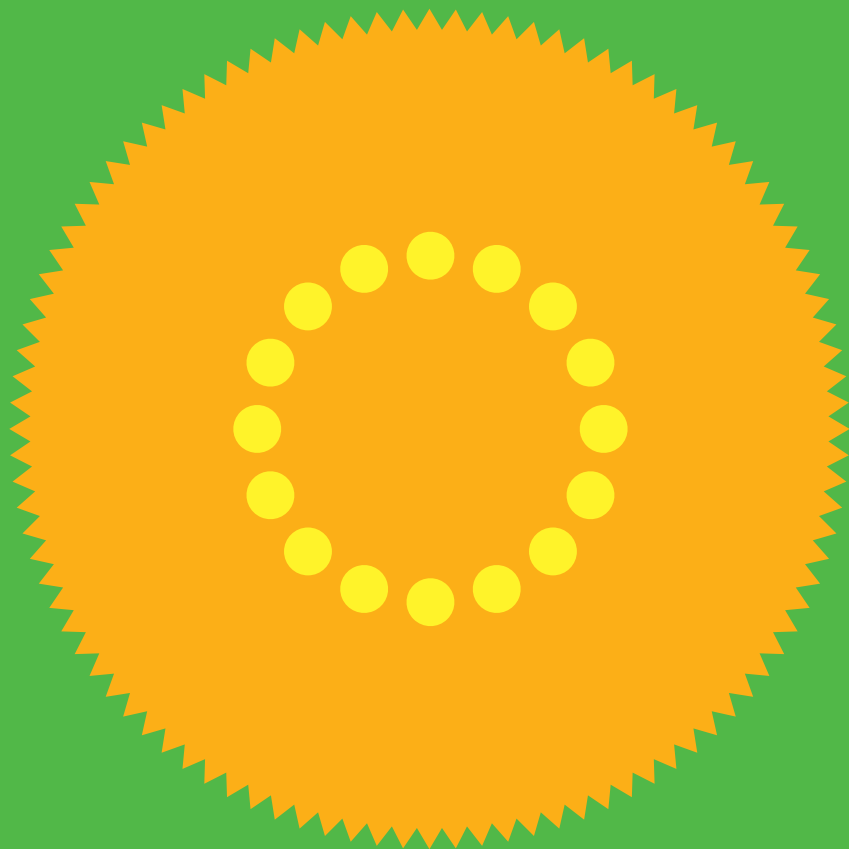


# Guide to hepatitis C for people living with HIV

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Watch out for out-of-date information

First questions  
Dealing with a new diagnosis  
Treatment for HCV  
Living with coinfection

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## Introduction

Welcome to the second edition of the i-Base guide for people living with HIV and Hepatitis C.

Any diagnosis can be difficult and having two infections can be more stressful. We hope that the information here helps you feel more in control of some of the treatment related choices so that you can focus on other things you want to do in life. Because some of the ways that you can catch both HIV and hepatitis viruses are similar, coinfection is not unusual. In some countries, coinfection with HIV and hepatitis C is more common than just having HIV alone.

People living with HIV, hepatitis C or coinfection, have written much of this guide. It is written with a positive outlook for management and treatment.

Some people have been living with HCV for over 20 years and have not chosen HCV treatment. Others were infected recently. Some of them have been HIV-positive for many years, and have chosen very early HCV treatment.

This emphasises that an individual approach to your own healthcare is essential. Although only short personal quotes are included in the print version of this guide, longer stories from people living with coinfection are in the web version:

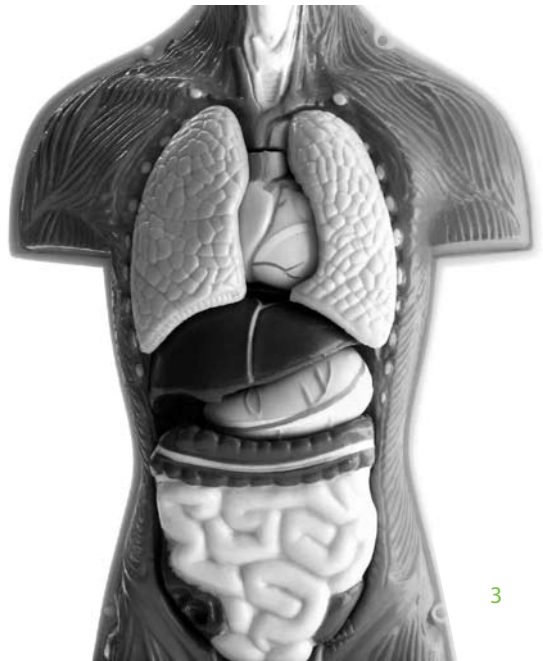
[www.i-base.info/guides/hepc/stories](http://www.i-base.info/guides/hepc/stories)

You can also add your own story to this resource.

The 'www' logo in the text indicates additional information online that is not in the print version. We've also included references and referrals to other sources of information and support organisations. A glossary is included throughout the booklet and at the end to help with medical terms that may be new. Finally, there is a short section on controversial aspects of care. Our understanding of these issues is likely to change as new research becomes available.

As with all printed treatment information, please check for up-dates to this edition, especially if reading this after March 2010.

This guide is also available in Italian, Portuguese, Russian and Spanish.



## First questions

Some of the questions in this section are dealt with in more detail later in this booklet.

However, it may be useful to answer some first questions now.

### What is hepatitis C?

Hepatitis C is liver disease caused by the hepatitis C virus (HCV). The virus mainly lives in the blood, and in liver cells where it can cause damage. HCV can cause liver inflammation, and scarring (known as fibrosis, or when more serious, cirrhosis). This can reduce the liver's ability to perform essential functions. Liver damage from HCV usually takes many years.

### How did I get HCV?

HCV can be caught if blood from a person with HCV enters your bloodstream.

The most common risk factors for this include

- Injecting drugs with shared unsterilised equipment (including spoons, filters) and possibly from snorting drugs with shared straws or bank notes.
- Tattooing or piercing with unsterilised needles or ink.
- Receiving a blood transfusion in the UK (before 1992) or blood products before 1985 in the UK.
- Healthcare workers who have a needlestick injury.
- From having unprotected sex with someone who has HCV.

As with HIV, knowing how you caught HCV may prevent you infecting other people or becoming infected with another strain of HCV. However, many people will never know how they caught HCV, especially if they have had hepatitis C for many years.

### How serious is HCV?

Unlike HIV, you can be cured of HCV. If this happens, either naturally by your immune system or from using treatment, then HCV may not have any serious effect on your long-term health.

More than 45% of HIV-negative people, and up to 20% of HIV-positive people clear HCV without treatment within the first few months of infection.

Chronic hepatitis C refers to HCV infection that hasn't cleared in the first few months. This can have a wide range of outcomes.

Some people will never develop significant liver damage, some will have mild liver scarring, and 20-30% will develop cirrhosis.

In a smaller percentage of people, HCV can cause liver cancer and liver failure (when a transplant is needed). This usually only occurs after many years.

Because HCV generally progresses very slowly, there is usually plenty of time to decide on approaches to treatment.

HCV progresses more quickly in people who are also HIV-positive, and treatment is less successful compared to people who are only infected with HCV.

### Will HCV make my HIV worse or more difficult to treat?

Generally, coinfection with HIV and HCV complicates each disease.

HIV causes HCV to progress more quickly, although we don't know why this happens.

It is not clear whether HCV has an effect on HIV. Some studies reported that people with both infections did not see their CD4 count respond as well to HIV treatment. However, other factors, such as ongoing drug use, low access to health care, homelessness and poor nutrition make this a difficult question.

There are a few drug interactions between HCV and HIV treatments that you need to be careful to avoid.

Luckily, although response rates to treatment vary, most people living with coinfection can be treated for both HIV and hepatitis C.

People with coinfection have a higher risk of liver damage from HIV drugs. However, the benefits of HIV treatment generally outweigh the risks from additional liver-related side effects. This is because a stronger immune system slows down liver damage from HCV.

### How common is HIV/HCV coinfection?

In the UK, around 5% of HIV-positive people are coinfecting with HCV (approximately 3,000 people).

This includes over 400 HIV-positive gay men in London and Brighton who have caught HCV sexually over the last four years.

Approximately 70,000 people in the UK are estimated to have HIV. Around 45,000 people are diagnosed.

Approximately 250,000–600,000 people in the UK have HCV. Only 55,000 have been diagnosed.

Worldwide, about 4 to 5 million people have both HIV and HCV. Coinfection rates range from about 5% in the UK to almost 50% in Spain and Italy. In the United States more than a million people have HIV, and 25–30% also have HCV.

Globally, sexual transmission of HIV accounts for the majority of new infections each year, but injecting drug use originally drove the HIV epidemics in Eastern Europe and Central Asia.

Coinfection is common among injecting drug users (IDUs), especially in countries where access to syringes and/or substitution treatment with methadone, buprenorphine or heroin is limited or nonexistent.

If it is likely that you caught HCV from drug use, you were probably infected with hepatitis C before HIV, since HCV is more infectious in blood, making it easier to catch.

### What should I do first after an HCV diagnosis?

The first thing is to give yourself time to let the news sink in. This can take a few days or weeks, or much longer.

Coming to terms with a new diagnosis is important before you can make rational decisions about what to do next. This will usually involve finding out more information, which is why we have produced this guide.

You can get information from your doctor, from friends and support groups and from other sources including the internet.

As with HIV, learning you have HCV can affect:

- Your own health. This will involve information about monitoring, treatment and things you can look at in your day-to-day life.
- The health of sexual and drug-using partners. This will include information about transmission and how to minimise the risk of passing either virus to others.

This booklet covers both aspects and includes a list of other resources for more information.

### Who should I tell?

When you first get an HCV diagnosis, only you and your healthcare professionals will know. It can help to be able to talk about this to a friend, partner or relative that you trust, so that you don't deal with this in isolation. Who you tell after this is up to you.

Your doctor can only inform other healthcare workers directly involved in your care. You can take time in deciding who else you want to tell.

### Newly diagnosed with HCV

If you have been HIV-positive for a while and were recently diagnosed with HCV, the shock of a second serious infection is difficult. Some of the strengths you brought to your HIV diagnosis will help you now.

It is important to have a doctor who knows about and takes responsibility for both HIV and hepatitis C.

The recommendation to see a specialist is included in the UK HIV standards of care.

‘After 6 years of being HIV positive I mistakenly believed I’d already been hit by the bus and survived so nothing else could hurt me.’

‘I only discovered my HCV status by accident after I volunteered for a trial at my hospital which was looking at whether interferon might be useful for people who had run out of ARV options for their HIV. I can’t say that it came as a surprise (I assumed I was because of my previous drug use) but never really thought about it as I assumed I would be dead by the time HCV kicked in.’

‘For me it was very important to have the HIV and HCV treated together – they are related...their progression is related... a liver specialist is not fully prepared to deal with somebody that lives with the double stigma of having these diseases...and didn’t really understand some of the social and psychological implications.’

### Newly diagnosed with both HIV & HCV

If you have been diagnosed with both HIV and hepatitis C at the same time, then this is a double blow. If the infections were both recent, then you may be more shocked by the HIV diagnosis, and should use some of the HIV-specific support services available.

It is important to remember that both HIV and HCV are treatable for most patients, including the majority of HIV-positive people. Importantly, research into HIV and HCV is likely to lead to new drugs for each virus, that may be more effective, and easier to tolerate.

### Are people around me now at risk?

People around you are not at risk from catching HCV from day-to-day activities, unless they come into contact with your blood. In practice, this just means taking care not to share anything that may contain traces of blood, such as toothbrushes, razors, and nail scissors and nail files.

Unlike HIV, HCV can live outside of the body for days to weeks, and is infectious even after blood has dried.

### Can I pass on HCV through sex?

The risk of sexual transmission is generally very low for heterosexuals. However, a recent increase in sexual transmission among gay men makes this question more complicated. Sexual transmission in gay men has mainly been reported in HIV-positive men.

### Can you catch another type of HCV or HIV?

Having one type of HCV virus doesn't protect you from being infected with a different type of HCV (see the information about HCV genotype on page 33).

If you have cleared HCV and are no longer infected, you are not protected from becoming infected again with HCV in the future.

Reinfection with a different strain of HIV is more controversial. It certainly happens, but it is less common and it usually only has serious implications when the new virus is resistant to HIV treatment. This has been reported though and is the subject of further research.

### What about other types of hepatitis?

The word hepatitis just means inflammation of the liver. Other viral infections, heavy alcohol consumption, chemical fumes, or some medications can all cause hepatitis.

There are several different hepatitis viruses, each named alphabetically, in the order that they were discovered. Before it was discovered in 1989, hepatitis C was called 'non-A non-B hepatitis'.



## Hepatitis A and B

After an HCV diagnosis it is important to check that you are protected against hepatitis A & B.

You really don't want another hepatitis virus to complicate your health. You should be vaccinated against hepatitis A (HAV) and hepatitis B (HBV), unless you are already immune to them.

In the UK, these vaccinations are free and available from your HIV or HCV clinic, from a sexual health clinic or from your general doctor (GP).

Information about other types of hepatitis is included on page 72.

## About HepA & HepB vaccinations

Vaccines work by generating an immune response to part of a virus. The effectiveness of HAV and HBV vaccinations depends on your CD4 count. The higher your count, the higher the chance that the vaccine will work.

If you are starting with a low CD4 count, and are at low risk for contracting HAV or HBV, it may be better to start HIV treatment and then be vaccinated when your immune system is stronger. You may also improve the chance of a successful response by using a higher dose of the vaccine. Once a year your clinic should check that the vaccines are still working, and give you a booster vaccination if necessary.

There is no vaccination against hepatitis C.

All HIV-positive people should be vaccinated against hepatitis A (HAV) and hepatitis B (HBV)... The immune responses to these vaccines should be checked once a year and boosted when necessary.

## HCV transmission

### How HCV is caught and passed on

HCV is mainly transmitted when infected blood directly enters another person's bloodstream. Saliva and tears are not infectious. Semen and genital fluids may be infectious.

As with HIV, you cannot transmit or catch hepatitis C by touching, kissing, hugging, or from sharing cutlery and crockery.

Unlike HIV, which dies in a few minutes outside the body, HCV survives as an infectious virus in dried blood for several days. This is why you should not share items that may contain tiny traces of blood.

### HCV can be transmitted by

- Injecting (or snorting) drug use with shared, unsterilised equipment.
- Tattooing or piercing that does not use new sterilised needles and ink.
- Medical or dental procedures with unsterilised equipment, including kidney dialysis (rare).
- Needlestick accidents in health care workers.
- Sharing items that may contain blood, such as razors, toothbrushes, nail scissors and nail files.
- Sex with someone who has HCV.

Hepatitis C can also be transmitted from mother to infant during pregnancy, or during labour and delivery.

People who received a blood transfusion or blood products before the blood supply was thoroughly screened (early 1990s) may have been infected with HCV. Since then, the risk has been brought down to virtually zero in the UK, Western Europe, and the US.

However, up to 90% of people with haemophilia who were treated with clotting factors before screening was introduced were infected with HIV and HCV.

In some countries, infections still occur from blood transfusions because blood is not screened thoroughly.

### Injecting drug use and HCV

Worldwide, most HCV infections are related to injecting drug use, through sharing needles and other drug injecting paraphernalia.

Hepatitis C is a tougher and smaller virus than HIV. It can live in a syringe for several days to weeks, and can be transmitted through shared needles and other injection equipment, such as cookers, cotton, water, measuring syringes and ties. Cleaning syringes with bleach reduces the risk for HIV transmission, but it is less effective against hep C. Using clean needles and your own works each time you inject stops both HIV and HCV transmission (and reinfection).

It also reduces the risk of other infections.

### HCV and other (non-injecting) drug use

Hepatitis C is more common among non-injecting drug users than the general population. It is not clear why. It may be possible to catch HCV from sharing straws or rolled bank notes for snorting drugs, and maybe from crack pipes. Sharing these items is therefore not recommended.

‘Transmission of HIV and hep C differ, particularly in terms of injection drug use ... because hep C is not just transmitted by sharing a needle, and HCV is much more infectious than HIV. So, I know many people who are taking exactly the same measures to prevent transmission of both, but we know that’s not enough to prevent HCV.

Sometimes people make decisions based on insufficient information, both in terms of HCV prevention and treatment.

I also worry about sharing a rolled up note when I do coke – but it doesn’t stop me from doing it or my friends from being willing to share. I guess this all comes down to individuals agreeing to own and share risks that they feel to be acceptable ... these risks feel ok most, but not all of the time’.

## HIV, HCV and sex

### HIV transmission

Worldwide, sexual transmission of HIV accounts for the majority of new HIV infections each year.

The ways that HIV is transmitted are well understood.

HIV is present in blood, semen, genital fluids and breast milk.

The risk of sexual transmission is greatly reduced by using condoms during sex.

Different types of sex carry different risks, for example body rubbing and mutual masturbation is zero risk, oral sex is low risk, and anal or vaginal sex without a condom is high risk. Higher viral load in the HIV-positive partner will increase each of these risks and lower or undetectable viral load will reduce them.

Other sexually transmitted infections (STIs), including herpes, gonorrhoea and syphilis, increase the risk of transmitting HIV. This is because they increase the amount of HIV virus in genital fluids and make the HIV-positive partner more infectious. STIs in an HIV-negative partner make them more vulnerable to HIV infection.

All this information is important when talking about HCV.

### HCV transmission

The risk for sexually transmitted HCV is very low in monogamous, HIV-negative heterosexual couples (in which one partner has HCV), but it is higher for HIV-positive gay men. The mechanism involved with sexual transmission among HIV-positive gay men remains unclear.

HCV is mainly contracted when infected blood from one person enters another person's body. Although the hepatitis C virus has been found in semen and vaginal fluid it is unclear whether this is infectious.

Sex will be riskier if it involves exposure to blood. This could include longer and more energetic sex, anal sex, fisting, sex with a woman during menstruation, and group sex. Condoms and latex gloves reduce these risks.

With HIV/HCV coinfection, sexual transmission of HCV appears to be different for gay male and straight partners.

### Heterosexual transmission of HCV

The risk of heterosexual sexual transmission of HCV in people who are HIV-negative is very low. One study following almost 900 heterosexual monogamous couples did not report any HCV infections over up to 10 years of follow-up. The risk is generally reported as less than 1%.

These couples did not use condoms, but also did not have anal sex or have sex during menstruation. The mechanism for this protection is likely to be through reduced exposure to blood-to-blood contact, but is not clearly understood.

### Sexual transmission of HCV in HIV-positive gay men

In the UK, sexual transmission of HCV to HIV-positive gay men has been reported since 2003.

A similar link between HCV sexual transmission and HIV-positive gay men has been reported in some other European, U.S. and Australian cities. HIV is clearly an important factor because, so far at least, new cases of HCV sexual transmission in HIV-negative gay men are not being reported nearly as often.

Other risk factors for gay men include:

- Unprotected anal intercourse (not using condoms),
- ‘Heavier’ sex including ‘fisting’, longer sex and sharing sex toys.
- Group sex.
- Use of some recreational drugs.
- Having other sexually transmitted infections.
- Among some groups of gay men, many of who meet partners online.

There is still a lack of clear information about sexual transmission of HCV between HIV-positive gay men.

### Crystal meth, Ecstasy, Coke and HCV infection

Although sex seems to be the source of infection, among HIV-positive men who have sex with men, non-injection drug use increased the risk,

This includes “party drugs” such as crystal meth, cocaine and ecstasy. Injecting crystal is as high a risk as injecting any other drug.

These drugs can lower your immune system so you may be more vulnerable to HCV infection.

### Mother to child transmission of HCV

As with HIV, a baby can catch HCV from his or her mother during pregnancy or at birth. This risk is 3-4 times higher if the mother has both HIV and HCV (perhaps up to 20% risk).

HIV treatment dramatically reduces the risk of mother-to-child transmission of HIV, regardless of the mother's hepatitis C status, and it may also lower the risk of HCV transmission.

HCV treatment however, is not possible during pregnancy. This is because one of the HCV drugs (ribavirin) causes birth defects, and the other (interferon) can cause brain and nerve damage in infants less than two years old. Planned delivery by Caesarean section (C-section) reduces the risk of mother-to-child HCV transmission among HIV-positive mothers.

UK guidelines (from the British HIV Association) currently recommend planned C-section delivery for mothers with have both HIV and HCV.

For more information about HIV and pregnancy, see the i-Base Guide to HIV, Pregnancy and Women's Health.

'We need a lot more information and research about transmission of mother to child – and transmission in general.'

'A friend who is co-infected just recently had a child and had to have a Caesarean section because of the HCV (her viral load was undetectable and CD4 count was high – so she could have delivered vaginally) but she was not able to because of HCV.'

'One thing that bothers me is that even in the HIV community there is discrimination against drug users... assumptions are often made by other HIV-positive women regarding drug users.'

Especially if they want to have children ... It is the same with some doctors ... and sometimes they don't pass the information that we need...'

## Natural history of HCV infection

### What does your liver do?

Although hepatitis C also affects other parts of the body, it is your liver that is most affected. [\*www]

Your liver is an essential organ that has hundreds of jobs, including:

- Filtering chemicals and waste from the blood.
- Storing vitamins, minerals, and iron converting nutrients from food into energy.
- Helping to balance levels of sugar and hormones.
- Producing cholesterol.
- Making bile (necessary for digestion), and creating the hormone that helps to produce platelets (to stop bleeding).

\*www – The web-based version of this guide includes more information about HCV outside the liver.

### How does HCV damage your liver?

Hepatitis C does not directly damage your liver.

After infection, the immune system reacts to hepatitis C by trying to rid the liver of infected cells. It is this immune response that can cause liver inflammation, and this inflammation leads to scarring. As the immune system attempts to isolate infected cells, scarring worsens.

As the liver becomes more scarred, it hardens and becomes less elastic. This makes it increasingly difficult for blood and other fluids to flow through it.

Even though the liver can operate when badly damaged, the continuous effect of hepatitis C can slowly interfere with liver function. Complications then occur when the liver is unable to carry out important tasks.

These complications include: fatty liver (steatosis), jaundice, oesophageal varices, ascites, encephalopathy, portal hypertension, kidney damage, thyroid disease, diabetes, and appetite and weight loss resulting in malnutrition.

## Natural history of HCV

As with HIV, there are similar terms to describe the natural history of HCV infection.

### Acute infection

Acute infection refers to the first six months after HCV infection.

Unless it causes symptoms – and about 80% people do not have symptoms – HCV is rarely diagnosed in acute infection. Symptoms, when they occur, include fever, fatigue, abdominal pain, nausea, vomiting, dark urine, and jaundice (yellowed skin and eyes).

However, because HIV treatment involves checking for liver function, higher liver enzyme levels has helped diagnose acute HCV infection in HIV-positive people.

In the first few months after HCV infection, some people clear the virus without any treatment. This occurs in perhaps up to 20% of HIV-positive people. This is called ‘spontaneous clearance’ and is more common if:

- You have symptoms during acute HCV
- You are a female.
- You are under 40 years old.

HIV-positive people are only half as likely to spontaneously clear hepatitis C. People of African descent are less likely to clear hepatitis C than Caucasians. The reasons for these differences are unclear.

People who have cleared the virus without treatment are no longer infected with hepatitis C. They may test HCV-positive using with an antibody test, but the virus is not detectable in their blood.

If HCV does not clear spontaneously, some people choose HCV treatment during acute infection. This is because there are higher success rates at this stage. It is important to discuss the risks and benefits of treating acute hepatitis C with your doctor.

### Chronic infection

Chronic infection refers to any time after acute infection. This is usually from six months after infection.

In HIV-negative people, HCV progresses very slowly, usually over decades and there is a wide range of outcomes from chronic hepatitis C. HCV can affect other areas of the body. However, there have been reports of HCV progressing more quickly in HIV-positive gay men.

Whatever the timescale, some people will never have significant liver damage or symptoms, while others may develop mild-to-moderate liver scarring (fibrosis), and experience symptoms such as fatigue, depression and confusion.

There seems to be no clear relationship between the degree of liver damage and the experience of symptoms.

Hepatitis C can contribute to a build-up of fat in liver cells called steatosis (or fatty liver), which worsens liver damage and makes HCV harder to treat. Fatty liver is most common in people with HCV genotype 3.

In people with HCV genotype 1 fatty liver is more likely among people who are overweight, have insulin resistance or diabetes, who have a heavy alcohol intake and who have liver inflammation.

In people with HIV/HCV coinfection,



fatty liver usually indicates more serious liver scarring. It is linked with several factors, including use of some HIV drugs (especially d4T and ddI), low levels of HDL (“good” cholesterol), being overweight and having lipodystrophy.

About 20-30% of people with chronic, untreated HCV will progress to cirrhosis (serious liver scarring). Even then, the liver can still function. When a cirrhotic liver can ‘compensate’ for the damage this is called ‘compensated cirrhosis’. When the liver is too damaged to function properly, this is referred to as ‘decompensated cirrhosis’ or ‘end stage liver disease’.



## Glossary

**Ascites** An abnormal accumulation of fluid in the abdomen, a sign of serious liver damage in people with hepatitis C

**Cirrhosis** Severe scarring of the liver that makes it difficult for the liver to carry out its functions

**Diabetes** Illness related to not being able to regulate sugar

**Encephalopathy** Degenerative brain function or disease

**Fibrosis** Mild to moderate scarring of the liver

**Genotype** A category for different types of hepatitis C viruses

**Grading** The grade of hepatitis infection refers to the amount of inflammation in liver tissue

**Jaundice** A common symptom of hepatitis where increased levels of bilirubin lead to a yellowing of the skin or eyes

**Portal hypertension** Increased blood pressure (hypertension) in the vein carrying blood to the liver

**Staging** The stage of hepatitis infection refers to the amount of scarring (fibrosis)

**Varices** Extended or swollen veins that can burst, a complication of cirrhosis

### End stage liver disease

If compensated cirrhosis progresses to decompensated cirrhosis, a liver transplant is required. Although it is a serious operation, successful liver transplants have been carried out in people with coinfection.

Each year, 1-5% of people with cirrhosis develop hepatocellular carcinoma (HCC; liver cancer). This can also be successfully treated, especially if it is caught early.

### HIV and hepatitis C coinfection

Although many people have lived with HIV and hepatitis C for many years, often without knowing that they were coinfecting, HIV makes HCV progress more quickly. The risk of serious liver damage is greatest if your CD4 count is under 200 cells/mm<sup>3</sup>.

HIV drugs have enabled many people to lead much longer lives. This means that people with HCV are now living long enough for the hepatitis to be a concern. End-stage liver disease from hepatitis C coinfection is now a leading cause of death among HIV-positive people in the developed world.

However, hepatitis C can be treated, regardless of a person's HIV status and some of these deaths are related to late diagnosis of HCV, or late treatment, after severe liver damage has already occurred.

### Effect of hepatitis C on HIV

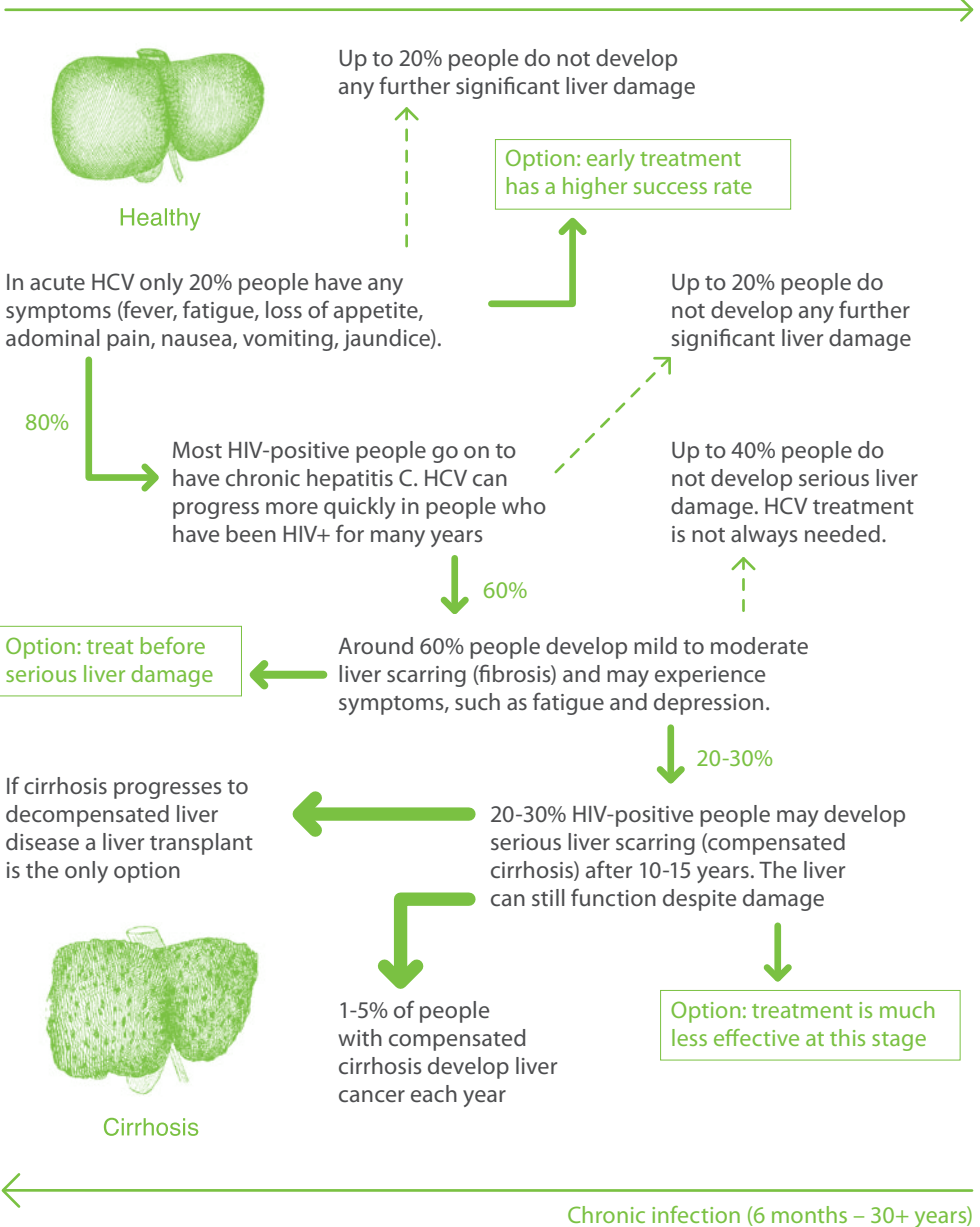
Hepatitis C is not thought to worsen HIV, but it may make HIV treatment more complicated. This is mainly because the liver processes most HIV drugs. Having HCV puts you at greater risk for liver-related side effects from HIV drugs. But, the benefit of HIV treatment still outweighs the risk of side effects. The doses of some HIV drugs can be individually adjusted for people with advanced, liver disease by measuring drug levels in a sample of blood.

Factors that accelerate HCV progression

- HIV coinfection.
- Alcohol intake, especially more than 50 grams/day.
- Aging.
- Duration of infection.
- Older at time of infection (over 40 years of age).
- HBV coinfection.
- HCV may progress faster in men than women.

Fig 1: Risk of HCV progression in HIV-positive people

Acute infection (0-6 months)



### How can you protect your liver?

There are many things that you can do to help your liver stay healthy. These include:

- Getting hepatitis A and hepatitis B vaccines. Having another viral infection in your liver can worsen hepatitis C.
- Drinking less, or stopping drinking alcohol—the less you drink, the better for your liver. Sometimes drinking less, or not at all, is more important than treating HCV.
- Maintaining normal weight; being overweight increases your risk for fatty liver.
- Drinking plenty of water, to help your liver filter out waste and toxins.
- Eating fewer fatty, salty and high sugar foods.
- Trying to eat more fresh fruit and vegetables, complex carbohydrates (whole grains, breads, rice, pasta, cereals, vegetables, fruits, beans, nuts and seeds), low-fat foods, high-fibre foods and an adequate amount of protein.
- Using HCV treatment to reduce liver damage.
- Asking questions & getting support  
Talking with other people who are living with hepatitis C or HIV and HCV.

In the UK, most cases of acute HCV infection in people with HIV have been reported among HIV-positive gay men.

The majority of these cases occurred from sexual exposure, even though large studies in heterosexuals have shown that HCV is not easily transmitted sexually.

HIV clinics in London and Brighton have now reported over 400 cases since 2003. In many of these cases, HCV has only been found because routine monitoring required during HIV treatment picked up increases in liver enzyme levels.

*'At the time I was diagnosed, I had been feeling really ill for about 6 weeks – tired all the time, pains everywhere. My GP failed to diagnose it but my HIV clinic picked it up straight away. In a way it was a relief because at last I knew what was causing it.'*

*'It was like getting an HIV diagnosis all over again. It changes how you think about sexual risk.'*

This has led to several public health campaigns for gay men, although awareness of HCV is still low.

The experience for many people of being diagnosed with HCV after many years of living with HIV is very traumatic, and is not helped by the lack of information about which risks are related to HCV transmission. For other people, the impact of HCV may be underestimated because they still see HIV as being more serious.

It is also complicated on a personal level because many of these men were open

about their HIV status and chose other HIV-positive partners as part of a choice to responsibly deal with HIV. An HCV diagnosis often means contacting previous partners to advise them of their risk of HCV.

People would like to protect themselves and each other, but often do not have accurate information to use to make these decisions.

*'... prior to the HCV infection, I had a reasonably active sex life, mostly with other HIV-positive men. In these circles, the issue of HIV disclosure is resolved by the simple fact that everyone is HIV-positive. However, because I do not really understand how I acquired my HCV, I am less clear about how to protect others from sexual transmission. Consequently, my sex life has declined dramatically and I see no sign of it improving.'*

'I suspect that disclosure within the group of HIV-positive men would be very similar to disclosing ones HIV status to a prospective sexual partner who was HIV-negative, indeed, maybe harder because of the lack of understanding over what steps to take to protect them.

The solution of finding other men in a similar position to mine means that my sexual partners would have to come from an even smaller group than they do at present.'

Exposure to HCV is also more likely if sex involves higher risk or trauma from rougher sex or from fisting, and this is often more likely if some recreational drugs are used. Because HCV is so infectious, it can also be more easily spread during group sex than HIV.

An analysis from the London and Brighton hospitals reported the following risks for HCV sexual transmission:

- Being HIV-positive
- Unprotected anal intercourse
- Sharing sex toys
- Rougher sex (longer fucking or fisting)
- Group sex or sex parties
- Number of partners
- Recreational drug use
- Other sexually transmitted infections (especially syphilis)
- Meeting partners online

HIV is a key factor in these cases of sexual transmission. This is likely to be related to the higher hepatitis C viral load in blood and possibly semen, in people with coinfection.

As many of these experiences overlap there are limitations in trying to identify the exact cause or route of infection. Another study suggested that the risk of HCV increased six-fold in people who get fisted compared to people who don't fist.

It is also important to remember though that people can also catch HCV without fisting and without using recreational drugs or taking part in group sex.

'There is so little information on the exact mechanism for HCV sexual transmission, and so little awareness amongst gay men or knowledge about what is safer HCV sex for an HIV-positive man that many people stop having sex until their HCV is cleared'

Responses to an HCV diagnosis are individual, and are not helped by a general stigma and lack of information about hepatitis C.

'I immediately told my partner and two fuck buddies who I was concerned I had put at risk. All were tested but none were infected. I also told my immediate family but that was all ... I decided not to tell my casual sexual partners - many men "don't ask, don't tell" and it was never an issue.'

'I didn't tell any of my friends because of possible stigma and I hoped the treatment would cure me and could put the whole experience behind me.' As my partner and fuck buddies had not become infected, I decided that bareback sex alone was not enough to transmit it.'

The advantage of detecting acute HCV (within 6 months of infection) is that there is a higher chance of clearing HCV with treatment, especially for harder to treat infections with HCV genotypes 1 and 4. HCV may progress more rapidly in people who are already HIV-positive.

The chance to clear HCV and protect sexual partners can be an important reason to use treatment.

'Six months after treatment I feel very lucky to have a "sustained virological response". I had all the side effects during treatment, and it truly was the worst time in my life, but it was all worth it.'

The decision to treat early – although recommended because of higher clearance rates – also needs to be balanced against the side effects from HCV treatment. Some people do not treat early because of the hope that easier to tolerate drugs may become available in the next 5-10 years.

'Deciding on treatment for the HCV was a difficult process. I have an excellent relationship with my HIV doctor but there was considerable pressure from the HCV specialist for me to start treatment immediately.

Because I have lost the sight in one eye because of CMV in the 1990s, I also consulted my ophthalmologist. She told me that the current HCV treatment carries a risk for a minority of people of causing fuzzy spots in the eyes.'

'Because of this information, I decided not to use HCV treatment at that time. I was not willing to risk any further damage to my eyesight.

I do not drink, which will hopefully slow down the progression of any liver damage. In twenty years I will be in my 70s and I suspect that it will not be the HCV that kills me. Over this time I gamble that HCV treatment will improve.'

Lack of information about HCV in the gay community, even amongst HIV-positive men makes a new diagnosis difficult at a time when you need most support. Some people say it felt like getting their original HIV diagnosis again.

*'Living with HCV has been difficult. When I discovered my HIV infection, I told almost no one. When I discovered my HCV infection I told too many people which I now regret since it means I have less control over who knows and who does not.'*

But again there are many approaches to dealing with a new HCV diagnosis:

*'I regret not relying on my friends for support, because I know it put an enormous burden on my partner who had to juggle being both partner and sole carer for me. I know I am not an easy patient. I don't think I could have done the treatment if it had not been for the unflinching support of someone who was totally devoted to me.'*

It is easier to talk about HCV once you feel stronger, or after a successful response to treatment. As with HIV, knowing other people in the same situation may be the most positive support.

*'There was no co-infection support group when I first went. I was the only HIV-positive man at a group run by the Hepatitis C Trust... but it was tremendously useful. I got just as much from helping other people as I did from their support.'*

They also run a fantastic helpline and everyone there has or has had Hepatitis C and they really understand what support means.'

The Hepatitis C Trust Helpline and Support Groups  
0870 200 1 200

Monday to Friday, 12.00 to 6.00pm  
Thursday, 12.00 to 7.00pm

Calls are charged at the national rate.

The Hepatitis C Trust run support groups that are women-only, men-only and mixed.

They also run a Gay Men's support group and a group for gay men co-infected with HIV and hep C.

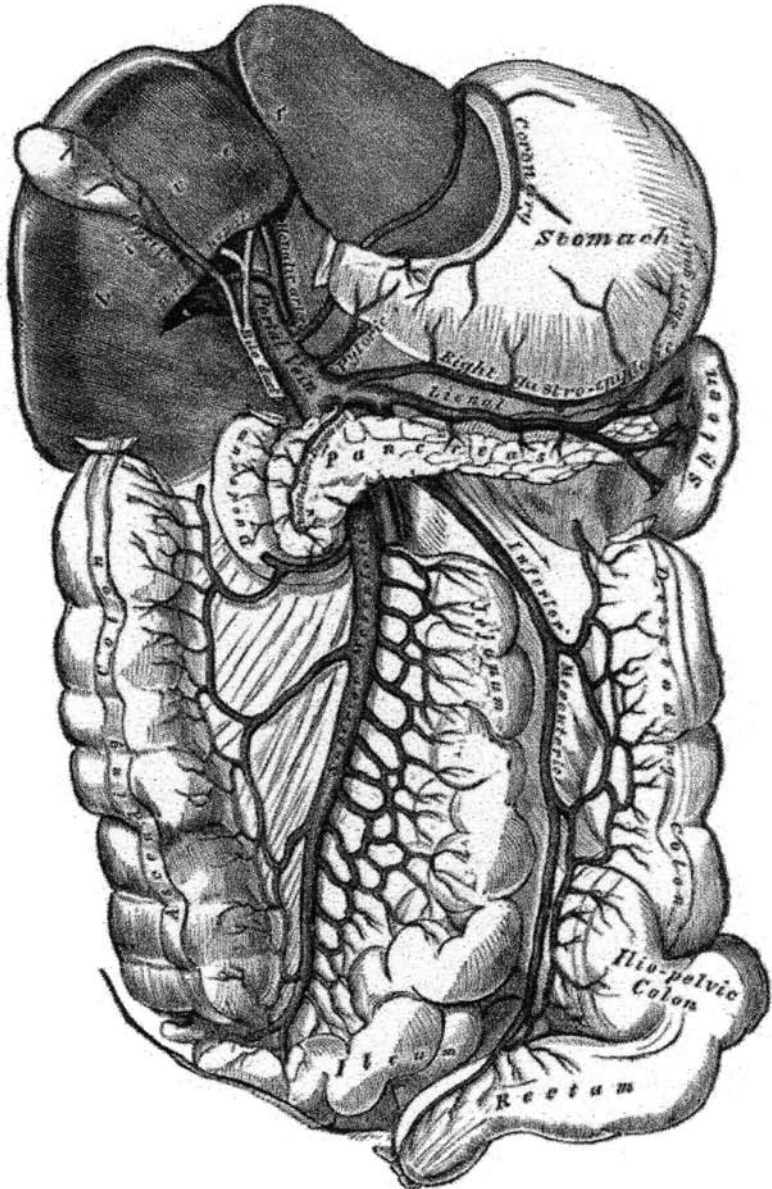
## Glossary

**Genotype** A category for different types of hepatitis C viruses

**SVR** 'Sustained virological response' having a negative HCV viral load test 6 months after stopping HCV treatment - effectively 'being cured of HCV'

\* www – More detailed stories about new HCV infections are linked to the the web-based version of this guide





It is very common for people who became HIV-positive through blood products or sharing injection drug equipment, to also have hepatitis C.

Most people in this situation have been living with both infections for many years.

One activist said:

'Even though I was diagnosed in the early 80's when HCV was called non-A non-B, that diagnosis was irrelevant compared to HIV. Now it has changed: while HIV is often under control, HCV has become the main cause of death for co-infected people.'

And others explained:

'I can't remember exactly when it was that I learned I had HCV but it was within a couple of years or so of receiving my HIV diagnosis and that was in early 1987. As an event, it pretty much went unnoticed as far as I was concerned. While I had experienced my HIV diagnosis as a devastating and life-changing blow, it barely registered when I was told I had HCV.'

'The only people I told were other ex junkies who I knew were also being tested. Even though my family and friends knew that I was HIV-positive, I didn't consider HCV as big news.'

For most of this time HIV was the most important health issue and HCV was just in the background. Now, HIV treatments have kept people alive long enough to develop complications from HCV, and dealing with hepatitis C is now the most important health concern.

Many people have lived with hepatitis C for years, before there was an effective treatment available. This involved monitoring and generally delaying treatment for as long as possible.

This was partly because of the side effects, and partly because treatment does not work as well for HIV-positive people. Also, many people chose to wait for newer treatments to become available.

'I am hoping that in a year or so some of the drugs on the pipeline will prove to be more effective. I hope that my liver will hold that long.'

I am really not looking forward to starting treatment with what is available at the moment – but I will do if that is required. But I am fearful because my quality of life is gonna drop to the floor – and for at least a year...'

'Careful monitoring is really the key to safely being able to delay treatment, especially if your liver enzymes remain stable and scans show little fibrosis.'

### HCV transmission to sexual partners

Advice given to heterosexual couples about the risk of HCV infection emphasises that there is little or no risk from sexual transmission.

‘For years, I was told that the risk of sexual transmission of HCV was very low, in fact recommendations for heterosexual couples in which one of them is HCV positive is not to use condoms.’

‘Since diagnosis with HIV we have practised safe sex by using condoms – primarily because of issues of re-infection (especially as we are both on different combinations). But, we had unsafe sex for nearly 3 years and he’s not HCV-positive...’

‘More recently, after my HIV viral load had been undetectable for several years, my partner and I stopped using condoms, although sometimes we worry about the potential risks of HIV and HCV infection.’

The approach to when to treat HCV is often different for people who have had HCV or HIV and HCV for a long time.

Getting the right balance between delaying treatment and not waiting too long is very difficult though because treatment is less effective if the liver becomes seriously scarred.

HCV treatment is difficult because side effects can make you feel more tired and unwell. This can interfere with work commitments and general quality of life.

HCV treatment can affect mood and increase depression. Some people use alcohol to cope with anxiety and depression in their life, even though alcohol itself causes depression and liver damage. Cutting out or cutting down on alcohol for the period of HCV treatment is a very good idea, since it may increase your chances of responding to treatment, even though it can be difficult.

Response rates to treatment are lower in people infected with HCV genotype 1 or 4. Some people choose to wait for better treatment.

*'I know people doing very well on HCV treatment, but at the moment, I don't feel strong enough to try it. The fact that there are new treatments coming in a few years, even though they will probably be added to the current treatment, has helped me to take the decision to check my liver every 1-2 years (by Fibroscan or biopsy) and wait for a better treatment options'.*

If your liver has already been badly damaged by HCV, then treatment is more important.

Planning for treatment is important, and with support, many people can manage treatment well when they need it.

Access to treatment is also not always straightforward, especially for those people who are heavy drinkers or who are using heroin and other drugs (see Section 'HCV treatment and drug users').

*Working with a team is often essential if former and current drug users are to be able to understand and access treatment.*

*'Having the experience of sharing with other people who have the same kind of health problems helped me to make informed decisions. It helped me to know where the information was available. They helped me understand things that were not easily understandable – because there's quite a bit of jargon there...'*

*Peer support, by people who are co-infected and the co-infection clinic is crucial'*

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Monday to Friday, 12.00 to 6.00pm  
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*\* www – More detailed stories about new HCV infections are linked to the the web-based version of this guide*



## Testing and monitoring

### Tests to diagnose HCV

HCV testing is recommended annually for HIV-positive people especially if diagnosed with another STI and/or are sexually active. It is also recommended after confirmed abnormal liver enzymes.

Although you may have already been diagnosed with HIV and HCV, information on how HCV is diagnosed is important.

HCV testing is a two-stage process. The first test is usually an HCV antibody test. If it is positive, it means that you have been infected with hepatitis C in the past, and that you may still be infected.

People who have spontaneously cleared hepatitis C without treatment remain antibody-positive for years afterwards. On the other hand, antibody test results may be negative even when someone does have chronic hepatitis C. This may occur when:

- CD4 cell count is low (less than 200), because the immune system may not be producing antibodies
- In acute (early) HCV infection, since antibodies take six to twenty-four weeks after infection before they develop.

Table 1: HCV tests and what the results mean for HCV infection

Type of Test			
Diagnosis	Antibody test result	HCV RNA (Viral load test)	Alanine Aminotransferase ALT: liver enzyme
Prior, cleared HCV Infection	Positive	Undetectable on two tests, performed at least 6 months apart	May be up to 7 fluctuate, or be persistently raised
Acute HCV Infection	Negative; becomes positive within 6-24 weeks	Detectable within 1-2 weeks, usually very high	May be up to 7-10 times above normal level
Chronic HCV Infection	Positive	Detectable	May be persistently normal, fluctuate, or persistently raised

An HCV viral load test (RNA) will confirm or rule out chronic infection. The viral load test looks for genetic material of HCV in the same way as an HIV viral load test detects HIV.

If you have detectable HCV viral load, it means that you are currently infected with HCV. If your hepatitis C viral load is undetectable, a second test should be done six months later. If two successive test results are undetectable, you have cleared HCV.

### Routine blood tests

After these test show you have HCV, your clinic should run a series of other blood tests.

These include HCV genotype, testing for hepatitis A and B, full blood count (FBC) and clotting studies, liver enzyme tests (including ALT/AST, albumin and GGT), thyroid function test (TFT), serum iron, liver autoantibodies, and liver ultrasound.

Information about these tests is included in Table 1.

### Hepatitis C viral load (RNA testing)

The hepatitis C virus replicates at a much greater rate than HIV (trillions vs. millions copies per day) so HCV viral load is often high– sometimes in the tens of millions.

People with HIV usually have higher hepatitis C viral loads than people with HCV alone.

Unlike HIV, hepatitis C viral load is not related to the risk of the disease getting worse. Unlike HIV, the hepatitis C viral load is not used to decide when to start treatment.

This can be confusing, especially if you are used to using HIV viral load results as a guide for when to start HIV treatment.

HCV treatment is more effective for people who start treatment when their HCV viral load is low (less than 400,000/IU), but most people already have viral loads that are well above this before treatment.

## Glossary

**Antibody** A protein that is part of the immune system and which recognises an infection

**Autoantibody** Abnormal antibodies produced against the body's own tissues

### About HCV viral load testing

There are two types of viral load tests.

#### Qualitative testing

Qualitative testing is usually used to diagnose HCV, and to monitor response to treatment, because it can detect very low levels of HCV RNA.

The most sensitive qualitative test can detect a viral load as low as 5 IU/mL ('International Units per millilitre of blood').

The virus is either found or not, and results are reported as either detectable or undetectable.

#### Quantitative testing

Quantitative testing measures the amount of HCV in a blood sample. Results are reported as IU/mL.

Quantitative testing is usually used to obtain a baseline (pre-treatment) viral load. Qualitative testing is often used to monitor response to treatment during HCV therapy.

### HCV genotype

There are at least six different strains of hepatitis C, known as genotypes. They are numbered from 1-6, in the order that they were discovered.

Each genotype has variations, called subtypes. Subtypes are named by lower-case letter (i.e. a, b, c, etc). One genotype cannot change into another, but it is possible to catch more than one genotype at the same time, or to catch a different genotype from the one you already have. You can also catch the same genotype again after successfully clearing the virus with treatment.

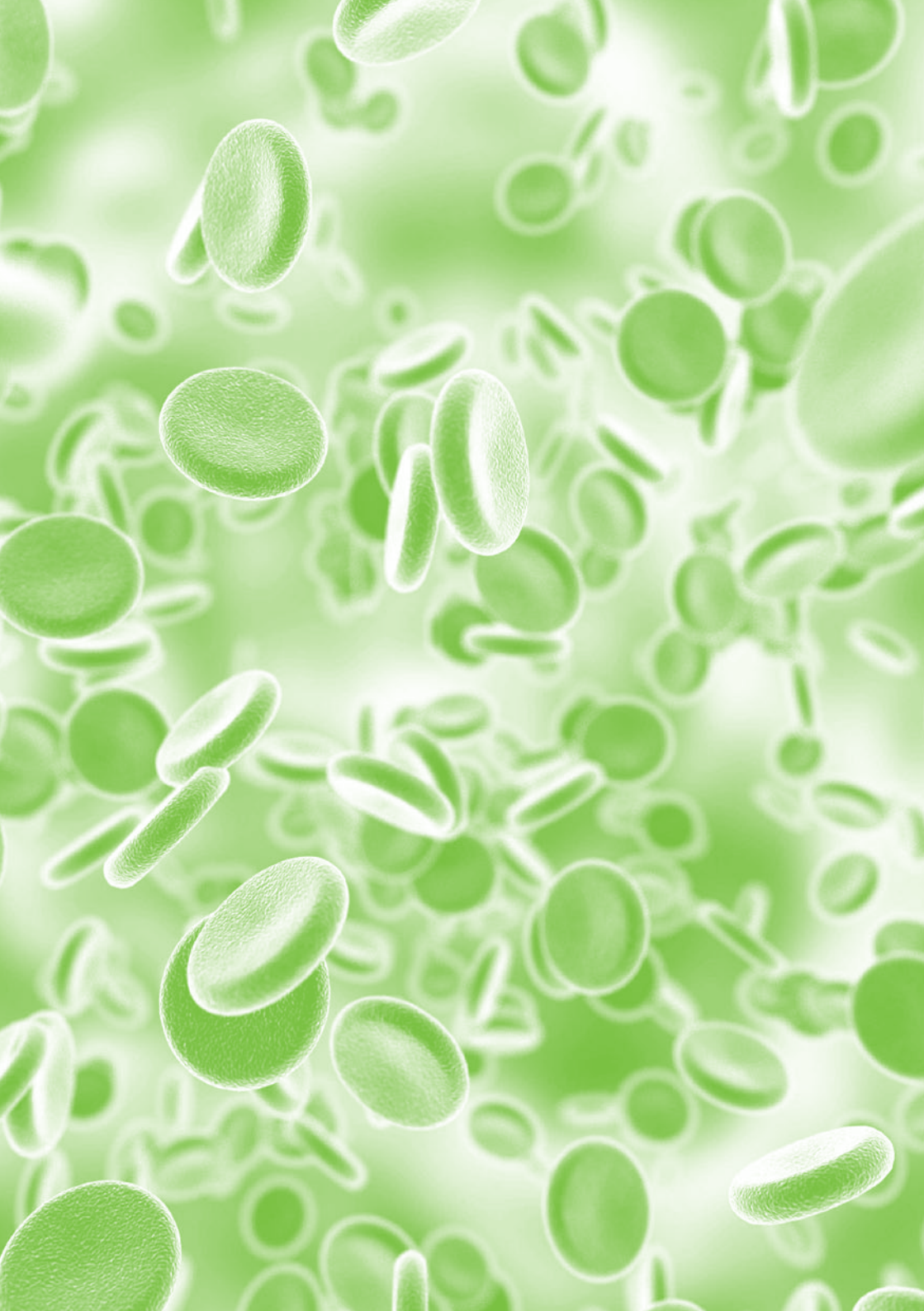
It is essential to know your HCV genotype in order to plan when to use treatment and how long to treat for. If your clinic hasn't done this, then be more insistent. This is strongly recommended in the British HIV Association (BHIVA) guidelines for treatment of HIV and HCV coinfection.

**It is essential to know your HCV genotype in order to plan when to use treatment and how long to treat for. If your clinic hasn't done this, then be more insistent.**

Table 2: Predominant HCV genotype by region

Region	Predominant HCV Genotype
Europe, North America, Japan	HCV Genotype 1a or 1b
Southeast Asia	Genotype 3
Egypt, Middle East, Central Africa	Genotype 4
South Africa	Genotype 5
Asia	Genotype 6





### Liver enzyme tests: ALT and AST

Liver enzymes are proteins that have specific functions. Some of these enzymes leave the liver and enter the blood when the liver is injured.

Several things can cause liver enzyme levels to increase. These include side effects from prescription and over-the-counter medications, herbs, vitamins and supplements, exposure to toxic fumes, high alcohol intake, a new or existing hepatitis infection, and coming off drugs and/or alcohol.

Many HIV drugs can cause liver enzymes to increase—though not usually to dangerous levels. In some cases, those drugs need to be stopped or switched.

People taking HIV drugs (or any other drugs processed by the liver) need to have liver enzyme levels measured with their routine blood tests. This is especially important if they also have HCV. Liver enzymes tests are often called liver function tests (LFTs), although they do not really measure liver function. The results from these tests should be looked at in relation to other information.

Alanine aminotransferase (ALT) and aspartate aminotransferase (AST) are two important liver enzymes.

The liver produces ALT, which helps produce salts and amino acids (which are used to make proteins). Increases in ALT are usually a signal of liver inflammation or damage. However, ALT is not a good marker for predicting HCV disease progression, or indicating how much your liver may already be damaged. This is because liver enzyme levels regularly go up and down in people with HCV.

Up to a third of people with chronic HCV always have a normal ALT, but some of them will have serious liver damage.

**Normal liver enzyme levels, even over time, do not mean that you have no liver damage.**

ALT should be monitored routinely, as if it continues to increase, it may mean HCV is getting worse.

AST is another enzyme involved in the production of amino acids but because it is made in the heart, intestines, and muscles, it is not a sensitive marker for liver injury. AST is often used to monitor liver inflammation and damage in combination with other tests.

Table 3: Table to track your lab results

Note: These ranges are included as a guide. Different laboratories may use different ranges, and it is important to refer to the reference range that your laboratory is using.

	Date and Lab results					Normal Ranges (W= Women M= Men)
CD4 Count						Measured in cells/mm <sup>3</sup> . Range 0 over 1600 Higher the better, over 200 reduces risk of OI's
HIV Viral load						Measured in copies/mL; Range from undetectable to over 1 million (rare)
HCV Viral load (RNA)						Measured in IU/mL; Range from undetectable to over 40 million. When over 400,00 it reduces the chance of treatment success
ALT						W: 7 - 30 units/L M: 10 - 55 Units/L
AST						W: 9 - 25 units/L M: 10 - 40 units/L
ALP						W: 30 - 100 units/L M: 45 - 115 units/L
GG						W: Over 45 U/L M: Over 65 U/L
Bilirubin (Direct)						0.0 - 0.4 mg/dl (US) 0 - 7 umol/L (SI units)
Bilirubin (Total)						0.0 - 1.0 mg/dl (US) 0 - 17 umol/L (SI units)
Albumin						3.1 - 4.3G/dL (US) 31 - 43 g/L (SI units)
PT						11 - 13.5 seconds PT 1.5 - 2 times control is abnormal

### Other liver enzymes: ALP, GGT, bilirubin, albumin and prothrombin time

It is important for people with HCV and HIV/HCV to undergo routine monitoring of ALP, GGT, bilirubin, albumin and prothombin time.

Alkaline phosphatase (ALP) is another enzyme that is present in tissues throughout the body, including the liver. If blood levels of ALP increase, this can be a sign of disease or damage to tissues. Your doctor can also test specifically for ALP from the liver. Some medications, including the HIV protease inhibitors atazanavir and indinavir, can cause ALP elevations. Elevated ALP from the liver is a sign of blocked bile ducts caused by liver disease.

Gamma glutamyl transferase (GGT) is enzyme involved in metabolism that is produced in the bile ducts. Any type of liver disease, heavy drinking, and some medications can increase levels of GGT.

Bilirubin is a waste-product from the breakdown of red blood cells. The liver is involved with processing bilirubin. When the liver is damaged, it may be unable to process bilirubin, and the total bilirubin levels increase. Jaundice, dark urine and pale stool are common signals of increased bilirubin. Some drugs, including the HIV protease inhibitors atazanavir and indinavir, can cause increased bilirubin levels.

Albumin is a protein made by the liver. It carries drugs, hormones and waste products through the blood and maintains fluid levels within the body. Abnormally low levels of albumin are a sign of serious liver damage.

PT (prothrombin time; pro-time)PT testing measures the amount of time it takes for blood to clot. When the liver is damaged, its ability to make clotting factors is impaired. If this time increases – referred to as a 'prolonged PT interval' it shows that the liver is not working so well.

### Screening for liver cancer in people with cirrhosis

People with HCV cirrhosis are at risk for liver cancer. Regular screening can detect early-stage liver cancer.

Usually, screening consists of a liver scan by ultrasound or computed tomography (CT), and a blood test measuring alpha-fetoprotein (AFP; a protein made in foetal liver tissue) levels. Screening is recommended every six months.

### Liver biopsy

A liver biopsy is where small sample of liver tissue is taken, and examined later under a microscope.

A liver biopsy is considered the best way to assess liver disease. It provides information about both the stage (the amount of scarring) and the grade (amount of inflammation, which drives future scarring) of liver disease. It can also identify other causes of liver disease.

A liver biopsy involves having a needle inserted between the ribs, and into the liver. This then clips and removes a small sample of liver tissue. The procedure can be painful, and carries a small risk of complications (1-3%), such as puncturing other organs or bleeding, and a much, much smaller risk of death (0.1% to 0.01%).

Biopsy is not perfect because there can be errors in sampling and in reviewing. Results may be inaccurate when a sample is too small, or it comes from an area in the liver that is more or less damaged than the rest. Samples also need to be reviewed by a specialist. In addition, the cost of a biopsy may limit how easy this is to access. Despite this it is still the 'gold standard'.

## Glossary

**Biopsy** Taking a small sample of body tissue for examination and testing in the laboratory

### Computed tomography (CT) scan

Medical scan that produces images on a computer from sections inside the body

Because a biopsy is not pleasant, many people with HCV are reluctant to take part. Still, many doctors think they offer the best and most reliable way to know the level of liver damage. Luckily, reliance on biopsy as a requirement for HCV treatment is an area that is changing.

Some experts think that if you have a high chance of response to treatment (people with genotype 2 or 3, and with lower HCV viral load) you do not need a biopsy before HCV treatment.

A biopsy may be most useful for informing treatment decisions in people with harder-to-treat HCV (genotypes 1 and 4) who may be able to wait for newer therapies if they do not have serious liver damage.

*‘One of the main obstacles to HCV treatment is the liver biopsy. So, right now I am considering treatment, because I see a lot of people dying from hep C and I’ve had it for a long time.*

*My viral load is OK, my liver enzymes are OK, but we know that the only way to know the real situation is a liver biopsy.*

*To be honest, I am ready to start treatment tomorrow, but I don’t want a doctor to put a needle in my liver.’*

A biopsy should only be performed by an experienced doctor, who has a good record of successful biopsies.

The doctor should guide the needle with an ultrasound scan to reduce the chance of puncturing another organ, and to pinpoint areas of damaged liver tissue for sampling. If you are concerned about the pain, ask your doctor about options for pain management during and after the procedure. Ask other people about their experiences. It may be easier to find a good doctor by talking with people who have had a biopsy.

Recent research is looking at less invasive alternatives to biopsy (see page 38).

### When is a biopsy important?

Having a biopsy can help you make a treatment decision by showing how damaged your liver is. Despite the discomfort, and risk of complications, it is an important test for monitoring HCV disease over time. It is therefore recommended during chronic infection, and especially recommended before starting treatment.

In untreated, HIV-positive people, a follow-up biopsy is recommended every 2-3 years.

UK guidelines say that the risks versus benefits should be weighed for each individual. Many centres feel that the risk of a liver biopsy outweighs the benefit in men with haemophilia.

One doctor said:

*‘I tell people who really don’t want a biopsy, that they are important in order to make treatment decisions, and they may need to get one in the future. For example, if someone isn’t responding to HCV treatment after 12 weeks, we need to decide whether or not to stop treatment altogether, or to continue with maintenance treatment.’*

### Interpreting biopsy results

There are different systems for measuring liver inflammation and fibrosis. All go from zero to a maximum score; the higher the number the more inflammation or fibrosis.

	Inflammation	Fibrosis
Ishak	0 – 18	0 – 6
Metavir	A0 – A3	F0 – F4
Knodell	0 – 18	0 – 4

UK (BHIVA) guidelines define mild liver damage as a modified Ishak score of 3 or less and a fibrosis score of 2 or less, and moderate liver damage has an inflammatory score of 4 or more and/or a fibrosis score of 3 to 5.

However, these scoring systems are not used in every hospital and some clinics prefer to just stage biopsies as mild, moderate or cirrhosis.

### Measuring liver stiffness (FibroScan)

The FibroScan is a non-invasive approach that is already showing promising results.

It is a scan that measures the 'stiffness' or 'elasticity' of the liver, using an ultrasound scan to create waves and measure their speed.

Wave speed is used to determine liver stiffness; the harder the liver tissue, the more rapidly the waves will pass through it.

Although this scan is much less sensitive in detecting mild or moderate liver damage, it is very sensitive at picking up severe damage. It can therefore identify people who need HCV treatment more urgently.

Results are presented as a figure in kilopascals (kPa). The higher the figure, the stiffer and more damaged the liver.

Results from Fibroscan do not equal fibrosis measured on other scores for all patients. However, a score of over 7.2kPa indicates higher likelihood of significant fibrosis (F2 or greater on Metavir and needing HCV treatment) and over 13kPa indicates cirrhosis (F4 on the Metavir scale).

These results need to be interpreted in the clinical context and should be repeated before labelling significant fibrosis/cirrhosis.

FibroScan is not painful. In the UK, both the Royal Free Hospital and the Chelsea and Westminster Hospital are using Fibroscan to monitor people with HCV/HIV coinfection.

'I refused to have a biopsy and for years argued with the specialists, but last month I had a FibroScan. This tests how stiff the liver is and can give an indication of the extent of liver damage. It was easy and painless'.

Alternatives to a biopsy: non-invasive

### biomarkers of liver disease

New research is looking at whether results from laboratory tests can be used in place of a biopsy. This could easily change the way that HCV is managed in the future.

Studies using combinations of these lab results suggest they are useful for identifying serious liver damage, but it remains controversial whether they are a reliable substitute for a liver biopsy.

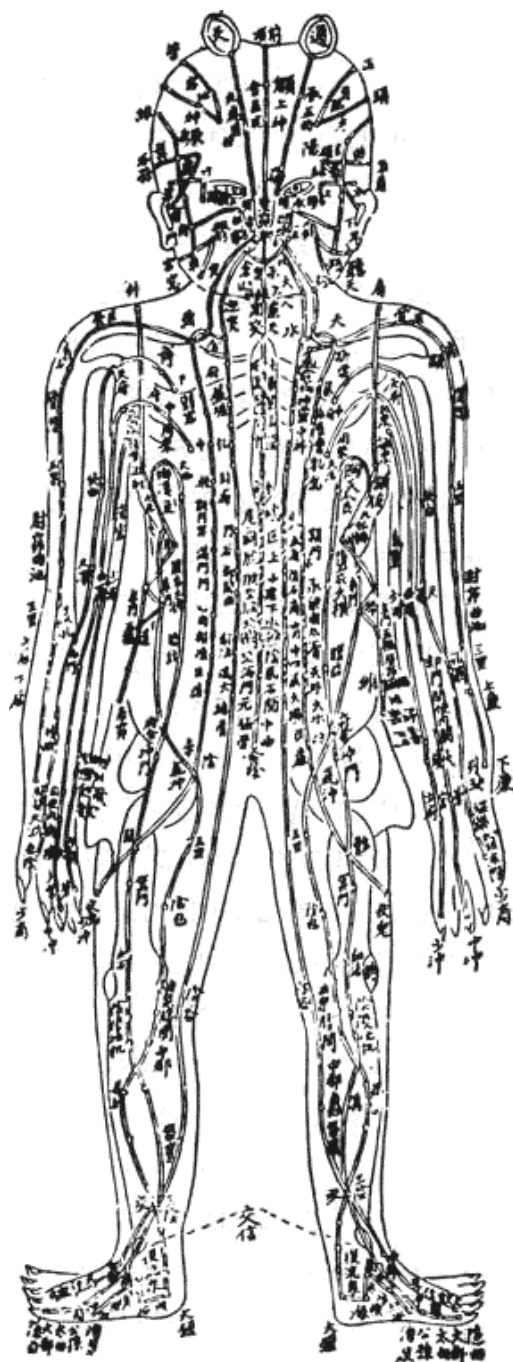


Youtube FibroScan

[www.youtube.com/watch?v=I\\_E4ZGmKooA](https://www.youtube.com/watch?v=I_E4ZGmKooA)

Youtube liver biopsy





## HCV treatment and management

One approach to managing HCV is to decide first what your priority is. Clearing the virus is the most important goal for many people but not for everyone. In some cases, treatment may be more likely to improve the condition of your liver than to clear the virus. In other cases, treatment may not be necessary right away, or ever.

For some people, deciding whether to start HCV treatment is an easy decision. For most, it isn't. There are a lot of factors to be considered.

This section focuses on conventional HCV treatment with the current standard of care, which is a combination of pegylated interferon and ribavirin.

Lifestyle-related choices that help your liver are covered later in the section 'Living with coinfection'.

### Who needs HCV treatment?

Treatment guidelines generally agree about when to treat HCV, and who to treat.

Regardless of HIV status, for all HIV-positive people this is when "the benefits of therapy outweigh the risks". Sometimes treatment is recommended for people with coinfection earlier than HIV-negative people.

- HCV treatment is more effective when given during acute infection, and is often recommended for HIV-positive men who have acquired HCV sexually.
- People with mild liver disease do not require treatment right away
- Treatment should be offered to people with moderate liver damage, since they are at risk of progression to cirrhosis.
- People with compensated cirrhosis can be treated, but treatment is less likely to be effective, and side effects may be worse. Careful monitoring is needed.
- People with decompensated cirrhosis cannot be safely treated for hepatitis C. This is when a liver transplant is the only option.

'I've heard about what happens in families during HCV treatment, people get so depressed, in such a mental state – the husband or wife will say "I hate you"...because people on interferon are so unbearable ... it's not worth it!

There's no guarantee you'll get rid of HCV, or even get better – but your life can be ruined!

### How is HCV treated?

Hepatitis C treatment is a combination of two drugs, pegylated interferon (PegIFN) and ribavirin (RBV).

Interferon is a man-made version of a chemical made by the human body that works against HCV in two ways. It works directly against the virus. It also stimulates the immune system to fight viruses. ‘Pegylated’ means that a small molecule has been attached to interferon to keep it in the body longer. This means you only need to inject once a week, and makes it more effective at treating HCV.

There are two types of PEG interferon:

1. Alpha-2a (manufactured by Roche, trade name ‘Pegasys’). Pegasys is a liquid that comes in one vial and is stored in the refrigerator. Everyone uses the same dose of Pegasys, regardless of their weight.
2. Alpha-2b (manufactured by Schering Plough, trade name ‘PegIntron’ or ‘ViraferonPeg’).

PegIntron is a powder that has to be reconstituted with purified water, both of which come in separate vials. PegIntron is dosed by weight.

Different formulations have been studied differently in patients with different severity of disease. They have not been compared directly, and so it is difficult to know whether one may be better than another in different circumstances.

Ribavirin is a nucleoside analogue, from the same family as many HIV drugs, but it does not work against HIV.

On its own, ribavirin is not effective against hepatitis C. It needs to be used with PEG interferon.

Ribavirin is given as pills or capsules, twice daily. It is usually dosed by body weight. Brand names for ribavirin include Copegus, Rebetrol and Ribasphere.

### How long is HCV treated for?

In HIV-positive people, treatment is currently recommended for at least a year, for all genotypes, although recently, researchers have looked at tailoring treatment according to individual response.

Some doctors are treating coinfecting people with genotypes 2 and 3 for less time if they have an early response to HCV treatment (see page 47 ‘How response to HCV treatment is measured’).

Some doctors treat people with genotype 1 and 4 for longer than a year. In particular, people with HIV/HCV coinfection may require a longer course of HCV treatment, especially people with HCV genotype 1.

Both AZT and ddI increase the toxicity associated with ribavirin. These HIV drugs should not be used during HCV treatment.

## Goals of HCV treatment

### Curing HCV

The primary goal is usually to get rid of the hepatitis virus, and to cure HCV.

In hepatitis C, a sustained virological response, or SVR, means that a person does not have HCV in his/her blood six months after the end of treatment. Most people who have had an SVR stay free of HCV, although there are less long-term results in HIV-positive people. Although some recent research has found very low levels of hepatitis C in the blood and liver tissue of some people with a sustained virological response, this may not have any significant effect on liver health.

### Improving liver health

A secondary goal of HCV treatment is to improve liver health by reducing inflammation, and, sometimes, reversing fibrosis. This even happens in people who do not get an SVR, although only in about half the number of cases.

For some people, the condition of the liver may worsen after HCV treatment, particularly among people who did not clear the virus. It is not clear why this happens.

### Maintenance therapy

Use of full or reduced dose pegylated interferon as a maintenance therapy in people who did not clear their hepatitis C with treatment, did not reduce the risk for liver disease progression. Therefore, maintenance therapy is no longer recommended for people with hepatitis C, regardless of their HIV status.

SVR reduces the risk of liver cirrhosis, liver cancer and liver failure for HIV negative and HIV positive people.

For HIV-positive people, there may be an additional benefit from HCV treatment in reducing the risk of liver-related side effects from HIV drugs.

### Predicting the response to treatment

Some people think they can't get treated for HCV because their CD4 counts are too low. But the things that are important for knowing how well you are doing with your HIV do not always predict how well you will respond to HCV treatment.

Several factors can help you predict your chance of how well HCV treatment will work, including:

- HCV genotype (2 and 3 are more sensitive to treatment than 1 or 4).
- HCV viral load (treatment is more effective with an HCV viral load that starts below 400,000 IU/mL).
- Race (treatment is less effective for African-Americans; ongoing research is looking at this question)
- Amount of liver damage and steatosis (treatment is less effective for people with cirrhosis or steatosis).

- HIV status (treatment is less effective for HIV-positive people than HIV-negative people).
- Adherence to treatment, including maintaining the full dose of ribavirin and pegylated interferon at least 80% of the time.
- Body weight (treatment is less effective for people who weigh more than 75 kg (165 lbs)).
- Age under 40 years.
- Effectively manage side effects!

In the end though, as with HIV, the only way to know how you will respond is to try treatment.

## Glossary

**Oesophageal Candida** Fungal infection ('thrush') in the throat.

**Steatosis** Accumulation of fat in the liver (also called 'fatty liver').

### When should HIV be treated first?

Using HCV treatment depends on:

- Willingness/readiness to start HCV treatment, and
- Need for treatment. If liver disease is mild, HCV treatment can be delayed. If it is moderate to serious, HCV treatment is recommended.

The most important aspects of HIV treatment are just as relevant for people who also have HCV, including choice of treatment, adherence, side effects and resistance. Generally, HIV treatment should be started first if CD4 count is less than 200 cells/mm<sup>3</sup>, and probably started first if it is between 200-350 cells/mm<sup>3</sup>. People with serious liver damage may need HCV treatment even when their CD4 count is lower than this. HIV treatment may be started at higher CD4 counts if the CD4 count is falling, and

HCV treatment will be used soon.

### When should HCV be treated first?

If HCV treatment is needed, people on a stable HIV regimen should be treated, even if their CD4 cell count is under 200 cells/mm<sup>3</sup>.

Older studies, that used standard interferon to treat HCV, reported that it was less effective for people with low CD4 counts. However, in a small group of people studied so far, PEG interferon plus ribavirin works at both high and low CD4 counts.

It is best not to start treatment for both HIV and HCV at the same time. This is because side effects from both treatments make this too difficult.

### HCV treatment and CD4 cell count

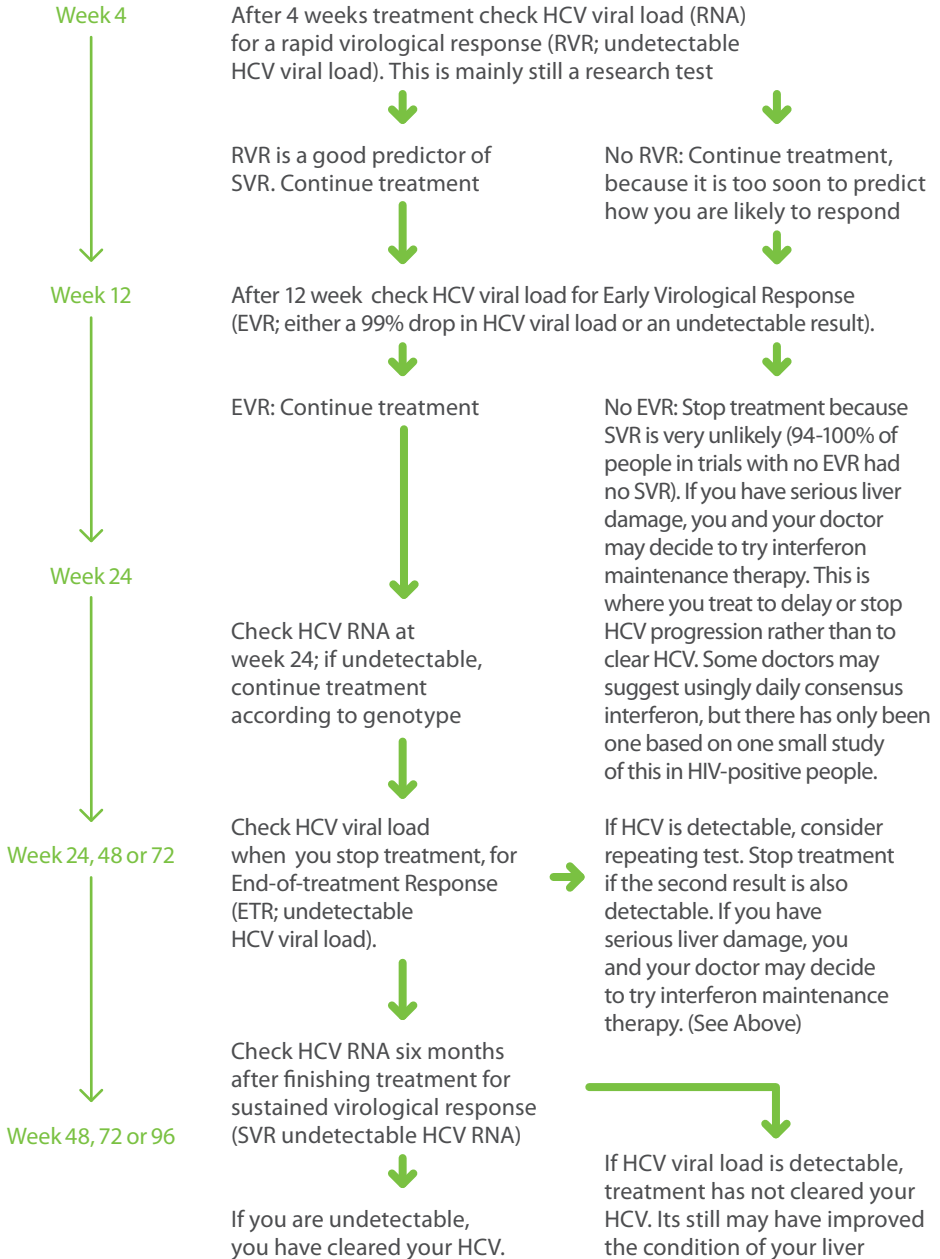
Even if you are on HIV treatment, interferon can cause your CD4 count to drop. However, your CD4 'percentage' usually remains the same, or may even increase. This shows that the drop in the count is unlikely to reflect a real change in your immune system.

To support this, the three major HCV treatment trials in HIV-positive people did not find more opportunistic infections (OIs) among people with low CD4 counts (under 200 cells/mm<sup>3</sup>).

There have been some reports of oesophageal Candida and TB in HIV-positive people using HCV therapy. In some cases, prophylaxis for certain OIs may be recommended.

After HCV treatment is ended, the CD4 cell count usually returns to the pre-treatment level within a few months.

Fig 2: Timeline for HIV-positive people on HCV treatment



In someone whose CD4 count is already strong (above 500 cells/mm<sup>3</sup>) there is no need to use HIV treatment before HCV treatment.

### HIV treatment concerns in people with coinfection

The main differences in HIV treatment for someone who also has HCV relate to:

- Timing of HIV treatment
- Concern for liver toxicity/damage as a side effect of HIV drugs, and
- The choice of HIV drugs.

Some drugs are less 'liver-friendly' than others. It is not clear though whether small increases in liver enzymes increase the risk of clinical disease. Caution is clearly important. HIV drugs should be selected carefully, and liver enzyme levels monitored regularly.

Some side effects occur more frequently in people with HCV coinfection, including lipodystrophy (fat accumulation or fat loss) and abnormal blood fat and insulin levels.

HCV increases the risk of developing diabetes and this risk is higher in HIV-positive people. Use of HIV protease inhibitors and nucleoside analogues, especially d4T (stavudine, Zerit), has been linked with an increased risk for high blood sugar and diabetes.

However, this risk should never be used as a factor to withhold HIV treatment.

### How response to HCV treatment is measured

The response to HCV treatment is measured by HCV viral load tests at different times.

#### SVR (sustained virological response)

An SVR means that HCV is not detectable in blood six months after completing treatment. Many experts think of SVR as a cure.

SVR rates are usually the most important results to look for from a clinical trial.

SVR-12 is used in research, meaning that a person is still undetectable 12 weeks after finishing treatment. Relapses almost always occur during the first 12 weeks after finishing treatment.

#### EVR (early virological response)

An EVR means that the hepatitis C viral load has dropped by 99% (2 logs), or is undetectable after 12 weeks of treatment.

Someone who does not have an EVR only has a 1-4% chance of getting an SVR. Usually, people choose to stop hepatitis C treatment if they do not have an EVR.

#### ETR (end of treatment response)

An end-of-treatment response means that hepatitis C virus can not be found using an HCV viral load test at completion of therapy. Some people with an ETR will see HCV viral load return, so ETR is not a reliable predictor of long-term response.



### RVR (rapid virological response)

An undetectable HCV RNA after four weeks is called a rapid virological response (RVR). If HCV viral load is undetectable, it is a good indication of continuing to have an SVR later. However, RVR is not good at predicting who is unlikely to respond, so treatment should not be stopped if there is no RVR. RVR is currently only used in research.

### Relapser (or breakthrough)

The term relapser refers to someone who has an EVR or ETR, but whose virus rebounded and who didn't achieve an SVR.

### Non-responder

Non-responder is a general term for someone who does not have an EVR, or, if they stay on treatment for 24 weeks, does not ever have a 99% drop or an undetectable HCV RNA while on treatment.

### How well does treatment work?

Clearly, many factors are involved with response to treatment.

The information in Table 4 is an overall snapshot of response rates from trials of PEG interferon plus ribavirin. \*

\* [www](#) – More detailed reports about trials in HIV-positive people are linked to the web-based edition of this guide.

Table 4: Response rates to treatment

Sustained Virological Response (SVR) rates	HCV Monoinfection (24 Weeks for Genotypes 2 and 3; 48 Weeks for Genotype 1)	HIV/HCV coinfection (48 Weeks for all Genotypes)
Overall	56 – 61%	27 – 40%
Genotype 1	42 – 44%	14 – 38%
Genotype 2 and 3	70 – 82%	Up to 73%

### Drug interactions between HCV treatment and HIV medicines

ddl (didanosine, Videx) should NOT be used during HCV treatment, because of a serious interaction with ribavirin that can cause lactic acidosis, pancreatitis, and the risk of liver failure in people with advanced cirrhosis.

AZT is not recommended because of the increased risk of anaemia.

d4T (stavudine) in some studies was linked with an increased risk for significant weight loss and lipoatrophy (fat loss) in people using ribavirin.

Abacavir may reduce the chance of a good response to HCV treatment because of a negative drug interaction with ribavirin, and should be avoided if there are other options for HIV treatment.

### HCV treatment and drug users (IDU's)

Hepatitis C treatment has traditionally been withheld from injecting drug users, even though current treatment guidelines recommend that treatment decisions be made on a case-by-case basis.

Fortunately, this has begun to change.

Experience in HIV treatment confirms that it is possible for drug users to adhere to ARVs, and response rates from clinical trials of HCV treatment in IDUs are similar to those reported in non-users.

- Try not to miss medical appointments, since some doctors will use this as part of the criteria for not treating your HCV.
- Don't avoid medical care because you are using.

This is especially important while you are on HCV treatment, because your doctor won't be able to monitor and treat your side effects.

- If you are on methadone, wait to taper or stop after treating HCV. Sometimes people find that methadone helps them through treatment, and may choose to increase the dose to help with side effects.
- It is important to find a doctor who is willing and able to work with drug users and who will treat your HCV.
- Asking other drug users to recommend a doctor –or to steer you away from one—may be a good place to start
- Discuss side effects of HCV treatment with your doctor, and ask how they will be managed. If you need pain medication or other medications with abuse potential, discuss this with your doctor. Make an agreement on how the two of you will handle this.

Depression and other mental health diagnoses are much more common among people with HCV, people with HIV, and drug users than the general population. Many of these conditions are treatable.

People with a history of depression are more likely to develop depression during HCV treatment. Depression can also happen to people who have not been depressed in the past. If you are concerned about the psychiatric side effects of HCV treatment, but want to treat your hepatitis C, consider support from mental health care services.

Some people can manage HCV treatment while they are using drugs; others have found that stopping or cutting down on drug use has helped them to prepare for, and stay on HCV treatment. This could be from a self-help programme, counselling, drug treatment, or heroin substitution, methadone maintenance, naltrexone implants, or using buprenorphine. Increasing the dose of methadone has helped people manage side effects of HCV treatment.

If you are still injecting drugs, ask your doctor or local syringe exchange programme for information on safer injection to lower your risk of HCV reinfection (and other infections).

### Concerns for people in recovery

Many people fear that they will relapse to active drug use, because the symptoms of interferon are very similar to opioid withdrawal. The risk of relapse is lower when side effects are promptly and effectively treated and when counselling and support from peers and medical and mental health providers is available.

Some people are concerned about self-injecting PEG interferon. If possible, injections can be given once weekly by a nurse to avoid triggering a relapse to injection drug use.

### Retreating HCV

With greater access to treatment, the number of people who did not clear the virus during treatment is also increasing.

Strategies for retreating HCV, including treatment with a different formulation of interferon, called consensus interferon, or a higher dose of PEG interferon and/or ribavirin and a longer course of treatment, have yielded disappointing results.

If you did not respond to treatment with the older non-pegylated formulations of interferon, which was much less effective, you should consider retreating with pegylated interferon.

Some of the new oral hepatitis C drugs are being studied in people who were unsuccessfully treated for hepatitis C. Based on the experience with HIV, it may be better to wait until there is more than one new HCV drug to add to a regimen that didn't work before.

### Management of cirrhosis

A damaged liver can still function, but people who have developed cirrhosis are at risk for liver failure and other serious, life-threatening complications. People with compensated cirrhosis should be screened for liver cancer, and monitored regularly for decreasing liver function and varices. These are stretched and bursting veins resulting from liver scarring that obstructs the flow of blood through the portal vein and increases blood pressure. Drugs called beta-blockers can help to prevent varices. Variceal bleeding is managed with medication and surgery.

Changing your diet can help to manage some of the complications of cirrhosis. Cutting down on salt, eating many small light meals per day with protein from vegetables and dairy products rather than meat can help address nutritional imbalances. A nutritionist and your doctor can help you plan a healthy diet.

Hepatic decompensation (decompensated cirrhosis) occurs when the liver cannot compensate for damage, and liver function has deteriorated. After hepatic decompensation, a liver transplant is necessary.

### Liver transplant in people with HIV/HCV coinfection

In people with decompensated liver disease, a liver transplant is the final option.

This is a major operation, and success rates vary. It is also complicated by a scarcity of donor organs that are available for transplant.

For many years, transplant services actively avoided liver transplants in HIV-positive people. This was due to several factors including discrimination from some surgeons, who did not want to operate on HIV-positive people. The poor long-term life expectancy for HIV-positive people before combination therapy meant that a donor organ would provide fewer years of additional life than it might to a person without HIV or other medical conditions. There were also concerns about using drugs to suppress the immune system that are an essential part of a transplant, in HIV-positive people

The effectiveness of HIV drugs has changed this. HIV is no longer an exclusion criteria for a liver transplant. Centres in the UK, Spain, France and the United States have transplanted livers into HIV-positive people. Some centres have reported no significant difference in survival according to HIV status.

However, medical management remains complex, due to drug interactions between drugs used to suppress the immune system after the transplant and protease inhibitors, the risk of graft rejection, HCV reinfecting the new liver, and difficulty in tolerating HIV and HCV treatment after the transplant.

Only a few transplant centres in the UK have reported liver transplants in people with coinfection, and referral to one of these centres is essential. The success is largely limited by recurrent HCV infection in the new liver.

HCV infection progresses more rapidly in people with HIV coinfection, and their survival after hepatic decompensation is shorter than that of people with HCV alone. Some specialists suggest that people with coinfection should be referred to a transplant list at an earlier stage of disease than people with HCV mono-infection.

A list of specialist liver centres and transplant units in the UK is included on the British Liver Trust web site.

[www.britishlivertrust.org.uk](http://www.britishlivertrust.org.uk)

## Side effects and management strategies\*

The side effects from hepatitis C treatment can be difficult, and, rarely, even life-threatening, and occur more often in people who are HIV-positive. The information below includes ways to manage these side effects.

With the right planning and support, the impact of side effects can be reduced. Ask your doctor how he/she will treat your side effects. Support from other people with HCV, friends, and family before and during HCV treatment plays a key role in coping with this difficult aspect of treatment.

### Depression, anxiety, and other psychiatric side effects\*

Depression and anxiety are commonly reported side effects of interferon.

In rare cases, people have reported that they have felt like taking their own lives, and a few people have committed suicide during their HCV treatment.

If you have a history of depression you may be at greater risk for developing these side effects during HCV treatment, although depression and anxiety are also common in people who have not experienced them before. Interferon can also cause irritability, difficulty sleeping, mood swings and psychosis.

It's important to have access to mental health care before and during (and sometimes after) HCV treatment, so that psychiatric side effects can be treated promptly and appropriately.

Some experts think that starting an anti-depressant before going on HCV treatment can help to prevent depression from the interferon. However, as anti-depressants and other psychiatric drugs have their own side effects, other experts think it is better to provide these drugs only if and when people need them.

Being prepared to consider using an antidepressant if you get these side effects is important, as depression is one of the main reasons that people abandon treatment before finishing the full course.

Your own history and how you feel about this are important. If you have never suffered depression or mental illness you may not identify the symptoms.

It is important to correctly diagnose and properly treat psychiatric symptoms of HCV treatment.

*'I stayed at work during the whole of the treatment, and while this was difficult mentally and physically, I think it was the best thing. Too much time on your hands is a bad thing when you are taking a treatment that fucks with your head.'*

*I was able to have quite a few sick days and an easier work schedule by telling the occupational health doctor at work what I was going through. Fortunately, he was not obliged to go into the details of my illness with my line manager, so my confidentiality was maintained.'*

'I think that to be informed about the disease is the best support that you can have initially. To have a real picture of what is going on can be the more helpful to avoid fear and anxiety. On the other hand, support and counselling are essential when deciding to start treatment.'

The treatment can have very disturbing side effects and to be informed about them and how to manage them is crucial for a better chance of success. This is especially true regarding physiological disorders. I also think that peer support is very useful.'

'It is difficult to consider taking a treatment that, in the long term, may help me – but it's going to make me very sick in the present.'

### Flu-like symptoms\*

Flu-like symptoms (fever, aches and pains, headache, chills, nausea) are common side effects of interferon. They usually appear 2 to 24 hours after an injection, and tend to lessen over time.

Taking the PEG interferon injection in the evening helps, as does a low dose of paracetamol (or ibuprofen or aspirin - not recommended for people with cirrhosis) and anti-nausea medication. Warm baths can help with muscle pain.

Drinking plenty of water and juice helps to lessen flu-like symptoms and keep you hydrated.

### Weight loss\*

Weight loss often occurs during HCV treatment, because people may lose their appetite, have diarrhoea, and/or feel nauseated. If possible, eat many small, light meals to keep energy up.

Dronabinol (a derivative from marijuana), available as a pill, may help to stimulate appetite.

If you lose more than 1kg a week, this should be treated more aggressively.

If you have diarrhoea your doctor should check for other causes.

Diet advice (including bananas, apples, rice, cereals and toast) can help.

Anti-diarrhoea medication such as loperamide may help.

### Fatigue\* (feeling tired)

Fatigue is also common. Napping and regular but light exercise, when possible, can help. Some doctors treat fatigue with the antidepressant methylphenidate (Ritalin).

### Anaemia, neutropenia and thrombocytopenia

HIV-positive people with a low CD4 count may have low white and/or red blood cell counts. Regular monitoring of white and red blood cell during HCV treatment is especially important for people with coinfection, since there is a greater risk for anaemia, neutropenia and thrombocytopenia.

Anaemia (an abnormally low red blood cell count) is a side effect of ribavirin. Interferon can also cause anaemia because it suppresses the growth of bone marrow, where blood cells develop. The most common symptom of anaemia is fatigue. Anaemia is a common problem for HIV-positive people, and can be caused by AZT and ribavirin. If possible, use an alternative HIV drug to AZT as combining AZT with ribavirin increases the risk. Combivir and Trizivir both contain AZT.

There are two ways to treat anaemia from ribavirin. One strategy is to lower the dose of ribavirin, but HCV treatment may not work as well. The other is to treat anaemia with injections of epoetin-alpha (EPO), which improves fatigue and helps people to stay on ribavirin. Severe anaemia is treated by blood transfusions, but reducing the ribavirin dose or starting EPO if anaemia develops during HCV treatment can avoid this.



Neutropenia is an abnormally low amount of neutrophils, a white blood cell that fights bacterial infections. Interferon can cause neutropenia. The risk of developing bacterial infections is increased in people with neutropenia. If the neutrophil count drops during HCV treatment, the dose of PEG interferon is reduced, or neutropenia is treated with injections of white cell growth factor called filgrastim (Neupogen).

Thrombocytopenia is a low platelet count, and can be caused by serious liver damage (because the hormone that stimulates platelet production is made in the liver). It can also be caused by other medical conditions, including HIV itself, and by pegylated interferon. Thrombocytes or platelets stop bleeding by clotting blood. Serious thrombocytopenia can have life-threatening consequences, such as bleeding inside of the brain. If severe thrombocytopenia develops, HCV treatment is usually stopped.

### Insomnia\*

Not sleeping well adds to the impact of other side effects, especially those related to your mood and how you feel. The i-Base Guide to Side Effects includes a page of tips on how to improve sleep. Your doctor should know if this is a serious problem, so that sleeping pills can be an option.

### Rash\*

HCV treatment can cause a rash, which is usually mild and 'non-itchy'. Tell your doctor about this, and if it becomes more serious, ask to be referred to a skin specialist.

### Dry mouth\*

Interferon can make your mouth dry, and this can cause dental and gum problems. Visit the dentist before, during, and after treatment. Using a soft tooth-brush reduces risk of bleeding gums, and brushing after each meal may help.

### Breathlessness and coughing\*

If you feel breathless or develop a cough, again, tell your doctor. Breathlessness can be a symptom of anaemia. Common treatments for cough are appropriate - drink more water, avoid smokey places and try over-the-counter cough syrups.

## Glossary

**Anaemia** Low type of red blood cells

**Neutropenia** Low type of white blood cells

**Thrombocytopenia** Low platelet count

\* [www](#) – More detailed information about managing side effects is included in the web-based edition of this guide, and in the i-Base Guide to Avoiding and Managing Side Effects.

### Irritability\*

Irritability can be common on HCV treatment - which is not surprising if you feel bad and have other side effects, so it is important that these are treated, especially if they affect your sleep. Preparing your friends, family and support network can help. Avoiding stress and using relaxation techniques including exercise, meditation and deep breathing help some people.

### Other complications\*

HCV treatment can also cause other diseases including thyroid (hormone regulating) or visual problems (blurred vision). It is important to tell your doctor about any symptoms, and that the doctor pays attention to them.

### Liver toxicity and HIV drugs

Many HIV drugs are cleared from the body by the liver, and have the potential to cause liver toxicity, and HCV coinfection increases the risk by 2-3 times. This could be through the direct action of the drugs themselves.

This is largely a concern with nevirapine (an NNRTI), tipranavir and higher doses of ritonavir (both PIs) – which can be managed by choice of alternative HIV drugs. The use of low dose ritonavir to boost other PIs does not seem to increase this risk.

It could also be through an indirect action related to higher drug levels of NNRTIs and PIs, especially if you have serious liver damage. Because a damaged liver is working less efficiently, drug levels can be higher and take longer to clear from your body.

Therapeutic drug monitoring (TDM) is a blood test that checks drug levels so that the dose can be modified if necessary.

### Therapeutic drug monitoring (TDM)

Therapeutic drug monitoring (TDM) is a blood test that checks blood levels of a protease inhibitors, NNRTIs, and possibly T-20.

Doses for HIV-drugs are worked out for an average person. However, individual differences in absorption can vary considerably in real life. In people whose liver is seriously damaged, drug levels can be much higher. This can increase the risk of side effects. TDM is available free in the UK for many people using nelfinavir, saquinavir, indinavir, fosamprenavir, atazanavir or lopinavir/r through programmes sponsored by the manufacturers.

Even if your clinic has to pay for a test, it will only cost around £60 per drug. TDM in the UK is available from Delphic:

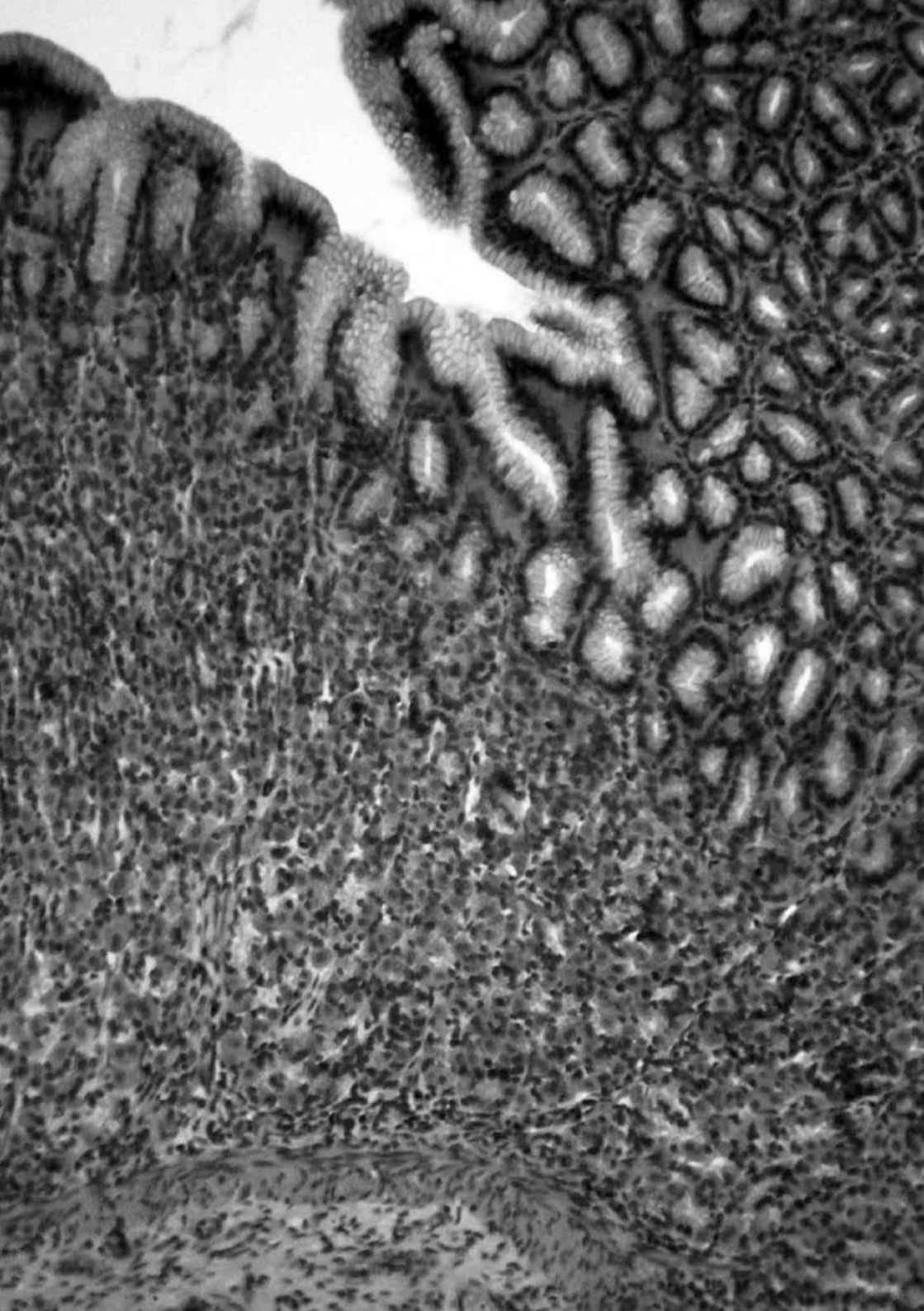
[www.delphicdiagnostics.com](http://www.delphicdiagnostics.com)

TDM is recommended in UK BHIVA guidelines for management of dosing in people with moderate or severe HCV-related liver damage.

*'The flu-like side effects were strong for the first three weeks. After this they became more like a tense headache that I could manage with painkillers and an early night. I did develop anaemia which has been difficult and made me very weak and dizzy.*

*All through this time I fixed my mind on getting to the end of the year and know that I could beat this infection even if I can't beat the HIV.*

*I'm currently in month four of treatment. The anaemia is better and I'm still hepC negative. I can't wait to get to month 12 and use the C word - CURE'.*



## Deciding whether to treat HCV

Deciding whether or not to treat hepatitis C is an individual and complex decision. Some people really need HCV treatment now. It may be a bridge until newer, more effective and less toxic therapies are available. Medical need is one of several other factors to be taken into account.

You may know early on whether it is necessary to use the full course of HCV treatment. If it looks like treatment will not work for you after 12 weeks, you may decide to stop.

One doctor said, “people don’t have to sign a binding contract to stay on HCV treatment for 48 weeks. If they start, and it is much worse than they were prepared for, they can stop. They can try again in the future when they feel better, or when new treatments are available.”

‘Over the last seven or so years, as my general health has vastly improved, my doctors have warned me my health may be at more risk from HCV than HIV.

I’ve been urged to have biopsies done of my liver and consider going on treatment for HCV. I’ve decided to delay embarking on therapy for two main reasons: firstly I have a genotype that is less responsive than others to therapy; and secondly I don’t want to take time out from work which I’d probably need to do to accommodate the side effects.

I like my life at the moment and I don’t want that to change on the off-chance that I can clear the HCV. My current strategy is to wait until more effective drugs come along.’

Another advocate who has been diagnosed with HCV for over 10 years said:

‘For me, to maintain my CD4 high is a way of protecting my liver from histological damage. Side effects are the most important reason for delaying treatment as I have seen a lot of people on treatment and in some cases it is really hard.

I also know people that are doing very well on treatment and avoiding the threat of cirrhosis is a really good thing. For me though, at the moment, I don’t feel strong enough to try it.’

Someone more recently infected chose earlier treatment, mainly to reduce the risk of sexual transmission to partners:

‘Six months after treatment I feel very lucky to have achieved a “sustained virological response”. I know of other people have not been able to stick to the treatment and others for whom it has failed.

The doctors tell you that even if you don’t succeed in eliminating it from your body, eleven months on treatment will put you in the clear of liver disease for years to come, but for me that would not have been enough.

I didn’t care about the liver disease, but I needed to be not infectious. I had all the side effects during treatment and it truly was the worst time in my life but it was all worth it.

All the side effects went away as soon as I finished the treatment and I feel pretty much like my old self now.’

'I was diagnosed with HCV in May and began treatment in November. I opted for immediate treatment because the thought of waiting or the chance of better treatment to come along would have meant years of worry and uncertainty, not to mention the restraints on my social life and guilt everytime I enjoyed a drink or a party with friends.

I decided that having survived PCP pneumonia and 12 years combination therapy that I could put up with a few more side effects for a year – because of the potential of a magic word CURE.

After 1 month of treatment my blood test was hep C negative.'

### Advantages of using HCV treatment

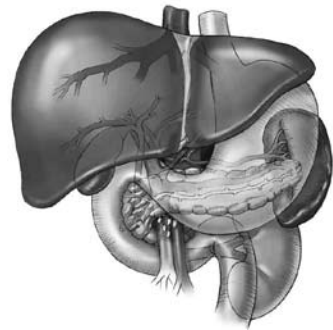
- You can clear the virus.
- Treatment can improve liver health by reducing inflammation. It may also reverse fibrosis. This can happen even in people who do not clear the virus, although less often.
- It will stop the risk of passing HCV to sexual and drug-using partners.
- Clearing the virus removes the risk of mother to infant transmission.
- Treating HCV before starting HIV treatment will reduce the risk of liver-related side effects from HIV drugs later.
- The treatment period is only likely to be 12 months, not lifelong.
- Treatment may reduce the risk of long-term complications including liver cancer, even in people who do not clear HCV.
- HCV treatment is less effective for people with serious liver scarring (cirrhosis), so it may be important not to delay treatment depending on the condition of your liver

'After diagnosis, I was determined to have the treatment immediately... but I had to leave the country for family reasons soon after starting the treatment and was unable to continue the treatment beyond the first month.

A few years later when things had calmed down, my concern turned to my partner and I resolved to get rid of the HCV as quickly as possible.'

### Treatment tips

- Identify people in your life who will be a good source of support for you.
- Be prepared before seeing your doctor; make a list of questions in advance.
- Take someone with you to appointments, particularly if there are psychological side effects that you need to discuss.
- Consider joining a support group



### Advantages for delaying treatment

- The major disadvantage to treatment consists of the side effects and the impact it may have on your life during the period of treatment.
- Occasionally, the side effects can be so severe that they could force you to stop treatment. In rare instances, you could be left with an illness after you stop treatment, such as thyroid disease or diabetes.
- Some people have reported that the side effects have persisted, leaving them feeling unwell long after the end of treatment.
- Treatment might not work.
- There are many new drugs in development for HCV that may be more effective and be easier to tolerate. These may be available through clinical trials in the next few years.
- If your liver is healthy you may be able to delay treatment.
- If you are thinking of getting pregnant in the next year, consider delaying treatment, since ribavirin causes birth defects.
- Men and women should not conceive during treatment and for at least 6 months afterwards. Women who become pregnant on ribavirin must consider terminating the pregnancy.

'Talking to peers worked for me.... we have long exchanges as most of my friends are co-infected.

But I also think that as co-infected people we might need to have some specific support group, especially as regards treatment issues – and coping with treatment!'

'I am squeamish and I thought I would never manage to self-inject. I asked to see the needles and when I saw how tiny they are I was reassured but still frightened. I asked the nurse to do the first three and when it came to doing it myself I was thrilled to find that I could. It was painless and over in a flash.

This made me so proud that I almost wanted to do it twice!'

\* [www](#) - More personal stories about deciding when to treat are linked to the web-based version of this guide

## Research into new HCV drugs

Interferon-based treatment does not work for everyone. Its benefits are limited by side effects that are daunting enough for some people to defer treatment until there are newer drugs.

However, it will take several years for new drugs to be tested and, if safe and effective, approved. Waiting for better treatments may be a good option if you don't need HCV treatment now, if your liver is okay, and if HCV is not progressing quickly. For a long time, research into HCV was difficult because, the virus couldn't be grown in laboratories. This changed recently when new models were developed to study the virus's life-cycle. This makes it easier to develop drugs that work both before the virus enters the cell, as well as when it is inside the cell.

### Many new treatments for hepatitis C are in development.

Some are oral drugs, from the same families as HIV medications (protease and polymerase inhibitors), though many of these drugs will not be active against HIV. These new drugs are likely to first be studied in people with HCV mono-infection. HCV treatment trials in coinfecting people are expected in the near future, due to pressure from treatment advocates. As with HIV drugs, combination therapy may be essential in order not to develop resistance, and a high level of adherence (taking over 95% of doses on time) is likely to be important.

To avoid resistance, new drugs will probably need to be used in combination with PEG interferon and ribavirin, until there are enough new drugs to construct interferon-free regimens. PEG interferon is likely to continue to be part of HCV treatment, but treatment may be able to be compressed into a shorter period. Also, a

small pilot study is starting with two oral drugs (an HCV protease inhibitor combined with an HCV polymerase inhibitor) to see if these can be safely used together, without standard of care. If all goes well, more combination studies will follow. To make an informed decision about starting or deferring HCV treatment, it is useful to know which new drugs are in development. Only brief details are included here of some of the compounds in development but the resources listed below can keep you up-to-date with this research.

Drugs that specifically target parts of the hepatitis C virus, protease and polymerase inhibitors, are currently in development. Some have made it into the clinic, others will follow. New formulations of interferon, which can be given less frequently, are being tested, as are immune-based therapies, and therapeutic and preventive vaccines. Drugs which generate an immune response, (called Mono- and polyclonal antibodies) are being studied in liver transplant recipients.

### Information on new HCV drugs

An update on HCV drugs in clinical development is included in the TAG Pipeline Report, available to download as a PDF file from the TAG website:

[www.treatmentactiongroup.org](http://www.treatmentactiongroup.org)

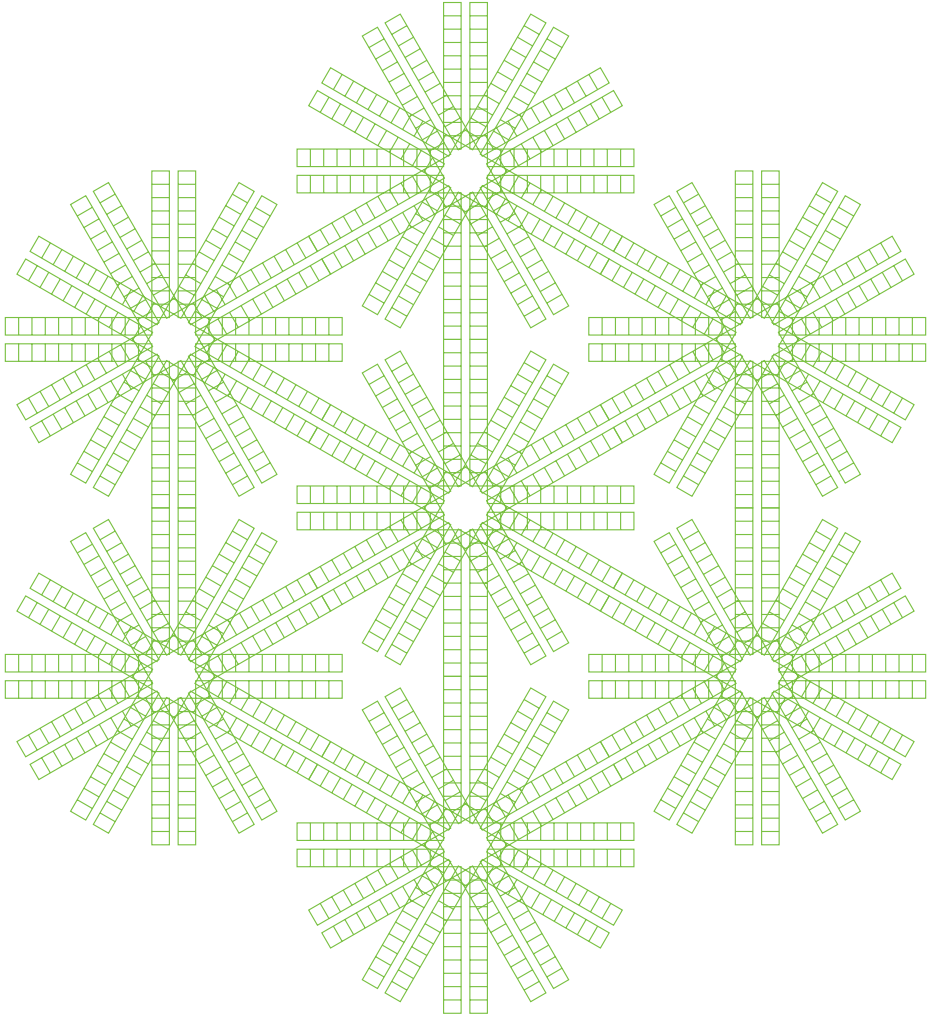
Reports relating to new HCV treatment are also regularly on the NATAP website:

[www.natap.org](http://www.natap.org)

An ongoing detailed list of HCV drugs in development is also posted to the HCVadvocate website:

<http://www.hcvadvocate.org/hepatitis/hepC/HCVDrugs.html>





## Living with co-infection: reducing stress and lifestyle factors

Probably the most important aspect of dealing with any medical condition includes having the time and support to become better informed about choices that affect your health.

Another common experience is to look at aspects of your life in order to reduce stress and improve both quality of life and general health. Some of these lifestyle changes can also reduce the risk for HCV progression, especially cutting down or avoiding alcohol. General things like stopping smoking, eating and resting properly, cutting down stress, and taking exercise are important for everyone.

### Alcohol and HCV

Heavy drinking is known to be harmful to the liver. Alcohol intake in amounts over 50 grams per day for men and over 30 grams per day for women accelerates HCV progression. Fifty grams is equivalent to four or five glasses of wine, beer or mixed drinks. Binge drinking is more harmful for your liver than regular drinking.

Alcohol harms the liver by increasing both inflammation and scarring. Generally, the less you drink, the better for your liver, since no one has determined what amount of alcohol is safe for people with chronic HCV. Drinking less—or not at all—may be more important than treating HCV.

Alcohol increases hepatitis C viral load, which makes HCV treatment less effective. This may be why studies of treatment with interferon (since replaced by a combination of pegylated interferon and ribavirin) reported that HCV treatment was not very effective for people who drink alcohol.

A few more recent studies have not reported much difference in HCV treatment outcomes among drinkers vs. non-drinkers. Nonetheless, many doctors will not treat people who consume alcohol. Heavy drinkers are not eligible for HCV treatment in the UK.

### Alcohol and liver damage

Alcohol is mainly broken down by the liver, but during this process bi-products are produced that damage the liver more than the alcohol itself. Prolonged inflammation from long-term alcohol use results in the over production of molecules called ‘free radicals’ that can destroy healthy liver tissue and subsequently impair liver function.

Alcohol can also disrupt the production of antioxidants, which defend the body against free radical damage. The combination of over-production of free radicals and loss of antioxidants can lead to liver damage.

Women may be more vulnerable to the damaging effect of alcohol than men.

Drinking less—or not at all—can be very difficult. Some people cut down or quit on their own, others find that support groups, counselling, and/or pharmacotherapy works best for them.

A list of resources is provided on page 36.

### Tips for reducing or avoiding alcohol

The following suggestions may help, whether you decide to drink less or quit drinking altogether

If you decide to stop completely:

- Don't keep any alcohol at home.
- Avoid people, places or circumstances that trigger alcohol use, or develop a plan so that you are prepared and able to deal with the situation without alcohol.
- Remind yourself regularly about why you are giving up alcohol and the benefits it will bring.
- Try to keep your mind off alcohol, by involving yourself in other things, particularly at times when you usually have a drink.

If you decide to cut down:

- Monitor how much alcohol you drink. Be honest, even if the total seems unreasonable. Once you know where you are starting from it will be easier to measure or monitor improvements.
- If you are drinking alcohol, drink slowly and drink plenty of water or juice as well
- Drink with or after food as this slows down the absorption rate.
- It is better to spread your alcohol intake over the whole week, rather than drinking heavily in one session.

### Recreational drugs

The liver is the organ that processes most recreational drugs.

Some are more toxic than others, but all will stress your liver to some extent.

They are also likely to contain impurities and unspecified ingredients that are also toxic and difficult to assess.

In general, injecting drugs is more dangerous as this bypasses the filtering system of the stomach.

If you are injecting drugs, using sterile equipment (syringe, cooker, filter, water, tie and measuring syringe) will protect you from reinfection with hepatitis C and other infections.

You may want to consider reducing your intake of recreational drugs, or stopping. If so, there are places where you can get help.

Some recreational drugs may have interactions with HIV drugs.

For more information see:

[www.tthivclinic.com/interact\\_tables.html](http://www.tthivclinic.com/interact_tables.html)

[www.hiv-druginteractions.org](http://www.hiv-druginteractions.org)

And the report 'Delivering HIV care and treatment for people who use drugs'

[www.soros.org/initiatives/health/focus/ihrd/articles\\_publications/publications/delivering\\_20060801](http://www.soros.org/initiatives/health/focus/ihrd/articles_publications/publications/delivering_20060801)

## Smoking

Smoking is not good for your health. There is some weak data to suggest that smoking may encourage the progression of hepatitis C, but most people in the studies also drank alcohol.

Some Primary Care Trusts run 'quit smoking' programmes that incorporate group therapy.

Stopping smoking is not easy, and probably not recommended during HCV treatment, if you feel it gives you support.

While quitting may be an important goal in the long-term, it may not be your most important short-term priority.

## Stress

Many of the symptoms of HCV are very similar to those of stress and one can enhance the other.

More detailed information about recognising the symptoms of stress and reducing stress is included on the HepCuk website: [www.hepctrust.org.uk](http://www.hepctrust.org.uk)

## Support organisations

Organisations in the UK that can provide information and support relating to reducing use of alcohol, drug and smoking with include:

### Alcoholics Anonymous (AA)

has over 3,000 regional meeting places. The AA phonenumber is 0845 769 7555 (10am-10pm, everyday) and their website is: [www.alcoholics-anonymous.org.uk](http://www.alcoholics-anonymous.org.uk)

### Alcohol Concern

can provide a wide range of information and advice. Contact details are 0207 395 4000 [www.alcoholconcern.org.uk](http://www.alcoholconcern.org.uk)

## Drinkline

is a national helpline that also provides information and advice on 0800 917 8282 (24 hour service).

Your doctor may also be able to refer you for help and support in giving up drinking.

## National Drugs Helpline

0800 776600 (24 hrs)  
[www.ndh.org.uk](http://www.ndh.org.uk)

## Narcotics Anonymous

0845 3733366 (24 hrs)  
[www.ukna.org.uk](http://www.ukna.org.uk)

## Cocaine Anonymous

0800 6120225 (10am-10pm)  
[www.cauk.org.uk](http://www.cauk.org.uk)

## Drugscope

0870 7743 682 (10am – 1pm, Mon-Fri)  
[www.drugscope.org.uk](http://www.drugscope.org.uk)

## Quit

is a UK charity that provides assistance to those who wish to quit smoking.  
0800 002200  
[www.quit.org.uk](http://www.quit.org.uk)

Other sources of direct help or information for other organisations include your GP, your local Drug and Alcohol Service, your HIV specialist and your HCV specialist.



### Body fat and body weight

Liver abnormalities are more common in people who are overweight. This is usually defined as having a Body Mass Index (BMI) that is over 25. These may include fatty deposits found in the liver and fatty inflammation or fatty liver; this is more common in people who have diabetes. Fat in the liver can cause it to become enlarged and can lead to raised liver enzymes.

People who are overweight and who have a fatty liver, and who subsequently reduce their weight, are likely to have an improvement in fat-related liver abnormalities. Losing weight increases the chance of a better response to HCV treatment.

If you do find it hard to maintain lower weight, ask to see a dietician for specialist advice.

### Diet

A healthy and balanced diet is important for general good health.

With advanced liver disease, avoiding or reducing certain foods may become more important. This includes avoiding or reducing:

- Fried foods
- Fatty foods especially saturated and hydrogenated fats
- Very high protein diets
- Foods with high iron content
- Processed food and 'fast' food
- Caffeine in coffee, tea and some carbonated drinks
- Salt, especially with advanced liver disease (people with ascites are recommend to use less than 500mg/day).
- Foods containing additives and pesticides.
- Iron supplements (unless advised by your doctor).
- Protein - guidelines for daily protein consumption for those with liver disease recommend 1 to 1.5 grams of protein per kilogram of body-weight.
- Sugar levels - a link between HCV and risk of diabetes may be improved by reducing processed sugars and keeping sugar levels more constant by switching from white bread and pasta, that quickly raise blood sugar levels, to whole wheat bread and pasta.

## Herbal medicine

Herbal remedies have been used for centuries to treat liver disease, but they cannot cure hepatitis C. So far, no clinical trials have demonstrated that herbal remedies are effective against hepatitis C, but many people use these nonetheless.

Some people use them because conventional treatment has not worked for them, or because of concerns about side effects of HCV therapy.

Milk thistle (silymarin) is often used by people with hepatitis C, although clinical trials have not found any benefit. Research on milk thistle in HCV is ongoing.

Licorice root (glycyrrhizin) has been used, although it has no effect on hepatitis C viral load. Some studies have shown that it can lower liver enzyme levels and may decrease the risk of liver cancer. However, long-term use can cause side effects, such as high blood pressure and fluid retention, which are especially serious for people with cirrhosis.

Many other combinations of herbs are being sold to treat HCV or benefit the liver. Unfortunately, these products are unregulated, and differ in purity and strength.

Some may actually be harmful to the liver, and others may interact with HIV drugs and other medications.

It is important to discuss the use of any herbs or supplements with your doctor.

## Glossary

**BMI (Body Mass Index)** A calculation using someone's height and weight that is used to determine if they are over or under weight.

**Further info** A US community site with information on lipoatrophy treatment [www.facialwasting.org](http://www.facialwasting.org)

\* [www](http://www.hepctrust.org.uk) – More detailed information about managing side effects is available on the HepCuk website: [www.hepctrust.org.uk](http://www.hepctrust.org.uk)

## Other viral hepatitis infections

### Hepatitis A (HAV)

HAV is found in faeces (stool). People become infected when faeces from an infected person enters their mouth. This may occur when food (including raw or undercooked shellfish) or water are contaminated with sewage, or when an infected person handles food without washing his/ her hands after going to the toilet, through oral-anal sex (rimming) and rarely, from blood transfusions.

A vaccine is available against HAV, but it is less effective in people with low CD4 cell counts.

Some people - especially children - don't feel sick at all; others have symptoms, including: nausea, vomiting, diarrhoea, fever, fatigue, rash, jaundice (yellow skin and eyes), liver pain, and dark brown urine. There is no treatment for HAV, but the symptoms can be treated. It is not a chronic infection.

A person can only be infected with HAV once. HAV goes away by itself, usually within two months.

### Hepatitis B (HBV)

HBV can be found in blood, semen, and vaginal fluid of infected persons. Very small amounts of HBV have been found in breast milk and saliva. A person can get hepatitis B from sharing injection or tattooing equipment, unprotected anal, vaginal or oral sex, and by sharing personal care implements (such as toothbrushes and razors). HBV can be passed from mother to child during birth.

HBV can be treated with interferon and oral antiviral drugs, such as adefovir, and telbivudine. Some HBV drugs are also active against HIV, such as: lamivudine (3TC), emtricitabine (FTC), tenofovir and entecavir.

As with HIV, antiviral HBV treatment should not be given as monotherapy to people with coinfection. Coinfection guidelines provide detailed information on drug choices. For example, they currently recommend starting HIV treatment earlier, and including tenofovir plus either 3TC or FTC, plus at least one extra drug so that there are at least three active drugs against HIV.

Another very important caution is that once HBV treatment is started, unless the infection is completely cleared, HBV treatment should not be stopped. Removing HBV drugs can cause a serious flare of liver enzymes that can be fatal.

If HIV treatment needs to be changed, then the HIV drugs that are active against HBV need to be maintained in the next regimen.



### Other viral hepatitis infections

There is less research on coinfection with other viral hepatitis infections. These include:

**Hepatitis D** An infection that only occurs in some people with hepatitis B. HDV increases the risk of cirrhosis and the rate of liver disease progression for people with HBV. Vaccination protection against HBV also protects against HDV infection.

**Hepatitis E** A separate infection, with similar characteristics to hepatitis A. HEV will clear without treatment over several weeks to months. There is no vaccine for HEV. You can only be infected with this virus once. It is not usually serious, except during pregnancy.

**Hepatitis F** Thought to be a new virus similar to hepatitis B, but recent research failed to confirm this.

**Hepatitis G (HGBV-C)** A virus with structural similarities to hepatitis C. The role and importance of hepatitis G is unclear, especially in someone with HIV. Some research suggests that hepatitis G may slow HIV progression. Other research suggested that clearing hepatitis G could make HIV more serious.

## Controversial aspects of HCV

This booklet includes aspects of care that are currently controversial and which may change as new information becomes available. These include:

### Sexual transmission

The risk for sexually transmitted HCV is very low in monogamous, HIV-negative heterosexual couples (in which one partner has HCV), but it is higher for HIV-positive gay men. The mechanism involved with sexual transmission among HIV-positive gay men remains unclear. This is discussed in more detail on pages 12-13 and 21-25.

### Safety of light-to-moderate alcohol intake

Heavy alcohol intake is known to cause liver damage in people who do not have hepatitis C. In people with hepatitis C, alcohol intake of >50 grams/ day (equivalent to 4-5 glasses of wine, bottles of beer, or mixed drinks) accelerates liver damage. A safe amount of alcohol intake has not been determined for people with hepatitis C. Most doctors advise patients with hepatitis C to abstain from alcohol altogether, or to limit their alcohol intake to one drink on special occasions.

### Liver biopsy

Some experts require a biopsy before treating HCV, regardless of HIV status or hepatitis C genotype, since they believe that it is the only reliable way to assess the cause and extent of liver scarring and inflammation. Others only consider a liver biopsy necessary for coinfecting people with hepatitis C genotype 1, since treatment is not as effective, and if liver damage is mild, treatment can be delayed. Some doctors realise that liver biopsy is a big barrier for many people, and have begun to rely on less invasive techniques, such as fibroscan and blood testing. These are discussed in more detail on pages 38-40.

### Access to HCV treatment for drinkers

HCV treatment guidelines recommend abstaining from alcohol, or limiting your intake to an occasional drink during HCV therapy. Many doctors will not treat people who have not stopped drinking, since alcohol may have a negative impact on adherence and HCV treatment outcomes. The expense of HCV treatment may be a factor as well. On the other hand, because alcohol makes HCV progress more rapidly, drinkers are at greater risk for developing serious liver damage and should be treated for HCV, as guidelines recommend treatment for people at risk for progression to cirrhosis.

### Access to HCV treatment for IDUs

HCV treatment is often withheld from injection drug users, despite medical need, willingness to undergo it and treatment guidelines that recommend making decisions on a case-by-case basis.

Doctors may prefer not to treat people who use drugs because of concerns about psychiatric side effects of HCV therapy, adherence, reinfection, treatment outcomes, and the cost of HCV therapy. But IDUs can be, and have been, treated for HCV, despite ongoing drug use. Successful programs for IDUs have provided peer support and education groups, demonstration of safer injection techniques, syringes and/or referral to a syringe exchange program, mental health care, and drug treatment, in tandem with HCV treatment.

### How long to treat genotype 2 and 3

In HCV mono-infection, the duration of hepatitis C treatment depends on genotype, and may be tailored according to individual response. People with genotype 2 or 3 are usually treated for up to six months. Coinfected people are usually treated for a year, regardless of their HCV genotype, since higher relapse rates have been reported in coinfected people with genotype 2 or 3 who treated for six months vs. a year. But six months of treatment may be enough for coinfected people with genotype 2 or 3, if they are rapid virological responders, and their ribavirin dose is weight-based.

### Retreatment: consensus interferon

In a small study, about 30% of 61 coinfecting people who did not have an early virological response to PEG interferon plus ribavirin had a sustained virological response after switching to daily injections of consensus interferon with weight-based ribavirin for 72 weeks.

Although no one discontinued treatment, flu-like symptoms were common, as were low red and white blood cell counts (anemia and neutropenia). More than half needed treatment with a growth factor for anemia, almost half for neutropenia, and approximately fifteen percent needed treatment for both. However, consensus interferon has not been approved for use in HIV-positive people.

### Earlier access to experimental HCV drugs

HCV drugs are currently always only available in trials for HIV-negative people. This reduces the risk that development of a promising HCV drug would be stopped due to negative results related to HIV or HIV drugs. However, HIV-positive people are in urgent need of these treatments, and many cannot wait until drugs are first approved in HIV-negative people, and then studied in people with coinfection.

Researchers and companies need to develop early access programmes for promising drugs in a similar way that HIV drugs are made available before they are licensed in named patient programmes and safety studies.

## HIV vs HCV: similarities and differences

Characteristic	HIV	HCV
Type of virus and how transmitted	Bloodborne; also present in semen, vaginal fluid and breast milk	Bloodborne; also may be present in semen and vaginal fluid
Whether sexual transmission occurs	Sexual transmission common	Sexual transmission less common, especially among heterosexual couples, but does occur among HIV-positive gay men
Risk of mother-to-child transmission (MTCT)	Risk of mother-to-child transmission can be dramatically reduced with use of antiretroviral therapy.	Risk of MTCT of HCV is higher if you are HIV-positive. In the UK, women with coinfection are recommended to have an elective c-section to lower the risk.
Risk from breastmilk	Breast feeding can transmit HIV	Risk of HCV transmission from breast feeding is considered very low (Unless mothers nipples are cracked or bleeding)
Whether lifelong	Yes (at time of printing)	Not always chronic (Can be cleared/cured)
Risk of reinfection	Reinfection with HIV happens. In many cases it may not have serious implications unless the new virus is drug resistant (cases of reinfection with drug-resistant HIV have been reported, but no one is sure how often this happens). HIV reinfection is the subject of current research	Reinfection with hepatitis C occurs, and being reinfected with a different genotype may make it more difficult to treat. For example, if someone with HCV genotype 2 is reinfected with HCV genotype 1.  Clearing the virus with a natural immune response or with treatment doesn't protect you from future reinfection.

Characteristic	HIV	HCV
How infectious outside the body	HIV is a fragile virus; dies quickly when outside of the human body.	HCV is a tougher virus; can live for days outside the human body.
Is treatment always needed	Treatment is not always needed, but it is needed by the majority of people at some time. Less than 5% people still have not needed to start treatment 15 years after infection.	Treatment is not always necessary. Some people clear the virus naturally and some people do not symptoms even in chronic infection.
Speed of progression	People can live with HIV for many years without symptoms (Average 5-8 without treatment).	People can live with HCV for many years without symptoms (Average over 10-15 for people with coinfection).
Effective treatment on viral load	Levels of HIV in blood can be suppressed by treatment.	HCV can be virtually eradicated from the bloodstream if treatment is successful.
Duration of treatment	Treatment can be lifelong.	Treatment usually lasts a year or less.
Impact of viral load on how fast the disease progressed	Viral load is linked to disease progression.	Viral load is linked to treatment response, but not disease severity or progression.
Choice of treatment	More than 20 drugs available, that specifically target the virus.	Currently standard of care is combination therapy with pegylated interferon plus ribavirin, two drugs that do not specifically target the virus.
Research pipeline	Drugs from new classes and existing classes are currently in development.	Drugs from new classes and existing classes are currently in development.

## Glossary

### ALT

(alanine transaminase, also called serum glutamate pyruvate transaminase; SGPT). A key liver enzyme produced in liver cells. ALT is routinely monitored in HIV-positive people on ARVs to detect liver toxicity from HIV drugs (or other medications). Elevated ALT signals liver injury, but does not indicate how serious liver damage is.

### Antioxidant

A substance that reduces oxidative damage (damage due to oxygen) such as that caused by free radicals

### Ascites

An abnormal accumulation of fluid in the abdomen, a sign of serious liver damage in people with hepatitis C.

### AST

(aspartate aminotransferase; serum glutamic-oxaloacetic transaminase; SGOT). An enzyme that is made in many places throughout the body (heart, intestines, muscle), which is monitored (as with ALT) routinely in HIV-positive people on ARVs to detect liver toxicity from HIV drugs (or other medications). Elevated AST that is specifically made in the liver signals liver injury, but does not indicate how serious liver damage is.

### Autoantibody

Abnormal antibodies produced against the body's own tissues.

### Bile Duct

A tube that carries bile from the liver to the gallbladder and then to the small intestine.

### Biopsy

Taking a small sample of body tissue for examination and testing in the laboratory.

### BMI

(Body Mass Index) A calculation from your height and weight that is used to determine if someone is over or under weight. There are many online calculators: [www.nhlbisupport.com/bmi/](http://www.nhlbisupport.com/bmi/)

### Cirrhosis

Severe scarring of the liver (see fibrosis) that makes it difficult for the liver to carry out its functions

### Coinfection

Infection with more than one virus

### Cryoglobulinemia

Increased blood levels of abnormal proteins called cryoglobulins that can inflame blood vessels and thicken blood.

### Encephalopathy

Degenerative brain function or disease.

### Enzyme

A protein produced in the body that speeds-up other chemical reactions.

### ETR

(End of Treatment Response) Having an undetectable HCV viral load at the end of HCV treatment (see SVR).

### EVR

(Early Virological Response) a 99% (or 2-log) drop in HCV viral load after 12 weeks of HCV treatment.

### Fibrosis

Mild to moderate scarring of the liver (see cirrhosis).

### Fibrotest

A test which uses results from blood tests to predict liver damage and which may become an alternative option to liver biopsy in some patients

### FibroScan

Non-invasive ultrasound scan that measures the ‘elasticity’ or stiffness of the liver.  
[www.youtube.com/watch?v=l\\_E4ZGmKooA](http://www.youtube.com/watch?v=l_E4ZGmKooA)

### Free Radical

A chemical produced after a molecular reaction, often containing oxygen, that has one ‘free’ unpaired electron on its outer surface. This makes it able to react and damage other cells, and perhaps increase progression of cardiovascular disease, cancers and aging.

### Fulminant Liver Disease

Sudden, rapid disease progression related to liver failure

### Genotype

A category for different types of similar hepatitis C viruses. The HCV genotype is the strongest predictor of response to hepatitis C treatment.

### Grade/Grading

The grade of hepatitis infection refers to the amount of inflammation in liver tissue, found by a biopsy. It is usually measured on the Ishak scale from 1-18) where 0 is none and 18 is the maximum.

### Hepatic Encephalopathy

Brain disease that occurs when serious liver damage prevents toxic substances from being filtered out of the blood, and they enter the brain.

### Hepatotoxicity

The medical term for liver related side effects

### IDU

Injecting drug user

### Jaundice

A common symptom of hepatitis where increased levels of bilirubin lead to a yellowing of the skin or eyes

### Monoinfection

Infection with one virus.

### NNRTI

Non-Nucleoside Reverse Transcriptase Inhibitor (a type of HIV drug)

### Pegylated interferon

(PEG-IFN) Main treatment for hepatitis C, given in combination with ribavirin. Given as a once-weekly injection.

### PI

(Protease Inhibitor) A type of HIV drug. HCV protease inhibitors are in development.

### Portal Hypertension

Increased blood pressure (hypertension) in the vein carrying blood to the liver.

### Ribavirin

Drug used to boost the efficacy of pegylated interferon in combination therapy for hepatitis C. Given as twice-daily capsules.

### RTI (Reverse Transcriptase Inhibitor)

A type of HIV drug - also called ‘nucleoside’ or ‘nuke’.

## Glossary

### RVR (Rapid Virological Response)

Meaning that hepatitis C virus is undetectable after 4 weeks of treatment. Currently, RVR is used in research, not everyday clinical practice. An RVR is a good sign, but HCV treatment should not be stopped in people who do not have one

### Stage/Staging

The stage of hepatitis infection refers to the amount of scarring (fibrosis), from results from a biopsy. It is usually measured on the Metavir scale of 0 to 4, where 0 represents no scarring and 4 cirrhosis, or on the Knodell scale of 0 to 6, where 0 is no scarring and 6 cirrhosis.

### SVR (Sustained Virological Response)

Having a negative HCV viral load test 6 months after stopping HCV treatment. The response, 6 months after treatment is stopped, determines whether treatment has been effective in terms of clearing HCV. SVR is the most important result from an HCV treatment trial.

### Toxicity

The term for the degree to which a substance harms a person

### Varices

Extended or swollen veins that can burst, a complication of cirrhosis.



## Further information

The following web links include excellent resources for further information.

### HIV i-Base

HIV i-Base is an treatment activist, advocacy and education organisation based in London that was set up in April 2000 by HIV-positive advocates.

i-Base run a treatment information phoneline on 0808 800 6013 (Monday, Tuesday, Wednesday 12-4pm).

i-Base publish non-technical treatment guides, and a monthly bulleting for doctors, all of which are available free in print, and online:

[www.i-base.info](http://www.i-base.info)

### Treatment Action Group (TAG)

TAG is an HIV/HCV/TB activist group based in New York that reports new data on the epidemiology and natural history of HIV/HCV coinfection and the development of new treatments. TAG works with drug companies, government agencies, researchers and other treatment activists. It also educates members of the HIV community about coinfection with HIV and hepatitis C.

[www.aidsinfonyc.org/tag/](http://www.aidsinfonyc.org/tag/)

TAG produce a 'pipeline' report that includes a review of new research:

[www.aidsinfonyc.org/tag/tagline/pipeline2006.pdf](http://www.aidsinfonyc.org/tag/tagline/pipeline2006.pdf)

### Hepatitis C Trust, UK

The Hepatitis C Trust a national UK charity. It was set up in June 2001 by people with HCV. It provides support, information and representation for people with hepatitis C. It is also committed to raising awareness and lowering the stigma.

The information on HCV is carefully written using non-technical language that can support many aspects of the HCV side of coinfection (although there is little information that deals with coinfection with HIV).

[www.hepcuk.info](http://www.hepcuk.info)

### Australian Injecting & Illicit Drug Users League (AIVL)

AIVL is a peer-based organisation that provides information on safer injection living with HIV, HCV and coinfection, and drug interactions.

[www.aivl.org.au](http://www.aivl.org.au)

### Hepatitis C Harm Reduction Project

A resource for drug users from the Harm Reduction Coalition.

[www.hepcproject.org](http://www.hepcproject.org)

### Hepatitis C Advocate

The Hepatitis C Support Project (HCSP) is non-profit organisation founded in 1997 by HCV positive individuals. HCSP provides information (such as fact sheets and conference updates) support, and advocacy to all communities affected by HCV and HIV/HCV coinfection.

[www.hcvadvocate.org/](http://www.hcvadvocate.org/)

### NATAP

NATAP publish a 40-page HIV/HCV coinfection handbook (last edition Summer 2005) and other publications that use non-technical language to cover detailed information on most important aspects of coinfection:

[www.natap.org/2005/publications/ver5final.pdf](http://www.natap.org/2005/publications/ver5final.pdf)

NATAP is a treatment information and advocacy project that provides wide coverage of news about HIV, HCV, HBV, including coinfection and other related issues. The website and email lists includes postings of conference presentations and full journal articles that are of public interest but require journal subscription.

[www.natap.org](http://www.natap.org)

### HIVandHepatitis.com

Medical website that includes research reports on viral hepatitis, particularly relating to HIV coinfection

[www.HIVandHepatitis.com](http://www.HIVandHepatitis.com)

### British HIV Association (BHIVA)

HIV medical association in the UK that publishes a range of important online guidelines, including for treatment of coinfection with HIV and hepatitis.

[www.bhiva.org](http://www.bhiva.org)

### British Liver Trust

This is a UK site with useful resources and information on hepatitis; including lists of specialist liver centres and transplant units, but which does not deal with coinfection.

[www.britishlivertrust.org.uk/](http://www.britishlivertrust.org.uk/)

### Medical conferences

Most of the main HIV conferences also include presentations and research relating to HCV/HIV coinfection. Hepatitis conferences tend to be less focused on coinfection.

Many HIV organisations cover reports from these meetings including:

[www.i-Base.info](http://www.i-Base.info)

[www.natap.org](http://www.natap.org)

[www.aidsmap.com](http://www.aidsmap.com)

[www.HIVandHepatitis.com](http://www.HIVandHepatitis.com)

## About i-Base

HIV i-Base is an treatment activist, advocacy and education organisation based in London that was set up in April 2000 by HIV-positive advocates.

We believe that HIV-positive people should be involved in every level of our care, including production of resources.

## Feedback please

We welcome and encourage your feedback on any of our services. i-Base currently provides all resources free to every UK clinic but receives no central government funding.

Your feedback may help in fundraising.

[www.i-Base.info](http://www.i-Base.info)

[www.i-base.info/questions/qasurvey.html](http://www.i-base.info/questions/qasurvey.html)

0808  
800  
6013

i-Base Treatment  
information Phoneline

Monday to Wednesday  
12 noon to 4pm

i-Base can also answer your  
questions by email or online

questions@i-Base.org.uk  
www.i-Base.info/questions

## i-Base publications

All i-Base publications are available free  
Treatment guides are written in everyday language  
HTB is written in more technical medical language



Please send me

- Introduction to Combination Therapy .....
- Changing treatment: Guide to Second-line Therapy .....
- Pregnancy and Womens Health .....
- Guide to Avoiding and Managing Side Effects .....
- HIV Treatment Bulletin (HTB) .....

Name .....

Address .....

.....

Postcode ..... Tel .....

Email .....

Please post to HIV i-Base, 3rd Floor East Thrale House,  
44-46 Southwark Street London SE1 1UN or fax to 020 7407 8489

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