Introduction to hepatitis C virus (HCV)

What is hepatitis C?

Hepatitis C is an infection of the liver caused by the hepatitis C virus (HCV). The liver is a major organ of the body that has several critical functions, including the removal of toxins from the blood and providing support in regulating blood sugar and gut metabolism. When the liver is inflamed or damaged, it may not work properly and this can result in serious ill-health.

Infection with HCV can cause both acute (short-term) and chronic (long-term) disease that can damage the liver.

Acute HCV infection refers to the initial stage of HCV infection after a person has been exposed to the virus. Most people with acute HCV infection have no symptoms or experience only very mild symptoms. Around a quarter of those with an acute HCV infection make a full recovery and their body is able to clear the virus fully from their blood (this is called 'spontaneous clearance').

People who are unable to clear the virus from their blood within six months of being acutely infected are considered to have **chronic HCV infection**. Many people with chronic HCV infection may not experience symptoms for years, until the virus causes liver damage, leading to serious liver disease.

Without treatment, chronic infection with HCV can result in serious damage to liver function, causing fibrosis or cirrhosis (scarring of the liver), and hepatocellular carcinoma (HCC) (liver cancer). The rate of progression to cirrhosis is variable and depends on several factors, including age of initial infection, gender, alcohol consumption, co-infections (e.g. HIV and hepatitis B virus), and obesity. Up to 30% of people living with chronic HCV infection will develop cirrhosis within the first 20 years after infection.

A person who has cleared their infection with HCV, either spontaneously or through curative treatment, can be re-infected with HCV throughout their life if exposed to the virus.

Geographical distribution

According to the World Health Organization (WHO), there are an estimated 50 million people worldwide living with hepatitis C [1]. There is variation in the geographical distribution of hepatitis C, with recent changes in the burden which are largely related to the increasing availability of curative antiviral treatment. The highest prevalence of HCV occurs in Central Asia and Central Africa .Recent estimates from the European Centre for Disease Prevention and Control (ECDC) indicate there are around 1.8 million people are living with chronic HCV infection in the European Union/European Economic Area (EU/EEA) [2]. Across the European Union there is also a geographical variation in the burden of cases, with the highest estimates of disease burden in the south and east of the region.

Symptoms

Most people who are infected with HCV have no signs or symptoms following their initial infection. If symptoms do occur, the most common may include:

- abdominal pain
- tiredness
- loss of appetite
- yellowing of the skin and the whites (conjunctiva) of the eyes (jaundice) (rare);
- dark urine.

A person living with chronic hepatitis C may not know they have it because it can take many years for symptoms to appear. Symptoms usually appear only after the virus has caused severe liver damage. Consequently, many people live undiagnosed for years.

Transmission

The virus is transmitted through exposure to infected body fluids, including blood, semen and vaginal fluids. The most commonly reported route of transmission in Europe is through injecting drug use, when a person uses needles or injecting equipment that have been contaminated with the blood of someone with HCV infection.

Infection may occur through sexual transmission, when someone has sex without a condom with a person who has HCV infection. Transmission of infection can also occur through exposure to sharp objects that have been contaminated with blood or other body fluids from a person who has HCV, either in healthcare settings where appropriate precautions have not been taken, or in the community through accidental needlestick injury. Transmission is also possible through the transfusion of unscreened blood or blood products, but this is now extremely rare in Europe due the tight regulations in place.

Prevention

There is no vaccine that can prevent infection with hepatitis C. The best way to avoid becoming infected with hepatitis C is to avoid behaviour that poses a risk for transmission of the virus. Preventive measures that can reduce the risk of hepatitis C transmission include:

- harm reduction measures targeting people who inject drugs, including the provision of sterile needles and syringes and the use of opioid agonist therapy for opiate users;
- safe sex through the use of condoms;
- strict enforcement of infection prevention and control measures in healthcare settings.

Testing and treatment

A blood test can tell if a person has ever been infected with HCV and if they are currently infected (see Table 1). HCV infection is diagnosed through blood tests that detect the presence of HCV RNA and antibodies.

Testing for HCV is simple and involves an initial test to check for antibodies (anti-HCV) which indicates if a person has been ever infected with the virus. As some individuals may resolve their infection spontaneously, or may have received curative treatment so they are no longer infected with the virus, it is necessary to check whether the individual has current (active) infection. Therefore, if the antibody test is positive, a confirmatory blood test is needed to check for chronic infection (HCV RNA or HCV-Antigen).

Table 1. Simple guide to the hepatitis C blood tests

Type of blood test	What does the blood test check for?	What does a positive test result mean?
Antibodies to hepatitis C (anti-HCV)	The test checks for antibodies to the virus which develop after a person has come into contact with the virus.	A positive test indicates that the person has at some point been infected with the hepatitis C virus. Antibodies will remain for life, even if someone is able to clear the virus - either spontaneously or through curative treatment.
Test for viraemic infection (HCV RNA or HCV-Antigen)	The blood test checks whether a person is currently infected with the virus.	A positive test indicates that the person has current hepatitis C infection and would be eligible for treatment.

Adapted from Hepatitis Australia. Testing for hepatitis C: https://www.hepatitisaustralia.com/testing-for-hepatitis-c

There are highly effective antiviral drugs available for the treatment of chronic HCV infection that are able to cure the infection and also reduce the risk of any long-term complications. The new treatments (known as direct-acting antivirals (DAAs) are extremely effective, easier to take (8–12 weeks of oral medication, 1–3 pills per day) and have fewer side-effects than the older medications.

References

1. World Health Organization (WHO). Global hepatitis report 2024: action for access in low- and middle-income countries. Geneva: World Health Organization; 2024.

2. European Centre for Disease Prevention and Control (ECDC). Prevention of hepatitis B and C in the EU/EEA. Stockholm: ECDC; 2024. Available at: https://www.ecdc.europa.eu/en/publications-data/prevention-hepatitis-b-and-c-eueea-2024

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