Nurses and Hepatitis C

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Nurses play an integral role in the management and care of people with, and affected by, hepatitis C. They provide education about: the disease and its prevention; lifestyle and psychosocial factors; testing and diagnosis; support during treatment; resources and referral to support services.

This profession-based booklet is aligned with the *Australasian Hepatology Association's Competency Standards for the Hepatology Nurse* and the *Consensus-based Nursing Guidelines for the Care of Patients with Hepatitis B, Hepatitis C, Advanced Liver Disease and Hepatocellular Carcinoma*.

Introduction

Over the past decade the hepatitis C virus (HCV) has been one of Australia's most commonly notified infectious diseases. By the end of 2010, it was estimated that 297,000 people living in Australia had been exposed to the virus, of whom 221,000 were living with chronic HCV infection.[1] Treatment is available and its efficacy has improved in recent years, but uptake of treatment remains low, at around 3,760 people with hepatitis C being prescribed treatment in 2010. The virus can progress to advanced liver disease and cause long-term liver problems, including cirrhosis and hepatocellular carcinoma. However, there is still widespread misunderstanding about hepatitis C, including how it is transmitted, infectivity, who is at risk, management and prognosis.

The virus

Hepatitis C is a ribonucleic acid (RNA) virus belonging to the flavivirus family.[2] Genetically distinct viral groups have evolved, with nine different genotypes of hepatitis C and approximately 40 different subtypes identified. Many predictive factors are associated with the effectiveness of antiviral treatment. The hepatitis C genotype is the most significant factor.

Natural history

Hepatitis C affects different people in different ways. The vast majority of people with hepatitis C are asymptomatic during the initial (acute) phase of infection. However, for those who are symptomatic, common symptoms include fatigue, nausea, headaches, depression, upper abdominal pain, intolerance to fatty foods and alcohol, and occasionally jaundice. During the acute phase, levels of the virus in the blood rise dramatically until the body's immune response starts producing antibodies.

Approximately 25% of people with acute hepatitis C infection spontaneously clear the virus without treatment, generally within 3 to 6 months. Approximately 75% of people exposed to the hepatitis C virus progress to have chronic hepatitis C infection.

A patient can be considered to have chronic hepatitis C infection if they have documented active infection for more than six months. This means a positive polymerase chain reaction (PCR) test 6 months or more after initial infection.

Risk factors for transmission of hepatitis C

HCV transmission occurs predominantly through blood-to-blood contact.[3] The virus can be spread unknowingly, as many people are not aware they are infected with the virus.

Risk factors associated with hepatitis C:[4]

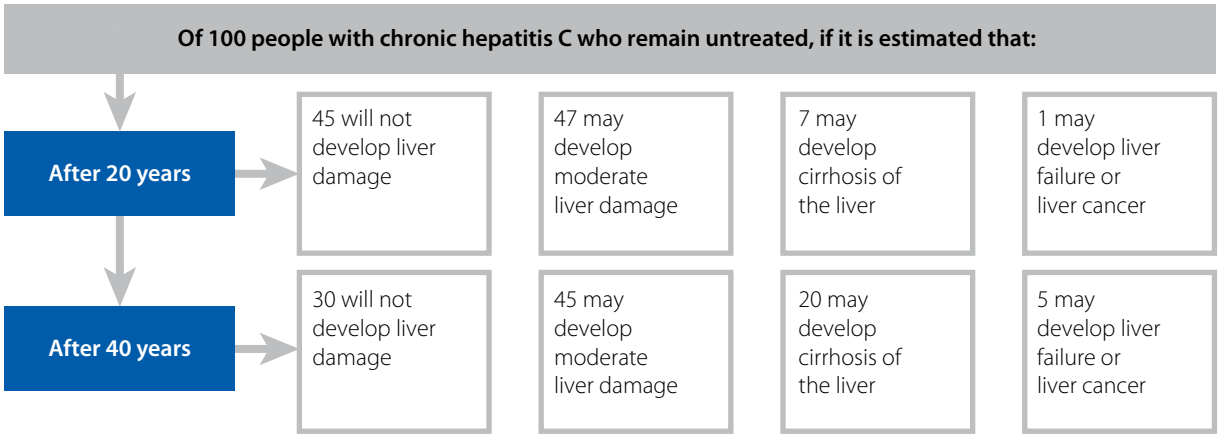
- Injecting drug use (IDU). This includes sharing of needles or syringes and other injecting equipment, such as spoons, filters and tourniquets.
- Transfusion with blood products in Australia prior to 1990.
- Incarceration.
- Tattooing and/or body piercing.
- Born in a high-prevalence country (Asia, Africa, Middle East, Eastern and Southern Europe).

The role of sexual transmission, if any, is still controversial. The current evidence suggests a very low rate of transmission through sexual contact among monogamous heterosexual couples.[5] Transmission may still occur if there is blood-to-blood contact during sexual activity or other high-risk behaviours. There is also evidence that transmission rates may be higher if the patient is coinfected with human immunodeficiency virus (HIV) or other sexually transmissible infections (STIs).[6]

The risk of perinatal transmission of HCV varies from 0 to 11% and averages 5%.[7,8] Coinfection with HIV increases this risk two-fold.[9] To date, the National Health and Medical Research Council (NHMRC) has not recommended changes to obstetric practice during antenatal care, delivery and post-partum care or in management of the neonate. Currently, there is no indication for elective caesarean section in HCV-positive mothers.[10] Despite HCV RNA being detectable in breast milk, breastfeeding has not been directly linked to transmission of hepatitis C.[11] Australian guidelines recommend breastfeeding should not be discouraged unless there are cracked and bleeding nipples. (Refer to the breastfeeding section later in this booklet.)

Figure 1. Outcomes for chronic hepatitis C

This figure shows the different potential outcomes for untreated chronic hepatitis C. It does not show the outcome for individual people. Factors such as alcohol intake, age when hepatitis C was acquired and current level of inflammation may all influence a person's individual outcome.



Adapted from G Dore/Hepatitis NSW (2012)

Household transmission (e.g. via the sharing of razors or toothbrushes) is considered rare. Nevertheless, where the possibility of blood contact exists, these items should not be shared.

It is important to provide adequate information around this to ensure an accurate understanding of transmission and to reduce the possibility of stigma or discrimination within the household.

There is NO risk of viral transmission of hepatitis C through the sharing of cups and plates, hugging and other such personal contact.

Hepatitis C testing

Nurses and other primary health care professionals play an important role in gaining informed consent and providing test results as part of diagnostic testing for hepatitis C. All testing for hepatitis C should be done after a discussion with the patient has led to the provision of informed consent. This may require the engagement of interpreters to ensure patients understand the processes and implications of testing. Provision of thorough test discussion in a primary health care setting is a valuable educational opportunity to help minimise the transmission of hepatitis C in the community. The *National HCV Testing Policy 2012,* available at http://testingportal.ashm.org.au/hcv, provides details of indications for testing and links to related resources, guidelines and policies.

Hepatitis C test results should always be given in person, and it may be necessary to engage an interpreter to ensure that informed consent is obtained before testing and that the results provided after testing are understood by the patient.

Gaining informed consent[12]

This discussion should include information on:

- Risk assessment and the reason for testing;
- How to reduce the risk of becoming infected or infecting others; for example, information about safe injecting when this is relevant;
- Possible need for other blood-borne virus (BBV) and/or STI screening;
- The window period;
- Confidentiality, disclosure and privacy;
- The testing process, including how results are to be provided;
- What happens to test results (i.e. the notification process);
- Seeking informed consent for the test to be conducted;
- Assessment of the person's preparedness to be tested;
- What a negative and positive result means, including basic printed information about hepatitis C; and
- Assessment of support mechanisms while waiting for the test result and/or if the result is positive.

Table 1: How is hepatitis C different from hepatitis A and B?

Virus Type	Profile	Transmission	Vaccination	Treatment	Notifiable
Hep A (HAV)	Usually a mild disease that does not become chronic.	Orally via food and/or water contaminated with faecal particles from an infected person. Occasionally via oral/anal sexual contact. Rarely through blood-to-blood contact.	Yes	No specific treatment.	Yes
Hep B (HBV)	Can be mild, severe, acute or chronic. Less than 5% of adult HBV infections become chronic.	Most cases of chronic HBV infection worldwide occur through mother-to-child transmission. In Australia, most new cases of HBV are acquired through sexual contact with an infected person. Also transmitted through contaminated injecting equipment.	Yes	Antiviral therapy and post-exposure prophylaxis (PEP) are available.	Yes
Hep C (HCV)	Hepatitis C is likely to become a chronic condition in 70 to 80% of infected people, with 10% developing severe liver disease.	Transmitted when infected blood enters the bloodstream of another person (blood-to-blood contact). Unlike hepatitis B, it is very rare for hepatitis C to be transmitted by sexual activity or through mother-to-child transmission. Hepatitis C is not transmitted by food or water contamination.	None for HCV. To prevent the complications of co-infection, people with hepatitis C should be vaccinated against hepatitis A and B.	Antiviral therapy.	Yes

Two other hepatitis viruses, D (or delta) and E, have been isolated, but both are uncommon in Australia.

Conveying a positive test result[13]

If the test result is positive, discussion should include (at appropriate time intervals):

- Immediate needs and support, including written referral information;
- Safe behaviours – education, information and support, including needle and syringe programs if appropriate;
- Information about legal requirements for disclosure and how to disclose to family and friends;
- Help with managing or understanding strong emotions, feelings, reactions and changes;
- Options in drug treatments and clinical management;
- Support for referral to ongoing counselling or therapy if required;
- Support for referral to complementary/alternative management options;
- Information about ways to deal with loss and grief, depression, anger and anxiety;
- Strategies for managing hepatitis C which are flexible and appropriate to the person's needs; and
- Legislative requirements (notification, contact tracing, storage and coding).

If the result is negative, the post-test discussion should reinforce harm-reduction strategies and education about safe injecting behaviours (also refer to Prevention and the Contacts sections of this booklet).

Patients may benefit from the provision of culturally relevant written material and contact details for support services when receiving a positive test result. Refer patients to Hepatitis Australia for the National Infoline (1300 437 222), factsheets and other downloadable resources.

Initial assessment

If someone is at risk of infection from hepatitis C, an HCV antibody test should be performed. A positive antibody test indicates ***exposure*** to the hepatitis C virus, but ***does not prove active infection.*** A HCV RNA test, such as a PCR test demonstrates viraemia and therefore current infection. HCV PCR tests can either be qualitative (HCV detected or not detected) or quantitative (amount of virus circulating in the blood). The presence of a positive antibody test and an elevated ALT (alanine aminotransferase) level, particularly in the setting of risk factors for transmission, is highly suggestive of active HCV infection, but the PCR test must always be used for confirmation of status – see Table 2.

Table 2: Diagnostic tests and their use

Test	Use
HCV antibody (HCV Ab)	If positive, shows evidence of exposure to the virus. Importantly, it does NOT provide immunity against reinfection with the hepatitis C virus. Remains positive for life, even following successful treatment.
HCV qualitative PCR	If detected, shows active or current infection (i.e. viraemia)
ALT	If elevated in the context of HCV Ab, generally shows some level of liver disease from the hepatitis C virus. High levels are associated with disease progression.
HCV genotype	Genotype determines the length and type of treatment.
HCV quantitative PCR (viral load)	Determines level of virus. Does not correlate with liver disease progression risk. It has clinical implications in terms of treatment monitoring and response.
IL28b[14]	In patients with genotype 1 infection, can improve the prediction of treatment outcomes by identifying the patient's individual interferon responsiveness.

Cleared infection

Qualitative HCV RNA testing should be a standard component of the diagnostic work-up of all individuals who are anti-HCV reactive.[15] A qualitative HCV PCR test in these conditions is rebatable under Medicare. People found to be HCV RNA negative but HCV antibody positive should be reassured that while they have been exposed to the hepatitis C virus in the past, they have cleared the infection.

It is recommended that people with normal liver function and no detectable HCV RNA have repeat PCR testing for detection of HCV reinfection on an annual basis if there is ongoing risk behaviour such as injecting drug use. Repeated antibody testing will not reveal a new infection in this group of patients, as their existing HCV antibody will remain positive, despite having cleared infection. Neither does their positive antibody confer any protection towards subsequent infection with hepatitis C. Although there are no specific guidelines for screening in this setting, an annual qualitative PCR test, regardless of ALT level, should be performed to detect any subsequent HCV infection.

Monitoring recommendations

It is recommended that a person with chronic hepatitis C is **reviewed every 6 to 12 months.** The main aims for reviewing a patient in this setting are to:

- Educate against behaviours that risk reinfection and transmission to others;
- Identify and address any modifiable risk factors (e.g. excessive alcohol consumption);
- Identify those most at risk of chronic hepatitis C complications (see below) and who may be appropriate for antiviral therapy;
- Educate about treatment and assess the patient's desire for treatment;
- Ensure referral to a specialist for hepatitis C treatment assessment is made at an appropriate time;
- Ensure monitoring for cirrhosis and advanced liver disease complications (such as liver failure, liver cancer) occurs where appropriate;
- Determine the patient's need for support services;
- Evaluate and facilitate shared-care arrangements, where appropriate.

Identifying those most at risk of disease progression

One of the most important things to establish in monitoring a person with chronic hepatitis C infection is whether or not they are likely to develop any serious liver damage. The following factors must be assessed, and documented, as there is very good evidence that they are associated with higher risk of advanced liver disease or cirrhosis:

- Heavy alcohol intake (more than 4 standard drinks/day);
- Duration of infection (over 20 years since exposure);
- Coinfection with HIV or HBV;
- Stage of fibrosis on FibroScan or biopsy, where performed;
- Obesity/insulin resistance;
- Elevated ALT;
- Male gender.

NB: Most people over 40 years of age with chronic hepatitis C infection in Australia are likely to have been infected for more than 15 or 20 years. They should be more strongly considered for treatment assessment.

A liver biopsy is no longer a specific requirement for treatment but may provide very useful information on severity of inflammation and degree of fibrosis which can guide treatment decisions. Non-invasive methods for staging liver disease include different surrogate marker classification systems using readily available biochemical tests and FibroScan.[16]

FibroScan® is a machine which assesses liver elasticity or stiffness through transient elastography. It is non-invasive and gives a rapid reading. The device can identify cirrhosis with a high degree of accuracy in hepatitis C, but it provides no information on the degree of current inflammation. FibroScan assessment is only available in some tertiary liver centres and specialist referral is required.

Treatment for hepatitis C

Aims of treatment[17]

The aims of antiviral therapy in chronic hepatitis C are to:

- eradicate the infection;
- prevent disease progression;
- improve liver histology;
- improve survival;
- improve symptoms.

Antiviral therapy is available in Australia under section 100 (s100) of the Pharmaceutical Benefits Scheme (PBS) for any person who fulfills all the following criteria:

- 18 years or older;
- documented chronic hepatitis C infection (repeatedly positive HCV Ab and HCV PCR positive);
- no prior treatment with interferon alpha or pegylated interferon alpha;
- compensated liver disease;
- commitment to use effective contraception.

Active injecting drug use (IDU) is no longer an exclusion criterion.

Antiviral treatment for hepatitis C

Current optimal therapy for hepatitis C is pegylated interferon and ribavirin, otherwise known as combination therapy. See Table 3 for dosage information. The combination of pegylated interferon and ribavirin produces an overall sustained virological response (SVR) of between 50% and 80% depending on genotype. SVR is defined as undetectable HCV RNA 6 months post treatment.

Treatment response[19]

Predictors of response to antiviral therapy include:

- Genotype 2 or 3;
- Rapid virological response;
- Low baseline viral load;
- Nil to minimal fibrosis;
- Genotype 1 with IL28B CC genotype;
- Nil to low alcohol intake;
- Low to normal body weight;
- Younger age < 40 years;
- Female gender.

Table 3: Current treatment regimens for hepatitis C[18]

Drug	Genotypes	Body weight	Dose
Ribavirin with peginterferon alfa-2a			
Peginterferon alfa-2a (SC injection)	All	All	180 mcg, once/week
Ribavirin (oral)	1 and 4	<75 kg	400 mg in the morning and 600 mg at night
		≥75 kg	600 mg twice daily
	2 and 3	All	400 mg twice daily
Ribavirin with peginterferon alfa-2b			
Peginterferon alfa-2b (SC injection)	**All**	**All**	**1.5 mcg/kg, once/week**
Ribavirin (oral)	All	<65 kg	400 mg twice daily
		65–85 kg	400 mg in the morning and 600 mg at night
		86–105 kg	600 mg twice daily
		>105 kg	600 mg in the morning and 800 mg at night

By monitoring on-treatment response, people can be counselled as to their likelihood of an SVR – see Table 4.

HCV genotype is the most powerful predictor of response at present. The rapidity of on-treatment response has also emerged as a major factor in predicting SVR.

Those who have a greater than 2 log (100-fold) reduction in viral load by week 12 on treatment, termed an early virological response (EVR), have an approximate 70% chance of SVR. Conversely, those who fail to achieve a greater than 2 log drop in viral load at week 12 should have their treatment ceased as there is a negligible (1–2%) chance of SVR. Additionally, those with genotype 1 who achieve undetectable HCV RNA at week 4 of therapy, termed a rapid virological response (RVR), have an approximate 80–90% chance of viral eradication and may be able to shorten their treatment duration, in consultation with their treating team.[22] Table 5 provides a summary of the treatment response definitions.

Currently a significant effort is being directed at determining whether measurement of early on-treatment virological responses may allow some patients to have their treatment duration shortened and conversely, whether other patients may benefit from a longer duration of therapy.

The benefits of achieving an SVR include a reduced risk of liver disease progression for people at all stages of the disease. In addition, there have been reports of significant regression of fibrosis, even in people with cirrhosis.

Retreatment[23]

As with initial therapy, retreatment should be contemplated in regard to the individual patient with consideration of host and viral factors.

Factors influencing retreatment response include:

- Previous treatment regimen:
  - dose of ribavirin and interferon
  - adverse medications effects leading to dose reductions
  - adherence with medications
  - use of alcohol and illicit drugs;
- Nature of previous response – relapse versus non-response;
- Bridging fibrosis or cirrhosis;
- Hepatitis C genotype;
- Viral load;
- Ethnicity;
- Insulin resistance.

Current research indicates that after completing 48 weeks retreatment, an SVR rate of between 14 and 38% can be expected.

Table 4: HCV genotype and treatment duration and expected outcomes with current s100 treatment (pegylated interferon & ribavirin)[20,21]

Genotype	Duration of treatment	Likely success rate of treatment *
1	48 weeks	40 – 54 %
2	24 weeks	65 – 82 %
3	24 weeks	65 – 82 %
4	48 weeks	43 – 70 %

* These outcomes are based on dual combination therapy only.

Table 5: Treatment response definitions

Response		Definition
RVR		HCV RNA not detected (<50 IU/mL) at week 4
EVR	Complete EVR	HCV RNA detected at week 4 but negative at week 12
	Partial EVR	HCV RNA not detected at weeks 4 and 12 but > 2 log 10 IU/mL from baseline at week 12
Non-EVR		< 2 log 10 IU/mL drop from baseline at week 12
SVR		Undetectable HCV RNA by a sensitive qualitative test six months after the completion of therapy

Side effects of current treatment and contraindications

Management of side effects to combination therapy is a joint effort involving the healthcare team and the person with hepatitis C. Lack of attention to side-effect development and contraindications can have potentially serious outcomes for the person with hepatitis C and reduce his or her chance of achieving an SVR.

Table 6 lists the common and rare adverse effects that patients may experience. It also details the significant contraindications to treatment.

While side effects are common, most people complete the treatment program. The treating specialist may recommend dose reductions at times as a way of managing side effects. The majority of side effects resolve within 4 to 12 weeks of treatment cessation.

Although interferon is contraindicated in people with depression, it may be used safely in patients with controlled depression and anxiety disorders or controlled seizure disorders. If the patient is being treated by a psychiatrist or neurologist, discussion and assessment with the specialist is recommended before the initiation of interferon therapy.

New treatments

Newer therapies known as direct acting antivirals (DAAs) are currently being used in clinical trials and product familiarisation programs throughout Australia. These medications may offer all genotype-1 patients greater opportunities to maximise their treatment outcomes to achieve an SVR. Access to these new drugs should be considered.

There is an expectation that both telaprevir and boceprevir will be approved for use and funded by the Australian Government through the PBS within the next 12 months. Patients with genotype-1 infections and mild or moderate but slowly progressing disease are being monitored and treatment deferred until the more effective therapy combinations become available. Interferon-free treatment regimens are also currently in development.

Table 6. Side effects of current therapy and contraindications to treatment[24]

Interferon		
Common adverse effects	Rare adverse effects	Contraindications to interferon treatment
Malaise, fatigue, low-grade fever	Interstitial lung disease	*Decompensated liver disease
Diarrhoea, anorexia, weight loss	Cardiomyopathy	Severe depression, psychosis
Irritability, forgetfulness	Retinopathy	Uncontrolled diabetes
Depression and anxiety		
Insomnia		Cardiac failure
Neutropenia		Autoimmune disease
Thrombocytopenia		Organ transplantation (other than liver)
Thyroid dysfunction		Pregnancy/ breastfeeding
Decreased sexual libido		
Injection-site erythema		
Hair thinning/loss		
Worsening of psoriasis		
Ribavirin		
Common adverse effects	Rare adverse effects	Contraindications to ribavirin treatment
Rash/pruritus		Renal failure
Upper respiratory tract congestion		Pregnancy/breastfeeding
Haemolytic anaemia (dose dependent)		Inability/unwillingness to practise adequate contraception
Teratogenicity		

*Decompensation usually refers to any of the following: jaundice, ascites/oedema, coagulopathy, variceal bleeding, hepatorenal syndrome.

The majority of people do complete a full course of treatment for hepatitis C once they have begun. Only a small minority actually cease their treatment early because of side effects.

Nursing support and monitoring

Not all people will be appropriate for, or interested in, treatment. For these people, regular clinical monitoring must continue, with a focus on those most at risk of progression.

In any treatment for hepatitis C, effective nursing support can be crucial. Management of side effects, advice and education are key elements of this support and can make a substantial difference in outcomes for a person with hepatitis C.

Given the wide range and potential seriousness of side effects, patients must be closely monitored during therapy. A number of different treatment models are used to provide access to therapy. However, most patients are treated through public hospitals where patients have ready access to experienced nurses who specialise in the treatment and care of patients undergoing antiviral therapy. These nurses are able to advise and support patients through therapy. Patients on therapy are reviewed regularly, with full blood counts and biochemistry evaluated at each visit, according to approved treatment protocols. Dose- modification guidelines are followed when side effects or laboratory changes require intervention.

Pregnancy and hepatitis C[25]

Conception

Hepatitis C does not affect the ova or sperm, therefore regardless of whether the male or female partner (or both) has a diagnosis of chronic hepatitis C, there will be no adverse effect on the baby following conception. This applies only when neither partner is undertaking treatment for hepatitis C.

Pregnancy

The overall risk of hepatitis C foetal transmission is around 5%, where there are detectable levels of the virus present in the blood (PCR positive).

There is an increased risk to the baby during pregnancy if:

- the mother is in the acute stage of hepatitis C infection; or
- the mother is coinfected with HIV and/or hepatitis B.

Current research regarding when transmission from mother to baby may occur is inconclusive. There is evidence that transmission may occur during pregnancy, while other studies indicate this may occur at the time of birth. Generally, all clinical procedures during birth that could result in a break of the baby's skin are avoided, such as forceps, vacuum and scalp electrodes.

The change in a pregnant woman's hormones can affect the liver, particularly if she has cirrhosis. This stage of advanced liver disease may cause decompensation of liver function.

Post-natal

Women may bleed for up to six weeks following birth, and the hepatitis C virus can be detected in this blood. Therefore, all standard precautions should be taken with regard to possible transmission risks as with all potential blood-exposures.

All babies born to hepatitis C positive mothers will test positive to hepatitis C antibodies. This is due to the mother's antibodies crossing the placenta into the baby's bloodstream. The baby will remain antibody positive for approximately 18 months, after which time antibodies are cleared from the body if the baby is not infected and the baby will test negative to the virus. If the baby continues to test positive for the antibodies, specialist advice should be sought.

Breastfeeding

Hepatitis C positive women should be encouraged to breastfeed where possible. Blood may be present if the woman has, for example, cracked nipples, in which case the NHMRC recommends women express and discard their milk during this time and work closely with their midwife or relevant healthcare worker regarding the best approach to managing this situation.

General management

Vaccination

Coinfection with more than one hepatitis virus may be associated with more severe liver disease. Super-infection with hepatitis A infection in a person with chronic hepatitis B or C, or acute hepatitis B in a person with chronic hepatitis C may precipitate the development of acute liver failure. In the long term, people with hepatitis B and C coinfection tend to be more likely to progress to cirrhosis and to develop hepatocellular carcinoma. Under NHMRC immunisation guidelines, hepatitis A and B vaccinations are recommended for people with chronic liver disease.[26]

Hepatitis A and B status should be assessed for all people with chronic hepatitis C infection, and vaccination offered if required.

Lifestyle factors

The possibility of lifestyle modification needs to be discussed with the patient, particularly in relation to alcohol consumption and drug use.

Alcohol intake ideally should be minimal. Excessive alcohol consumption (>40 g/day) is associated with higher risk of disease progression and a poorer response to treatment. Advice about alcohol intake should be tailored to the stage of disease and risk of progression. For example, someone with early liver disease, no risk factors for progression, a consistently normal ALT, and normal clinical examination could be advised to limit alcohol consumption to the level recommended to the general population. In contrast, a person with significant fibrosis will have an increased need for moderation of alcohol intake. People with cirrhosis should certainly be encouraged to avoid drinking alcohol altogether.[27]

Advice to your patient about alcohol intake should be tailored to their stage of disease and risk of disease progression and should be guided by the NHMRC Australian Guidelines to Reduce Health Risks from Drinking Alcohol. [28]

There will be individuals who continue to inject drugs and who require ongoing care and monitoring. They are not only at risk of super-infection with other HCV genotypes, but may be putting others at risk through injecting practices. Nurses play an important role in identifying those most at risk and educating against behaviours that risk reinfection and transmission to others. Nurses may counsel patients about the risks of hepatitis C and the benefits of treatment, assist in preparation for hepatitis C treatment, and discuss other aspects of a person's care, including options such as opiate substitution therapy and chronic disease self-management.

Nutrition

For most people with hepatitis C, dietary recommendations are the same as for the general population.

Overweight or obese patients should be advised of a gradual weight-reduction program, particularly as there is increasing evidence of interaction between hepatitis C, obesity and type 2 diabetes in accelerating the progression to fibrosis. Those who may have fatty liver need to avoid a precipitous fall in weight as this can induce deterioration in liver function.

Fatigue and other symptoms

People with chronic hepatitis C may report fatigue, malaise, headache, rash, and aching muscles and joints. Consideration should be given to specific food and drinks that may be triggering symptoms, as well as work, family or other commitments which may exacerbate stress and fatigue. Patients may benefit from planning rest periods during the day or incorporating light to moderate exercise into their routines to reduce fatigue.

Complementary therapies

There is little evidence that herbal medicines have a profound antiviral effect despite many patients reporting some symptomatic improvement, and the ability of some agents to induce a fall in ALT.

Most herbal medicines are safe but some have reported hepatotoxicity and should be avoided (e.g. heliotropium, Kava kava, kombucha tea, mistletoe and valerian). Close monitoring of liver biochemistry is recommended at the commencement of any herbal medicine. Hepatitis Councils of each state can provide further information regarding complementary therapies.

Hepatitis C and HIV

HCV is found in 10% of people living with HIV, which means hepatitis C is a significant cause of co-morbidity in HIV. On the other hand, only about 1% of people living with hepatitis C have HIV. The viruses are, however, very different. In Australia, the majority of HIV infections are

among men who have sex with men, while the majority of hepatitis C is among current and past injecting drug users. It is important for nurses to understand these differences so they can advise patients appropriately. Patients often confuse the viruses and this can lead to undue concern, risk-taking and uncertainty.

HIV/HCV coinfection is associated with higher HCV viral load and an accelerated rate of liver disease progression.[29] There is no fundamental difference in the management of hepatitis C in the presence of HIV. Patients with HIV/HCV coinfection who have stable CD4 cell counts on antiretroviral therapy with ongoing evidence of active HCV may be considered for combination pegylated interferon and ribavirin. Such management is difficult, particularly in patients already taking multiple medications, as side effects, drug interactions, toxicity and poor tolerability are common.[30]

Prevention

Nurses play an important role in educating people living with hepatitis C about preventing transmission. Prevention messages may include the following:

- People who inject should use sterile needles and syringes and new injecting equipment every time they inject drugs (same applies for snorting devices). They should safely dispose of equipment and wash hands immediately before and after injecting. Needle and Syringe Programs can be used to obtain sterile injecting equipment, education and referral advice on drug use. More information on safe injecting is available from the Australian Injecting and Illicit Drug Users League (AIVL) National Hepatitis C Education Program (refer Contacts section).
- Use condoms or dental dams where there is the possibility of blood contact during sex.
- When breastfeeding, milk from cracked or bleeding nipples should be expressed and discarded until the lesions are healed.
- Do not share toothbrushes, razors, shavers, dental floss or barber's haircutting equipment.
- Do not share or reuse tattoo or body-piercing equipment.

Standard precautions

Standard precautions are recommended for the care and treatment of all patients, regardless of their perceived or confirmed infectious status, and in the handling of:

- Blood (including dried blood);
- All other body fluids, secretions and excretions (excluding sweat), regardless of whether they contain visible blood;
- Non-intact skin;
- Mucous membranes.

All blood and body fluids of all patients should be considered potentially infectious. Effective infection control for communicable diseases lies in the application of standard precautions when caring for all patients. These include aseptic technique, hand washing, use of appropriate personal protective equipment (including gloves and eye protection), as well as appropriate reprocessing of instruments and equipment.

Needlestick injury

The risk of hepatitis C transmission through a needlestick injury depends on the viral load of the source patient, the first aid administered and the instrument involved; for example, a hollow bore needle.

All nurses should have access to infection control guidelines that advise about the management of an occupational injury, including clear written instructions on the appropriate action to take in the event of a needlestick injury and other blood or body substance exposure. Nurses are encouraged to report occupational exposures immediately, and all testing procedures and follow-up treatment should be fully documented. Confidentiality should be maintained.

In general, if an injury or incident occurs where blood or body substances come into contact with non-intact skin or membranes, the following actions should be taken:[31]

- Wash exposed membrane or injury with soap and water (an antiseptic could also be used on the skin).
- If eyes have been exposed, thoroughly rinse the eyes with tap water or saline solution while open.
- If mouth has been exposed, thoroughly rinse the mouth with water and spit out.
- Seek medical advice immediately for assessment of the nature of the exposure, the risk of transmission of BBVs, the need for HIV or HBV post-exposure prophylaxis or other testing/management.
- If the exposure is significant and the source patient is known, his or her consent for HIV antibody, HCV antibody and HBsAg testing should be sought.

Healthcare workers with hepatitis C

All healthcare workers who perform exposure-prone procedures have an ongoing responsibility to know their HBV, HCV and HIV status, and should not perform exposure-prone procedures if there is evidence of current HBV, HCV or HIV infection, as there is a risk of transmission of infection. An exposure-prone procedure is any in which there is a potentially high risk of BBV transmission from a healthcare worker to a patient during a medical procedure, such as any procedure with sharp handheld instruments beneath the mucous membrane, or any procedure dealing with sharp pathology or bone spicules in a confined space or where visibility is poor. Exposure-prone procedures do not include non-invasive examinations or procedures, intact skin palpation, injections or venepuncture.[32]

For more information regarding the rights and responsibilities of healthcare workers with hepatitis C, contact your state or territory's health department, your local Hepatitis Council (refer to Contacts section of this booklet) or your state or territory's Anti-Discrimination Board or Equal Opportunity Commission.

Discrimination

Australian Commonwealth law prohibits discrimination against someone with an infectious disease, unless the discrimination can be shown to be necessary to protect public health. In addition, most states and territories have laws in the same terms as the Commonwealth law.

Hepatitis C is a highly stigmatised condition, and many people living with the disease experience discrimination. The Anti-Discrimination Board of NSW found that discrimination in healthcare settings may take many forms and results in unfair treatment of patients.[33]

Discriminatory behaviours in a healthcare setting may include:

- Refusal of care or treatment;
- Not obtaining informed consent
- Conveying test results inappropriately;
- Breaches of confidentiality and disclosure related to hepatitis C;
- Giving a lower standard of treatment;
- Assumptions about how the patient acquired hepatitis C;
- Assumptions about the patient's past or present drug use.

Everyone living with hepatitis C should have access to care and services regardless of transmission route, gender, ethnicity, culture, sexual orientation or lifestyle factors (such as drug use).

Using non-judgemental language helps build trust with a patient.

Accurate non-judgemental language, combined with a concern for the patient's welfare, helps to build trust with a patient.

addict, addiction, drug abuse, drug abuser, drug addict and intravenous	'drug use' rather than drug abuse; 'reused equipment' rather than shared equipment; 'new equipment' rather than clean equipment; and 'injecting' rather than intravenous

Injecting equipment covers more than just needles; it includes swabs, filters, water, tourniquets and syringes. When discussing drug use with the patient, it is best to ask about the presence of drug dependence or withdrawal symptoms, rather than addiction. Clarifying the meaning of any colloquial terms, or terms that you do not understand, facilitates more effective communication with patients.

Models of care

There are various models of care for the management and treatment of hepatitis C. These include physician-led medical care with nursing support, general practitioner shared care, outreach clinics such as in Drug and Alcohol Services or Aboriginal Medical Services, and nurse-led/nurse coordinated liver clinics. Varying models of care can provide patients with access to hepatitis C treatment in their usual primary care setting, through multidisciplinary teams, and enable greater flexibility and increased access to treatment in rural and remote areas.

It is recognised that the nursing models of care are underpinned by the Third National Hepatitis C Strategy 2010–2013. Nursing practice in the field of hepatology is also widely supported by the Australasian Hepatology Association's *Competency Standards for the Hepatology Nurse* and the *Consensus-based Nursing Guidelines for the Care of Patients with Hepatitis B, Hepatitis C, Advanced Liver Disease and Hepatocellular Carcinoma.*

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ASHM resources

Other ASHM resources, including the following hepatitis C related publications, are available from the ASHM website: www.ashm.org.au

Profession Based Booklets

- An Overview of Hepatitis C: Clinical management in opiate pharmacotherapy settings
- Antenatal Testing and Blood-Borne Viruses
- Correctional Officers and Hepatitis C
- Dental and Orofacial Health and Hepatitis C
- Dentists and HIV
- Emergency Service Providers and Blood-Borne Viruses
- General Practitioners and HIV
- General Practitioners and Hepatitis C
- Hepatitis B and Primary Care Providers
- Pharmacy and Hepatitis C
- Police and Blood-Borne Viruses

Factsheets

- Decision Making in HBV
- Decision Making in HCV
- Hepatitis B Factsheet: for people newly diagnosed
- Hepatitis C in Brief – patient factsheet
- Hepatitis C Management and Treatment for Clients of Pharmacotherapy Services
- HIV Patient Fact Sheet

Monographs

- B Positive: all you wanted to know about hepatitis B – a guide for primary care
- Co-infection: HIV & viral hepatitis – a guide for clinical management
- Hepatitis C: clinical management in opiate pharmacotherapy settings
- HIV and Viral Hepatitis C: policy, discrimination, legal and ethical issues
- HIV Management in Australasia: a guide for clinical care
- HIV, Viral Hepatitis and STIs: a guide for primary care

Distance-learning Kit

- Clinical Science of HIV Medicine CD

Manuals

- Australasian Contact Tracing Manual
  Available in hardcopy and online at www.ashm.org.au/ctm

Online Resources

- ASHM Directory of HIV, Viral Hepatitis and Sexual Health Services
- Guide to Australian HIV Laws and Policies for Healthcare Professionals

DVD

- C Me, Hear Me. Hepatitis C in our own words

Online Learning Module

Hepatitis C management - we can do more is a case-based online module for health professionals available at: **www.ashm.org.au/e-learning**

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Contacts

Australia – Hepatitis organisations
Hepatitis Australia (Provides links to State and Territory Hepatitis Councils) Tel: 1300 437 222 (or 1300 HEP ABC) Web: www.hepatitisaustralia.com

New Zealand – Hepatitis organisations
Hepatitis C Support Group (NZ) Tel: 64 9 377 8500 Web: www.hcvsupport.org
The Hepatitis Foundation Tel: 0800 332 010 (Freecall in NZ) Email: hepteam@hepfoundation.org.nz Web: www.hepfoundation.org.nz

Further resources and support information are available from the following organisations:

ASHM Tel: 02 8204 0700 Web: www.ashm.org.au	Australian Drug Information Network Tel: 03 9278 8100 Web: www.adin.com.au
Australian Government Department of Health and Ageing Freecall: 1800 020 103 Web: www.health.gov.au	Australian Drug Foundation Tel: 03 9278 8100 or 1300 858 584 (Infoline) Web: www.adf.org.au
Australian Liver Association, Gastroenterological Society of Australia Tel: 1300 766 176 Web: www.gesa.org.au	Dietitians Association of Australia Tel: 1800 812 942 Web: www.daa.asn.au
Australasian Hepatology Association Web: www.hepatologyassociation.com.au	Haemophilia Foundation Australia (HFA) Tel: 03 9885 7800 Web: www.haemophilia.org.au
Australasian Society for Infectious Diseases (ASID) Web www.asid.net.au	National Centre for Education and Training on Addictions Web: www.nceta.flinders.edu.au
Australian Injecting and Illicit Drug Users League (AIVL) Tel: 02 6279 1600 Web: www.aivl.org.au	National Health and Medical Research Council Tel: 13 000 64672 Web: www.nhmrc.gov.au

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