of all relaxation techniques so it is a good place to start! When you breathe deeply, your lungs fill fully with oxygen and you push out carbon dioxide (the waste product of breathing). The extra amount of oxygen will be carried to your brain and you may experience a pleasant euphoria, a feeling of well being.

1. Lie down or sit in a warm, comfortable place where you will not be disturbed. (You may find it easier to practice deep breathing sitting in a chair.)
2. Begin by thinking slow, relaxing thoughts to quieten your busy mind. When you feel comfortable, put your right hand over your upper abdomen about level with your navel, and your left hand over your chest.
3. Begin the breath in and count slowly for five seconds. You can pace this by counting "One thousand, two thousand, three thousand, four thousand, five thousand." You should feel your right hand rise and your left hand staying in about the same position (as you breathe down into your abdomen instead of into your chest). Imagine that you have a balloon of air under your right hand, which gradually fills with air as you breathe in. When you reach 'five thousand' you will be at the top of your breath. Slowly let the air out of your lungs. Don't pause; just let the air escape from your lungs at the same pace you counted it in. Repeat this step three or four times and then breathe normally. After a break of 5 to 10 minutes, begin again. Don't do more than three rounds of five breaths at one go because you may become light headed or dizzy. (Don't worry, this is not dangerous but can feel unpleasant.)

## ABOUT YOUR LIVER

### WHERE IS MY LIVER?

Your liver is in the top right hand corner of your abdominal cavity (or belly). Your diaphragm (the large muscle that separates your lungs from your abdomen and controls your breathing) lies just above your liver. Your gallbladder is tucked underneath your liver and your stomach lies to the left of it. The fact that your liver receives nearly one third of the blood flow through your body at rest reflects the importance of its many functions.



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#### How hep C can affect you

The hepatitis C virus may cause swelling (inflammation) in your liver. This inflammation is at the cellular level. Most people with hepatitis C do not have any symptoms that indicate disease. Any symptoms you do have are usually not from the virus itself but from this inflammation in your liver as your immune system tries to deal with the virus. The virus is usually not cleared by your immune system and so leads to chronic (long-term) hepatitis and liver disease in many cases.

### WHAT DOES MY LIVER DO FOR ME?

Your liver has four important jobs. It:

- Produces bile salts to help digestion.
- Cleans up toxic substances and dead cells.
- Stores essential proteins, carbohydrates, vitamins and minerals.
- Produces essential proteins and substances required for body function.

#### How hep C can affect you

The liver has an essential role in many body functions. People with hepatitis C often experience fatigue and weakness. If you experience these symptoms, it may be directly related to the presence of a virus in your body or may be related to changes in the function of your liver. Toxic substances may be less quickly cleaned up and storage may be less efficient. It is important to allow your body to rest and to reduce the stresses on your liver (like alcohol and going without sleep) as the process of fighting a virus can consume energy.

Food is made up of carbohydrates (commonly called sugars and starches), proteins, fats, vitamins and minerals. When you eat, food enters your stomach where the first phase of digestion occurs. Then the food passes on to your small intestine where the main work of digestion takes place with the help of your liver. Your liver makes bile salts and digestive enzymes, special proteins that help to break down food to give you energy. Bile salts are stored in your gall bladder and act somewhat like a detergent so that fat is more easily broken down and absorbed. Many waste products are secreted into bile (a complex fluid containing bile salts and other substances that are secreted into your small intestine) before leaving your body in the faeces. Cholesterol and bilirubin (a waste product from old red blood cells) are excreted with bile. When the liver does not function properly fat digestion is

particularly affected. Fat-soluble vitamins such as vitamin A, D, E and K may not be well absorbed under these circumstances.

### How hep C can affect you

Your liver must have enough vitamin K to make prothrombin (a clotting factor), and you need bile to absorb vitamin K because it is fat-soluble. So if you do not make enough bile or the flow of bile is blocked because of liver disease, bile will not flow into your intestine, you will not digest and absorb fat properly, and you will not absorb vitamin K either. Then your liver will not be able to make prothrombin as it usually does. This may make you prone to bleeding. (Whilst you usually have good stores of vitamins A, D and E, your body only stores a few days worth of vitamin K.)

Also, if your liver cells are not working properly you can have problems making other clotting factors.

So, poor absorption of vitamin K, less prothrombin production and changes in the production of other substances needed in blood clotting can occur if your liver is injured. These types of changes only become apparent in people with end-stage cirrhosis of the liver (less than 5% of people with hep C, and only after many decades).

When digestion has occurred, the broken down parts of carbohydrates, proteins and fats as well as vitamins and minerals are absorbed and directed into your liver. Your liver acts as a filter against toxic substances (chemical and infectious) entering your main blood system. Toxic substances can also be changed into substances that can be removed by your kidneys. For example, ammonia is a toxic substance that comes from the breakdown of proteins. Your liver changes ammonia into urea which is easily handled by your kidneys.

### How hep C can affect you

When liver cells are destroyed (as happens if you develop cirrhosis from hepatitis C), your liver will have problems storing nutrients and detoxifying the chemicals that your body normally produces and those that you take in from the outside. As alcohol is a toxic chemical you are advised to stop or limit your alcohol intake.

Your liver stores essential substances such as iron and some vitamins like vitamin B12. It is also critical in the maintenance of brain function for a number of reasons. Your liver takes up glucose absorbed after a meal and turns it into glycogen (a form of glucose or sugar suitable for storage). Since glucose is the only form of energy that the brain can use, this store is essential to ensure that there is always enough glucose for your brain. When your liver glycogen reserves become depleted (after not eating for hours), your liver begins to make glucose from other forms of energy such as proteins in your body. Your liver converts excess carbohydrates and proteins into fat for storage and breaks down fats.

### How hep C can affect you

During an acute (sudden or new) infection or later when inflammation is quite severe, the liver can swell. When liver cells swell they can block the flow of bile through your liver. The levels of bilirubin, a substance found in the bile, will rise in your blood stream. Since bilirubin has a yellow pigment, your skin and eyes may develop a yellow tinge called jaundice. Because of the poor absorption of fat, there may be nausea, diarrhoea, flatulence and bloating. These symptoms may reduce your appetite and cause vague abdominal discomfort. Your faeces may become pale in colour and your urine dark. The accumulation of bilirubin can be quite uncomfortable and cause itching. Bilirubin levels are tested as part of liver function tests (blood tests).

Your liver is crucial in the production of hormones (like oestrogen, progesterone, testosterone, and cortisol). It also produces proteins needed for your circulation (like plasma proteins to help keep your blood pressure okay), proteins for blood clotting (like prothrombin and fibrinogen) and antibodies needed by your immune system. Your liver makes lymph as well as Kupffer cells, both of which help remove toxic substances from your circulation.

### How hep C can affect you

Untreated, hepatitis C can lead to serious liver disease in a small percentage of people. Chronic (long-term) hepatitis C can progress to cirrhosis in about 20 years. In cirrhosis, damaged liver cells die and are replaced by scar tissue. Over time, this scar tissue blocks the blood flow and the bile flow through your liver. Your liver cannot do all its many jobs properly as more and more cells die.

The blood test prothrombin time (PT) is a good measure of your liver function. A prolonged PT is usually found in severe hepatitis when the liver is badly damaged.

ALT (alanine aminotransferase) and AST (aspartate aminotransferase) are enzymes found in liver cells. These enzymes leak out when your liver cells are inflamed or damaged. ALT and AST appear in your blood stream in elevated amounts when groups of liver cells die. ALT is more specific for liver damage than AST (as you can have an elevated AST when other organs are damaged). Whilst ALT is often used to monitor chronic hepatitis C, it is not a very good measure of inflammation nor of your actual liver function.

Another 'liver enzyme', alkaline phosphatase, is made by your bones and liver, and removed from your blood stream by your liver then excreted in the bile. It will be elevated if the flow of bile in your liver is blocked.

Your liver has a large blood supply that not only provides oxygen and nutrients (food) to working liver cells, but also carries blood that is rich in food from your gut for processing. A large volume of blood flows through your liver every minute.

### How hep C can affect you

If hepatitis C progresses to cirrhosis then blood flow can be interfered with. Fibrous tissue takes the place of normal liver tissue, and it squeezes and chokes up the blood vessels in your liver. This happens slowly over some years so that veins in the region, like those around your spleen and oesophagus, grow in size. Over time, fluid rich in proteins leaks out of your liver and from blood vessels in your gut into your abdominal cavity (this is called ascites). The proteins in this ascitic fluid pull more and more fluid into the space.

Ascites can be uncomfortable and cause you pain. It can also put pressure on your diaphragm (the large muscle that moves your chest wall), and will make it difficult for you to breathe. Ascites can alter your appearance and disturb how you feel about yourself.

## CAN LIVER CELLS REPLACE THEMSELVES?

Liver cells can reproduce (make copies of) themselves. However, your liver cells need the best conditions possible including an excellent blood supply, so that they can make copies of themselves and thrive.

### How hep C can affect you

The hepatitis C virus reproduces in your liver usually without killing liver cells directly. The way in which the hepatitis C virus brings about liver disease is not clearly understood. Your immune response to the virus is believed to be responsible for damaging or killing liver cells. The virus can persist with or without significant damage to your liver – only 1 in 5 people with chronic infection develop cirrhosis. If your hepatitis progresses to cirrhosis there will be changes in the flow of blood through your liver and the supply of food to your liver cells. Your liver, though, can renew itself unless severely damaged as happens with cirrhosis (when it is scarred and becomes smaller and hardens).

# HOW DO YOU GET HEP C?

## WHO COULD HAVE HEP C?

Hepatitis C is inflammation of the liver caused by the hepatitis C virus. It is spread by blood-to-blood contact. So you can get hepatitis C if an infected person's blood gets into your blood stream. This can happen if there is contact between broken skin (like a cut, sore, graze or burn) and infected blood, or damaged mucous membranes (like inside your mouth) and infected blood.

Today, those who have the highest risk of contracting hepatitis C are persons who choose to inject drugs. Sharing *any* injecting equipment is a fairly sure way of transmitting hepatitis C. It is believed that at least 90% of new cases of infection are acquired through sharing equipment for injecting drugs.

To the end of 2009 it is estimated that there are 284,000 (NCHECR, 2008)\* people in Australia who have been exposed to hepatitis C, of whom an estimated 70,400 will have cleared the virus. About 1.3% of the population are believed to have been exposed to hepatitis C. In Australia, the number of hepatitis C positive people is said to be more than 10 times greater than HIV positive people, and there are nearly 20 times more new cases of hepatitis C each year than there are HIV infections.

Most people who get hepatitis C do not know that they are ill. The symptoms usually associated with acute hepatitis C are flu-like illness, anorexia (loss of appetite), nausea and abdominal discomfort, with jaundice being relatively uncommon. The incubation period (from exposure to the virus to the onset of symptoms) is from 6 to 10 weeks. It usually takes about 2 to 3 months from the time of infection before antibodies show up in the bloodstream. So a negative blood test for antibodies does not exclude current infection with hepatitis C virus. Infected people can transmit the virus to others.

In the table that follows you will find hypothetical cases, the risk of getting hepatitis C and ways to prevent the spreading of the virus to others.

*\*National Centre in HIV Epidemiology and Clinical Research. HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report 2008. National Centre in HIV Epidemiology and Clinical Research, The University of New South Wales, Sydney, NSW. 2008. <http://www.med.unsw.edu/nchecr>*

## WHAT IS THE RISK? PROTECT YOURSELF AND OTHERS

	What is the risk?	Protect yourself and others
Nathan, a 26-year-old labourer, occasionally injects speed (amphetamine). He sometimes finds himself in situations where sterile equipment is not available.	Nathan is at high risk. The most common way of spreading hepatitis C is through sharing needles and syringes and other injecting equipment like spoons, water, filters, swabs, tourniquets and solvents. Even just once is a high risk.	Sharing injecting equipment is very high risk for spreading hepatitis C. The hepatitis C virus is very robust – it takes only tiny amounts to infect someone. And you can be re-infected with the same or other strains of the virus. <ul style="list-style-type: none"> <li>• Use your own clean injecting equipment, including tourniquet, needles &amp; syringes, sterile water for injections, swabs &amp; spoon.</li> <li>• Do not re-use or share injecting equipment.</li> <li>• Wash your hands before and after injecting and make sure your preparation surface is clean.</li> <li>• Obtain sterile equipment from a reliable source like a needle exchange or pharmacy.</li> <li>• Dispose of your used equipment safely. (Products like Fitpacks provide a means for safe disposal of used equipment.)</li> <li>• Get vaccinated against hepatitis B because if you get infected with both B &amp; C your liver can be badly damaged.</li> </ul>
Michael, a 20-year-old student, plays for the university rugby team. Pre-season Michael works out. During the playing season he and some teammates inject steroids to bulk up – they share injecting equipment.	Michael is also at high risk. The most common way of spreading hepatitis C is through sharing needles and syringes and other injecting equipment like spoons, water, filters, swabs, tourniquets and solvents. Even just once is a high risk.	
Ida, a 66-year-old mother of four, migrated to Australia 40 years ago from Italy. She has 6 grandchildren.	Ida is at moderate risk. Mass inoculation occurred in some countries during the 1940s & '50s – people could have been vaccinated with contaminated injecting equipment.	Household transmission is rare, and considered very low risk for spreading hepatitis C. You cannot get hep C from sharing a cup, kissing or hugging.
Kate, a 40 year old mother of three, used [injected] drugs for a while 16 years ago.	Kate is at high risk if she shared needles or other injecting equipment (even if she injected many years ago).	<ul style="list-style-type: none"> <li>• Be careful when there is blood around.</li> <li>• Hand washing and hand care are the most important ways to prevent infection.</li> </ul>
Sue, a 54-year-old grandmother, had a blood transfusion after a car accident in 1984.	Sue is at moderate to high risk because blood screening for hepatitis C antibodies was adopted throughout Australia early in 1990. Before 1990, blood transfusion accounted for a large proportion of people infected with hepatitis C. <u>Note:</u> Transfusion of blood or blood products after 1990 pose an extremely low risk in Australia.	<ul style="list-style-type: none"> <li>• Cover cuts with a waterproof dressing to prevent spreading infectious blood.</li> <li>• Do not share personal items like razors, toothbrushes or grooming items.</li> <li>• Wrap used tampons and sanitary napkins, put inside a plastic bag and tie securely before throwing out with your regular household rubbish.</li> <li>• Wear disposable latex gloves when cleaning up blood spills or giving first aid.</li> <li>• Wipe up blood spills with paper towels and lots of cold, soapy water.</li> <li>• Seal paper towels and gloves inside two plastic bags and throw them out with household rubbish.</li> </ul>

	What is the risk?	Protect yourself and others
<p>Mark, a 57-year-old ex-army officer, had tattoos done during the late '60s when he joined the army.</p> <p>Alison, a 16-year-old pre-apprentice, recently had body piercing done by friends.</p>	<p>Mark is at high risk from tattooing with unsterile equipment (including multiple use dye and dye tubs).</p> <p>Alison is at high risk from body piercing with unsterile, shared equipment.</p> <p>Tattooing, body piercing &amp; branding are high-risk activities for the spread of blood borne infections <i>if</i> operators do not comply with the code of practice for skin penetration procedures (issued by the Health Department of Western Australia).</p>	<p>Your unbroken healthy skin is your best protection against infection.</p> <ul style="list-style-type: none"> <li>• Do not let anything dirty through your skin or mucous membranes.</li> <li>• In Australia, choose a professional body piercer or tattooist who has hygienic work habits &amp; uses 'Standard Precautions' for infection control.</li> <li>• It is recommended that you do NOT have tattooing or body piercing done overseas.</li> </ul>
<p>Paul, 46, is Kate's husband. He didn't know about Kate's drug use when they married 8 years ago. He has not injected drugs himself. Paul &amp; Kate have unprotected sex.</p>	<p>Paul is at low risk. Ordinary social contact like hugging, kissing, sharing crockery, using the same shower &amp; toilet poses no threat.</p> <p>Although the hepatitis C virus has been found in body fluids other than blood, the results are inconsistent. Hepatitis C is not considered a sexually transmitted disease. It is thought that hep C is not transmitted during vaginal or oral sexual intercourse. Unbroken mucous membranes seem to provide an effective barrier against the virus.</p> <p>Hep C <i>may</i> be transmitted during sex when there is bleeding or trauma that results in blood-to-blood contact. This can happen with anal intercourse, the insertion of objects or if you have any condition that causes open sores, blisters or makes you scratch. It can also happen with sex during menstruation if the woman is hep C positive. The likelihood of sexual transmission is also related to the number of partners (the more partners the more likely transmission is to occur).</p>	<p>Sexual transmission is considered very low risk for people in long term, stable relationships. However, when one partner is hepatitis C positive, couples should reassess their sexual practices to prevent blood-to-blood contact during sex.</p> <ul style="list-style-type: none"> <li>• Use condoms to protect yourself &amp; your partner from infection.</li> <li>• Use condoms &amp; dams when a female partner is menstruating.</li> <li>• Use a water-based lubricant to help prevent condom breakage, skin damage or abrasion during sex.</li> <li>• Have sex with only one partner.</li> </ul>

	What is the risk?	Protect yourself and others
Jill, a 40-year-old nurse, had a needle stick injury at work involving a needle contaminated with blood.	<p>Jill is at low to moderate risk. The risk of getting hepatitis C after a sharps or needle stick injury from an infected source is about 4%. That is, for every 100-sharps/needle-stick injuries involving hep C positive blood, 4 people may become infected.</p> <p>For hepatitis B, the estimated risk is 30 in 100.</p> <p>For HIV the risk is 3 in 1,000.</p>	<p>Handling of blood or body fluids by workers can lead to a risk of exposure to blood borne viruses if Standard Precautions are not observed.</p> <ul style="list-style-type: none"> <li>• Treat the blood of any individual as infectious.</li> <li>• Use correct hand washing techniques.</li> <li>• Cover any open sores, cuts or abrasions (that are weeping) with a waterproof dressing.</li> <li>• Get to know the infection control policy &amp; procedures in your workplace.</li> <li>• Attend workplace occupational health &amp; safety training.</li> <li>• Follow safe work procedures &amp; use personal protective equipment.</li> <li>• Follow correct cleaning &amp; disinfecting procedures.</li> </ul>
Mary, 29 years old, is hepatitis C positive. She & her partner want to start a family. She is worried that she will pass the virus on to her baby.	<p>Mary's baby is at low risk for getting hepatitis C from Mary before or during birth. (Researchers are still trying to find out how hep C is passed from infected mother to baby and the risk for babies born vaginally, by emergency Caesarian or by Caesarian before the onset of labor).</p> <p>If tested at birth for hepatitis C antibodies, a baby born to a hep C positive mother can test positive. This is because the baby will have some of its mother's antibodies. These maternal antibodies will disappear naturally over time.</p> <p>If PCR positive, the risk of transmission from mother to baby is about 5%. If PCR negative then the risk is probably zero. The risk of transmission seems to relate to the amount of virus that the mother carries. (If infected with both hep C &amp; HIV then the risk of passing hepatitis C on to the baby is higher at 20-30% if not on HIV treatment, 16% if HIV treatment is being taken properly.)</p> <p>Mary's baby is at extremely low risk of getting hepatitis C from being breast-fed. There is no evidence that breast-feeding transmits the virus.</p>	<ul style="list-style-type: none"> <li>• Do not breast feed if you have breast trauma like cracked, grazed or bleeding nipples, or mastitis that lets blood into the breast milk. Re-start when your nipples or breast heals. (In the meantime, express your breast milk &amp; throw it away – this will keep your supply up for when you start breast-feeding again.) During this time use infant milk formula and bottle-feed your baby.</li> <li>• If PCR negative, you can be quite confident that you will not pass the virus on to your baby.</li> <li>• If thinking about getting your baby tested, antibody testing done after 18 months of age generally gives an accurate result.</li> </ul>

# TESTING FOR HEPATITIS C

## ANTIBODY TESTING FOR HEPATITIS C

The hepatitis C virus (HCV) was first identified in 1988, a specific test for HCV antibodies was developed in 1989, and testing became available in Australia early in 1990.

Whilst hepatitis C infection is often asymptomatic, initial, acute infection can cause non-specific symptoms such as mild nausea, jaundice, fever, abdominal pain and a general feeling of unwellness. These symptoms usually occur 6-10 weeks after you are exposed to HCV, as your body's immune system makes antibodies to fight and try to get rid of the invading virus.

### HOW THE ANTIBODY TEST WORKS

Diagnosis of hepatitis C is first made by finding antibodies to the hepatitis C virus in your blood. An anti-HCV enzyme immunoassay, (EIA test), is commonly used for this purpose. In this test the serum (clear liquid part of the blood) is set up to react if there are antibodies. Antibodies are proteins produced by your body if there has been contact with the hepatitis C virus. They are created by your body in response to contact with antigens (foreign material that stimulates an immune reaction) on the virus.

It can take 7-14 days for the results of your test for antibodies to hepatitis C to come back. If your serum is reactive it is reported as 'anti-HCV positive'.

Anti-HCV indicates exposure to hepatitis C. If you have antibodies to hepatitis C they will **NOT** protect you from reinfection. You can be infected more than once with hepatitis C or infected with other strains of the virus. HCV antibody test results give no indication of the damage, if any, to your liver nor the long-term implications of your disease.

### HOW ACCURATE IS THE ANTIBODY TEST FOR HEP C?

Third and fourth generation antibody tests (EIA tests), available since 1994, are said to be more than 95% sensitive. So they miss less than 5 infections in 100 (false negatives).

### WILL THE ANTIBODY TEST PICK UP YOUR HEP C INFECTION?

It usually takes up to 3 months from the onset of hep C infection before antibodies can be found in your blood and you test positive (this is called seroconversion). During this period of time, known as the 'window period', antibody tests may not pick up your infection and register a false negative (because you were tested too early). Occasionally people with chronic (long-term) hepatitis C will remain antibody-negative, for example, in a person whose immune system is not working properly.

Whilst the latest generation EIA tests enable more people who have acute hep C infections to be detected, you may still not know your definite hep C status. Some people who resolve their infection also seem to lose their antibodies. At the moment, there is not a good test for active infection. Test results may be reported as 'indeterminate', even after a second round of testing. As testing improves, some people may find out that their infection has resolved (and are not chronic carriers).

Each person is unique, with his/her own immune response that recognises different parts of the virus. It is possible, therefore, to be negative to those parts of the virus included in the test. (Note: most assays are based on viral genotype 1. The slight difference between genotypes may be enough to reduce the efficiency of the EIA tests.)

Tests for hepatitis C infection have been shown to have their limitations and problems. As researchers further define the features and properties of the hepatitis C virus, so antibody testing for hepatitis C infection will undergo improvements.

### ANTIBODY TEST RESULTS YOU CAN HAVE

EIA results only show if you have come into contact with the virus. There is no specific antibody associated with active infection. The presence of anti-HCV antibodies can mean either a past infection, a resolved infection, a current acute infection or current chronic disease. The range of test results is shown below. You will need to have a PCR test to find out if you are still infected with the virus.

Range of Antibody Test Results	
Positive	Negative
Acute infection	Not infected
Past infection	False negative
Chronic carrier	
False positive	

### WHAT TO DO IF YOUR TEST RESULT IS POSITIVE

If your test result is reported as anti-HCV positive, the National Health and Medical Research Council recommends the same sample of your blood be tested again. A second confirmatory test will be done (with a test made by another manufacturer), and if your test result is positive for both tests, then you are said to be positive.

If the results from the two EIA tests do not match after repeat testing (using the same sample of your blood), then the sample will be sent to a reference laboratory for further testing using another type of test.

One of the problems with EIA testing is the occurrence of false positives, although this is rare. This means that you can be anti-HCV positive but do not have and never have had hepatitis C. This can happen when you react to the substances used in making the test itself. As a consumer it is well to be aware that different laboratories perform different antibody tests, so the reliability of tests can vary.

### WILL YOU LOSE YOUR ANTIBODIES TO THE HEP C VIRUS?

Antibodies tend to stay for the long term but as the infection progresses you can lose a lot of your antibodies. Some people are said to resolve their hepatitis C infection. If you do resolve your infection you will become PCR negative. Some people do clear the virus and lose their antibodies to the virus too.

### PCR TESTING FOR HEP C

A blood test called Polymerase Chain Reaction (PCR) can be done to find out if you have active hepatitis C infection. If the virus is present it means that you are infectious and can transmit the virus to other people.

PCR testing became available late in 1993. As PCR testing involves a long, technical process it is expensive and not done on a routine basis. Limited access to Medicare covered PCR testing is available.

## HOW THE PCR TEST WORKS

PCR testing involves looking for RNA of the hepatitis C virus in your blood. (RNA – Ribonucleic acid – is the genetic material of the virus.) This is then multiplied and amplified to make sighting of the virus easier. Instead of relying on antibodies to the virus, the PCR test looks to see if the virus is actually in your blood. So it can show up infection before the antibodies are seen. The PCR test cannot tell you how long you have been infected.

False results can happen with PCR testing especially if the sample of your blood has been contaminated in any way. PCR results that shift from positive to negative and back again can represent problems with the test itself. For example, false negatives can occur if samples are left too long. The possibility of error makes it worthwhile having a repeat test done if you show up positive (as false positives can occur), and then repeating the test to ensure consistent results. Commercially prepared PCR tests reduce the possibility of error and produce more reliable results. (Apart from test error, level of virus usually remains constant for most people – though it does fluctuate in a small number of people.)

## WHAT DOES A NEGATIVE PCR MEAN?

A negative PCR result can mean that the virus is not present in your blood. This could be because you have eliminated the virus. However, a negative result does not always mean that you are not infected with hepatitis C. The concentration of the virus can be so low that the PCR test does not pick it up. In this case you might still be infected and infectious. The virus may not be present in your blood but could still be in your liver and other tissues.

## WHY IS PCR TESTING DONE?

PCR testing can be done for the following reasons:

- To identify people who have positive antibody results but who have eliminated the virus.
- To detect hepatitis C infection early.
- To monitor the progress of hepatitis C infection.
- To monitor the response to treatment.
- To test babies for infection with hepatitis C (as babies can have their mother's antibodies to the virus in their blood).

## WILL MEDICARE COVER THE COST OF YOUR PCR TEST?

The Medicare benefits schedule covers the basic PCR test to detect hepatitis C virus in your blood. Medicare provides cover for one (1) PCR test:

- If you had a positive HCV antibody test result with at least 2 normal Liver Function Test (ALT) results at least 6 months apart.
- If you had an inconclusive HCV antibody test result (your serological status is uncertain after testing).
- To determine your HCV status if you have a weakened immune system.
- If your medical management requires detection of acute hepatitis C before seroconversion e.g. if you have experienced a risk exposure (such as a needle stick injury).

The Medicare benefits schedule also covers up to four (4) PCR tests in a 12-month period if you have treatment for chronic hepatitis C. In each instance the tests are Medicare rebated to 75% unless you are bulk billed. However under the Medicare Safety Net scheme, once your out-of-pocket costs exceed your annual Safety Net threshold, Medicare will cover 80% of your new out-of-pocket costs for the rest of that year. You can get more information about the Safety Net by visiting your local Medicare office, by phoning 1800 011 163 or by visiting the website [www.health.gov.au](http://www.health.gov.au).

## WHO TO TELL THAT YOU HAVE HEPATITIS C

Hepatitis C is one of the many communicable or infectious diseases that the Department of Health (WA) keeps track of. This is so that it can allocate health care resources for affected people in WA, and plan to prevent further spread of the disease.

If you test positive for hepatitis C your doctor is required by law to inform the Commissioner of Health, that is, the Health Department. Your doctor will give your details to the Health Department. When your doctor notifies the Health Department that you have hepatitis C no one at the Health Department may contact you or tell anyone else about your illness. Information is coded and entered into the Health Department's database.

## PRIVACY AND CONFIDENTIALITY

Most professionals are guided by a code of ethics that usually includes steps for preserving confidentiality. This means that health professionals like your doctor and others (including staff in your doctor's practice and those at the testing laboratory), are expected to keep your personal information private. Workers who disregard this can be held answerable to disciplinary procedures of the relevant body.

Most people do not complain about breaches of confidence by professionals. It is in your interest, other consumers, and the profession's interests that legitimate complaints are made and investigated. Otherwise nothing changes.

The laws to do with privacy and confidentiality protect you from others finding out that you have hepatitis C.

## DISCRIMINATION

If you (or your partner, carer or others) are treated less favourably than other people in some area because you have hepatitis C; if unfairly excluded from an activity; if asked discriminatory questions; harassed or given a hard time because you have hepatitis C, then there are state and federal laws that protect your rights and can help you find a solution.

You can get detailed information about impairment discrimination and The Equal Opportunity Act 1985 of Western Australia from the Commissioner for Equal Opportunity, 2<sup>nd</sup> Floor, Westralia Square, 141 St Georges Terrace, Perth. Ph (08) 9216 3900; Country callers 1800 198 149 (free call) or visit website: [www.equalopportunity.wa.gov.au](http://www.equalopportunity.wa.gov.au)

For more information about privacy, disability rights and discrimination and the Disability Discrimination Act 1992 visit the Human Rights and Equal Opportunity Commission's website: [www.hreoc.gov.au](http://www.hreoc.gov.au)

Confidential legal advice about disability discrimination is available by appointment only from Sussex Street Community Legal Service, ph (08) 6253 9500 (Perth callers); 1800 642 791 (Free call country-1300 648 655); (08) 9470 2831 (TTY callers).



## MAKE A LIST

Make a list of the people who are at risk of getting hepatitis C from you.

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Look at the list of people who you think should know that you have hep C, and could catch it from you.

- If you listed the ambulance service, you won't need to contact them as ambulance workers routinely wear gloves when handling an injured person. Similarly, the police put on gloves before touching any injured person. As do nurses and doctors in emergency departments.
- The doctor who ordered your antibody test will already know. If you consult another doctor you do not have to disclose your hepatitis C status. But, you will need to tell the doctor if you want him/her to be able monitor your health and any treatment.
- Did you write down your dentist? Again, you do not have to tell your dentist. But if your dentist is to fully assess any oral problems that you have, and recommend appropriate dental care, you will need to tell him/her. You may attend a dental clinic or practice where you are asked to fill in a medical history form before any treatment is carried out. The information on this form should be asked for a specific purpose, and your replies kept confidential. To keep your details confidential, fill in your medical history personally and hand the form directly to your dentist (not to the receptionist), or seal it in an envelope to be put in your file. Note, dental staff should follow standard precautions to prevent patient-to-patient infection (of any bacterial or viral infection, not just hepatitis C), and to prevent exposure of themselves to blood borne viruses like hepatitis C.
- If you share a house with someone, you may need to tell that person that you have hepatitis C if, for example, they have used/shared your razor or toothbrush. Likewise if you engage in any activities in which your blood could come into contact with their blood. However, if you live in a block of flats or a boarding house and do not share with others then there is no need to tell them.
- It is your decision whether or not to tell your sexual partner (new or usual). This means assessing your sexual practices and your relationship when making your decision. Chronic illness rarely affects only one person in a relationship. Disclosing your hepatitis C positive status to your sexual partner(s) poses both problems and opportunities.
- There is usually no need to tell your employer that you have hepatitis C. You should not be excluded from work or school because you have hepatitis C. Discrimination is against the law in employment areas such as selection, training, promotion and dismissal. If you can carry out the work required, then you should not be treated less favourably because you have hepatitis C. There are exceptions. For example, if you are a health professional and have hepatitis C you can continue to provide direct patient care. However, the Health Department has policies pertaining to the performance of exposure prone procedures that may apply limitations to the scope of your practice.
- When you purchase life, medical and hospital insurance and superannuation, the rules and regulations of the organisation govern the product. If you want to take out insurance when you already have hepatitis C you will need to tell the company prior to being accepted as a client. Some companies ask for a higher rate of contribution from you, and/or you may not be covered for your pre-existing illness (but can make claims for other illnesses or treatments). Since there are many companies and many types of policies, shop around until you find one that suits you.

# ANTIVIRAL TREATMENT FOR HEP C

## WHY WORRY ABOUT HEP C INFECTION?

Most people infected with the hepatitis C virus will develop chronic (long-term) hepatitis – they will have a certain amount of inflammation of the liver. The concern with hepatitis C infection is the progression of fibrosis (scarring) in your liver that comes from inflammation. Treatment with antiviral drugs is aimed at preventing serious health problems from liver disease, by slowing down the progress of liver disease, improving your liver function and/or getting rid of the hepatitis C virus. The more severe the scarring, the more difficult it is to get rid of the virus.

Originally, the only proven treatment for chronic (long-term) hepatitis C was interferon alpha called monotherapy. Combination antiviral therapy with interferon alpha and ribavirin was then developed. Today the primary treatment is pegylated interferon and ribavirin therapy. Each advance in treatment has resulted in higher long-term response rates.

## ABOUT PEGYLATED INTERFERON AND RIBAVIRIN

After a number of treatment trials, pegylated interferon and ribavirin has become the first line of treatment offered to people with hepatitis C.

### WHAT IS INTERFERON?

Interferon is a substance that your body normally makes to defend itself against infection from viruses, including the hepatitis C virus. The interferons used in treatment are synthetically manufactured and taken in higher doses than those which occur naturally in the body. They boost your body's normal defences against hepatitis C.

### WHAT IS PEGYLATED INTERFERON?

The addition of a large polyethylene glycol (PEG) molecule to interferon produces a molecule that lasts a lot longer within your body. This means that only one injection per week is required (instead of 3), and this injection results in considerably fewer peaks and troughs in levels of the drug in your blood. Pegylated interferon offers greater tolerability and greater efficiency regardless of the state of your liver, genotype or viral load. Pegylated interferon and ribavirin has been approved for the Pharmaceutical Benefits Scheme.

### WHAT IS RIBAVIRIN?

Ribavirin is an antiviral drug that has some effect against hepatitis C when given in combination with interferon. Ribavirin interferes with the virus' production of genetic material – the blueprint that the virus needs to grow and make copies of itself. Ribavirin dampens down the virus production rate but does not completely stop it. Ribavirin is taken orally (by mouth), and the dose is adjusted to the person's weight. (In some cases the dose will be adjusted during treatment.)

## WHO CAN HAVE PEGYLATED INTERFERON AND RIBAVIRIN ANTIVIRAL TREATMENT?

From November 2000 general practitioners were authorised to order blood tests to assess PCR viral load and to determine virus genotype. This means that they are able to better advise you about treatment options and possible outcomes before you commit to treatment or even see a specialist. The tests are Medicare rebated to 75% if done outside the hospital system; however some laboratories will bulk bill for these blood tests.

Treatment with antiviral drugs requires that you commit to 6 to 12 months of treatment and medical appointments as scheduled.

Subsidised pegylated interferon and ribavirin treatment is available to those who satisfy all the following S100 criteria:

- **Blood tests** - you must have chronic hepatitis C (repeated anti-HCV positive and /or PCR positive).
- **Contraception** - female patients of child-bearing age are not pregnant, not breast-feeding, and both the patient and his/her partner are using effective forms of contraception (one for each partner). Female partners of male patients are not pregnant.
- **Age** - you must be 18 years or older.
- **Treatment history** - you must not have had prior interferon or pegylated interferon treatment. It should be noted that you are eligible for treatment even if you use drugs illicitly.

### CRITERIA FOR PATIENTS PREVIOUSLY TREATED AND WHO HAVE RELAPSED

Since 1 December 2008 retreatment for hepatitis C has been approved for people who have previously failed to clear the virus through treatment, or have relapsed. The same criteria as above applies to retreatment. If you have previously undergone treatment for hepatitis C and the virus is still present, talk to your doctor about a referral to a liver clinic to discuss your retreatment options. Re-treatment is available for up to 48 weeks.

### DURATION AND GENOTYPES

If you have genotype 2 or 3 without cirrhosis or bridging fibrosis, the treatment is limited to 24 weeks (6 months). If you have genotype 1, 4, 5 or 6 or genotype 2 or 3 with cirrhosis or bridging fibrosis, the treatment course is 48 weeks (12 months).

### CUT OUT POINT FOR 48 WEEK TREATMENT PROGRAM

If you have genotype 1, 4, 5 or 6 and are undergoing the 48 week treatment program, for the last time there is a cutoff point at week 12. You will have a PCR test in week 12. The baseline and 12 week tests must be performed at the same laboratory using the same type of test kit. Treatment will continue if the PCR test shows;

- The hepatitis C virus has become undetectable in your blood (neg PCR) at week 12.

Or if the PCR is positive:

- The viral load has decreased by at least a 2 log drop.

If you have genotype 2 or 3 the PCR test is unnecessary because you have a higher likelihood of early viral response.

## CAUTIONS

If you have a past history of clinical depression, a psychologist or psychiatrist should assess you before and during treatment.

Throughout treatment blood counts will be monitored very closely, as a drop in white and red cells and platelets can be a problem.

Also insomnia and increased irritability has been noted in people undergoing treatment.

**Pregnancy** in women undergoing treatment or in the female partners of men undergoing treatment **must be avoided** during therapy and for 6 months after treatment ends. This avoids potential damage to a developing foetus.

### Categorising hepatitis C

When scientists and doctors describe the inherited characteristics of the hepatitis C virus (HCV) they arrange them according to 4 categories or classes: firstly, genotype; secondly, subtype; thirdly, isolate and fourthly, variant.

**Hepatitis C genotype:** Some 6 major strains or types of HCV (genotypes 1-6) have been found worldwide. Each genotype is distinctive, it is put together in the same way. For example, viruses in genotype 1 will pass on their specific characteristics to new copies of the virus when they replicate.

**Hepatitis C subtypes:** For each genotype there are a number of subtypes each known by a letter of the alphabet. So you get type 1a, 1b, type 2a, 2b and so on.

**Hepatitis C isolate:** The isolate describes the virus found in a particular community (like Perth), and shows the subtle differences between HCV subtypes.

**Hepatitis C variant:** The variant describes the virus population in each infected person. As the virus makes copies of itself mistakes occur causing alterations and variations in the new viruses. Variants are also called mutants or quasispecies. You will have variants peculiar to you alone. There is evidence that infected individuals with a high number of variants are less likely to respond to antiviral treatment. Scientists are continuing to study HCV variants to find out their role in the progression of liver disease, and implications for treatment.

Quasispecies could also be responsible for the ineffectiveness of isolate-specific vaccines and make it difficult to design antiviral drugs.

Genotype does not predict the course of the disease or whether the subject is more likely to develop scarring. People with genotype 2 or 3 are more likely to respond to treatment with pegylated interferon and ribavirin with sustained response rates, (i.e. PCR negative 6 months after completion of therapy) of 80% with 6 months treatment. With genotypes 1 and 4, people are less likely to attain a sustained response. The sustained response rate for pegylated interferon and ribavirin is about 50% with 12 months of treatment for those genotypes.

## WHAT IS THE CHANCE OF PEGYLATED INTERFERON AND RIBAVIRIN THERAPY CURING YOUR HEP C?

It is important to remember that most people with chronic (long-term) hepatitis C will only have mild to moderate disease. If your ALT (a liver function test) is normal, or near normal, then treatment has not in the past been recommended. The approach has been to treat those likely to have progressive liver disease. However, recent results from the CHARIOT study indicate that treating before scarring occurs significantly improves the success rate (reported at EASL, May 2009).

Pegylated interferon and ribavirin gives a better outcome for persons infected with hepatitis C than previous treatments. In cases where the treatment does not eradicate the virus, it can still provide health benefits such as slowing down the inflammatory process, which can slow down the progression of liver disease, and also improve liver function.

Overall, about 60% of those treated with pegylated interferon and ribavirin therapy will have a sustained response. That is, the virus will not be found in the blood 6 months after treatment. This may be increased depending on the strain of hepatitis C that you are infected with. Some strains of the virus have been shown to respond differently to treatment. Genotypes 2 and 3 have been shown

to respond better to treatment. If infected with genotype 2 or 3 you can get away with a 24 week treatment course and have an 80% chance of achieving a sustained response rate. But if you are infected with genotype 1, 4, 5 or 6 you will need 48 weeks of treatment with a 50% sustained response rate.

People with a low viral load have a better chance of responding well to therapy. Viral load measures the amount of virus. If you have a high viral load you have lots of copies of the virus.

As the virus replicates it changes. The aim of pegylated interferon therapy is to maintain a constant high level of medication in your blood stream to stop the virus replicating as quickly and thus prevent the development of quasispecies.

Your specialist or GP will monitor your response to treatment with PCR testing, looking for the RNA of the hepatitis C virus in your blood. If you remain PCR negative 6 months after treatment then it is unlikely that damage is ongoing – you will not have active disease. ‘Negative’ means below detectable levels in your blood not that the virus is all gone – as it can still be inactive (dormant) in your liver and bone marrow.

If you live outside the metropolitan area going on treatment usually means a visit to Perth or, in some cases, your nearest regional hospital, for assessment and getting started on treatment. Whilst you are on treatment your local doctor can liaise with medical staff at a Perth teaching hospital (under the statewide GP Hepatitis C Shared Care Program) about monitoring your blood tests etc. Arrangements can be made to transport the antiviral drugs to your local regional hospital for dispensing to you.

A proportion of people may not respond to treatment. This does not mean that all is lost. Some people will respond when they have treatment again. Medical researchers are continuing to look for more effective treatments for hepatitis C.

### **SIDE EFFECTS OF TREATMENT**

All the side effects associated with interferon monotherapy and combination therapy apply to pegylated interferon and ribavirin therapy. Most people who have interferon experience some sort of side effect. Many, though, report that interferon is “not so bad”. You can expect flu-like symptoms in the first couple of weeks. You may also experience fatigue, muscle aches, nausea, loss of appetite, weight loss and diarrhoea. Some people say that they feel unwell and weak from these side effects. Getting as much rest and quality sleep as you can, and eating small, nutritious meals can help. Ask your treating doctor to recommend an analgesic for relief of mild pain and the flu-like symptoms.

Your white cell and red blood cell counts will be monitored as the drugs can make you more prone to infection and cause fatigue.

A small number of people experience serious side effects such as anxiety, depression, irritability, moodiness and other serious mental health problems from interferon. You can have good and bad days or feel bad throughout treatment. If you experience problems like anxiety or depression you should see your doctor as soon as possible, as your treatment dose may need adjusting or you may need medication prescribed to control or reduce the severity of the side effect.

However, the picture of pegylated interferon and ribavirin therapy is different to interferon on its own. Some people feel good at first then worse as treatment progresses. Some report having good and bad days. Others feel bad throughout treatment (as the side effects of pegylated interferon and ribavirin therapy do not necessarily lessen as they may do on interferon alone). Still others may tolerate treatment quite well throughout. Problems with insomnia and increased irritability have also been noted by people undergoing treatment.

The most likely and serious side effect from ribavirin is anaemia, a condition of the blood in which the amount of haemoglobin in your blood falls below normal (haemoglobin transports oxygen from your lungs to the cells of your body). This can leave you pale, breathless on exertion and worn out, and the dose of ribavirin may need to be reduced.

If you have heart disease or kidney disease the anaemia associated with ribavirin can cause serious health problems and you may not be able to receive pegylated interferon and ribavirin therapy (and so pegylated interferon alone may be used).

Ribavirin is also thought to endanger the unborn baby. Ribavirin is potentially toxic to the embryo from either the male or female parent. It may be found in semen and so can potentially cause damage in a woman who is already pregnant. So both women and men must practice effective birth control (that is, the person being treated **AND** their partner) whilst taking ribavirin and for the 6 months following treatment.

The Commonwealth Government has set up a 'Medicines Line' which can advise about potential side effects of medicines. You can call the Medicines Line on 1300 888 763 Monday to Friday, 9.00am to 6.00pm EST. HealthDirect is a 24 hour health advice line and can be called on 1800 022 222 (TTY is 1800 022 226).

#### Side effects of pegylated interferon and ribavirin

Flu like symptoms	Depression
Lethargy	Irritability
Nausea & vomiting	Anger
Weight loss	Psychosis (a severe mental disorder)
Exacerbation of diabetes	Decreased concentration
Introduction of auto immune conditions	Amnesia
Worsening of psoriasis	Sleep disturbances
Cardiac arrhythmias, cardiomyopathy	Cough
Decrease/increase of libido	Sinusitis
Hair loss	Birth defects
Low white cell count	Low red cell count
Low platelet count	

**There is no accurate way to predict who will experience which side effect or how mildly or severely they might be experienced. Therefore it is important to consider which of these side effects may be a problem for you and how planning in advance may reduce their effects.**

## DRINKING ALCOHOL AND TREATMENT

To be eligible for combination antiviral treatment you should limit your alcohol intake to no more than 7 standard drinks per week. (A standard drink of beer or a glass of wine equals 10 grams of alcohol.) **Ideally, it is preferable not to drink alcohol at all if your concern is the health of your liver.** Lifetime consumption of alcohol plays an additive role in progression to cirrhosis and liver cancer.

## TREATMENT AND METHADONE

If you are on a stable dose of methadone or naltrexone and meet the other criteria you can be treated with pegylated interferon and ribavirin antiviral therapy.

## CHINESE HERBAL TREATMENT

CH100 – Liver Tonic – is a Chinese medicine designed for use by practitioners (including GPs, naturopaths and other health professionals) who are not Chinese medical practitioners. Cathay Herbal developed CH100 specifically for treating hepatitis C. An Australian clinical trial at The John Hunter Hospital and at Fremantle Hospital reported that whilst CH100 did not clear the virus, it did improve symptoms and reduce ALT levels. It is said to boost the body's immune system and prevent progression to cirrhosis.

Many of the major herbs in CH100 have been found to be hepatoprotective. Some promote digestion, some strengthen the immune system. The combination of the herbal ingredients of this formula have been found to effectively alleviate symptoms of hepatitis C – things like general malaise, abdominal pain and distension, loss of appetite, nausea and fatigue.

CH100 is taken in tablet form. Side effects are few – usually gastrointestinal (gut) symptoms like abdominal bloating and diarrhoea.

## HAVING A LIVER BIOPSY

A liver biopsy is the removal of a tiny sliver of liver using a needle. This is then examined under a microscope for signs of disease. It is a way to check out the condition of your liver. Hepatitis C is a diffuse disease (the damage tends to be spread or distributed evenly throughout the liver), so a liver biopsy is quite an accurate way to find out how damaged your liver is.

### WHY DO A LIVER BIOPSY?

The liver biopsy requirement was removed from the criteria for treatment on the 1<sup>st</sup> April 2006, and an ultrasound is now performed as part of the pre-treatment assessment. A biopsy may still be necessary in some cases (for example, if cirrhosis or severe fibrosis is suspected). If the doctor recommends a liver biopsy it will be because he/she believes it to be in your best interest. Your doctor will also look for any other diseases that can affect the liver.

### HOW IS IT DONE?

You must give your informed consent before a liver biopsy can be done. The biopsy is done as a day case procedure. To guard against bleeding, blood will be taken to check your platelet count and clotting profile (preferably done within a week of the liver biopsy). You will be told to fast (not eat or drink) before the procedure.

Usually you will have an ultrasound first so that the biopsy spot can be marked up. The doctor will numb your skin between the ribs on your right hand side with an injection of local anaesthetic (this stings!) You will be asked to breathe in a particular way so that the doctor can locate your liver and its depth. Then a small nick is made in your skin to let the biopsy needle through. (The needle is quite fine – about 1.4mm.) The needle is inserted and a specimen of liver – about 1cm long – is obtained. A dressing will be put over the biopsy wound and you will be given instructions about when to take it off. For people with significant liver disease and an increased risk of excessive bleeding following the procedure a transjugular biopsy may be performed.

### WHAT HAPPENS AFTERWARDS?

After a standard liver biopsy, you will be asked to stay in bed and rest for 4 hours to prevent bleeding. You will have to lie either flat or on your right hand side. Nursing staff will check your pulse, blood pressure and the biopsy dressing regularly.

You will be observed closely for another 2 hours before being discharged (but you will be able to get up and move around and eat a light meal). You may feel pain in your shoulder (this is known as referred pain), or discomfort in your abdomen. You will be given medication for pain relief and nausea if you need it.

You should not do any heavy lifting or play contact or collision sports for a period of time following the liver biopsy (check with hospital staff). **Those who have had a transjugular liver biopsy** will be provided with appropriate home care information by hospital staff.

### COMPLICATIONS OF LIVER BIOPSY

As with any invasive medical procedure, liver biopsy carries a degree of risk and, in rare cases, complications can occur (most commonly bleeding). Your medical team will inform you of all risks associated with having a liver biopsy.

**You should contact your doctor or the hospital if you experience severe pain, swelling in your abdomen, if you feel faint or short of breath, or if you notice bleeding from the biopsy wound.**

Someone ***must*** pick you up from the health service (this could be a hospital, outpatients clinic or radiology clinic) to take you home, and you ***must*** have someone stay with you overnight.

# PREVENTION

## HYGIENE AT HOME

The home is a place where family and friends can be accidentally exposed to infections of various kinds including viruses that live in the blood. Household transmission of hepatitis C, though, is considered very low risk. You can prevent the spread of infection in the home by a common-sense approach to hygiene.

**“Hepatitis C is a blood borne virus.  
You can’t get hep C from sharing a cup or anything like that, and hugging is okay.”**

### About your skin

Your skin is the largest organ of your body. It has a number of functions that are crucial to your survival. Importantly, a healthy skin provides a protective barrier against harmful germs (micro-organisms such as bacteria and viruses).

The top layer of your skin is particularly important for protecting you from infections. It is usually dry and waterproof. If your skin is broken, if you get a cut or graze, or a puncture wound beneath your skin, then germs can get through and infect you. Viruses like hepatitis C that live in another person’s infected blood can get into your own blood stream through broken skin, cuts and other wounds.

The hepatitis C virus can also stay alive in very small amounts of blood spilt on surfaces, contaminated wound dressings and personal household items like razors. You may not be able to actually see the blood. You can protect yourself from the virus entering your blood stream by treating ALL blood as potentially infectious, by washing your hands properly and by wearing gloves when you help someone who is bleeding or when you clean up blood spills at home.

### WHEN TO WASH YOUR HANDS

Washing your hands with soap and water will help remove germs from your skin, and is the simplest way to prevent the spread of infection in the home.



#### Remember to wash your hands

- Before handling or eating food.
- After going to the toilet or changing the baby’s nappy.
- After blowing your nose or that of your child.
- After touching your nose, eyes or mouth.
- After cleaning up blood, faeces, vomit or urine.

Even when you wear disposable gloves to clean up body fluids you should wash your hands as soon as possible after taking the gloves off. Apply a moisturising lotion after washing your hands to prevent your skin drying out.



### WASHING YOUR HANDS PROPERLY

- Use a liquid soap (if you have it) and cold or lukewarm running water.
- Lather and rub your hands, wrists and fingernails.
- Rinse soap off with your hands pointing down (so the dirt and germs do not run back up your arms).
- Dry with a clean cloth towel or paper towel.
- Hang up the cloth to dry between uses.
- Hint: If you use a bar of soap make sure that it is not left sitting in water.

### BE BLOOD AWARE

All blood-stained disposable items such as sanitary towels, tampons, dressings, tissues, incontinence pads, gloves and paper towels used in cleaning up blood spills, should be put in a leak-proof plastic bag and tied securely. Put in a second plastic bag, secure and throw out in your regular household rubbish.



### Do not share personal items such as...

- Razors.
- Toothbrushes.
- Grooming items like nail files and nail clippers.
- Enema equipment.




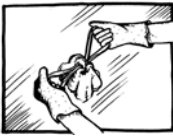



Tip: Have one or two spare (unused) toothbrushes and disposable razors on hand for friends or relatives who stay over.

## CLEANING UP BLOOD SPILLS AT HOME

You should be careful when there is blood around. Any person could have a blood borne virus like hepatitis C. Look after your own cuts and wounds and keep them covered. If you can, clean up your own blood spills and dispose of bloodied materials yourself. By washing all parts of your hands with soap and running water you can prevent the spread of infection to others.

### Cleaning up Blood Spills at Home

- Cover any cuts, chapped skin or open wounds that you have with a waterproof dressing. 
- Avoid contact with blood and other body fluids by putting on disposable latex gloves before giving first aid to another person, or cleaning up blood spills.
- Wipe up blood spills on the floor, furniture etc with paper towels (or tissues or disposable cloth). 
- If there is a possibility of bare skin contact with the contaminated surface, disinfect the area with good quality household bleach (which is a 12.6% sodium hypochlorite solution). Make a solution by diluting the bleach 1 part bleach in 20 parts water. Leave the bleach on for 10-15 minutes if possible, then wipe dry with paper towel. (Mix a fresh solution of bleach each time, as diluted bleach will lose its effectiveness. Stronger solutions do not work any better and can cause damage to surfaces and clothing.) Note, bleach does not kill the hepatitis C virus but is effective against some other blood borne viruses.
- Seal paper towels and disposable gloves inside a plastic bag. Place in a second plastic bag and throw out in your regular household rubbish.  
- Wash your hands with soap under cold, running water. 

**Tip:** Wear disposable gloves when cleaning up blood spills. You can buy these from most supermarkets. If you do not have any gloves at home you can use a plastic shopping bag over your hand instead.

When putting on or taking off gloves do not use your teeth. Pull gloves off so they turn inside out (this keeps any contaminated material inside the gloves).

## WHAT TO DO IF YOU GET A CUT, GRAZE OR PUNCTURE WOUND

It is important to clean the wound properly – no matter how small it is.

### How to Clean a Wound

- If the wound is bleeding, cover it with a clean, dry cloth (or gauze) and apply pressure until bleeding stops.
- To start, wash your hands with soap and running water, and dry them completely using a clean paper towel.
- Use mild soap and lukewarm running water to clean the wound. Try not to let dirt from around the edges of the wound into the centre.
- Gently pat dry the wound with a clean, dry cloth (or uncut gauze if you have it).
- See your doctor if the wound is deep because it could need stitching to help it heal properly.
- Cover all cuts and wounds completely with a waterproof dressing like a Band-Aid.
- Wash your hands thoroughly when you have finished.
- When the wound has dried, and a scab has formed over it, you can leave it open to the air.
- Check that your tetanus vaccination is up-to-date. You can get infected with tetanus if an open wound comes into contact with dirt or rust.
- **Note:** When helping another person who is bleeding, assist that person to cover his/her own wound and apply pressure to stop the bleeding.

## WHAT TO DO IF CONTAMINATED WITH BLOOD AT HOME

If you, a family member or friend is accidentally exposed to blood you should wash the affected area immediately.

- A puncture wound or cut should be washed well with mild soap under running water, dried and covered with a waterproof dressing.
- Broken skin that is contaminated with blood should be washed well with mild soap under running water, dried and covered with a waterproof dressing.
- If blood is splashed into the eye, mouth or nose, then it should be rinsed gently but thoroughly and repeatedly with water.
- Obtain prompt advice from your doctor.

## WHAT ABOUT BLOOD STAINED CLOTHES?



Once you have cleaned up blood spills at home, you should change any blood stained clothes for clean ones.

Pre-soak the bloodied clothes in cold water to reduce staining (and according to the clothes manufacturer's instructions).

Machine wash separately on cold water cycle with laundry detergent.



Hang out in the sun until dry.

**Wear disposable gloves when handling bloodied items. Wash your hands as soon as possible after removing the gloves.**

### DISPOSING OF SHARPS AT HOME OR IF FOUND

Uncapped, used needles and syringes (fits) pose a risk for injury. Used needles should never be recapped, bent or broken. All sharps generated at home, for example, needles and syringes for injecting interferon, insulin or illicit drugs, should be discarded directly into a clearly labelled puncture-resistant container that conforms to Australian standards (these can be purchased at your local pharmacy).

Place sharp items like razor blades and broken glass into a puncture-resistant, leak-proof container so that the sharp points cannot penetrate the walls. The same goes for needles and syringes that you find in and around your neighbourhood. A plastic bottle with a wide neck and secure lid can be used for this purpose. Do not use aluminium cans that can be squashed or glass that can break – all of which people collect for recycling. Make sure that the lid is on properly and put the container in your regular household rubbish bin.

#### Handle sharps carefully...

- Avoid touching the pointy end, pick the needle and syringe up firmly by the barrel (the blunt end).
- Never recap needles.
- Do not remove the needle from the syringe.
- Do not open or put your hand inside the sharps container.
- Use a dustpan and broom to clean up broken glass.

If you are injured with a discarded needle, wash the wound gently with mild soap and running tap water as soon as possible. Cover with a clean dressing. Seek medical advice from your local doctor or hospital emergency department.

### IS IT SAFE TO GIVE MOUTH-TO-MOUTH RESUSCITATION?

Yes. Theoretically, there is a low risk of getting hepatitis C from giving 'the kiss of life'. However, people trained in First Aid should not hesitate to give mouth-to-mouth if it is needed.

Small, single-use plastic masks are available from the National Heart Foundation for Expired Air Resuscitation (mouth-to-mouth). The mask acts as a barrier to prevent any exchange of body fluids between the patient and the person giving First Aid.

Heart Foundation

Ph (08) 9388 3343 (WA only)

1300 36 27 87 (national)

Website [www.heartfoundation.org.au](http://www.heartfoundation.org.au)

## SELECTING A BODY PIERCER OR TATTOOIST

When selecting a body piercer or tattooist, choose an operator who has hygienic work habits that comply with the “Code of Practice for Skin Penetration Procedures”. Ask the operator if he/she uses ‘Standard Precautions’ for infection control. (Standard Precautions mean that the operator treats the blood and other body fluids of all clients as infectious. Applying Standard Precautions is the first line approach to infection control.) Check out the studio, look at how the operator works and ask a few questions. You can take a copy of the checklist that follows with you.

**This is a checklist to help you decide whether you are at risk of being infected with a blood borne virus like hepatitis C. Put a tick  if the answer is “YES” to the question. Put a cross  if the answer is “NO” to a question. A “NO” answer indicates a possible risk to yourself and others, and we recommend you find another studio where they take care of your health and safety.**

<input type="checkbox"/>	Premises are clean and tidy?
<input type="checkbox"/>	Work surfaces are covered with disposable coverings (one for each client)?
<input type="checkbox"/>	There is a ‘sharps safe’ container (a puncture-resistant container) for contaminated wastes in the work area?
<b>Operator</b>	
<input type="checkbox"/>	Wears clean clothes?
<input type="checkbox"/>	Thoroughly washes his/her hands before and after contact with clients (and after any break)?
<input type="checkbox"/>	Wears new disposable gloves throughout the procedure (and puts on new gloves after any break like answering the telephone)?
<input type="checkbox"/>	Uses single-use skin penetrating equipment (including needles)?
<input type="checkbox"/>	Uses a sterile, single-use cartridge model stud gun if piercing your ears with a stud gun?
<input type="checkbox"/>	Uses single-use preparation equipment (including stencils, spatula, and disposable razor)?
<input type="checkbox"/>	Puts pigments and dyes (and lotions, ointments etc) into single-use disposable containers?
<input type="checkbox"/>	Cleans and disinfects your skin before starting?
<input type="checkbox"/>	Can explain how equipment is sterilised and show you a functioning autoclave steriliser on the premises?
<input type="checkbox"/>	Opens autoclave sterilised packages containing instruments onto the work surface in front of you?
<input type="checkbox"/>	Cleans and disinfects the work area between clients (including the electrical handpiece, bench, chairs, instruments and garments)?

**New jewelry should be used but if you are using your own jewelry, take it to the studio the day before to be checked and sterilized. Stud guns are designed for piercing ear lobes only, and should NOT be used for piercing other parts of your body.**

## EATING AND KEEPING WELL

### WHY DIET IS SO IMPORTANT IN MANAGING HEPATITIS C

Hepatitis C is inflammation of your liver caused by infection with the hepatitis C virus. When the hep C virus is not cleared, it can set up a persistent infection and escape destruction by your immune system. Your body's immune response in the infected liver cells can damage the cells of your liver. You may experience fatigue and weakness related to the presence of the virus in your body or related to changes in the function of your liver. Toxic substances may be less quickly cleaned up and storage may be less efficient. You may feel generally unwell, tired and nauseous.

Your liver is part of your digestive system. Some of the many jobs that it does each day are listed below.

#### What Your Liver Does

- Breaks down the foods that you eat into compounds that can be stored in your body, and later changed into glucose (sugar) to give you energy.
- Makes bile to help your body break down and absorb fats from the foods that you eat.
- Stores glycogen (that can be changed into sugar), some vitamins and minerals.
- Breaks down toxic substances or changes them into less harmful substances.
- Makes many of the substances that help your blood clot and stop bleeding.
- Stores and releases iron when you need it.

Diet is very important as your liver processes the foods that you eat, making the products needed by the cells of your body. So it is important to eat the right balance and the right type of macronutrients like proteins, carbohydrates (sugars and starches) and fats, and to avoid chemicals and toxins if you want to remove the burden from your liver and give it time to heal and regenerate. You can get into some good habits to keep your liver healthy and help it do its many jobs.

#### Things You Can Do to Keep Your Liver Healthy

- Get plenty of regular sleep, 6-10 hours a night. Don't let yourself get over-tired.
- Eat regular, well-balanced meals. Several small meals each day are better for you than one large meal. Don't skip meals.
- Do not fast. Fasts such as water fasts and juice fasts can do more harm than good. Your liver needs adequate amounts of nutrients to carry out its normal functions.
- Drink plenty of fresh water (2 litres a day).
- Avoid junk food, as most is high in fat.
- Avoid drinking alcohol.
- Exercise regularly.

## HEALTHY EATING GUIDELINES

### HEALTHY EATING FOR LIFE

The general changes to a more healthy way of eating should be a lifetime commitment. These are something that everyone would be best to do, not only those who have a serious health scare. If you are living with your family or friends, everyone can follow the general guidelines and would be better for it – so there is no need to cook special meals or shop separately. Family and friends do not have to be as strict as you with their dietary fats, nor the simple and refined carbohydrates and specific foods that they avoid.

When you are symptomatic you should follow the guidelines and foods as closely as possible. At other times you can be a little more lenient with yourself.

### GUIDELINES

You need a combination of protein, carbohydrate, fat, vitamins, minerals and fibre in your diet to supply you with energy and keep you healthy. When you get the right type and amounts of nutrients your body will be better equipped to deal with illness and stress.

Hepatitis C can cause you to lose your appetite. This is because your body's ability to make bile (and the flow of bile) has been affected. Poor absorption of fats can make you feel nauseous and cause flatulence, bloating and abdominal discomfort. The diet recommended for you will depend on your individual needs, lifestyle and on the health practitioners you consult. The general guidelines that follow on the next page are a good start.



### Healthy Eating Guidelines

- Eat small, regular meals and snacks, as this puts less strain on your liver and digestive system. Especially avoid large, heavy meals in the evening.  
Tip: If you have difficulty even with the thought of facing food when you first wake up, try starting the day with a glass of water with the juice of half a lemon in it (you can drink this hot or at room temperature). If you feel nauseous, try some ginger or peppermint tea or nibbling a dry, whole meal cracker.
- Eat a diet that has adequate vitamins and minerals (micronutrients). If taking supplements make sure that you do so with the advice of your doctor or qualified naturopath.
- Make sure that you get adequate protein (but no raw fish or meat), as you need it to promote liver tissue repair and to maintain all your bodily functions. Protein also provides agents such as methionine and choline that speed up the removal of fat from your liver or decrease the deposit of fat in your liver. The best sources of protein for you are fish and vegetable sources such as soy, grains, lentils, beans etc. Meat has high levels of saturated fats – even when all the visible fat is trimmed from it.
- Make sure that your diet is high in complex carbohydrates – these restore protective glycogen reserves and meet the energy demands of your disease. Steer clear of simple carbohydrates (sugars) and refined carbohydrates (white flour, white rice etc) as too much of these are more likely to be converted into fats and also flood your body and upset your blood sugar levels.
- Include plenty of fibre (soluble and insoluble) in your diet to encourage elimination of bile acids and toxins that accumulate in your liver and gallbladder, and keep your digestive tract working efficiently.
- Avoid saturated fats (fats that are solid at room temperature such as those in meat, dairy products, coconut and palm kernel); and hydrogenated fats (those naturally liquid oils that are chemically treated to make them solid such as margarine); and oxidised fats (those that have been reheated, overheated or burnt). The unsaturated fatty acids in fish are the sort that you should eat, but still in moderation.
- Tip: Try and avoid using added fats or oils in cooking or spreads. Why put butter or margarine on your bread? You can enhance the flavour with the right choice of fillings. To stop wet filling making the bread soggy, make your sandwiches just before eating. If you want something between the bread and the filling, try alternatives like soy margarine or a light spread of avocado.
- Drink plenty of water – your body needs this to eliminate toxins.  
Tip: Many people forget to drink water. Keep a bottle or jug on your desk at work or school, nearby at home, and in the car. This will act as a reminder and help you keep track of how much water you drink.
- Avoid drinking alcohol. Alcohol is processed by your liver and broken down into less harmful substances. Alcohol can and will aggravate liver problems. Excessive alcohol consumption can worsen the progress of the disease. Ask your doctor if it is all right for you to drink within the recommended safe drinking limit (2 standard drinks a day) However, if you're on antiviral treatment, you should limit your alcohol intake to no more than 7 standard drinks per week.

## HOW TO DO ALL THIS WITHOUT A DEGREE IN NUTRITION OR MATHEMATICS?

You do not need to weigh food and calculate calories and quantities. Nor do you have to try and decide what part of the lean beef is protein versus fat, or what part of an avocado is complex carbohydrate versus fat. Just apply each of the following six principles to the way that you shop, cook and eat. This way you can take control of improving your health through sound nutrition.

<p><b>1. Eat as close to the original source as you can.</b></p>	<p><b>2. Eat a wide variety of foods.</b></p>
<p>Buy whole food as close to the way nature made it as possible. Every time you buy food think, "Can I get closer to the real thing?" e.g. instead of tinned tomatoes, buy fresh tomatoes. Instead of frozen vegetables, buy fresh vegetables. Instead of white flour, buy stone ground whole meal flour.</p>	<p>Be adventurous and expand the range of fruits, vegetables etc that you eat. As much as possible, eat foods that are in season. Remember that wheat and rice are not the only grains. Flour, baker's flour, burghul, couscous &amp; semolina are all wheat products processed in different ways. Alternative grains include rice, oats, barley, millet, triticale, maize, corn &amp; buckwheat.</p>
<p><b>3. Eat in the right balance.</b></p>	<p><b>4. Prepare your food in a more healthy way.</b></p>
<p>This is probably the hardest of the principles to follow. Each day try to eat:</p> <ul style="list-style-type: none"> <li>• 4-5 serves of salad or vegetables.</li> <li>• 2-3 serves of fruit.</li> <li>• 1-2 serves of grains (rice, oats, wheat, barley etc).</li> </ul> <p>1 serve protein (fish, poultry, lean meat, live culture natural yoghurt, eggs, legumes, lentils, soy products, nuts and seeds). For most adults a serve is about 1 cooking measuring cup. What is important is the balance or ratio across the four groups. Think of everything that does not fit into the 4 categories above (except herbs and water) as a luxury (i.e. fats, oils, salt, sugar, dairy etc) and restrict your intake of these.</p>	<p>The way you cook your food can make it healthier. Or the way you don't cook it! Try to eat as much raw food as possible – salads, raw or blanched vegetables, raw nuts, plain fresh fruit etc. Heat, water and air all destroy valuable vitamins and enzymes and, to a lesser degree, the minerals in foods – so do not cut or prepare your food until you are about to cook it. When you cook, choose the better options. E.g. instead of deep-frying try shallow or dry pan-frying or, better still, grilling. Instead of boiling, try shallow poaching or, better still, steaming. Instead of roasting in fat try oil or, better still, dry rack. <u>Tip:</u> In acute stages you may find raw food hard to digest. If so, try blanching or lightly steaming it.</p>
<p><b>5. Choose more nutritious options.</b></p>	<p><b>6. Drink at least 2 litres of water a day.</b></p>
<p>Every time you make a food selection, ask yourself, "Can I change it for something healthier?" E.g. instead of sweet biscuits try plain crackers, or better still fresh fruit. Instead of chips, try pretzels, or better still raw nuts and seeds. Instead of white bread, eat whole meal bread.</p>	<p>If possible, drink pure fresh filtered water or spring water. Alcohol, tea and coffee are diuretics – so rather than helping with your water intake they cause you to urinate (pass water) more.</p>

## 'Good' foods and 'bad' foods

### 'GOOD' FOODS

There are some specific foods that are claimed to have beneficial properties when it comes to liver function and also to general digestive functions. These include pineapple, lemon, grapefruit, pear, grapes, artichoke, shitake and reishi mushrooms, garlic, tomato, carrot, beetroot leaves and root, cucumber, bitter lettuces and leafy greens, chicory, legumes asparagus and green tea. If you want to know more about the biochemical support for these consult your health practitioner.

There is not a lot of research that proves that these foods really help your liver function. Even so, these are all healthy foods to include as part of a varied diet, unless you have a particular sensitivity to them or other health problems. Remember, though, more is not necessarily better. Keep things in moderation!

### 'BAD' FOODS

- These are the things that you should try to avoid:
- Alcohol – it depletes vitamin and mineral stores, decreases immunity, slows metabolism, overloads and is toxic (poisonous) to the liver.
- Caffeine in coffee, tea and chocolate – stimulates the nervous system, increases blood cholesterol and fats, decreases digestive juices and is a diuretic. You can buy decaffeinated tea and coffee; however, these still have high levels of chemicals. You may still have tea, coffee and chocolate in moderation.
- Tip: For healthier alternatives try dandelion tea or coffee, soya coffee, coffees made from barley, rye, chicory or beetroot, and herbal teas. (Do not be fooled by the flavoured teas as these still have a black tea base.)
- Drugs – except those prescribed or OK'd by your doctor. Some prescribed and over-the-counter medications can harm a damaged liver. Many medications can damage the liver when taken in high doses for too long. You should consult your GP, specialist or pharmacist about any medication you currently take or plan to take (as well as any drugs you were prescribed before you found out about your hep C).
- Steroidal substances crop up a lot in food sources, particularly chickens and eggs. Buy organic produce to avoid this problem.
- Some foods should be included in moderation in your diet – these are:
- Foods with a high fat content, particularly saturated fats.
- Sugars, including simple carbohydrates like those found in confectionery (sweets).
- Processed foods, due to the colourings, additives, sugar and fat (plus generally high in salt).
- Commercially dried fruits – as these are high in concentrated sugars and are often coated in oils to make them look more appetizing.

## SHOPPING HELP

To be a smart shopper you have to learn how to read the labels. You will find basically three types of information.

### Firstly, the marketing blurb:

- Includes everything from the product name, visuals and claims.
- Designed to make you buy the product.
- By law it is not allowed to tell lies, but it can be deceptive.
- You could be forgiven in assuming that bread or cereal that is called 'Soy & Linseed' contains just that. Well it does – but not only that!
- Look at the actual ingredients (in the small type), to find the major ingredient.

### Secondly, the ingredients:

- The ingredients are not given by quantity. Ingredients are usually listed in order of greatest quantity to least quantity.
- Most additives are given in numbered codes (colouring, preservatives, gums, emulsifiers, anti-caking agents, humectants, mineral salts, flavour enhancers, bleaching agents, treatments, propellants, thickeners etc). To understand these you can buy a book called the *New Additive Code Breaker* by Lothian or similar (look for the Australian version).
- Watch out for ingredient listings that are not whole foods to start with – like concentrated juice. Something has to be done to the juice in the concentration process, but the manufacturer who buys this as an ingredient only needs to give you its name.
- Look here to find out if what you are buying is organic, biodynamic etc.
- Look here to check fat content.

### Thirdly, nutritional information:

- Typically lists Energy (kJ or cal), Protein, Fat, Carbohydrates (Total and Sugars), Fibre, Sodium and Potassium. Many products will have additional information.
- Values for a typical serve usually given (and a typical serve will be described), plus a standard weight (usually 100g).
- When comparing different types of foods you should put the weight into context. For example, 100g of puffed corn crispbreads would be almost a whole packet, whereas 100g of bread could be a little less than 2 slices. You are unlikely to eat a whole packet of corn crispbreads for lunch, but could eat 2 slices of bread.
- Look here for products that are low in fats. It is also best to choose foods low in sugar and salt. If you do not want to follow the earlier eating ratios over different food groups but prefer to balance your diet using the % energy (kJ or cal) of protein, fat and carbohydrate then you will find the information that you need here.

## SOME TRICKS TO WATCH OUT FOR

Watch out for cereal, muesli, fruit bars and so called 'health' bars, as they often have added fats or oils, plus nuts and seeds (containing fats), dairy products (more fat), coconut (more fat), salts and sugar plus dried fruit (with concentrated sugars and oils). Read the labels and check for key ingredients like fat, sugar, salt and chemicals. Try making your own porridge or muesli.

Don't be tempted by 100% fruit jams and preserves. Read the labels. Look for added ingredients like fruit sugars, fruit syrups and fruit juice concentrate.

Beware of tinned fruits and vegetables. Check out the added amount of sugar and salt. The same goes for tinned and pre-packed legumes and lentils. Buy them dried without additives – it is cheaper too! And have a go at making your own pasta sauces, curry pastes, relishes etc.

## EATING OUT

When eating out, keep in mind the foods that you should be avoiding (fats and sugars), and those that are good for you (fresh vegetables, fruit and vegetable sources of protein like grains, legumes, lentils).

## FAST FOODS

Most fast food tends to be very high in fat and sugar. So eat fast food sparingly – not as part of your everyday diet. Steer clear of the big food chains, as they do not usually vary the food to suit your needs. Try choosing from:

- Sandwiches on whole meal or whole grain bread, no butter, with salad and vegetable fillings. Tuna (in spring water) is also okay but avoid the deli meats. If you want egg make sure it is not mashed up with mayonnaise or butter.
- Pita breads or crisp breads with fills as above.
- Pizzas from small outlets where you can ask them to go easy on the oil, processed meats and add none or only a small amount of cheese.
- Turkish kebabs with less meat and lots of tabouleh.
- Jacket potatoes with bean sauces (avoid cheese, sour cream and meat sauces).
- Tacos with beans and salads (avoid cheese and sour cream).
- Salads (freshly made. Ready made salads are often sprayed to stop oxidation).
- Grilled fish sprinkled with herbs (resist the chips).
- Fresh fruit (again, pre-made fruit salads may be sprayed).

From the table that follows you will be able to add up the fat in fast foods.

There are five main things to look out for when shopping for food:

### Kilojoules

These are listed under energy in the panel. To avoid overeating, try to get your kilojoules from foods that satisfy your appetite. Choose snacks such as this cereal bar, that has 600kJ or less per serve

### Fibre

Wholegrains, fruit and vegetables provide your body with the fibre it needs, but it can sometimes be difficult to make sure you're eating enough. This cereal bar is a good source of fibre at 3g per serve. Adults should aim for 25-30g of fibre daily.

**TICK CEREAL BAR**

NUTRITIONAL INFORMATION			
SERVINGS PER PACKAGE 6			
SERVING SIZE 24g (1 BAR)			
	AVG QTY PER SERVE	% DAILY INTAKE (PER SERVING)	AVG QTY PER 100g
ENERGY	365kJ	4.2%	1520kJ
PROTEIN	1.7g	3.4%	7.0g
FAT - TOTAL	0.8g	0.9%	2.5g
- SATURATED	0.2g	0.8%	0.8g
- TRANS	Less than 0.01g		<0.01g
- POLYUNSATURATED	0.1g		0.4g
- MONOUNSATURATED	0.1g		0.4g
CARBOHYDRATE	17.3g	5.6%	72.1g
- SUGARS	5.8g	6.4%	24.2g
- fructose	1.8g		7.5g
- sucrose	2.2g		9.2g
DIETARY FIBRE - TOTAL	3.0g	10.0%	12.5g
SODIUM	12mg	0.5%	50mg


















Percentage daily intakes are based on an average adult diet of energy. Your daily intakes may be higher or lower depending on your energy needs.

### Saturated fat and trans fat

While fats are an essential part of your diet, too much unhealthy saturated and trans fats should be avoided. This cereal bar is low in saturated fat - it contains less than 1.5g per 100g and is virtually free of trans fat.

### Sodium

Listed as sodium, salt is often used in packaged foods as a flavour enhancer, which means your salt intake can be high without you knowing it. This cereal bar is low in salt - it contains less than 120mg of sodium per 100g.

Fat in Fast Foods		
	Fat content (teaspoons)	Grams
Pizza with the lot (2 slices)		30gms
Home made pizza (2 slices)		15gms
Meat pie (190g)		26gms
French fries (small 100g)		22gms
Oven fries (homestyle brand 100g)		5gms
Wedges (small 100g)		18gms
Fish & chips (1 serve)		40gms
Hamburger with the lot		48gms
Hungry Jacks Whopper with cheese & bacon		46gms
Home made hamburger with salad		14gms
Chicken nuggets (6 pieces)		19gms
Fried chicken (2 pieces)		29gms
Red Rooster Hawaiian pack (1 serve)		51gms
Chicken Treat Chicken'n'Corn (1 serve)		41gms
KFC Dinner box (3 pieces)		57gms
Roast chicken without skin (2 pieces)		10gms
Frozen meals low fat average (e.g. McCain chicken chasseur, lean cuisine beef or lasagne)		8gms

*Reproduced with permission Nutrition and Diet Therapy Department, Sir Charles Gairdner Hospital, Western Australia, July 2001.*

## NATURAL THERAPIES THAT MIGHT BE OF HELP

There is growing scientific evidence to support the benefits of various natural therapies, particularly herbal medicine and nutritional medicine (vitamins, minerals, trace elements, tissue salts, amino acids, glyconutrients, enzymes etc).

A number of the above substances are said to boost the health and function of the liver. These are concentrated therapeutic agents which you should not self prescribe. You should consult a qualified Naturopath, Herbalist or Nutritionist who will know about:

- Correct dosages (to provide therapeutic activity but not be toxic).
- Interactions between individual herbs, nutrients and any other drugs you are taking.
- The specific mix of herbs or nutrients that is right for you (natural therapies are not prescribed on a disease basis, but rather tailored to your individual needs taking into account your full medical history and current symptoms).
- Any contra-indications specific to you.

**Note:** Sales assistants in health food stores are usually just that. Most have no specific training in natural therapies and cannot spend the time required to fully assess your health needs. Just like food, not all natural therapeutic products are equal. You should make sure that the products you purchase are from the best possible sources and manufactured or processed to keep the highest quantity and quality of active constituents, and are in the most bio-available forms.

Things that you can safely self-administer are:

- A good quality multi-vitamin and mineral complex (but do not self-prescribe individual mineral supplements as these all have complex interactions that could put other nutrients out of balance).
- A natural multi-nutrient product such as Spirulina (look for a product that has been cold processed as heat destroys many of the nutrients).
- Herbal teas (fresh or dried) – various teas help with digestion, nausea and sleep. Although teas are in very dilute form, you should still not drink too many cups of any one tea in a day.
- Herbs in cooking (fresh or dried), to add flavour and taste, and for specific health benefits like aiding digestion.

## SPECIFIC DIETS YOU MAY BE WONDERING ABOUT

You may have heard or be wondering about some of the many different types of diets that are promoted. These include diets like: Food Combining Diet, Acid Alkaline Balance Diet and the Blood Type Diet.

Orthodox medicine does not support or promote these, nor is there any strong biochemical support as to why these diets or cleansing products would be of their patients. In themselves, none of these diets would be harmful as long as you also incorporate the specific guidelines for hepatitis C and the health diet guidelines previously outlined. For more information ask a qualified naturopath.

**Caution:** If anyone suggests that you go on a fast - DON'T. No matter whether it is a water or juice fast, or even a reduced food fast, these could do you more harm than good and make you feel worse. Your liver is already under stress. You need adequate nutrition to protect your liver, to help it regenerate and allow it to carry out its normal functions, to support your whole digestive system, and to boost your immune system. High levels of quality micro and macronutrients are essential to achieve this.

In addition to these diets we often see 'liver detox' products advertised. Some of these contain herbs which may be harmful to the liver, especially in people living with hep C.

## QUESTIONS TO ASK YOUR HEALTH PRACTITIONER

It is your body and your health, so ask all the questions you want of the health practitioners you go to (see the table that follows).

If you choose to use natural as well as orthodox medicine, let your doctor know as some herbs and foods can interact with medications prescribed by our doctor. If you have liver disease, you should talk with your medical doctor or specialist before taking nutritional supplements, foods, herbs and other chemicals said to enhance the function of your liver. (This includes products prescribed by a natural therapist as well as products you buy from a health food shop, pharmacy or supermarket). It is best if your natural therapist and medical practitioner can consult directly with each other.

You cannot claim a Medicare rebate for your visits to a natural therapist, unless that therapist is also a registered GP. Some health insurance schemes do cover natural therapies – so if you have private cover, check it out.

**Caution:** If any natural therapist suggests that you stop seeing your medical doctor or specialist, or that you stop or alter your prescribed medicines, then change your therapist. No one, not even yourself, should change your medical treatment without first consulting with your prescribing doctor. Stopping some medicines abruptly can be dangerous.

Questions to Ask Your Health Practitioner			
<input type="checkbox"/>	What are your qualifications?	<input type="checkbox"/>	What experience do you have treating people with hepatitis C?
<input type="checkbox"/>	Are you a member of a recognized association?	<input type="checkbox"/>	What are the aims of the therapy you are recommending?
<input type="checkbox"/>	How long have you been practicing?	<input type="checkbox"/>	How will you measure or judge the outcomes of this therapy?
<input type="checkbox"/>	How will you assess my health needs?	<input type="checkbox"/>	What are the side effects?
<input type="checkbox"/>	Is the treatment dangerous in any way?	<input type="checkbox"/>	How much will it cost me?
<input type="checkbox"/>	What payment options do you offer?		

## GLOSSARY

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**Acute:** an infection lasting less than six months. The body can sometimes rid itself of a hepatitis virus without medical intervention. If this has not occurred by six months, the infection is classed as “chronic”.

**Adefovir dipivoxil:** an antiviral medication used in the treatment of chronic hepatitis B infection.

**ALT:** Alanine aminotransferase. An enzyme released into the blood stream by liver cells during hepatitis. Used in conjunction with other tests as a measure, or indicator, of liver health.

**Alternative medicine:** practices not generally recognised by the mainstream medical sector. These include chiropractic, naturopathy, acupuncture, Chinese medicine and homeopathy.

**Antibodies:** proteins produced by the immune system to tag and neutralise specific viruses, bacteria or other antigens.

**Antigen:** foreign substances, including viruses and bacteria, capable of causing disease.

**Anti-HCV:** antibodies produced by the body to attack the hepatitis C virus.

**AST:** Aspartate aminotransferase. Levels of this enzyme in the blood stream rise during hepatitis. This test is often used in conjunction with the ALT test to monitor liver health.

**Biopsy:** the removal of a tiny piece of tissue for microscopic examination. Liver biopsies are used to determine the amount of liver damage present.

**Chronic:** an infection lasting longer than six months. If the body has been unable to clear the virus after six months, it is likely to be present life-long.

**Cirrhosis:** scarring and inflammation of the liver to the point where blood flow is restricted and liver function is therefore reduced.

**Clear (the hepatitis virus):** viral levels in the blood are at levels so low, they are undetectable in tests.

**Combination therapy:** the simultaneous use of weekly pegylated interferon injections and daily ribavirin capsules or tablets for treatment of hepatitis C.

**Complementary medicine:** non-invasive, non-pharmaceutical therapy techniques usually used in conjunction with medical treatments. These may include massage, acupuncture and herbal remedies.

**Contra-indications:** factors which might make a particular treatment ineffective or dangerous. These could include alcoholism, asthma, depression, pregnancy or serious injury.

**Conventional medicine:** the health care practiced and endorsed by mainstream medical staff such as GP’s, nurses and specialist doctors.

**Disclosure:** the act of releasing information which might ordinarily be kept guarded. For the purposes of HepatitisWA, this usually refers to a person telling others that he/she is hepatitis B/C positive. It is not a legal requirement, except for specific circumstances, for anyone to know the hepatitis status of another.

**Entecavir:** an antiviral medication used in the treatment of chronic hepatitis B infection.

**Fibrosis:** the formation of scar-like (fibrous) tissue. This can occur anywhere in the body, however in the case of hepatitis, “fibrosis” occurs in the liver.

**Fibrosis stage:** a system used to categorise the extent of fibrosis within the liver.

**Fitpack<sup>®</sup>:** a pre-packaged, black plastic container housing five sterile needles (fits). Once used, the fits can be put back into the Fitpack<sup>®</sup> for safe disposal. Fitpack Plus<sup>®</sup> contains three fits, as well as water, a spoon and sterile swabs. These can be purchased from some pharmacies or Needle and Syringe Programs. Phone HepatitisWA for more details.

**Genotype:** the class or strain of the virus. Each genotype is similar enough to belong to the same viral family, however there are slight genetic differences which may cause alternate immune system responses or treatment outcomes.

**HBcAb or Anti-HBc:** hepatitis B core antibodies. HBcAb are produced in response to the core antigen and are detectable in blood tests. Only people who have been infected with HBV will produce these antibodies. HBcAb are the first antibodies developed after infection with hepatitis B.

**HBcAg:** hepatitis B core antigen is found only in the liver and is not detected in a blood test. However, detectable antibodies will be produced against the antigen. Only people who have been infected with hepatitis B will produce the antibodies to the core antigen.

**HBeAb:** hepatitis B “e” antibody. HBeAb indicates that the virus is less active which usually means less liver damage.

**HBeAg:** hepatitis B “e” antigen. The second antigen to appear after infection, it indicates that the virus is actively replicating (reproducing) in the liver.

**HBsAb:** hepatitis B surface antibody. The last antibody to appear in hepatitis B infection, HBsAb indicates immunity. Immunity may occur either through vaccination or through having had the virus and naturally cleared it. In both cases HBsAb will be detectable in the blood.

**HBsAg:** hepatitis B surface antigen. The first antigen to appear after infection with hepatitis B. This indicates current infection.

**HBV:** hepatitis B virus.

**HCV:** hepatitis C virus.

**Hepatitis:** inflammation of the liver usually associated with liver cell injury.

**Interferon:** a natural protein in the body’s immune system which stimulates the growth of some disease-fighting cells. By giving hepatitis B or C positive patients extra interferon during treatment, their own immune response to the presence of the virus is effectively boosted.

**Lamivudine:** an antiviral medication used in the treatment of chronic hepatitis B infection. Also used in the treatment of HIV.

**LFTs (Liver Function Tests):** tests performed to monitor liver health. These tests include the ALT and AST tests.

**PCR (Polymerase Chain Reaction):** a test which can be used to detect the genetic material, DNA or RNA, of hepatitis B and C. It can also be used to determine viral load and genotype.

**Pegylated:** the interferon is attached to molecules of polyethylene glycol (PEG), enabling the drug to last longer in the human body.

**Ribavirin:** an oral antiviral medication used as part of combination therapy for hepatitis C.

**Sero-conversion:** literally “blood change”. The point at which there are enough antibodies in the blood stream to be detectable by blood test.

**Side Effects:** unwanted effects of a treatment or medication.

**SVR:** sustained viral response (to antiviral treatment).

**Symptoms:** changes in the body or its functioning indicating infection.

**Tenofovir:** antiviral medication used in the treatment of chronic hepatitis B infection. Also used in the treatment of HIV.

**Therapeutic:** treatment used to assist in clearing infection and /or healing the body.

**Transmission:** passage or transfer of virus from one person to another causing infection.

**Ultrasound:** a medical imaging technique which uses high frequency sound waves to create pictures of internal tissues and organs.

**Viral levels / viral load:** the amount of virus present in the positive person’s bloodstream, measured by a PCR quantitative test.

**Virus:** a microscopic organism that invades body cells and may cause illness. Viruses take over the host cells in order to expand in numbers, as they do not have the machinery to reproduce independently.

**Window period:** the time between the point of infection and the ability for tests to show a positive result.

# CONTACTS

## COUNSELLING, SUPPORT & INFORMATION

Cultural Diversity Unit  
(Health Department of WA)  
Ph (08) 9222 4222 – ask for CDU  
*For printed translated information.*

### **Derbarl Yerrigan Health Service**

156 Wittenoom St, East Perth  
Ph (08) 9421 3888  
*Medical, dental & community care. Emergency relief & shelter.*

### **Haemophilia Foundation of WA**

2 Delhi Street, West Perth  
Ph (08) 9420 7294  
*Self-help group supporting people with haemophilia & related bleeding disorders.*

### **Health Department of WA**

189 Royal St, East Perth  
Ph (08) 9222 4222  
Hep C Duty Officer: 9388 4999  
*Education resources & information for people with hep C related concerns.*

### **HepatitisWA (Inc)**

187 Beaufort St, Northbridge  
Ph (08) 9328 8538  
1800 800 070 (Freecall country)  
Email: [info@hepatitiswa.com.au](mailto:info@hepatitiswa.com.au)  
Web: [www.hepatitiswa.com.au](http://www.hepatitiswa.com.au)  
*Telephone information & support for people living with hepatitis, their partners, family & friends. One-to-one counselling by appointment. Hepatitis testing and immunisation (hep A&B) also available by appointment.*

### **Magenta/Sex Workers Outreach Project WA (SWOPWA)**

81 Brisbane St, Northbridge  
Ph (08) 9328 1387  
*Support, information, education & referral service for sex workers & their clients. Health clinic.*

### **Red Cross Blood Transfusion Service**

290 Wellington St, Perth  
Ph (08) 9325 3333 (Perth)  
**Albany** Regional 9841 4920  
**Bunbury** Regional 9722 4900  
**Geraldton** Regional 9956 2350  
**Kalgoorlie** Regional 9080 5869  
**Broome** Regional 9194 2280  
*Counselling to current donors who present hepatitis C positive during screening.*

### **SECCA (Sexuality, Education, Counselling & Consultancy Agency)**

2 Dehli St, West Perth  
Ph (08) 9420 7226  
*For people living with disabilities and their carers.*

### **Step 1 Street Work Program (Anglicare)**

23 Adelaide Terrace, Perth  
Ph (08) 9325 7033  
Mobile Youth Workers 0418 942 475  
Email: [step1@anglicarewa.org](mailto:step1@anglicarewa.org)  
*Information, support, referral & advocacy to homeless & 'street present' young people in Perth inner city. Ask for someone from 'Step 1' or 'on street'*

### **Uniting Care West**

Creditcare: *financial counselling and emergency relief.*  
Ph (08) 9220 1288  
Homeless Accom & Support Services: *integrated services for homeless or those at risk of homelessness, including Tranby Drop-in Centre; tenancy support; advocacy & referral; supported accommodation.*  
Ph (08) 9220 1288  
Trinity Learning Centre: *educational & learning options for pregnant and parenting young women 14-19years. Free onsite crèche services.*  
Ph 1300 663 298  
True Colours: *regional support for young people with a diverse sexuality and gender.*  
Ph 1300 663 298 or 0409 373 922

### **Vietnamese Telephone Information Line**

Ph 1800 011 046 (Australia-wide)  
*Vietnamese-specific recorded information (non-interactive).*

### **WA AIDS Council**

664 Murray St, West Perth  
Ph (08) 9482 0044  
Van: 0417 093 537  
Email: [waac@waacids.com](mailto:waac@waacids.com)  
*HIV/AIDS information & counselling. Mobile needle exchange van & safer sex products.*

**TESTING & COUNSELLING****B2 Sexual Health Service**

Fremantle Hospital B2 Clinic  
B Block, Alma Street, Fremantle  
Ph (08) 9431 2149

*Comprehensive sexual health care, HIV and hepatitis testing (by appointment – self-referral or doctor's referral).*

**Centre for Women's Health**

King Edward Memorial Hospital  
374 Bagot Rd, Subiaco  
Ph (08) 9340 2222

*HIV, Hep B & C testing & counseling for pregnant women (with doctor's referral).*

**Next Step Drug & Alcohol Services**

32 Moore St, **East Perth**  
Ph (08) 9219 1919  
22 Queen's St, **Fremantle**  
Ph (08) 9430 5966  
26 Dugdale Rd, **Warwick**  
Ph (08) 9246 6767

*Counselling & testing for blood borne viruses, methadone & naltrexone programs, & psychiatric services.*

**Sexual Health Clinic, Royal Perth Hospital**

Ainslie House  
48 Murray St, Perth  
Ph (08) 9224 2178

*Free confidential advice on sexual health, STDs & blood borne viruses. Counselling, testing, vaccinations (hepatitis A & B) if requested.*

**Family Planning WA (FPWA)**

70 Roe St, Northbridge  
Ph (08) 9227 6178 (Perth sexual health hotline)  
1800 198 205 (Freecall country)  
Email: [info@fpwa.org.au](mailto:info@fpwa.org.au)

Web: <http://www.fpwa.org.au>  
Hep C counseling, information & testing for clients. Specialists in sexual health for men & women. Also telephone information service.

**Fremantle Hepatitis Services**

*Fremantle Hospital, Alma St, Fremantle*  
Ph (08) 9431 2912

*Hep B & C education, testing, counselling & treatment.*

**Quarry Health Centre**

Rear 7 Quarry St, Fremantle  
Ph (08) 9430 4544

*Youth friendly doctors, health service for young people under 25 years.*

**ALCOHOL & DRUG SERVICES****Alcohol & Drug Information Service (ADIS)**

7 Field St, Mt Lawley  
Ph (08) 9442 5000  
1800 198 924 (Freecall country)

*Confidential 24 hour counseling & information about alcohol & other drugs.*

**Next Step Drug & Alcohol Services**

32 Moore St, **East Perth**  
Ph (08) 9219 1919  
22 Queen's St, **Fremantle**  
Ph (08) 9430 5966  
Suite 10, 2232 Albany Hwy, **Gosnells**  
Ph (08) 9394 0250  
22 Tuckey St, **Mandurah**  
Ph (08) 9581 4010  
14 Sayer St, **Midland**  
(08) 9274 7055  
7 Field St, **Mt Lawley**  
Ph (08) 9370 0333  
318 Fitzgerald St, **Northbridge**  
Ph (08) 9328 9200  
Unit 3, 3 Goddard St, **Rockingham**  
Ph (08) 9529 2500  
26 Dugdale St, **Warwick**  
Ph (08) 9246 6767

*Assessment of people with alcohol & other drug use issues. HIV, hep B & hep C counseling & testing.*

**Cyrenian House**

318 Fitzgerald, Perth  
Ph (08) 9328 9200  
Email:

[enquiry@cyrenianhouse.com](mailto:enquiry@cyrenianhouse.com)

**Drug & Alcohol Rehabilitation Service**

7 Field Street, Mt Lawley  
Ph (08) 9370 0333

*Drug & alcohol treatment, & clinical training.*

**Holyoake (The Australian Institute on Alcohol & Addictions)**

PO Box 604, **Victoria Park**  
Ph (08) 9416 4444  
Men's Residence  
14 Sayer St, **Midland**  
Ph (08) 9274 7055

Email: [reception@holyoake.org.au](mailto:reception@holyoake.org.au)

Web: [www.holyoake.org.au](http://www.holyoake.org.au)

*Drug & alcohol treatment.*

**AADS (Aboriginal Alcohol and Drug Service)**

211 Royal St, East Perth  
Ph (08) 9221 1411

*Counselling & referral service for Aboriginal people with alcohol & other drug related concerns. By appointment only.*

**Palmerston Association**

U3/145 Proudlove Parade, **Albany**  
 Ph (08) 9842 8008  
 Unit 7, 39 Strickland St, **Denmark**  
 Ph (08) 9848 1491  
 Floor 3/22 Queen St, **Fremantle**  
 Ph (08) 9335 8156  
 4 Cliffs St, **Katanning**  
 Ph (08) 9821 8306  
 22 A & B Tuckey St, **Mandurah**  
 Ph (08) 9581 4010  
 54 Langton Rd, **Mt Barker**  
 Ph (08) 9851 1971  
 134 Palmerston St, **Northbridge**  
 Ph (08) 9328 7355  
*Residential & outpatient services for illicit drug users & families.*

**PEPISU (Pregnancy, early parenting & illicit substance use project)**

Perth Women's Centre  
 122 Aberdeen St, Northbridge  
 Ph (08) 9227 9032  
 1800 246 655 (Freecall)  
 Email: [pepisu@inet.net.au](mailto:pepisu@inet.net.au)  
*Support, information, treatment & referrals for women who use while pregnant, or use & have young kids. Closed Friday.*

**Perth Women's Centre**

122 Aberdeen St, Northbridge  
 Ph (08) 9227 9032  
 1800 246 655 (Freecall)  
*Information & counseling for women & significant others with drug & alcohol problems.*

**WA AIDS Council**

Van mobile: 0417 093 537  
 Ph (08) 9482 0000  
 AIDSline (08) 9482 0044  
*HIV/AIDS information & counseling. Mobile needle exchange & safer sex products.*

**WASUA (Western Australian Substance Users' Assoc. Inc)**

519 Murray Street, on the corner of Elder Street  
 Ph (08) 9321 2877 (Perth)  
 Ph (08) 9791 6699 (Bunbury)  
 Email: [info@wasua.com.au](mailto:info@wasua.com.au)  
*Needle & syringe exchange program, treatment & referral service. Peer education, information on safer drug use & safer sex. Hepatitis B immunisation clinic.*

**DAYS (Drug & Alcohol Youth Service)**

Hill Street Center  
 129 Hill St, East Perth  
 Ph: (08) 9222 6363 (general enquiries)  
 Ph: 1300 651 329 (referrals)  
*For young people under 18 years experiencing difficulties related to their drug & alcohol use.*

**LEGAL SERVICES****Equal Opportunity Commission**

2<sup>nd</sup> Floor, Westralia Square  
 141 St Georges Tce, Perth  
 Ph (08) 9216 3900  
 1800 198 149 (Freecall)  
 Web: [www.equalopportunity.wa.gov.au](http://www.equalopportunity.wa.gov.au)  
*Information about impairment discrimination in Western Australia.*

**Sussex Street Community Legal Service**

29 Sussex St, Victoria Park  
 Ph (08) 6253 9500 (Perth callers)  
 1800 642 791 (Freecall country)  
 (08) 9470 2831 (TTY callers)  
*Confidential legal advice about disability discrimination – by appointment only.*

**Youth Legal Service**

138 Murray Street, Perth  
 Ph (08) 9202 1688  
 1800 199 006 (Freecall country)  
*Community legal service offering assistance to young people, their families & those who work with young people.*

## **TRAVELLING INTERSTATE**

### **ACT Hepatitis Resource Centre**

Ph (02) 6282 2611  
1800 803 990 (Freecall within ACT & NSW outside metro area)  
To make a confidential appointment:  
1300 301 383  
Email: [business@hepatitisresourcecentre.com.au](mailto:business@hepatitisresourcecentre.com.au)  
[www.hepatitisresourcecentre.com.au](http://www.hepatitisresourcecentre.com.au)

### **Hepatitis NSW**

Ph (02) 9332 1853 or 9332 1599  
1800 803 990 (Freecall within ACT & NSW outside metro area)  
Email: [hccnsw@hepatitisc.org.au](mailto:hccnsw@hepatitisc.org.au)  
[www.hepatitisc.org.au](http://www.hepatitisc.org.au)

### **Hepatitis Council of Queensland**

Ph (07) 3236 0610  
1800 648 491 (Freecall within Qld outside metro area)  
Email: [reception@hepqld.asn.au](mailto:reception@hepqld.asn.au)  
[www.hepqld.asn.au](http://www.hepqld.asn.au)

### **Hepatitis C Council of South Australia**

Ph (08) 8362 8443  
1300 437 222 (Freecall within SA outside metro area)  
Email: [admin@hepcouncilsa.asn.au](mailto:admin@hepcouncilsa.asn.au)  
[www.hepcouncilsa.asn.au](http://www.hepcouncilsa.asn.au)

### **Tasmanian Council on AIDS, Hepatitis and Related Diseases**

Ph (03) 6234 1242  
1800 005 900 (Freecall within Tasmania outside metro area)  
Email: [mail@tascahrd.org.au](mailto:mail@tascahrd.org.au)  
[www.tascahrd.org.au](http://www.tascahrd.org.au)

### **Hepatitis C Victoria**

Ph (03) 9380 4644  
1800 703 003 (Freecall within Victoria outside metro area)  
1800 456 007 (Freecall Vietnamese telephone information line – Victoria only)  
Email: [info@hepcvic.org.au](mailto:info@hepcvic.org.au)  
[www.hepcvic.org.au](http://www.hepcvic.org.au)

### **Northern Territory AIDS & Hepatitis Council**

Ph (08) 8944 7777  
Email: [info@ntahc.org.au](mailto:info@ntahc.org.au)  
[www.ntahc.org.au](http://www.ntahc.org.au)

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HepatitisWA (Inc) 187 Beaufort Street Northbridge WA 6003

PO Box 8435 Perth Business Centre, WA, 6849

☎ (08) 9227 9806 f (08) 9227 6545 **e-mail** [eto@hepatitiswa.com.au](mailto:eto@hepatitiswa.com.au)

**Information** (08) 9328 8538 Metro - 1800 800 070 Country

**Website** [www.hepatitiswa.com.au](http://www.hepatitiswa.com.au)