Venepuncture

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Venepuncture is a procedure that is performed by nursing and medical staff in a wide variety of clinical areas as a clinical and diagnostic aid in patient management.

**Anatomy and physiology**

The superficial veins of the upper limbs, particularly those in the antecubital fossa, are most commonly selected for venepuncture as they are numerous, easily accessible and minimise discomfort (Weinstein, 1997). These veins include:

- The median cubital veins;
- The cephalic vein;
- The basilic vein.

The median cubital vein is frequently used as it is usually close to the skin surface and easy to palpate. Metacarpal veins are frequently easily visualised and palpated. However, the use of these veins may be contraindicated in patients with poor skin turgor and diminished subcutaneous tissue (Weinstein, 1997).

Some clinical areas may choose to use metacarpal vessels to minimise damage caused by potential extravasation in patients who are due to receive hypertonic or cytotoxic drugs.

Nurses should also avoid sites where there is:

- Evidence of venous fibrosis;
- Evidence of haematoma/oedema formation;
- Evidence of localised infection/inflammation;
- Any vascular access device;
- Fistulae or vascular grafts.

They should also avoid the affected side of the body in patients postmastectomy or post-cardiovascular accident as lymphatic drainage may be impaired.

Patient choice and prior experience should also guide the practitioner and should be part of the process of obtaining informed consent.

**Preparing for venepuncture**

The practitioner should prepare by undertaking thorough handwashing with an appropriate solution (Dougherty and Lister, 2004), donning a clean apron and ensuring the area where the procedure is to be undertaken is clean, safe and well lit.

**Equipment required:**

- Clean disposable gloves;
- Disposable apron;
- Alcohol wipe;
- Tourniquet;
- Clean tray or receiver;
- Plastic holder;
- Needle;

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Fig 1. Stretch the skin over the vein with thumb of one hand. Insert the needle bevel side up into the vessel at a 30-45 degree angle.

Fig 2. On entering the vein, place the bottles in order of draw into the plastic holder system.

Fig 3. Remove final bottle and tourniquet prior to removing the needle, applying gauze with digital pressure after the needle has been withdrawn. Maintain pressure for 30-60 seconds or until bleeding stops.
Sharps bin;
Hypoallergenic tape or plaster as appropriate;
Gauze;
Required blood bottles;
Request forms clearly signed, dated and labelled.

This equipment list is not exhaustive and practitioners should be guided by local protocols. The vacuum aspiration system is common in clinical practice. Syringes are also used frequently but may be associated with a higher incidence of inoculation injury. Again, certain specialist areas may use winged ‘butterfly devices’, some of which have a blood ‘flash-back’ system that may be useful for patients who have poor veins.

Franklin (1999) suggests that although there is some controversy about whether skin cleansing of the site prior to venepuncture or peripheral venous cannulation is necessary, thorough cleansing with some agent is generally recommended.

The patient should be prepared for the procedure by obtaining informed consent, explaining all procedures and attempting to allay any anxiety. Possible allergies to any material likely to be used should also be ascertained. The patient may be asked to assist with techniques to encourage vasodilation and venous filling. A tourniquet may be used. However, it should only be tight enough to impede venous return and not obstruct arterial flow (Hadaway, 1995). Asking the patient to open and close their fist may encourage venous filling (Dougherty and Lister, 2004). This may be complemented by using gravity to encourage filling.

Light tapping of the vein may be useful but can be painful and may result in the formation of haematoma in patients with fragile veins (Dougherty, 1999). ‘Smacking’ the vessels may cause histamine release.

The procedure:
Prepare equipment and self for the procedure;
Correctly identify the patient. Explain the procedure to the patient and obtain consent. Ensure the patient is seated or lying down and comfortable;
Wash hands and don apron;
Assemble equipment;
Extend the patient’s arm and place on a pillow to enhance visibility of veins;
Apply tourniquet (5–10cm above the puncture site);
After palpation and vein selection, clean the skin with alcohol and allow to dry;
The procedure continues in Figs 1–6;
Abort if haematoma develops;
Apply plaster/gauze if necessary;
Document procedure;
Ensure samples are collected.

Professional responsibilities
All nurses who practise venepuncture must have received approved training and documented, supervised practice. The onus is also on individuals to ensure their knowledge and skills are maintained, both from a theoretical and practical perspective. All practitioners must operate within the protocols/guidelines of their particular organisation.

REFERENCES

This article has been double-blind peer-reviewed.
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