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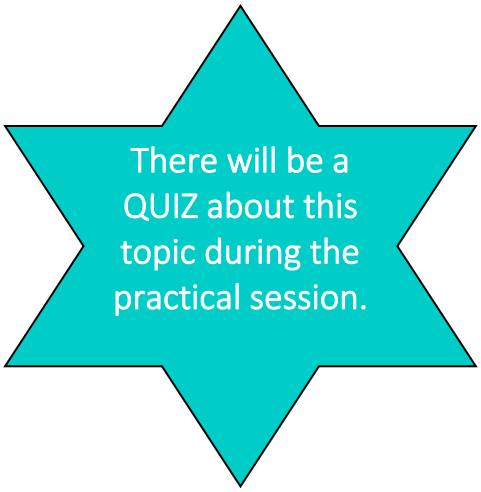


Venepuncture

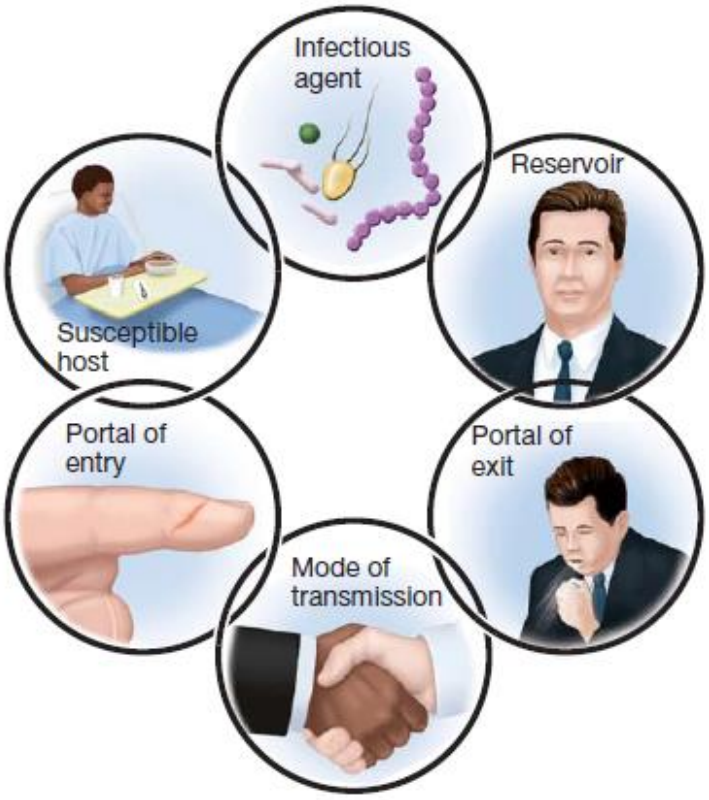
Infection Prevention

Updated Nov 24 - JM

Infection Control

When a blood or body fluid exposure incident occurs in the context of an "exposure-prone procedure", the possibility of transmission of infection from healthcare worker to patient must be considered, as well as from patient to healthcare worker. "Exposure-prone procedures" are those where there is a risk that injury to the healthcare worker could result in the patient's blood or open body tissue being exposed to the blood of the healthcare worker.

Chain of Infection



An **infectious agent** is the pathogen or disease producing micro-organism. This could be a virus or bacteria for example.

The **reservoir** is where the pathogen replicates and grows. This is usually local to the site of infection but can quickly become life threatening if the infection becomes systemic (spreads through the whole body i.e. via the circulatory system).

The portal of exit in the case of phlebotomy is usually the puncture of the skin or the site of the cannula. From the healthcare provider it would be the skin, for example if hands not properly washed, pathogens on the hand would be the exit point from yourself to the patient.

Mode of transportation is how the pathogen travels. In the case of phlebotomy this would be through the blood.

The portal of entry from the healthcare provider to the patient, would be via the puncture wound or the cannula. However, when considering the patient infecting the health care provider, this is usually via a needle stick injury and is also therefore the needle wound. It should however be considered that mucous membranes can also transmit bloodborne infections and as such contact with blood to the eyes or mouth should also be considered a significant risk.

A susceptible host is needed for the pathogen to multiply. Immunosuppressed patients are at particular risk of infection.

Bloodborne Pathogens & Risk of Needlestick Injury

Needlestick or sharps injuries occur when a needle or other sharp instrument accidentally penetrates the skin. This is called a percutaneous injury. If the needle or sharp instrument is contaminated with blood or other body fluid, there is the potential for transmission of infection, and when this occurs in a work context, the term occupational exposure (to blood, body fluid or blood-borne infection) is used.

When blood or other body fluid splashes into the eyes, nose or mouth or onto broken skin, the exposure is said to be mucocutaneous. The risk of transmission of infection is lower for mucocutaneous exposure than for percutaneous exposures but still significant. Other potential routes of exposure to blood or other body fluids include bites and scratches.

2,600 claims for needlestick injuries were received by NHS Resolution with incident dates between 2012 – 2022 (fiscal years). Of these, there were 1,947 successful claims which cost the NHS £10,799,616 (total damages paid plus legal costs). The total cost for this time period could be higher as 167 claims remain open. 1,460 successful claims were received from ancillary workers (including cleaners, porters, laundry and maintenance staff) – employees exposed to sharps (NHS Resolution, 2024).

The major blood-borne pathogens of concern associated with needlestick injury are:

- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)
- Human immunodeficiency virus (HIV).

However, other infectious agents also have the potential for transmission through needlestick injury. These include:

- human T lymphotrophic retroviruses (HTLV I & II)
- hepatitis D virus (HDV or delta agent, which is activated in the presence of
- HBV) hepatitis G virus (GB virus or GBV-C)
- cytomegalovirus (CMV)
- Epstein Barr Virus (EBV)
- parvovirus B19
- transfusion-transmitted virus (TTV)
- West Nile Virus (WNV)
- malarial parasites
- prion agents such as those associated with transmissible spongiform
- encephalopathies (TSE).

In the United Kingdom (UK), the Health Protection Agency (HPA) monitors significant occupational exposures and potential transmission of HIV, HCV and HBV from patients to

healthcare workers through a national surveillance scheme. Data are reported in the *Eye of the Needle* report, which is regularly updated and can be accessed at www.hpa.org.uk/infections.

Significant stress and psychological trauma can result from needlestick injuries, even where no infection is ultimately acquired, due to long periods of uncertainty regarding the outcome of the injury, as well as changes in lifestyle, working restrictions and, where indicated, extended and debilitating treatments. The Infection Control Manual should contain the policy on treating a sharps injury.

***REMEMBER – information about known bloodborne diseases may not be the patient notes or patients may not know they have a bloodborne disease. ENSURE APPROPRIATE PPE for all venepuncture to protect yourself and the patient.**

Avoiding Sharps Injury

Phlebotomists should ensure that they are familiar with procedure for dealing with sharps injury in their workplace. To minimise the risk of a sharp/splash injury associated with phlebotomy procedure, the following rules apply:

- Patient should be in a safe position with arm well supported.
- Seek help if patient is restless or un-cooperative.
- Ensure that vacuum bottles are disconnected from the multisampler area prior to removing needle from vein.
- Lightly cover venepuncture site with gauze when removing needle.
- Engage the safety needle cover immediately upon removing the needle and dispose into a sharps box.
- Never attempt to re-sheath a needle.
- Should a sample bottle break, never attempt to pick it up. Avail of the nearest spillage kit and use appropriately to clean the hazardous material.

- Gloves should be worn for procedure. While this will not prevent sharp injury, the glove has a wiping action and will reduce the amount of blood inoculated.
- Cover all exposed cuts and abrasions with sterile waterproof dressings.
- Should an injury occur, avoid contact of affected area with the mouth

Handwashing

Handwashing is the most important factor in the prevention of infection in healthcare. It was highlighted as particularly important in the prevention of COVID-19 with many advertising campaigns teaching people how to wash their hands effectively.

Where there is actual soiling on the hands, they should be washed with soap and water as opposed to alcohol gel. Please note: Alcohol gel is ineffective against some pathogens, particularly diarrhoea and vomiting conditions such as norovirus. Where the patient has a disease that requires barrier nursing, additional PPE should be used, and the clinical area may need to be deep cleaned prior to other patients entering, as per the employer's policy.

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How to Handwash?

Duration of the entire procedure: 40-60 seconds

1

Wet hands with water

2

Apply enough soap to cover all hand surfaces

3

Rub hands palm to palm

4

Right palm over left dorsum with interlaced fingers and vice versa

5

Palm to palm with fingers interlaced

6

Backs of fingers to opposing palms with fingers interlocked

7

Rotational rubbing of left thumb clasped in right palm and vice versa

8

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa

9

Rinse hands with water

10

Dry hands thoroughly with a single use towel

11

Use towel to turn off tap

12

Your hands are now safe

NHS Grampian

World Health Organization

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES Clean Your Hands

Diversey

for a cleaner, healthier future™

Personal Protective Equipment Required for Phlebotomy

- Gloves do not replace handwashing! Hand hygiene should be practiced before and after wearing gloves (gloves are not completely impermeable). Washing your hands with gloves on compromises the integrity of the glove. Non-sterile gloves are appropriate for phlebotomy and should be donned after putting and apron on and doffed before removing the apron.

- Aprons protect the health care professional from bodily fluids and patients from cross contamination. This should not be touched by gloves.

- Masks are only required if there is a specific risk to or from the patient that requires this form of PPE but should not be used for phlebotomy routinely.

- Eye protection is only required if there is a specific risk to or from the patient (for example a known blood borne virus) that requires this form of PPE but should not be used for phlebotomy routinely. Eye protection protects the mucous membranes of the eye from contamination.

Aseptic Non-Touch Technique

Aseptic Non-Touch Technique (ANTT) is a vital practice in healthcare that minimises the risk of infection during clinical procedures. Here are the key reasons why it should be used:

- Prevention of Healthcare-Associated Infections (HAIs):
  HAIs are a major concern in healthcare settings, leading to increased patient morbidity, prolonged hospital stays, and higher costs. ANTT helps prevent these infections by ensuring that microorganisms do not contaminate key parts such as needles).

- Protection of Patients:

  Patients undergoing procedures often have compromised immune systems, making them more vulnerable to infections. ANTT reduces the introduction of pathogens, promoting patient safety and better outcomes.

- Focus on Key Sites and Key Parts:

  The technique emphasises protecting specific areas and parts of equipment that directly interact with the patient. By targeting these critical points, the risk of introducing infection is minimised. ANTT ensures that these are not touched unless absolutely necessary, maintaining sterility and reducing contamination risks.

- Compliance with Regulations:

  Many healthcare regulatory bodies and guidelines recommend or mandate the use of ANTT as part of infection prevention protocols. Adherence to ANTT helps healthcare institutions meet these standards.

- Reducing Antibiotic Use:

  By preventing infections, ANTT reduces the need for antibiotics to treat those infections, helping combat antibiotic resistance—a significant global health challenge.

- Improving Patient Confidence:

  Patients and their families are reassured when they see healthcare providers adhering to rigorous infection control practices, enhancing trust in the care being delivered.

ANTT is a cornerstone of infection control that ensures safe, effective, and standardised care for patients. It not only protects individuals during procedures but also supports broader public health goals by reducing the spread of infections and antimicrobial resistance.

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Handling of Specimens

Care should always be taken when handling blood specimens. All specimens are potentially infectious.

1. Standard precautions should always be used.
2. Gloves should always be worn.
3. Exposed cuts and abrasions should be covered with suitable waterproof dressings.
4. Hands should be washed/ alcohol gel before and after each procedure.
5. All staff should be familiar with the Infection Control Manual.

Specialised containers are available to transport samples to outside laboratories. The phlebotomist should be familiar with legislation and local arrangements.

Waste disposal- Infection Control Guidelines

Sharps

Sharps Containers are effective methods of disposal of sharp clinical waste material, as they are perforation proof. However, they are not leak proof, and so, should exposed blood products be placed in them, the risk of splash injury is increased.

- A yellow bin with a yellow lid should be used for all sharps including razors, scalpel blades, suture needles and small pieces of broken glass.
- The opening should be routinely covered over (without permanently sealing it) so that needles do not spill if the bin is knocked over.

- The sharps bin should be close to you when doing any procedure to avoid having to walk around with sharps.
- For medication/IV lines, a yellow bin with a purple lid is more appropriate.
- Where possible syringes and needles must be discarded as a single unit. Where this is not possible due to the size of the sharps bin, use the sharp removal tool on the lid, to remove the needle. Do not do this by hand.
- Only fill a sharp bin up to the line/ three quarters full to reduce the risk of needle stick injury.
- Once full closed, the sharps bin will not re-open.
- Ensure containers are securely closed before discarding as per your infection control policies.
- When making up or discarding a sharps box, ensure the information on the front of the bin is completed.

Clinical Waste

USE YELLOW PLASTIC BAGS (printed with "For Incineration Only")

- For all waste from clinical areas
- For all waste contaminated with blood or body fluids
- Securely fasten bag with 2/3rds full and mark source name
- This waste is incinerated

Household waste

USE BLACK PLASTIC BAGS (printed with "Household Waste Only")

- For all waste from non clinical areas, eg waste paper, hand towels.
- This waste can be disposed of either by landfill or incineration.

Summary: Reducing the Risk of Infection in Phlebotomy

- Be aware of any special infection control precautions for individual patients.

- Use alcohol hand rub or soap and water to decontaminate hands before handling equipment or donning an apron and gloves.

- Aseptic Non-Touch Technique (ANNT) should be used when preparing for and undertaking venepuncture to reduce the likelihood of infection.

- USE GLOVES – some clinicians chose not to use gloves when practicing venepuncture in order to better palpate the veins. Employers provide PPE, if this is not used, it is unlikely that you will be covered by insurance if you become infected with a bloodborne virus or

- PPE must be changed between EACH patient and hands decontaminated at key points.

- Single use tourniquets should be used to prevent cross contamination.

- Ensure the puncture has stopped bleeding and clotted or appropriate clean dressing used (check allergies before applying a dressing).

Appendix A - Risk Assessment Following Sharps/Splash Injury

To be completed by staff member who has sustained the sharps/splash injury and then taken to Accident & Emergency Department and / or Occupational Health.

PERSONAL DETAILS	
Name:	Date of Birth:
Post:	Place of Work:
Telephone Number: Home: Work:	Manager:
Date:	Time of Accident/Incident:

DETAILS OF THE INJURY
Brief description of the incident with blood/blood stained body fluids (please tick box if applicable) SHARPS INJURY: Needle/scalpel blade or other sharp instrument Scratch Bite Cut Bone Other CONTAMINATION: Abrasion Eczema Psoriasis Other EXPOSURE TO MUCOUS MEMBRANE Eye Other
Which high risk body substance? Blood Blood stained body fluid Vaginal secretions Saliva (if visibly blood stained e.g. in association with dentistry) Used needle Other please specify ……

Source Patient History (if known, to be completed by doctor/nurse managing the staff member NOT the injured person)

Name……. Tel No: ……

Address: ……

DOB ……

GP / Clinician details: ……..

Source patient infected with

HIV

HBV

HCV

Source patient on medication for one (or more) of above illnesses

IV drug user (present or previous)

Does client have high-risk behaviour? (ask only if appropriate and in the strictest confidence)

Appendix B: Blood Borne Infections - Information to Consider

The source patient

1. Known or unknown?

2. If unknown, is there any indication of the origin of the device or body fluid? For example, was the device from a unit or area with patients known to have hepatitis B or C or HIV?

3. If known, is the source patient known to be infected with hepatitis B, hepatitis C or HIV? The validity of negative results varies depending on how long ago the tests were done and current risks factors.

4. If the source patient is not known to carry any of these infections, do they have any risk factors for them?

5. The risk of being infected with HIV is increased in people from areas of high prevalence, particularly sub-Saharan Africa, men who have sex with men (MSM), intravenous drug users, people with HIV-infected mothers or with HIV infected sexual partners.

6. The risk of being infected with hepatitis C is increased by receipt of unscreened blood or untreated plasma products (in the UK prior to September
1991 and 1985 respectively); sharing of injecting equipment while misusing drugs; sharps injury or mucous membrane splash exposure to blood from patients known to be infected, or at risk of infection with hepatitis C; involvement as a healthcare worker or a patient in invasive medical, surgical, dental or midwifery procedures in parts of the world where infection control precautions may have been inadequate; or with populations with a high prevalence of hepatitis C infection (like Egypt).

7. The risk of being infected with hepatitis B is increased in intravenous drug users, men who have sex with men (MSM), and in people with hepatitis B infected mothers or hepatitis B-infected sexual partners.

8. If the source patient is known to be infected with HCV, is HCV RNA detectable on most recent test?

9. If the source patient is known to be infected with HIV:
- has there been a recent/current seroconversion illness?
- are they terminally ill with HIV-related disease? If so viral load may be high.
- what is the most recently recorded viral load?
- are they taking anti-retroviral drugs?
- is there any evidence of viral drug resistance?

10. If the source patient is known to be infected with hepatitis B, are they:
- HBsAg positive?
- HBeAg positive?

The exposed person

Hepatitis B immune status:

- unvaccinated?
- one, two, three or more doses of hepatitis B vaccine?
- date of last booster?
- most recent HBsAb result and date?
- HBcAb positive (natural immunity)?