

# Focus on Blood-borne viruses

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This article highlights the rates of incidence and transmission of three well-documented BBVs. It includes information on where to find the latest legislation for safe handling of sharps and what to do following a needle-stick incident.

The prevalence of blood-borne viruses (BBVs) is increasing at an alarming rate amongst the UK population. Medical practitioners who routinely use sharp instruments or needles during treatment are acutely aware of the risks of transmission of BBVs. It is good advice, however, to periodically remind ourselves of the hazards and to review existing practices to ensure that we employ the safest methods available for the handling and disposal of used instruments and needles.

## The BBVs under discussion

Healthcare professionals are at risk from many infections, but it is widely accepted that the BBVs **Hepatitis B**, **Hepatitis C** and **HIV** feature high on the agenda.

## Transmission routes

Fortunately, transmission of a BBV from a patient to a healthcare professional is a rare occurrence. The main vehicle of concern is blood associated with routine or surgical procedures,<sup>1</sup> with a dangerous route of infection being a sharps injury. A sharps injury is a percutaneous puncture or scratch with a soiled instrument, and a significant number occur with a used needle.<sup>2</sup> For this reason, we will focus on the prevention and post-exposure procedures for this type of incident, although the protocol for all sharps injuries remains the same.

According to the EPINet survey, there are 100,000 needle-stick incidents reported each year in the UK NHS healthcare system. The number is certainly much higher, as there is gross under reporting.<sup>2</sup>

With this in mind, this article aims to give the reader an understanding of:

- Disease prevalence of HBV, HCV and HIV in the UK.
- Disease progression.
- Potential for transmission.
- Immunisation and current treatments.
- Legislation and protocol for potential blood-borne infection exposure.
- Prevention of needle-stick injuries.

## Hepatitis B

Hepatitis B is an infection of the liver by the Hepatitis B virus (HBV). The virus can be transmitted in blood and body fluids. It is estimated that 180,000 people in the UK are chronically infected with the HBV, which equates to 0.3% of the population.<sup>3</sup>

HBV can potentially be transmitted to a healthcare professional from an infected patient following a needle-stick injury, and the chances of transmission are reported to be around 1 in 3.<sup>4</sup>

Newly acquired infections are often sub-clinical, or can manifest as flu-like symptoms. The incubation period is between 40 and 160 days, with 30-50% of adults going on to develop jaundice. Acute hepatitis can lead to liver necrosis, and can be fatal.<sup>5</sup>

Hepatitis B is confirmed by the presence of the serological markers, Hepatitis B surface antigen (HBsAg) and anti-HBcIgM. A chronically infected person (or carrier) is someone who has HBsAg in their serum for over six months.<sup>5</sup>

Workers who are at occupational risk of blood-borne infections should be immunised against Hepatitis B.<sup>4</sup> In normal circumstance the Hepatitis B vaccine is given in several doses over a period of months. Antibody titres should be checked one to four months after the first vaccination course and antibody levels of 100 IU/ml indicate immunity. Workers with antibody levels between 10 and 100 IU/ml at test should have a booster dose at that time.<sup>5</sup>

Because the immunity period is unknown for Hepatitis B vaccine, a single booster dose is recommended at five years or following exposure to the virus. Healthcare professionals who have a sharps exposure and are currently unprotected can be given Hepatitis B immunoglobulin, which gives rapid active immunity. Passive immunity can then be accelerated using the standard vaccines. Time is of the essence, and immediate reporting of exposure incidents is imperative.<sup>5</sup>

## Hepatitis C

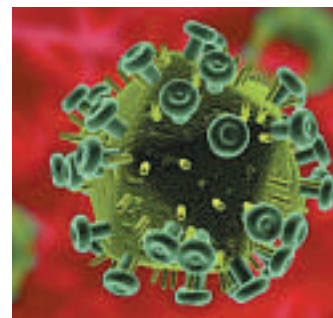
Hepatitis C is a liver disease caused by the Hepatitis C virus (HCV). Like HBV, HCV can be transmitted in blood and body fluids. It is estimated that around 200,000 (0.4%) people are chronically infected with the virus in England.<sup>6</sup>

The risk of transmission of HCV from an infected person to a healthcare worker following a sharps injury such as a needle-stick is around 1:30.<sup>4</sup>

Most people who contract Hepatitis C suffer no symptoms, with the minority only feeling unwell. The incubation period is between 43 and 70 days. Around 60-80% of people go on to develop chronic Hepatitis C, the remainder clear the disease spontaneously.<sup>6</sup> Those who become chronically infected, generally live out a normal life span, with only 5% to 20% developing liver disease (cirrhosis).<sup>6</sup>

At present, there is no vaccine for Hepatitis C, but treatment is available. Combined anti-viral drug therapy can clear the virus from the blood in around 40% of people, but not all are suitable for the treatment.<sup>7</sup>

## Human Immunodeficiency Virus (HIV)



HIV is a blood-borne virus that can be passed on to a healthcare worker as a result of a needle-stick injury. It is estimated that by the end of 2004, around 58,000 (0.01%) of the UK population were carrying the virus, 34% being unaware.<sup>8</sup>

The HIV virus acts by attacking a particular type of white blood cell (CD4)

that normally helps provide the body's immunity against infections. Although people usually appear well for many years (average ten years), the HIV progressively weakens the immune system. The infected person is then vulnerable to infections that a healthy person would otherwise resist (e.g. pneumonia). The condition of AIDS (Acquire Immune-Deficiency Syndrome) is said to have been reached when a person develops one or more infections from a specific list.<sup>9</sup>

HIV transmission from an infected person to a healthcare worker following a sharps injury is low – about 1 in 300.<sup>10</sup> The risk is lower than this in podiatry as the blood loading on the needle is slight, and duration of exposure is brief.<sup>7</sup>

At present there is no vaccine or cure for HIV. Anti-viral therapy can be used to inhibit the viral replication in specific high-risk exposure incidents, which is called PEP (post-exposure prophylaxis).<sup>9</sup>

The anti-viral therapy consists of several drugs that inhibit the replication capacity of the virus. This therapy should be started as soon as possible in the appropriate cases, so it is important to act promptly in informing the necessary hospital department for guidance.<sup>7</sup>

### Legislation

Employers have a legal duty to protect employees at work premises. A risk assessment regarding needle-stick and other sharps injuries should be carried out, and employees need to be consulted within this process.<sup>11</sup>

The whole process should culminate in a reliable and workable action plan, designed to prevent blood-borne exposures and, importantly, deal with them in the most appropriate way.

Guidance can be obtained from the following sources:

- Local Primary Care Trusts
- Occupational Health or infection control departments
- The Society of Chiropractors and Podiatrists - [www.feetforlife.org](http://www.feetforlife.org)
- Health and Safety Executive - [www.hse.gov.uk](http://www.hse.gov.uk)
  - Health and Safety at Work Act 1974
  - Management of Health and Safety at Work Regulations 1999
  - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995: RIDDOR
  - Five Steps to Risk Assessment. HSE Books
  - The Control of Substances Hazardous to Health Regulations 2002. COSHH

### Following the guidelines

All Primary Care Trusts produce guidelines for dealing with sharps injuries and therefore protect employees. If you cannot find it then speak to occupational health or the infection control nurse and they will help you to obtain a copy.

Ensure you read it, and then incorporate the important points into your daily infection control routine. This policy should be discussed at a team meeting, and then audited at set intervals.

Ensure that you use safety wear and devices within the clinic in order to protect all personnel.

### Prevention of needle-stick injuries

Many needle-stick injuries occur during treatment, and this can be reduced by revision of clinical techniques. Alarming, a high number of incidents occur on re-sheathing and whilst disposing of the needle. Traditionally re-usable metal syringes are used and needles re-sheathed and removed by hand. It is this action that causes a significant risk.



There are a number of needle safety devices available on the UK market. The most recent innovation in the field of needle safety is **Safe-Point**; a compact desktop device that automatically removes a used needle from the syringe, eliminating all hand contact. The Safe-Point unit should be installed in the surgery itself, within easy reach of the practitioner. The removal process takes seconds, and the intact needle is safely deposited into an attached sharps bin.

**Safe-Point** ensures that the practitioner complies with Trust needle stick policy in the following ways:

- The clinician removes the needle.

- No re-sheathing is involved.
- The needle is removed at the point of treatment.
- The sharps bin is safe and sealed.
- A safety device is being used for needle safety.<sup>12</sup>

Needle-stick injuries are a common and worrying fact of life in clinical practice. There are obvious risks involved but in order to put these into perspective, a clear and informed policy should be produced for each clinic. This will help provide a safe and secure place of work for all employers and employees.

Safe-Point is manufactured in UK by Safe-Point Healthcare Ltd (Tel: 01295 816888). Visit [www.safe-point.co.uk](http://www.safe-point.co.uk) for further information. Safe-Point is also available from Canonbury Healthcare and DLT Chiroprody.

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