

# VENEPUNCTURE

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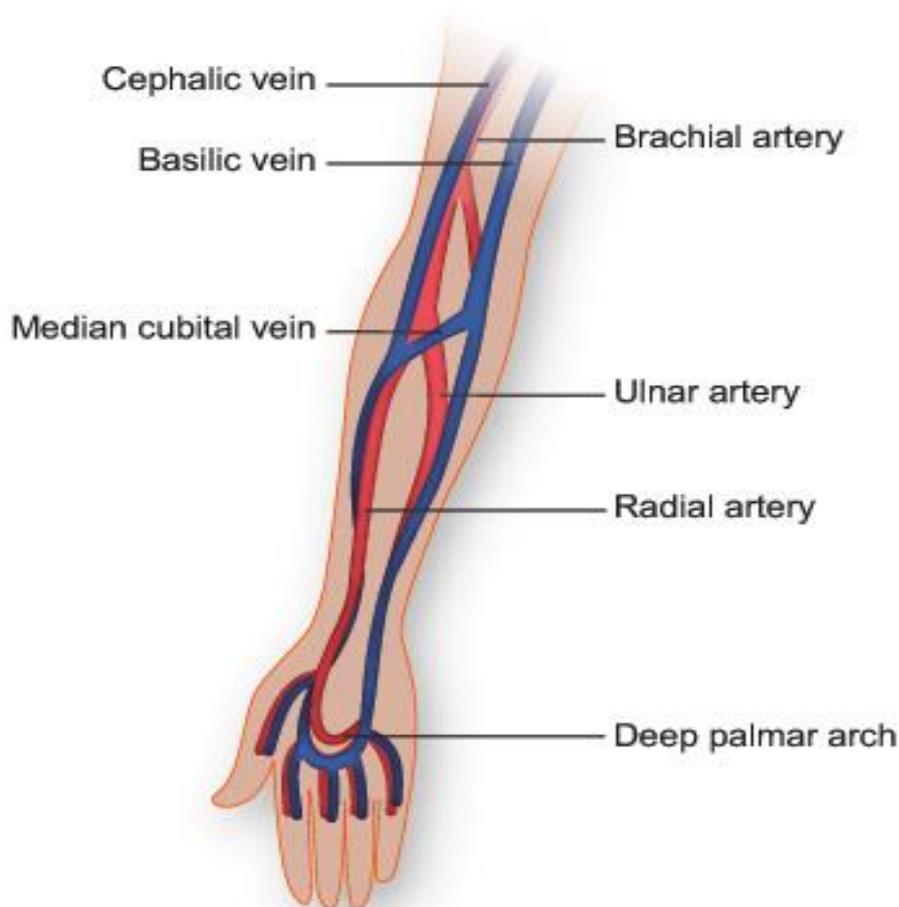
## Introduction

*Venepuncture is the process of entering a vein with a needle, and it is carried out for the following reasons:*

-  *To obtain a sample of venous blood for diagnostic purposes*
-  *To establish and subsequently monitor levels of blood components*
-  *To establish and subsequently monitor levels of drugs*
-  *To monitor response to medical treatments (e.g. fluids, drugs)*
-  *To provide a sample of blood to cross match for a blood transfusion*
-  *To screen for infection.*

*The superficial veins of the upper limbs are most commonly chosen for venepuncture; these veins are superficial and accessible with only minimum discomfort for the individual, thereby enabling the procedure to be performed safely.*

## 1. Procedure



- a) **Choosing a vein:** The veins normally chosen for venepuncture are those in the antecubital fossa, since they are usually of a good size and capable of providing copious and repeated blood specimens; they are also easily accessible, thus ensuring that the procedure can be performed safely and with the minimum of discomfort for the individual. The main veins of choice are as follows:

-  median cubital vein
-  cephalic vein
-  basilic vein
-  metacarpal veins (in the hands) — used only when the others are not accessible.
-  Choose the vein that is best for the individual; the most prominent is not always the most suitable.

**b) Visual Inspection**

-  It is important to scrutinise the veins in both arms
-  Veins adjacent to the foci of infection, bruising, or phlebitis should not be considered, due to the risk of causing further tissue damage or systemic infection
-  Oedematous limbs should be avoided, as there is a danger of stasis of lymph which may cause complications of phlebitis and cellulitis and increased tissue damage by the tourniquet
-  Areas of previous venepuncture should be avoided, to prevent the build-up of scar tissue and pain due to repeated trauma.

**2. Palpation:** Palpation is an important assessment technique in determining the location and condition of the vein. It is used to distinguish veins from arteries and tendons, identify the presence of valves, and detect deeper veins.

-  Always use the same fingers for palpitation, as this increases sensitivity and the ability to know what is being felt; the thumb should not be used, as it is less sensitive and has its own pulse (which may lead to confusion when trying to distinguish the veins).
-  The least dominant hand should be used for palpitation, in order to keep the dominant one free to realign the needle if required.
-  Thrombosed veins feel hard and cord-like, and they should not be used for palpitation.
-  Veins that are tortuous, sclerosed, fibrosed, inflamed or fragile should also not be used, as they may not be able to accommodate the device and repeated venepuncture will cause pain.
-  Veins that pass over bony prominences or bones themselves, such as the inner side of the wrist, should be avoided for palpitation, as these sites cause more discomfort.
-  Instead, preference should be given to veins that possess the following characteristics:
  -  Easily detected by inspection and palpitation
  -  Patent and healthy
  -  Unused (no previous palpitation)
  -  Soft to the touch, bouncy, and refill when depressed.

**a) Equipment required for the procedure**

-  Clean tray or receiver
-  Tourniquet or sphygmomanometer and cuff
-  21 swg multiple sample safety needle or 21/23 swg winged safety infusion device and multiple Luer adaptor
-  Standard plastic tube holder
-  Appropriate, vacuumed specimen tubes
-  Swab saturated with 2% chlorhexidine in 70% isopropyl alcohol solution
-  Low-lint gauze swab
-  Sterile adhesive plaster or hypoallergenic tape
-  Specimen request forms
-  Non-sterile, well-fitting gloves
-  Plastic apron
-  Sharps box.

**b) Procedure**

-  Explain and discuss the procedure with the individual to reduce anxiety; blood vessels can become constricted when a person is anxious

- 👉 Allow them to ask questions and discuss any previous problems they may have experienced; this may give information about changes in their condition or recent surgery that may affect the limb to use for the procedure
- 👉 Consult with the individual if they have any preferences
- 👉 Check if they have any allergies for example latex
- 👉 Check that the identity of the individual matches the request form details. If the person is unable to communicate then seek clarification from another member of staff, or family member if present.
- 👉 Confirm consent for the procedure
- 👉 Ensure all equipment is ready for the procedure
- 👉 Wash and dry hands thoroughly, to minimise the risk of infection
- 👉 Cover any broken skin visible on your hands, to minimise the risk of contamination to the practitioner
- 👉 Check all packaging before opening and empty into clean receptacle, to maintain asepsis and check that the equipment is not damaged
- 👉 Support the chosen limb on a pillow
- 👉 Apply the tourniquet or sphygmomanometer cuff to the upper arm, making sure that it does not obstruct the arterial flow—if the radial pulse cannot be felt then the cuff is too tight
- 👉 The position of the cuff can be varied, for example if a vein in the hand is being used then the tourniquet can be placed on the forearm; this obstructs the venous return causing the veins to dilate
- 👉 If venous flow does not improve then the arm can be placed in a dependent position and the individual asked to clench their fist; alternatively, the veins can be gently tapped or stroked, or the tourniquet removed and a warm water compress applied
- 👉 The vein should then be selected by careful palpation to determine size, depth, and condition
- 👉 Release the tourniquet
- 👉 Select a device based on the size and site of the vein, and the volume of blood to be taken
- 👉 Wash and dry hands thoroughly before putting on gloves
- 👉 Clean the individual's skin carefully for 30 seconds using appropriate preparations such as chlorhexidine 70%
- 👉 Do not re-palpate or touch the skin
- 👉 Remove the cover from the needle and inspect the device
- 👉 Anchor the vein by applying manual traction on the skin a few centimetres below the chosen site
- 👉 Insert the needle smoothly at an angle of approximately 30 degrees
- 👉 Reduce the angle of descent of the needle as soon as a flashback of blood is seen in the tubing of a winged infusion device or when the puncture of a vein wall is felt
- 👉 If possible, slightly advance the needle into the vein but do not exert pressure on the needle
- 👉 Withdraw the required amount of blood using a vacuum blood collection system
- 👉 Release the tourniquet; in some cases this may be required at the beginning of the sampling to reduce the pressure within the vein, as inaccurate measurements may be caused by haemostasis, for example when taking blood to assess calcium levels)
- 👉 To prevent blood spillage caused by vacuum in the tube, remove tube from plastic holder
- 👉 Place gauze swab over puncture wound but do not exert pressure until the needle has been fully withdrawn
- 👉 Activate safety device and discard needle immediately into the sharps box
- 👉 Apply digital pressure over the vein for at least one minute, longer if required
- 👉 The individual themselves may apply pressure with their finger
- 👉 Gently invert the tube at least six times

-  Label the bottle with the individual's details
-  After inspecting the wound, apply a dressing; check if the individual is allergic to adhesive plaster. Dressings prevent leakage and contamination
-  Ask the individual if they are comfortable or need to rest further
-  Remove gloves and discard waste into the correct bins
-  Document procedure in the individual's notes
-  Follow procedure for the collection and transportation of specimens to the laboratory by calling a taxi on account.

- 3. Fainting:** In the event of the individual feeling faint the device should be removed immediately. Apply pressure to the site and encourage the individual to lower their head and to breathe deeply. The application of a cold compress to the forehead and, if possible, the opening of a window, may help to make the individual more comfortable. If the individual loses consciousness then the assistance must be called for and the safety of the individual ensured while they recover. After fainting the individual must rest for at least 30 minutes. The incident must be recorded in the appropriate records and care notes.

#### *Further Guidance*

*World Health Organisation (WHO) guidelines on drawing blood: best practices in phlebotomy*  
*[http://www.who.int/injection\\_safety/job\\_aids/en/](http://www.who.int/injection_safety/job_aids/en/)*  
*NICE quality standard [QS61]: Infection prevention control (Published April 2014)*