



Blood Borne Viruses:

Some important basic facts



Blood Borne Viruses: Some important basic facts

A programme developed by Greater Glasgow and Clyde Health Board and made available through NHS Education to other interested partners.

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Foreword

This programme is designed to provide a brief and basic background of the nature of selected Blood Borne Viruses (BBV) including transmission, testing, progression of infection and treatment. The information will be of value to those working within the health, social or voluntary care sectors who have a role in supporting patients/clients and their families.

The information may also be of interest to those who have no specified remit to work with BBV patients/clients but wish to increase their knowledge in this area.

The material can be undertaken either as a self-directed learning package or used as supporting material by appointed trainers during face-to-face sessions.

The programme can be edited at local level by an “approved” staff lead e.g. sections to allow for the inclusion of additional local resources/information is provided.

Testing of knowledge gained

It is possible for online participants to self-test prior to commencing the programme and test again following completion. This will give an opportunity to compare “before and after” knowledge. A Statement of completion can be printed off at the end of the programme.

Pre Quiz: How much do you already know?

Before beginning, look at how much you already know about Blood Borne Viruses and specifically HIV, Hepatitis C and Hepatitis B. This quiz is designed to test knowledge and perhaps highlight any common misconceptions you may have of these three important BBVs.

Please note, this quiz is also available as a downloadable pdf worksheet, which can be printed out for use individually. The quiz can then be re-taken after the training materials have been delivered if desired.

Question 1

What does BBV stand for?

- A. Blood Based Viruses
- B. Blood Borne Viruses
- C. Basic Blood Viruses

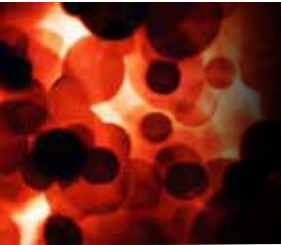
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- C. Basic Blood Viruses

Answer

B. Blood Borne Viruses



Question 2

How is HIV most commonly transmitted?

- A. Unprotected sex
- B. Social contact
- C. Through the air

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Answer

A. Unprotected sex

Question 3

You will know if someone has a BBV just by looking at them?

A. True

B. False

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A. True

B. False

Answer

B. False

Question 4

What does 'window period' mean?

- A. This is the length of time before treatment can start
- B. This is the time it may take between first infection and when a blood test can reliably detect antibodies or the infecting organism itself.
- C. This is when you are waiting to see if the clients have symptoms of HIV

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Answer

- B. This is the time it may take between first infection and when a blood test can reliably detect antibodies or the infecting organism itself.**

Question 5

Antibodies to HIV generally appear within 3 months of infection with HIV?

A. True

B. False

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- A. True
- B. False

Answer

A. True

Question 6

What is the main route of transmission for Hepatitis C in the UK?

- A. Sharing razors and toothbrushes
- B. From an infected mother to her baby
- C. Sharing equipment to inject drugs

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Answer

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Question 7

You might need two tests for Hepatitis C?

A. True

B. False

Question 7

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B. False

Answer

A. True

Question 8

For which BBV is a vaccine available?

- A. HIV
- B. Hepatitis C
- C. Hepatitis B

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Answer

C. Hepatitis B

Question 9

BBVs can be transmitted by social contact such as hugging, kissing and shaking hands, sharing cutlery?

A. True

B. False

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A. True

B. False

Answer

B. False

Question 10

For which BBVs are there effective treatments?

There may be more than one answer

- A. HIV
- B. Hepatitis C
- C. Hepatitis B

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Answer

- A. HIV**
- B. Hepatitis C**
- C. Hepatitis B**

Question 11

Accidental injuries which result in exposure to BBVs can be caused by needles or sharp objects, splashes on broken skin, contamination of eyes, nose or mouth or a bite that breaks the skin.

- A. True
- B. False

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- A. True
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Answer

A. True

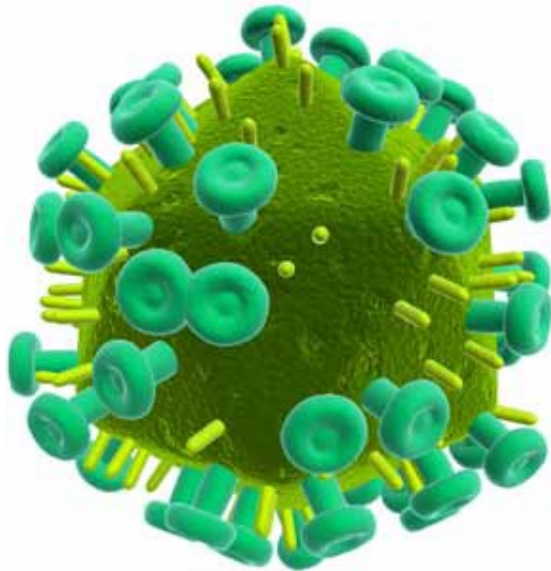


Introduction

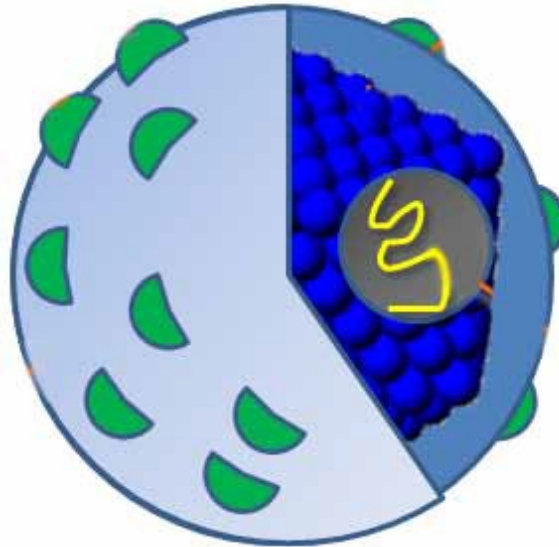


Introduction

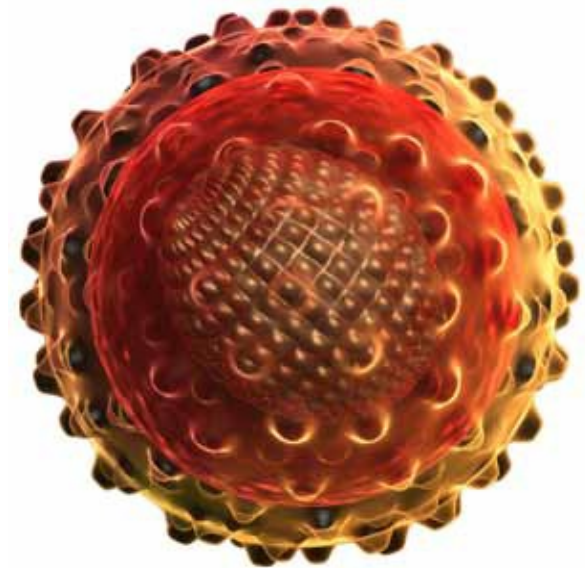
This unit is about the three main Blood Borne Viruses, **HIV**, **Hepatitis C** and **Hepatitis B**.



HIV
Human Immunodeficiency Virus



HCV
Hepatitis C Virus



HBV
Hepatitis B Virus

Introduction: You will learn

You will learn:

- how they are transmitted
- what tests can be carried out
- how the infection progresses
- what treatment is available
- what BBVs cannot do

What are Blood Borne Viruses (BBVs)?

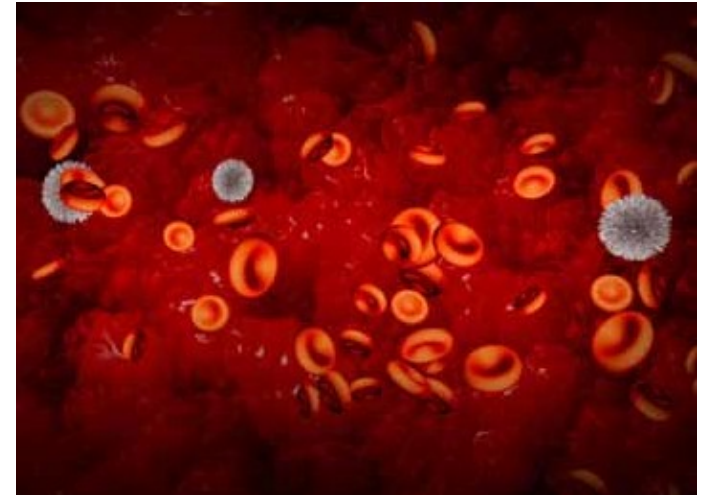
BBVs are viruses that are carried in blood and blood products.

There are three main BBVs:

- HIV
- Hepatitis C
- Hepatitis B

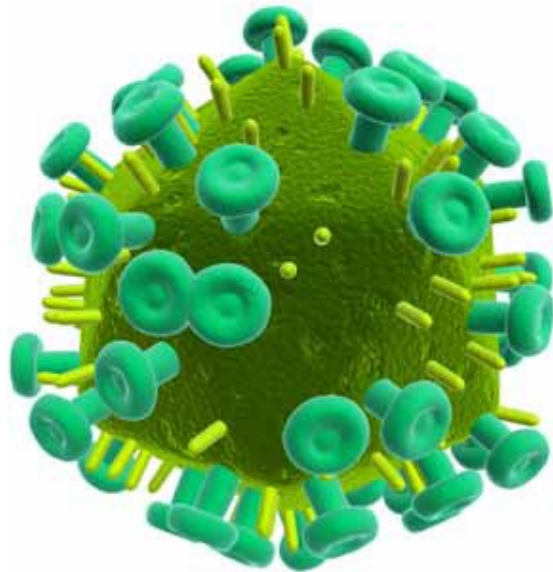
These are separate and distinct viruses.

As well as blood, BBVs can also be present at varying levels in various body fluids such as semen and vaginal secretions.

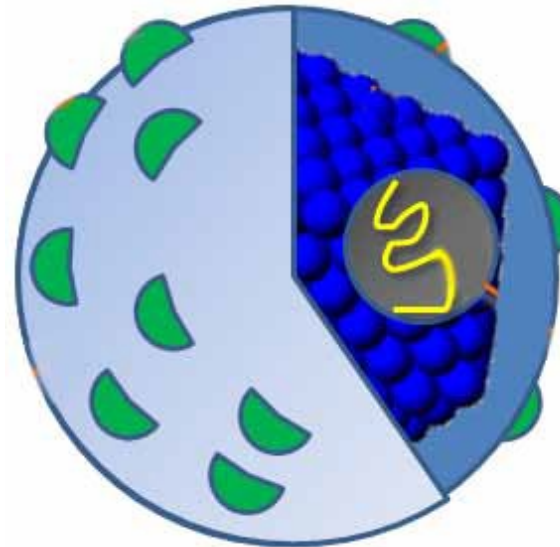


The three main Blood Borne Viruses

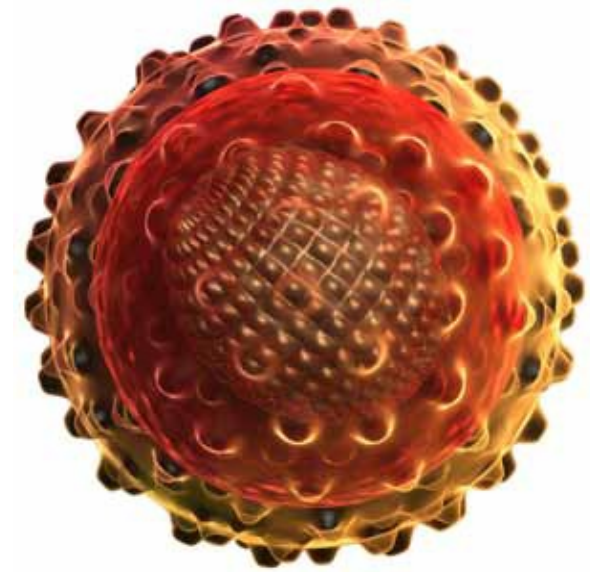
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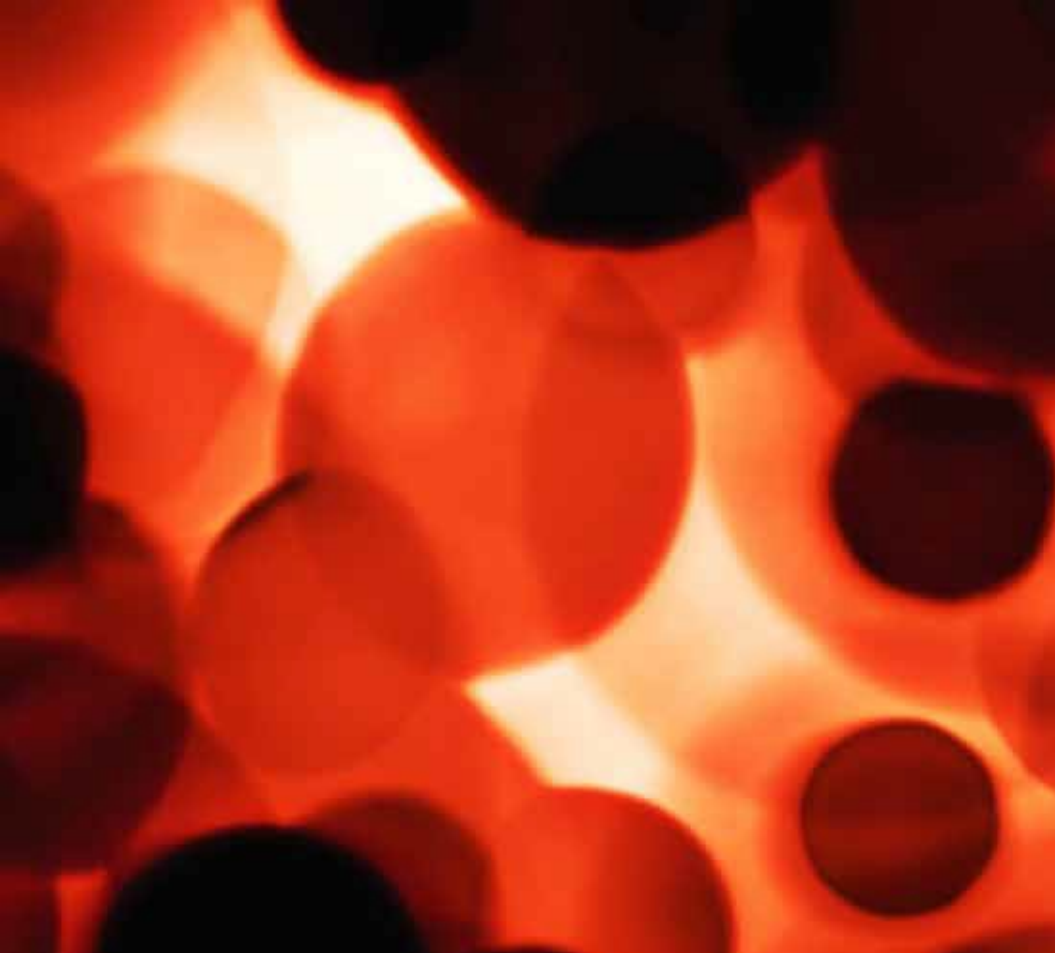
HIV
Human Immunodeficiency Virus



HCV
Hepatitis C Virus



HBV
Hepatitis B Virus



HIV



HIV

You cannot tell by looking at someone if they have HIV.



HIV

It can affect anyone regardless of their age, gender, sexuality, relationship status, ethnicity or religion.



HIV

There is no vaccine or cure, but medicines are available which control the virus and help people to keep well.



HIV - Routes of transmission



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HIV - Routes of transmission

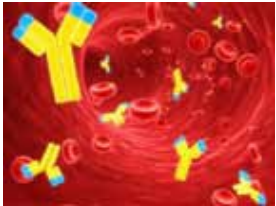
Prevention of HIV



There are a number of ways to reduce the risk of transmission of HIV:

- Treatment as prevention - When someone with HIV takes effective treatment it reduces their viral load to undetectable levels. This means the level of HIV virus in the blood is so low that it can't be detected by a test. Having an undetectable viral load for 6 months or more means it isn't possible to pass the virus on during sex. This is called undetectable=untransmittable (U=U), which can also be referred to as "treatment as prevention".
- Condoms - Condoms should be used for vaginal and anal sex, and for oral sex performed on men.
- It's important not to share needles, syringes, injecting equipment such as spoons and swabs, or the actual drugs or liquids used to dilute them.
- HIV Pre-exposure Prophylaxis (PrEP) - If someone is HIV negative, they may be able to take pre-exposure prophylaxis (PrEP) medication to reduce the risk of getting the virus. PrEP is available for some people who are at high risk of HIV infection – for example, those whose partner is HIV positive but not yet on treatment. It's available as a tablet, and is to be taken either every day, or before and after having sex. HIV PrEP is provided in sexual health clinics across Scotland.

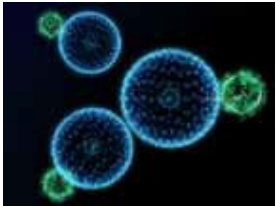
HIV - Testing



The only way to know if you have the virus is to have a test

- HIV is routinely detected using an **HIV antigen and antibody blood test (4th generation)**.
- If you get infected with HIV, your body reacts to the infection and produces ‘antibodies.’ The blood test looks to see if you have these HIV antibodies in your blood. If these antibodies are present you have HIV – usually called being HIV positive.
- Most people develop HIV antibodies within 6-12 weeks of infection. Remember, the time it may take from exposure before antibodies may show in the blood test is called ‘**the window period**’.
- During the **window period** the HIV antigen and antibody blood test (4th generation) may give a false negative result. However, a negative result on a 4th generation test performed at 4 weeks post-exposure is highly likely to exclude HIV infection. A further test at three months after exposure need only be considered following an event assessed as carrying high risk of infection. The BASHH/EAGA statement on HIV window period can be found at [http://www.bashh.org/documents/BASHH-EAGA%20statement%20on%20HIV%20WP%20\(nov%20%202014\).docx](http://www.bashh.org/documents/BASHH-EAGA%20statement%20on%20HIV%20WP%20(nov%20%202014).docx)
- If someone was infected shortly before the test, there would be a false negative result, but the person is still infected with HIV and can pass it on to others.
- It’s important to establish what risks people have taken and how long ago, as a repeat test might need to be arranged.

HIV - Progression



HIV has a complex life cycle that involves several steps. Disease progression occurs when the virus replicates (reproduces) and infects new cells.

HIV infects and destroys certain types of white blood cells, which are part of your immune system. Your immune system is important for fighting infection.

Often people do not have any symptoms at all for many years. Unless they get tested they are not aware that they are living with HIV and require treatment.

Without treatment, over a period of time, more and more HIV infected cells are destroyed or impaired, and the person's immune system becomes less and less effective at fighting infections and disease.

The person is said to be 'immunocompromised' and more likely to develop diseases called 'opportunistic infections' that they would not get if their immune systems were healthy. If this happens the person will be diagnosed with an AIDS defining illness. There is effective treatment available which can successfully delay the progression of HIV infection.

HIV - Treatment

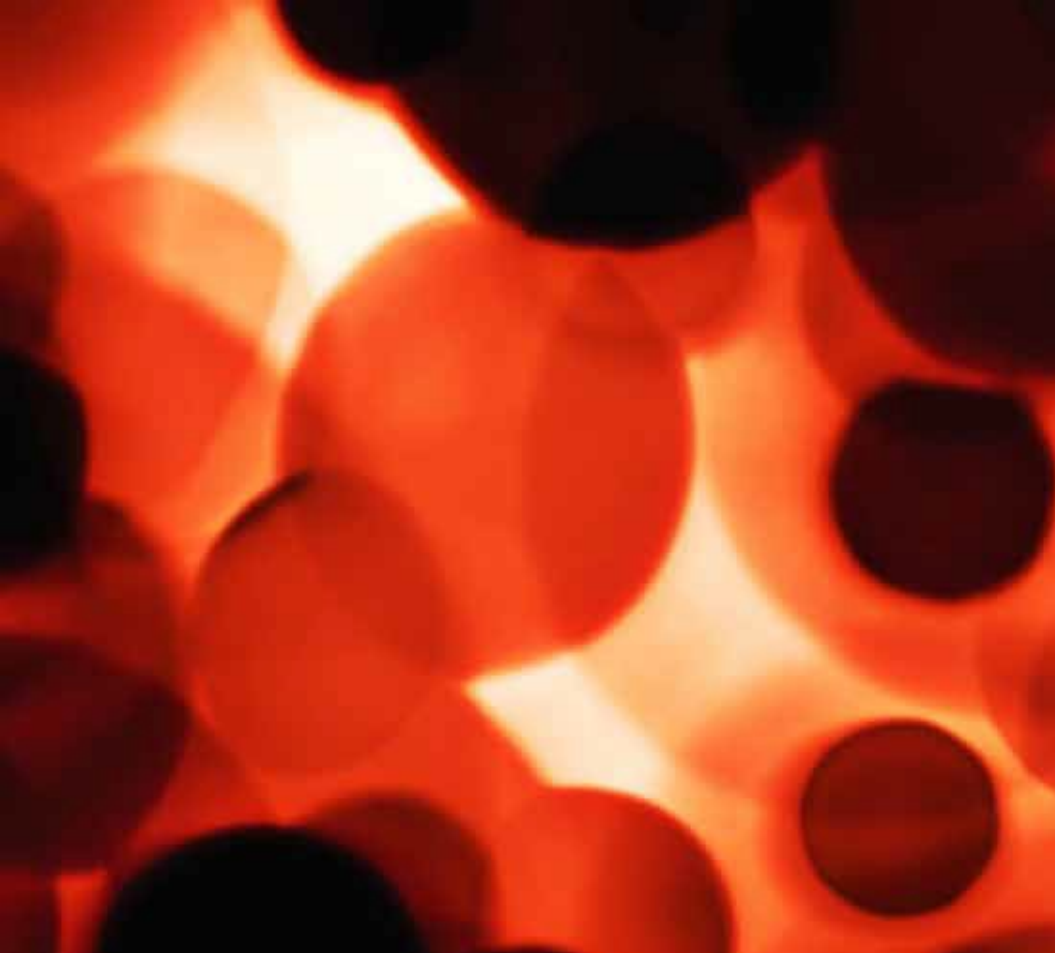


Antiretroviral drugs, targeting different steps in the viral life cycle, are the mainstay of HIV treatment and are very effective.

The treatment cannot cure HIV, only contain it.

An HIV positive person will need treatment for the rest of their life.

With appropriate treatment people can expect to live normal functioning lives.



Hepatitis C



Hepatitis C

You cannot tell by looking at someone if they have Hepatitis C.



Hepatitis C

It is most commonly transmitted in the UK through sharing equipment used for injecting drugs.



Hepatitis C

There is no vaccine, but treatment is available which can get rid of the virus for most people.



Hepatitis C - Routes of transmission



In the UK sharing any drug injecting equipment is the most common way of becoming infected with Hepatitis C i.e. needles, syringes, spoons, water, filters.
Other routes include:

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- Sustaining an occupational injury involving transmission of blood e.g. needlestick injuries.

Hepatitis C - Testing



The only way to know if you have Hepatitis C is to have a test.

- Around 1 in 4 people infected with Hepatitis C will clear the virus from their body naturally, but most people will not be able to clear the virus without treatment.
- There are two types of test for Hepatitis C - one looks for **antibodies** and the other looks for **virus**.
- **Antibody Test** – your body will make antibodies if you have ever been infected with Hepatitis C. If you have a positive antibody test it means that at some time you were infected with Hepatitis C. You will then need a test to check for virus to see if you are still infected.
- **A Virus Test** – there are now two types of test which look for the virus itself. A positive virus test means you are currently infected with Hepatitis C
 - A PCR test, which looks for the generic material of the virus
 - An antigen test which looks for a protein in the virus itself
- It can take up to 6 months to show up on an antibody test. This is called '**the window period**'.
- Antibodies to HCV generally appear within 6 months after infection.

Hepatitis C - Progression



Hepatitis C is a slow, silent disease that often takes many years to develop (10-20 years).

If left untreated, those who do not clear the virus naturally will develop chronic Hepatitis C infection.

Chronic infection can progress to scarring of the liver (fibrosis), and advanced scarring (cirrhosis) which is generally apparent after many years.

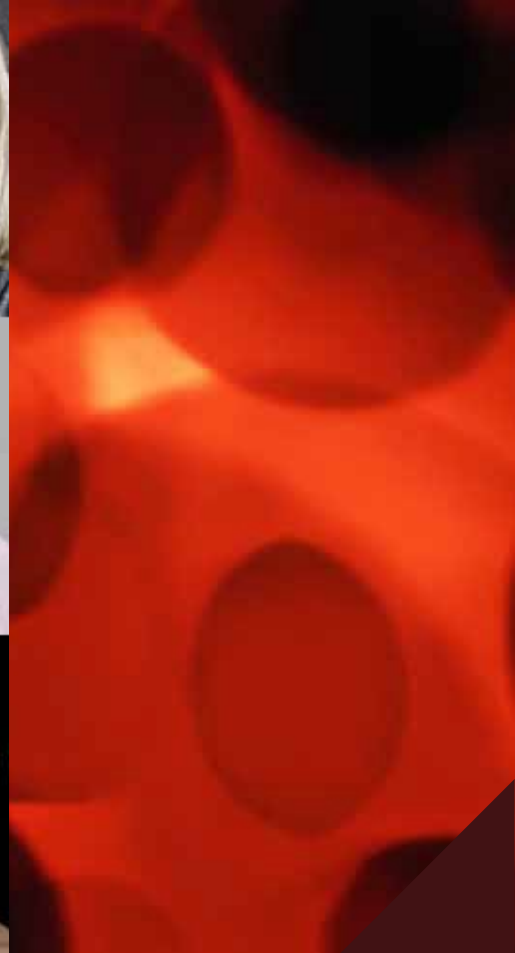
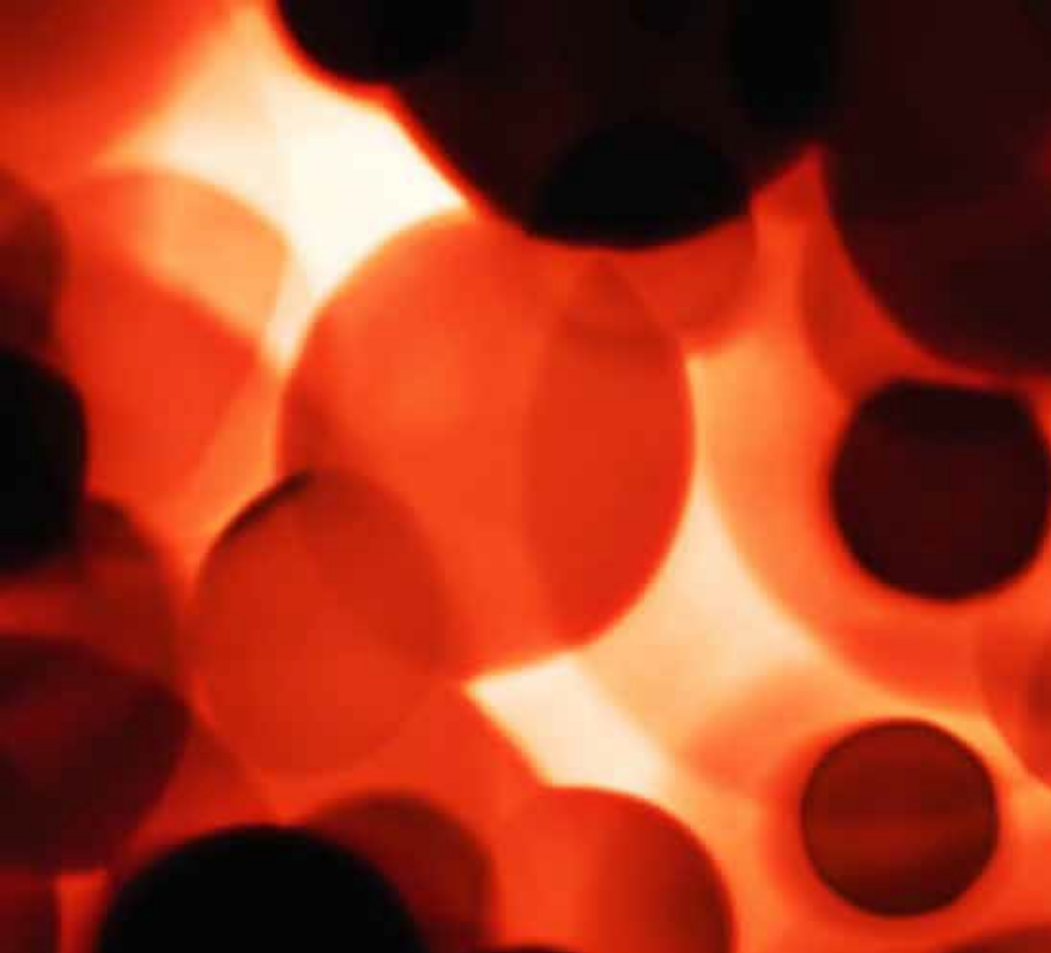
In some cases, those with cirrhosis will go on to develop liver failure or other complications of cirrhosis, including liver cancer.

Hepatitis C - Treatment



There are effective treatments available that can clear (cure) the infection in the vast majority of patients.

- Treatment currently consists of a combination of drugs.
- Treatment regimens vary but most now only last 8-12 weeks.
- Modern treatments have very few side effects.
- Most people are suitable for treatment – though the stage of the disease, the type of virus (genotype), the amount of damage to the liver and the existence of other health conditions all need to be considered.



Hepatitis B



Hepatitis B

You cannot tell by looking at someone if they have Hepatitis B.



Hepatitis B

Hepatitis B is the most infectious BBV - 100 times more infectious than HIV.



Hepatitis B

There is an effective vaccine available, which prevents infection.



Hepatitis B - Routes of transmission



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- Blood transfusion or blood products in countries where blood is not screened for Hepatitis B. In the UK there is little risk of transmission as all blood and blood products are (since 1971) screened for Hepatitis B.
- Transmission may rarely occur through the sharing of personal items such as razors, nail clippers and toothbrushes that are contaminated with blood.
- Using unsterile equipment and poor infection control procedures for tattooing, body piercing, ear piercing and acupuncture.

Hepatitis B - Routes of transmission



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Other routes include:

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- Bites that break the skin

Hepatitis B - Testing



- The only way to know if you are infected with Hepatitis B is to have a test
- Hepatitis B is detected by a range of blood tests
- These tests look for past or present infections, whether the infection is currently active and how infectious it may be

Hepatitis B - Progression

Acute Hepatitis B

- Is the period of illness that occurs during the first one to six months after infection, including jaundice, which occurs in a minority of cases and usually goes after a few weeks, as the immune system either clears the virus or brings it under control
- Very rarely, an acute severe ('fulminant') hepatitis develops which is life threatening.
- Most may not be aware that they have been infected with Hepatitis B. In particular, babies who acquire their infection from their mother during childbirth usually have no symptoms at first
- There is a good chance of full recovery and clearing the virus for adults who become infected with Hepatitis B.

Hepatitis B - Progression

Chronic Hepatitis B

- Is when the infection lasts for longer than six months
- The earlier you are infected in life, the higher your chance of developing chronic infection. Up to 5% of adults, and 90% of babies who acquire their infection from their mother, develop chronic Hepatitis B
- Chronic Hepatitis B infection affects individuals in very different ways. Symptoms vary greatly and are often influenced by factors such as the presence of other viruses or alcohol

Of those who develop chronic Hepatitis B infection:

- Most remain well, with no damage or problems to the liver. This is called being a 'carrier'. All carriers are infectious and can pass on the virus to others.
- Some people develop persistent liver inflammation. Symptoms vary in severity and some people have liver inflammation without having any symptoms.
- Some people develop cirrhosis. Cirrhosis is like a 'scarring' of the liver which can cause serious problems and 'liver failure' when it is severe. Cirrhosis usually takes many years to develop.
- After many years, a small number of people with cirrhosis then develop liver cancer.

Hepatitis B - Treatment



Most adults will clear the virus and only those with chronic Hepatitis B might require treatment.

Treatment aims to stop or limit the virus from damaging the liver.

There are two types of treatment which can be used separately or in combination - interferon and / or a range of antiviral medications.

The length of treatment will depend on a number of factors including how much damage there is to the liver, but once started treatment is likely to continue for many years.



What can BBVs NOT do?



What can BBVs NOT do?

They cannot infect a person if there has been no exposure of infected blood or bodily fluids to broken skin or mucous membranes.

They cannot infect a person if they have not entered a person's body.



BBVs CANNOT be passed on through social contact

Such as:

- Hugging
- Kissing
- Shaking hands
- Sharing cups or cutlery
- Sitting on the same toilet seat



Health benefits of testing



- Detecting and diagnosing people with BBVs reduces the number of people in the community who do not know their status.
- This allows them to take control of their health and take actions to prevent onward transmission to others.
- Treatments for all three Blood Borne viruses are available and successful.
- Usually, the earlier someone gets tested and diagnosed the better the long-term outcome for them. This can be because they get earlier access to treatment, can access regular monitoring and care and make choices to look after their health and avoid activity that might speed up disease progression such as drinking alcohol.
- Close contacts of those infected with a BBV (e.g. sexual partners, injecting drug sharing partners and household members) should be informed of the risks and advised where they can get tested. Contacts of those infected with Hepatitis B can also be offered vaccination.

Management following exposure to a Blood Borne Virus



Accidental injuries or exposure to BBVs can occur in different ways:

- Needles or sharp objects.
- Splashes on broken skin.
- Contamination of eyes, nose or mouth.
- A bite that breaks the skin.

It is important to identify injury types and the associated risk.

Seek early medical advice if there is any concern about exposure to a BBV following an injury. Sometimes treatment may need to be provided without delay.

Policy (National and Local)

Further training

NHS Education for Scotland has developed an on-line learning module; Prevention and Management of Occupational Exposure which includes needlestick injury. This can be accessed free of charge at to all Health and Social Care staff in Scotland via [Learn-pro](#) and [Learn-pro Community](#):

NHS Education for Scotland has also developed a range of resources to support the professional development of staff whose role includes aspects of Hepatitis C service delivery. To download copies of 'A Route to Enhanced Competence in Hepatitis C: Workbook and Managers Guide' go to the NHS Education for Scotland website.

Further information

Contact your local BBV Coordinator

Treatment centres
