

Practitioners need to identify those most at risk of hepatitis C virus infection and encourage them to access diagnostic and support services and treatment

# Challenges and issues in managing hepatitis C

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Hepatitis C virus infection is the most common chronic bloodborne infection in the world. Injecting drug users are most at risk of infection in the UK and other industrialised countries but this group remains hard to reach.

This article discusses the epidemiology, diagnosis and treatment of HCV, including new treatment strategies. It also explores the role of hepatology nurse specialists and gives advice for general nurses.

**H**epatitis C causes a form of liver inflammation and is a highly infectious bloodborne disease. There are six major genotypes of the hepatitis C virus (HCV) – types 1-6, which include subtypes a-e.

Acute hepatitis C, which represents the first six months of infection, is self-resolving in 20% of cases but does not confer permanent immunity. The majority of infected people are unaware of their HCV-positive status due to lack of disease-specific symptoms and go on to develop chronic hepatitis (European Association for the Study of the Liver, 2011).

Chronic infection is associated with variable degrees of hepatic inflammation and fibrosis progression, regardless of HCV genotype and viral load. Only exceptionally does it resolve spontaneously. People chronically infected are at increased risk of developing fibrosis, cirrhosis, hepatocellular carcinoma and end-stage liver disease (EASL, 2011).

Symptoms of chronic infection can include tiredness, fever, headaches, flu-like symptoms, depression, insomnia, pain and digestive disorders, which can be attributed to other illnesses. This represents a challenge as many infected people do not feel the need to be tested for the disease and remain undiagnosed (Health Protection Agency, 2008).

Although no vaccine is available, the disease is preventable and can be successfully treated and cured in around half of clients, avoiding complicated and costly healthcare interventions and premature death.

## Epidemiology

HCV represents a significant global health burden, with more than 170 million people infected worldwide (Lavanchy, 2009) and 250,000-466,000 in the UK (HPA, 2008).

In industrialised countries, sharing injecting equipment among current or former injecting drug users is the most common route of infection, to the extent that the prevalence of chronic infection among this group varies between 50% and 95% (HPA, 2009; Sweeting et al, 2009; Shepard et al, 2005).

Other transmission routes include tattooing and body piercing, unprotected sexual contacts with high-risk partners and parenteral infection during pregnancy or childbirth (there is no evidence that breastfeeding is a risk factor).

Before 1991, blood transfusions were a common route of infection (Choo et al, 1989). The development and introduction of blood screening for HCV antibodies soon after the discovery of the virus controlled this transmission route in the

## 5 key points

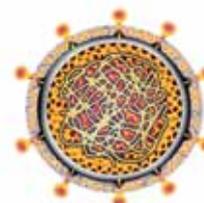
**1** Many people are unaware of their hepatitis C virus infection due to its asymptomatic nature or non-specific symptoms

**2** Diagnosis usually involves testing serum for both anti-HCV antibodies and HCV ribonucleic acid

**3** Sharing equipment among injecting drug users is the most common route of infection in industrialised countries

**4** This group is under-represented in testing and treatment programmes for HCV, despite being most at risk

**5** The primary goal of therapy is to cure the infection and attain a sustained virological response



Hepatitis C may be asymptomatic

## BOX 1. HEPATOLOGY NURSE SPECIALIST ROLE

This specialist role involves:

- Screening clients at risk of hepatitis C virus (HCV) infection
- Educating clients and partners/relatives/friends about HCV after a positive diagnosis
- Taking a thorough medical history, which includes assessing pre-existing conditions and looking for signs of extra-hepatic manifestations of HCV and cirrhosis or decompensated liver disease
- Liaising with other health professionals involved in clients' care, which is particularly important for managing side-effects
- Closely monitoring treatment efficacy and side-effects according to a treatment protocol
- Providing education to other health professionals (such as GPs, general nurses and midwives) to increase awareness of the disease

UK, Western Europe, North America and other industrialised countries. However, in developing countries, HCV is mainly transmitted through unscreened blood transfusions, non-sterile injections and poorly sterilised medical equipment (Prati, 2006).

### Injecting drug users

Current or past injecting drug users are under-represented in the uptake of testing and treatment programmes despite being the group most at risk. The default rate (did not attend rate) of this group at appointments at my clinic was previously as high as 35% and remains high internationally (Kreek et al, 2009).

These clients often experience complex and interconnected problems such as social exclusion through family breakdown, poor health, limited education, unemployment and criminal activity. In particular, their housing needs affect access to healthcare and exacerbate drug use and concomitant risk of hepatitis C. The stigma they experience from wider society and health professionals further compounds difficulties in accessing care (Neale et al, 2008).

The majority of these clients are referred to nurse specialists from drug treatment centres and, because they have multifaceted needs, nurses often liaise with key workers, social workers and

mental health services to promote positive outcomes.

Methadone substitution at drug treatment centres can lead clients to stop using street drugs and bring some stability to their lives. This helps them to start treatment and significantly increases adherence to therapy (Kreek et al, 2009).

### Diagnosis

Diagnosis of HCV infection involves an antibody test, usually on serum, to identify whether clients have ever been infected.

Recently developed simple and reliable oral testing provides rapid diagnosis of HCV; this has the potential to increase testing opportunities in a variety of settings outside clinic rooms because of its non-invasive nature (Lee et al, 2011). Since injecting drug users are generally reluctant to provide a blood sample or have difficult venous access, the salivary detection method offers advantages.

Testing for HCV is carried out with clients' informed consent and accompanied by a confidential discussion. Practitioners provide post-test counselling in the case of a positive result and suggest further tests to determine whether the virus is still present and, if so, to diagnose the extent of the underlying liver disease.



When acute infection is suspected, the presence of both anti-HCV antibodies and HCV ribonucleic acid (RNA) is tested. HCV RNA may fluctuate during acute infection, making a second HCV RNA test necessary several weeks later in all negatively tested clients where acute hepatitis C is suspected. HCV RNA testing is essential for managing HCV therapy (Chevaliez and Pawlotsky, 2008).

Practitioners also advise clients about ways to avoid infecting other people with the virus (Box 2), then explain treatment options.

### Treatment

The primary goal of HCV therapy is to cure the infection and attain a sustained virological response (SVR), which results in detectable circulating HCV being eliminated after treatment.

SVR is defined as an undetectable HCV RNA level (<50 IU/ml) 24 weeks after the end of treatment and is generally

associated with resolution of liver disease in clients without cirrhosis. Those with cirrhosis still remain at risk of life-threatening complications.

In England and Wales, the National Institute for Health and Clinical Excellence (2006) recommend a combination of peginterferon alfa and ribavirin for treating mild chronic HCV infection (NICE, 2006; Wright et al, 2006). The therapy consists of once-weekly subcutaneously administered peginterferon alfa plus twice-daily oral ribavirin over 24 or 48 weeks (EASL, 2011; NICE, 2006). This combination produces an overall SVR greater than 50%, which is a significant improvement on the SVR rates of 10% achieved with interferon monotherapy in the mid-1990s (Manns et al, 2006).

The likelihood of a response is much higher in people with HCV genotypes 2 or 3 (80% SVR rate after six months of combination therapy with peginterferon alfa and ribavirin) than genotype 1 or 4 (50% SVR rate after 12 months of therapy) (EASL, 2011). While HCV genotype is the most powerful predictor of response, other predictors of SVR include low viral load, minimal hepatic fibrosis, female sex and being aged under 40.

New treatment strategies aim to achieve higher efficacy, shorter treatment, easier administration and client adherence. Two new drugs, telaprevir and boceprevir, have recently been shown to improve rates of SVR in clients infected with HCV genotype 1 when used in combination with peginterferon alfa and ribavirin (Poordad et al, 2011; Zeuzem et al, 2011). Up to now, only about 50% of these clients achieved an SVR when treated with peginterferon alfa and ribavirin, in contrast to 70–80% when either of these two protease inhibitors is added (Mitchell and Rafael, 2012).

NICE issued new regulatory approval recommending boceprevir or telaprevir in combination with peginterferon alfa and ribavirin as an option for treating genotype 1 chronic HCV (NICE, 2012a; 2012b). Another benefit of triple therapy is that its duration is likely to be shortened from the current 48 weeks in 50–66% of patients (EASL, 2011; NICE, 2012a; 2012b).

### Nursing care

Clients come to the clinic at a minimum of weeks 4 and 12 after starting treatment, then at a minimum of every 12 weeks until the end of treatment to monitor treatment efficacy and side-effects, and 24 weeks after the end of therapy to assess SVR.

Side-effects are common and clients need significant support and

encouragement throughout treatment as they affect quality of life.

Interferons are naturally occurring proteins that play an essential role in the immune system by hindering the virus's replication process and enhancing the body's immune response. They are responsible for many of the symptoms associated with flu such as headaches and fever, and they can also reduce serotonin levels, resulting in depression.

Ribavirin causes a fall in haemoglobin, leading to tiredness and shortness of breath. Haematological side-effects may require dose reduction which, in turn, may have implications for the likelihood of attaining an SVR (EASL, 2011).

Besides the flu-like symptoms mentioned above, adverse effects include depression, irritability, anxiety, heart problems, headaches and fatigue and the development of certain autoimmune conditions, most notably thyroid disease (Aspinall and Pockros, 2004).

Given the wide range and potential seriousness of adverse reactions, clients need close monitoring from hepatology nurses at regular intervals. Adherence to treatment is undoubtedly one of the key factors for success in achieving an SVR (Manns et al, 2006).

### Hepatology nurse specialists

Hepatology nursing is an established specialist area focusing on promoting health, preventing illness and caring for clients affected by liver disease. The role also involves clinical trials and research, and incorporating new evidence-based findings into practice.

Hepatology nurse specialists carry out a number of functions in managing the care of clients with chronic HCV infection from diagnosis to treatment. Box 1 outlines some of these functions.

### Advice for general nurses

Hepatology nurse specialists can provide vital information to other health professionals and help them identify clients at risk as well as signs of an infection that would not otherwise be diagnosed. While taking clients' medical history, health professionals should consider some of the risk factors outlined in Box 3 before offering the opportunity to be tested for HCV.

If a client is HCV antibody positive with a detectable HCV RNA, practitioners should request a referral to a consultant gastroenterologist or hepatologist. After an initial assessment, the consultant can arrange an appointment with a hepatology nurse specialist.

## BOX 2. ADVICE FOR AVOIDING ONWARD HCV TRANSMISSION

Clients are advised:

- Not to share any injecting equipment such as needles and syringes
- Not to donate blood nor carry a donor card
- Not to share razors, toothbrushes or anything else that may possibly be contaminated with blood
- To use condoms when having sex. The risk of passing on the hepatitis C virus during sex is small, but is reduced even further by using condoms. However, partners in regular monogamous relationships may accept the small risk of having sex without condoms

## BOX 3. RISK FACTORS FOR HCV INFECTION

- Blood transfusion or organ transplant before 1991
- Past or present injecting drug use
- Time spent in prison
- Birth, travel or receipt of medical treatment in countries where contaminated equipment is a potential source of infection due to the absence of screening
- High-risk sexual behaviour
- Homelessness
- Haemodialysis
- Needlestick injuries
- Birth from a mother who is HCV positive
- Abnormal liver biochemistry
- HIV infection
- Hepatitis B virus infection

### Conclusion

HCV causes serious liver disease that can lead to death if untreated.

Injecting drug users are the greatest at-risk client group. Despite the availability of new and more efficient triple-drug therapy and the fact they are most in need, this group is under-represented among those receiving treatment for HCV. In order to reduce the number of undiagnosed infections, better engagement of this vulnerable client group is needed.

Hepatology nurse specialists play an essential role in managing the care of chronically ill clients from diagnosis to treatment. **NT**

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