



# HEPATITIS C, OTHER HEPATITIS VIRUSES AND HIV

- Hepatitis C is one of several hepatitis viruses, named A, B, C, D and E that can affect the liver.
- The viruses are different but share the ability to target the liver and cause similar symptoms in the acute infection.
- Vaccines have been developed to protect against infection with hepatitis A and hepatitis B. Currently there is no vaccine for hepatitis C.
- Infection with two or more blood-borne viruses at the same time is possible, and is known as co-infection.



- The effects of acute viral hepatitis range from no symptoms to severe illness with nausea, pain, abdominal discomfort and jaundice. Such symptoms indicate liver dysfunction.

## SUMMARY OF IMPORTANT POINTS

- Some viral hepatitis infections, such as hepatitis A, clear naturally from the body giving life-long immunity.
- Hepatitis B virus and hepatitis C virus can cause a chronic infection. Approximately 75% of people exposed to hepatitis C develop a chronic infection. With hepatitis B, progression to a chronic infection is partly determined by the person's age at the time of infection. Adults are unlikely to develop a chronic infection, while over 90% of babies develop a chronic infection.



# OTHER FORMS OF VIRAL HEPATITIS

## HEPATITIS A

- Hepatitis A is transmitted through contaminated food and water and from person to person by contaminated faeces (called faecal-oral transmission).
- The time between initial exposure to the hepatitis A virus until symptoms develop is usually 4 weeks, but it can range from 2 to 7 weeks.
- Acute illness can range from no symptoms to liver failure, in rare instances.
- This acute illness usually lasts from 1 to 3 weeks, but it may continue for several weeks or months (prolonged convalescence). Hepatitis A does not become chronic. Many people are not aware they have been infected.
- Complications with hepatitis A can occur for people with hepatitis C, for those over the age of 50 or for those with pre-existing liver damage. *See Co-infection with hepatitis A and/or hepatitis B below.*
- Once a person has been infected with hepatitis A and developed antibodies, they have life-long immunity from infection with this virus.

### Transmission examples:

- food, drink and eating utensils that have been contaminated by a person infected with the virus;
- failure to wash hands properly after handling nappies, used condoms, linen or towels soiled with faecal material;
- oral/anal sex;
- water contaminated by faecal matter; and
- food, particularly shellfish, contaminated by sewage.

### Symptoms of acute infection, if they occur, include:

- aches and pains;
- fever;

- nausea;
- loss of appetite;
- abdominal discomfort;
- dark urine, followed by jaundice; and
- yellowing of the eyes and sometimes the skin.



### To avoid hepatitis A transmission:

- get vaccinated (there is likely to be a cost – contact your local state or territory health department for more information) *See Chapter 3: Reducing Hepatitis C Transmission in the Community;*
- wash hands thoroughly with soap and water:
  - after going to the toilet;
  - before preparing food; and
  - after handling soiled or used objects such as nappies and condoms; and
- avoid sharing eating utensils, cigarettes or drinks with others.

## HEPATITIS B

- Hepatitis B is transmitted through contact with infected blood or body fluids including saliva, semen, vaginal secretions, and breast milk.
- The time between exposure to the hepatitis B virus until symptoms develop is on average 60 to 90 days.
- The acute illness usually lasts from 1 to 3 weeks, but it may also continue for several weeks. Many people, particularly children, do not experience symptoms of infection.
- Liver disease can be more severe for people who also have hepatitis C. *See co-infection with hepatitis B below.*
- Most adults (95%) recover completely from hepatitis B. However, progression to chronic infection is high when transmitted from mother to baby (90%) and intermediate for children aged 1–5 years (20–50%).

### **Transmission examples:**

- sexual activity;
- unsafe injecting practices;
- sharing contaminated objects that pierce the skin, such as needles, tattoo equipment, body-piercing equipment, acupuncture equipment and razor blades;
- sharing razors or toothbrushes; and
- the predominant mode of transmission in the high prevalence regions of the world, is from mother to baby.

### **Symptoms of acute infection, if they occur, include:**

- general aches and pains;
- fever;
- nausea;
- loss of appetite;
- abdominal discomfort;
- dark urine, followed by jaundice; and
- yellowing of the eyes and sometimes the skin.

### **To avoid hepatitis B:**

- get vaccinated;
- practice safer sex;
- avoid sharing injecting equipment (including needles, syringes, water, tourniquets, filters and spoons);
- use new and sterile injecting equipment to ensure that there is no blood contamination during injecting practices (e.g. on hands, tourniquets and surfaces); and
- wear disposable gloves if giving someone First Aid and when cleaning up blood or body fluids.

A vaccine is available for hepatitis B, and immunisation is the most effective way to protect against hepatitis B (contact your local state or territory health department for more information). The hepatitis B vaccine is safe, inexpensive and effective in 95% or more of the population. However, people over 40 years of age and people who inject drugs are less likely to develop an effective immunity. Combination hepatitis A and hepatitis B vaccination is recommended for those at risk of getting both infections: including people who inject drugs and people whose work involves a risk of blood-to-blood contact. *See Chapter 3: Reducing Hepatitis C Transmission in the Community for more details.*

## CHRONIC HEPATITIS B

Around 400 million people are chronically infected with hepatitis B virus, making hepatitis B one of the world's most common infectious diseases. Of these chronically infected carriers, approximately 25% will eventually develop serious liver disease, including cirrhosis and liver cancer. Globally, about 80% of all liver cancer is caused by hepatitis B infection. In Australia, there are no exact records of how many people have hepatitis B but it has been estimated that 0.5% of the population (100,000) is chronically infected with about 50% of these estimated to be migrants from endemic hepatitis B regions such as Asia. Chronic hepatitis B infection is also common in Aboriginal and Torres Strait Islander communities. As shown by studies in the 1990s in rural areas of the Northern Territory, exposure rates to hepatitis B virus approached 50% with chronic infection rates up to 25%. Targeted vaccination for Aboriginal and Torres Strait Islander communities was introduced to try and reduce this disease burden.

In countries with endemic hepatitis B, such as China and in South East Asia, transmission is predominantly from mother to baby. Due to a number of factors, including an immature immune system, the risk of the baby becoming chronically infected is high, greater than 90%. In developed countries, such as Australia where the prevalence of hepatitis B is low, the virus is transmitted mainly by sexual contact and injecting drug use. The risk of the infection becoming chronic if infected as an adult is less than 5%.

People who do not clear the virus can help maintain their health by seeking advice from a liver specialist (hepatologist), a gastroenterologist or an infectious diseases specialist. Reducing or eliminating alcohol and following a balanced

diet helps some people generally feel better, but it is important to emphasise that improvements to diet do not prevent the risk of developing cirrhosis. See *Chapter 5: Living with Hepatitis C for information on diet.*

People who clear the virus and have normal liver function tests do not need any treatment. People with chronic hepatitis B who have no liver damage or no active viral replication may not require treatment. However, if there is liver damage, antiviral medicines such as pegylated interferon or lamivudine/ adefovir/entecavir are often used.

## HEPATITIS D

- Hepatitis D only occurs when hepatitis B is also present. Hepatitis D is a defective virus in that it needs the help of hepatitis B to grow. Thus, it can be prevented by stopping hepatitis B infection through vaccination.
- Hepatitis D can speed up liver disease and cirrhosis caused by hepatitis B.
- Hepatitis D is uncommon in Australia.

## HEPATITIS E

- Hepatitis E is transmitted via water sources contaminated with faeces containing the virus (faecal-oral transmission similar to hepatitis A).
- Symptoms last for 2 to 3 weeks.
- This infection is not associated with chronic liver disease.
- Hepatitis E can be fatal for up to 35% of pregnant women, depending on the stage of pregnancy.
- Hepatitis E is rare in Australia and is seen only occasionally in travellers returning from areas of high hepatitis E prevalence, such as Asia, Africa and the Indian subcontinent.

There have been reports of two other viruses, called hepatitis F and G. Neither of these are true hepatitis viruses. They are not associated with any liver disease and do not exacerbate liver disease caused by other hepatitis viruses.

HEPATITIS	TRANSMISSION	INCUBATION PERIOD	CHRONIC INFECTION	VACCINE
Hepatitis A	Faecal–oral	2–6 weeks	No	Yes
Hepatitis B	Blood and body fluids	4–24 weeks	Yes	Yes
Hepatitis C	Blood-to-blood contact	4–20 weeks	Yes	No
Hepatitis D	Blood and body fluids	2–6 weeks	Yes – when hepatitis B is also present	Yes – Hepatitis B vaccination provides protection
Hepatitis E	Faecal–oral	2–6 weeks	Yes	No

## CO-INFECTION ISSUES

Co-infection occurs when a person is infected with two or more blood-borne viruses. In Australia, among the hepatitis viruses, the most commonly recognised co-infection is hepatitis C together with hepatitis B. It is estimated that 2–5% of people with hepatitis C are co-infected with chronic hepatitis B. Treatment and management issues for a person with a co-infection are complex, with the available research information constantly being updated. Information about management of patients with co-infection is best provided by a liver specialist, a gastroenterologist or an infectious diseases specialist.



## CO-INFECTION WITH HEPATITIS A

In the presence of chronic hepatitis C, hepatitis A can become life-threatening. Hepatitis A virus infection in individuals with chronic hepatitis C infection is associated with more severe disease, liver failure and higher fatality rates than in those infected with hepatitis A alone. If there is no prior evidence of infection with either hepatitis A or B in people with hepatitis C, immunisation against both is strongly recommended. Combination vaccines for hepatitis A and B are available. *See Chapter 3: Reducing Hepatitis C Transmission in the Community.*



## CO-INFECTION WITH HEPATITIS B

Co-infection with hepatitis B virus and hepatitis C virus is not uncommon as both can be acquired from exposure to the blood of an infected person. There is some evidence that the two viruses interact and may interfere with one another because it has been observed that the hepatitis B virus is relatively inactive in many individuals with active hepatitis C infection and vice versa. Nevertheless, individuals co-infected with both viruses do have a faster progression of liver disease and are at a greater risk of developing liver cancer. As described above, hepatitis A and B vaccination should be offered to individuals with chronic hepatitis C. Combination vaccines for hepatitis A and B are available.





## CO-INFECTION WITH HIV

In the late 1990s, a highly effective anti-HIV therapy (known as HAART) transformed HIV/AIDS from a disease that was regarded as nearly always fatal to one that is potentially manageable long-term. With more HIV positive people able to manage their infection, other syndromes such as chronic liver disease due to hepatitis C virus and hepatitis B virus have become a major cause of illness and death. HIV infection alters the course of hepatitis C virus infection, with an increased viral load being produced and more rapid progression of liver disease.

### WHO IS AT RISK FOR HEPATITIS C AND HIV CO-INFECTION?

- People who became infected with HIV through blood-to-blood contact via injecting drug use practices.
- People with haemophilia and HIV who were treated with blood products before 1990.
- Children born to women with co-infection.
- Hepatitis C is not classified as a sexually transmissible infection. However, international reports suggest an increased risk of transmission of hepatitis C between men who have sex with men who are also HIV positive.
- People from culturally and linguistically diverse communities (CALD) since they are often late in presenting for either HIV or hepatitis C diagnosis.

The current number of people in Australia with hepatitis C and HIV co-infection is thought to be low. It is estimated that less than 1% of people with hepatitis C also have HIV. In people who inject or have injected drugs and who are HIV positive, hepatitis C rates are between 50% and 90%. The majority of people with haemophilia who have HIV are also co-infected with hepatitis C.

People with co-infection have a high risk of developing liver disease. Hepatitis C infection is more serious in HIV-infected persons and can lead to rapid liver damage. Since the life span of persons living with HIV has been increased due to better treatment and management, hepatitis C-related liver disease has become a major cause of hospital admissions and deaths among HIV-infected persons.

The United States Public Health Service officially declared hepatitis C as an opportunistic infection in people with HIV/AIDS in August 1999.

In terms of the interaction between these two viruses, more is known about the effect of HIV on hepatitis C than the effect of hepatitis C on HIV.

## THE IMPACT OF HIV ON HEPATITIS C

- The presence of HIV results in an increased amount of hepatitis C virus in the blood (viral load).
- In people with co-infection it appears that the risk of transmission of hepatitis C is increased in the presence of HIV. This increased risk is probably related to the higher level of viraemia and makes both sexual and vertical transmission more likely.
- The presence of HIV also decreases the accuracy of the antibody tests used to diagnose hepatitis C. This suggests that the hepatitis C PCR test should be the test of choice when a person is also infected with HIV. *See Chapter 4: Hepatitis C Testing.*

Co-infection with hepatitis C may also affect the treatment of HIV infection. Some studies have suggested that infection with certain hepatitis C virus genotypes is associated with a more rapid progression to AIDS and/or death. It is important for people with HIV to know whether they are also infected with hepatitis C and, if they are not, to take steps to prevent infection.

- An infectious diseases specialist should be consulted in such cases.

## DEVELOPMENT OF DISEASE IN CO-INFECTED INDIVIDUALS

- Studies have consistently demonstrated that, in people with hepatitis C, those who also have HIV progress significantly faster to severe liver disease (cirrhosis) than those who do not have HIV. Their liver also fails more frequently due to this rapid disease progression.
- These consequences are directly related to the degree of immune damage caused by HIV.

## CO-INFECTION IN PEOPLE WITH HAEMOPHILIA

Our understanding of the consequences of co-infection comes largely from people with haemophilia who also have HIV and hepatitis C. Most of these infections were acquired through the use of infected blood or blood products before the introduction of HIV screening in 1985 and hepatitis C screening in 1990. *See Chapter 3: Reducing Hepatitis C in the Community.*

In Australia, nearly all people with haemophilia who have HIV are co-infected with hepatitis C. The issues of managing co-infection for this group of people are generally the same as for others with co-infection (see above), with the additional considerations:

- people with haemophilia most likely received large quantities of blood products in the course of treatment for haemophilia and were potentially infected with higher viral loads of hepatitis C and possibly with multiple genotypes;
- it is not known whether or in what doses multiple drug combinations are appropriate for people with haemophilia who are co-infected;
- the side effects of some treatments for HIV and hepatitis C are further complicated by haemophilic bleeding.

*See Chapter 6: Treatments for Hepatitis C.*

## COMMONLY ASKED QUESTIONS

 I WAS DIAGNOSED WITH HIV 15 YEARS AGO. I ALSO HAVE HEPATITIS C AND POSSIBLY CONTRACTED IT MORE THAN 15 YEARS AGO. WILL MY HEPATITIS C AFFECT THE PROGRESSION OF MY HIV?

 Research is inconclusive, but liver disease may affect plasma levels of some anti-retroviral drugs. In this situation, people are advised to consult with their infectious diseases specialist.

**Q I HAVE RECENTLY BEEN DIAGNOSED WITH BOTH HEPATITIS C AND HIV, BUT MAY HAVE BEEN POSITIVE WITH BOTH FOR SEVERAL YEARS. DOES HAVING HIV HAVE IMPLICATIONS FOR THE PROGRESSION OF HEPATITIS C?**

**A** Yes. With HIV, the level of hepatitis C in the blood and the rate at which liver damage occurs is often higher. People with co-infection experience a higher risk of toxicity when taking anti-retroviral drugs. You need to consult with your liver specialist.

**Q I HAVE HEPATITIS C AND HEPATITIS B. I THINK THAT I CONTRACTED THESE AT THE SAME TIME WHEN I INJECTED DRUGS IN THE LATE 1980S. WHAT DOES THIS MEAN FOR MY HEALTH?**

**A** It depends on whether your hepatitis B infection is chronic. Consult your GP or an infectious diseases specialist.

**Q I AM TAKING COMPLEMENTARY THERAPIES TO TREAT MILD DEPRESSION THAT MAY BE ASSOCIATED WITH HEPATITIS C. WILL THIS HAVE ANY IMPACT ON MY HIV?**

**A** Complementary therapies may impact on take-up and effectiveness of HIV treatments, particularly Indinivar. Consult a GP or infectious diseases specialist and a complementary therapist about the possible effects of combined treatments.

**Q WILL THE FACT THAT I HAVE BOTH HEPATITIS C AND HIV INCREASE MY CHANCE OF TRANSMITTING EITHER OF THESE VIRUSES?**

**A** Yes. HIV causes an increased amount of hepatitis C virus in the blood, and consequently the blood of people with co-infection is more infectious to others through blood-to-blood contact.

*See Chapter 3: Reducing Hepatitis C Transmission in the Community for details of safer behaviours.*