

Donor Haemovigilance

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The contents of this document are believed to be current. Please continue to refer to the websites for in-date versions.

Good venepuncture practice: Recommendations for UK Blood Transfusion Services

This guidance has been created by the Accidental Arterial Puncture Collaboration, a subgroup of the Standing Advisory Committee on Care and Selection of Donors (SACCSD). The group comprises of representatives of the four UK Blood Transfusion and Tissue Transplantation Services, the Irish Blood Transfusion Service and Serious Hazards of Transfusion (SHOT).

It aims to provide good practice guidance for blood donation venepuncture (VP), ensuring that VP is carried out in a manner that promotes donor and recipient safety, and to provide standards for the training and monitoring of blood donation venepuncturists.

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With thanks to Euan Burton for the illustration of the antecubital fossa.

Update information

Version	Date of publication	Changes
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1. Introduction.....	4
1.1. Scope	4
1.2. Guideline development.....	4
1.3. Review of these guidelines.....	4
2. Good venepuncture practice	4
2.1. Approach to the donor.....	4
2.2. Anatomy of the antecubital fossa.....	5
2.3. Vein selection	6
2.3.1. Use of the pressure cuff	6
2.3.2. Identification of a suitable vein	6
2.4. Infection prevention and control.....	7
2.5. Venepuncture technique	7
2.6. Monitoring of the donor during venepuncture.....	8
2.6.1. Needle adjustment.....	8
2.7. Ending venepuncture.....	9
2.8. Managing unsuccessful venepunctures and adverse events.....	10
3. Training and monitoring of blood donation venepuncture.....	10
3.1. Principles and training approach	10
3.1.1. Training the clinical skill of Venepuncture	10
3.2. Content of training programme.....	11
3.2.1. Approach to the donor.....	11
3.3. Assessment of venepuncture competency.....	12
3.3.1. Continuing Professional Development (CPD) and maintenance of venepuncture skills.....	12
3.4. Monitoring of venepuncture performance	12

1. Introduction

1.1. Scope

This document covers the practice of venepuncture from the point where the donor has been accepted to donate and directed to a donation chair / bed, until the point where the donor leaves the donation area. It includes training and monitoring recommendations for venepuncturists.

It does not cover venue set up, donor health screening, donor consent or post-donation management of the donor

1.2. Guideline development

This document was developed through the Accidental Arterial Puncture Working Group, a short-life subgroup of SACCSD / SHOT. Venepuncture practice and training across the four UK blood transfusion services were reviewed and used to develop an overarching set of good practice principles which can be applied within each individual service. These principles are also consistent with the relevant sections of the [Guidelines for Blood Transfusion and Tissue Transplantation Services in the UK \(Red Book\)](#) and the [EDQM Guide to the preparation, use and quality assurance of Blood Components, 22nd edition](#).

1.3. Review of these guidelines

This document will be the responsibility of the SACCSD. It will be reviewed every three years.

2. Good venepuncture practice

2.1. Approach to the donor

Venepuncture must only be carried out once the donor has completed health screening and consent processes.

Donor staff should adopt a professional tone when speaking to the donor, using neutral language and remaining attentive to any cues that the donor may give (see 3.2.1).

The donor's must be asked to actively confirm their identity immediately prior to venepuncture.

Vein assessment should only be carried out once the donor is comfortably positioned on the donation chair/bed. Ensure that the donor's arm is well supported.

2.2. Anatomy of the antecubital fossa

The antecubital fossa (ACF) is the triangular depression lying in front of the elbow, when the arm is outstretched. It is used for blood donation venepuncture as it contains the most accessible veins of sufficient calibre to support the collection of a large volume of blood.

'Medial' refers to the side of the arm closest to the body when arms are outstretched with palms turned forwards (little finger side).

'Lateral' refers to the side of the arm furthest away from the body when in this position (thumb side).

Structures within the ACF include:

- brachial artery and its subsidiaries
- biceps tendon
- median cubital, cephalic and basilic veins
- median and radial nerves
- lateral cutaneous nerve of forearm
- medial cutaneous nerve of forearm

Figure 1 shows the usual position of the main blood vessels and nerves within the ACF.

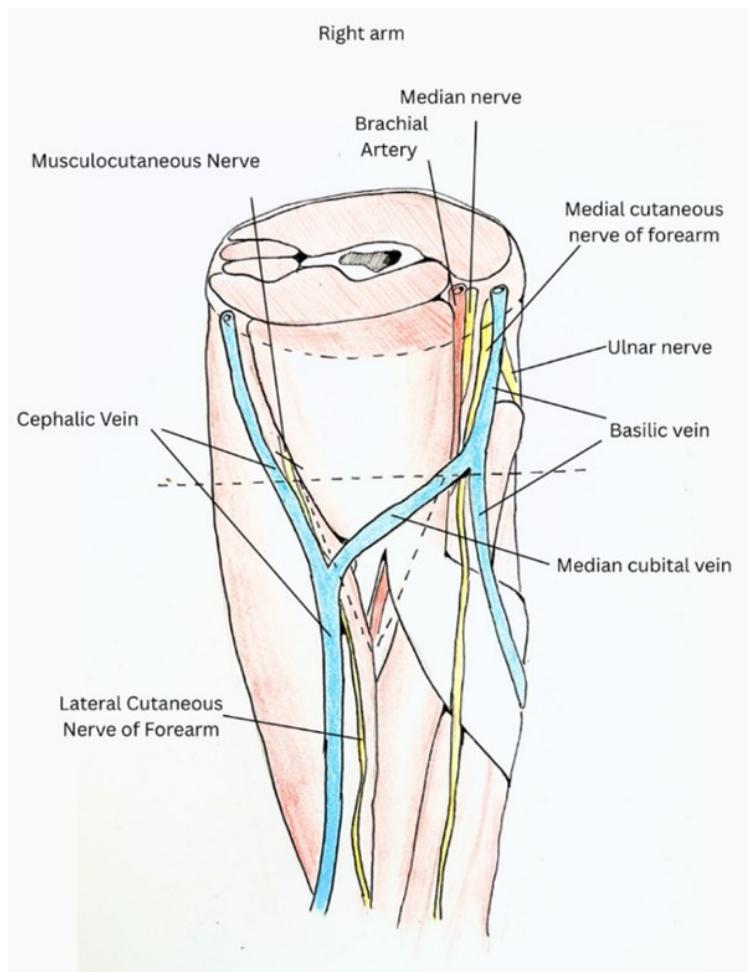


Figure 1: Position of blood vessels and nerves within the ACF (illustration by E Burton)

It should be noted that the layout of the ACF varies between individuals:

- The brachial artery usually lies in the medial part of the ACF. However, donors may have arteries at different positions than shown in the ‘normal’ layout – for example, an accessory brachial artery in the lateral part of the ACF or a subsidiary such as the ulnar artery branching off above the ACF rather than within it.
- The distribution of nerves in the ACF is highly variable and cannot be inferred through inspection of the ACF prior to venepuncture. Injury is most likely to the median or lateral cutaneous nerve of forearm. These provide sensory supply to the forearm and palm-side of the hand.

2.3. Vein selection

Care must be taken in assessing the donor’s arm for a suitable vein for venepuncture. The donor should be assessed while on the donor chair or bed in a reclined position with their arm in a comfortable position for blood donation.

2.3.1. Use of the pressure cuff

If a pressure cuff or tourniquet is used, do not apply too tightly – pressure should be sufficient to cause venous enlargement (usually 40–60 mmHg) without restricting the arterial pulse.

Once a suitable vein has been identified, the pressure cuff should be loosened slightly. If needed, it can be repressurised just before VP. It should be loosened again as soon as the needle has been inserted and blood flow established.

2.3.2. Identification of a suitable vein

Staff should assess the position of key structures within the ACF, including the position of the biceps tendon and the brachial artery:

- The biceps tendon can be identified by asking the donor to flex their arm, which will make the tendon more prominent in the centre of the ACF.
- The brachial artery is usually situated in the medial side of the ACF. It can be detected by feeling for a pulse.

Features of a suitable vein are:

- **Skin condition:** Clear skin with no inflamed or open areas. Avoid blemishes, bruises or scars (including recent blood sampling).
- **Location:** Vein is straight, well anchored in the ACF and in a position where it is easy to secure the needle hub and bleed line.
- **Size:** Vein is clearly palpable (a ‘bouncy’ feel, when pressed lightly with two fingers) and is of sufficient size to fit a large bore (16g) needle. It should run in a straight line for long enough to accommodate the needle.

The median cubital vein is usually the straightest and most well anchored of the three veins. It is also generally found to be furthest away from other key structures such as the brachial artery, the biceps tendon and the various nerves located in the front part of the ACF. This makes it the first choice of the venepuncture practitioner.

The cephalic vein, on the lateral side of the ACF, should be used if the median cubital vein is not suitable.

The basilic vein, on the medial side of the ACF, should only be used if neither the median cubital vein nor the cephalic vein is suitable. This is because the basilic vein may be closely associated with the brachial artery, biceps tendon and median nerve. It is recommended that both arms are checked before performing venepuncture on the basilic vein.

The venepuncturist should perform an additional check for the presence of a pulse at the planned VP site before needle insertion. This is because a donor may have an atypical layout of the brachial artery and its subsidiaries. Do not attempt venepuncture if pulsation can be felt at the planned VP site.

If the venepuncturist cannot find a suitable vein, a second opinion from an experienced venepuncturist can be sought. VP should not be carried out if a suitable vein has not been identified.

2.4. Infection prevention and control

Maintaining strict hand hygiene and infection control is essential to maintain donor and patient safety.

Staff should perform hand hygiene immediately before VP and between blood donors.

Staff must follow the skin cleansing procedures required by their service, using the validated cleansing technique mandated by their standard operating procedures. It is important that any cleansing solution is allowed to dry thoroughly before VP is performed.

Once the ACF has been cleansed, staff must not re-palpate the VP site. If it is necessary to feel for the vein again, the skin cleansing procedure must be repeated.

Section 3 includes guidance on the training required for Infection Prevention and Control.

2.5. Venepuncture technique

Ensure the donor's arm is in a comfortable position.

Using a 'no-touch' technique, insert the needle into the vein in a single motion. The needle should be at an angle of roughly 45 degrees. Advance it steadily into the vein until blood flow into the tubing is seen.

If flow is too slow, the needle can be rotated or withdrawn slightly. If this does not improve flow, stop the procedure. Do not probe or advance the needle further into the ACF.

Once blood flow is established, secure the needle and tubing with tape.

Stop the procedure immediately if the donor reports:

- Severe and/or persistent pain at the point of venesection.
- Nerve injury symptoms, including radiating pain or 'electric shocks' into the forearm and wrist.
- Feeling faint, lightheaded or nauseous.

2.6. Monitoring of the donor during venepuncture

Staff must pay close attention to the donor's wellbeing throughout venepuncture. Watch out for indications that the donor is in pain or is at risk of a vasovagal reaction.

- **Vasovagal symptoms:** stop the donation and remove the needle immediately. Lie the donor back and raise their legs. Monitor closely.
- **Haematoma formation:** stop the donation and remove the needle immediately.
- **Mild pain at VP site:** adjustment of arm position may help. If pain persists, stop the donation
- **Severe, radiating or 'nerve-type' pain:** stop the donation and remove the needle immediately.
- **Tingling in the hand and fingertips of the donation arm:** deflate the pressure cuff as low as possible to maintain blood flow. If symptoms do not settle, stop the donation.
- **Tingling in both hands, lips, feet (whole blood donors only):** may be due to hyperventilation, talking to the donor may provide distraction. If symptoms persist, stop the donation. NB For apheresis donors, this symptom is most likely due to a citrate reaction and should be managed by slowing the return of citrate to the donor.

Always record donor adverse events on the donor's session documentation.

2.6.1. Needle adjustment

Needle adjustment may be used if blood flow is too slow or stops during donation. It should only be carried out once during the VP and must be recorded and signed for on the donor's session documentation.

Needle adjustment is defined as:

- Any deviation to the original direction of the point of the needle during insertion.
- Either a 180-degree rotation OR withdrawal of needle for slow flow. This may be during donation or, if removing tape to allow the needle to settle in place.
- Adjusting of the arm rest once the needle is in position, where this results in a change in needle position.

When carrying out needle adjustment, do not:

- Advance the needle after stopping (including during VP at any point).
- Adjust the needle more than once.
- Pass the needle over to another venepuncturist.
- Leave the needle unsecured.
- Hold an unsecure needle.

In addition, avoid adjusting the arm rest once donation is established.

2.7. Ending venepuncture

The venepuncture should be ended once the full donation has been collected or if the maximum bleed time has been reached. For whole blood donation, maximum bleed time is 15 minutes.

VP should also be stopped if blood flow is too slow to give a whole donation and cannot be improved by a single attempt at needle adjustment.

To end venepuncture:

- Deflate the pressure cuff to zero.
- Hold a sterile gauze lightly over the venepuncture site.
- In a single movement, withdraw the needle from the donor's arm, being careful not to change the angle of the needle as it is being withdrawn.
- As soon as the needle has exited the skin, apply firm pressure (with two fingers) through the gauze to the VP site. Maintain pressure for at least two minutes. Do not lift the gauze or dab at the VP site during this time.
- If able, the donor can take over application of pressure but should be instructed not to lift the gauze or dab at the site.
- After two minutes, the site can be checked. If bleeding has stopped apply a sterile plaster or dressing to the site, as per the donor's preference.

Use of haemostatic plasters may reduce the risk of delayed bleeding after venepuncture. These are applied at the same time as removal of the needle. Services must ensure instructions for their application are incorporated into Standard Operating Procedures and that staff are fully trained in their use.

After VP completion, the donor's arm should be checked before the donor is allowed to leave the donation area. Ensure all bleeding has stopped and that the donor does not report any complications related to VP.

2.8. Managing unsuccessful venepunctures and adverse events

Services must have SOPs and training in place to manage unsuccessful venepunctures and donor adverse events, including when post-donation follow up is required. In addition, services must have mechanisms in place to ensure recording and reporting of donor adverse events, as described in the Guidelines for the UK Blood Transfusion Services (see Red Book chapter 5.10). Venepuncture is a critical touchpoint in donor care. Establishing clear key performance indicators (KPIs), consistently recording and trending donor adverse events, and acting on those insights are critical steps toward safer, more accountable practice.

Donors must be carefully observed during and after donation. Staff should be attuned to spoken and visual cues that the donor is experiencing a vasovagal reaction or arm symptoms such as pain and paraesthesia. Action should be taken as soon as an issue with the donation or the donor is identified.

If venepuncture has been unsuccessful, a second venepuncture attempt should not be made on the same arm until the vein has fully healed. This will usually take one to two weeks but may be longer if the arm is also bruised or inflamed.

Donations should never be prioritised over donor wellbeing.

3. Training and monitoring of blood donation venepuncture

3.1. Principles and training approach

Good venepuncture practice starts with a robust training programme, that will give the trainee the knowledge and confidence to undertake this clinical skill.

If the trainee has been trained to a high standard, then the outcome for both blood donor and recipient will be a safe and positive one.

3.1.1. Training the clinical skill of Venepuncture

Training should be a blended approach, containing elements of theory and practice. These elements are trained by staff who are subject matter experts in the clinical skill of venepuncture. They need to demonstrate:

- Practical/occupational experience in venepuncture
- Knowledge of the theoretical aspects of the clinical skill
- Knowledge of the Standard Operating Procedures (SOP), relating to venepuncture
- Knowledge of training methods, including a basic understanding of how to support staff with neurodivergence issues. It is expected that services will provide access to appropriate training for trainers. This may be professional qualifications or in-house training.

3.2. Content of training programme

The training programme should use a blended approach. This will give the trainee a comprehensive introduction to the clinical skill.

The programme should contain:

- Anatomy and physiology of the antecubital fossa (ACF)
- Structures found within the arm – artery, veins, tendon and nerves
- Vein selection
- Infection prevention and control
- Venepuncture technique
- Observation of donor during donation
- Management and documenting of adverse events relating to venepuncture
- Completion of the donation
- Assessment of the clinical skill
- Adverse events of donation, including:
 - Vasovagal events
 - Bruising
 - Arm pain
 - Rebleeds
 - Arterial punctures
 - Allergic reactions

3.2.1. Approach to the donor

Training should also include best practice for approach to the donor. Good communication, using clear and appropriate language, facilitates safe and effective venepuncture.

The trainee should be taught to:

- Always use a donor-focused approach.
- Introduce themselves by name.
- Gain verbal consent from the donor.
- Explain they are in training. This gives the donor the opportunity to ask for a member of staff who is more experienced in venepuncture, if preferred.
- Use eye contact throughout the venepuncture, looking for signs of pain/discomfort from the donor.
- Use neutral language, e.g. 'I'm just going to start your donation'. Using language such as 'slight scratch' or 'this may hurt' may make the donor feel uneasy prior to venepuncture.

3.3. Assessment of venepuncture competency

Services must have processes in place to ensure that individuals undergoing venepuncture training are safe to practice before being signed off as trained. Following this, individuals will require a period of consolidation to develop their venepuncture skills to become fully competent in the skill.

Assessment of the clinical skill of venepuncture should include both theoretical and practical elements. Formative and Summative assessments are a robust process to follow. These have been validated over many years and training courses.

Formative assessment – a collection of formal and informal methods used by trainers to assess students learning during the learning process.

Summative assessment – a formal evaluation of a student's understanding and achievement at the end of a learning period.

The above can take place using many different formats:

- Observation of clinical skill – classroom & session environment
- Examinations – in the form of written tests/multiple choice questions
- Demonstration of a skill – verbal instead of written
- Reading of underpinning knowledge and signing to the SOP/guideline

Services should ensure that the assessment methods support equality, diversity and inclusion. For example, use of different formats as appropriate for staff undergoing training. Once the trainee leaves this environment, they will work under direct supervision of a trainer on a donation session. Again, support and constructive feedback will be given to the trainee, the donor also could give feedback as well, regarding the comfort of the needle. This will support the trainee through their training and help them gain confidence.

3.3.1. Continuing Professional Development (CPD) and maintenance of venepuncture skills

It is recommended that staff are offered regular refresher training to maintain their skills. As a minimum, staff returning to venepuncture after a 6-month absence for any reason must have a skills gap analysis or equivalent undertaken and be offered appropriate refresher training and assessment as appropriate.

3.4. Monitoring of venepuncture performance

Services should monitor venepuncture performance both for individual staff and for the service or teams within it. This can be through:

- Observation by clinical lead on session.
- Review of venepuncture statistics / KPIs for individuals and teams.
- Trending of venepuncture performance statistics.
- Formal audit of team performance / procedures.
- Investigation of quality incidents relating to venepuncture.
- Investigation following donor complaints / feedback, including donor adverse events.

As part of the monitoring process, services should have in place targets associated with KPIs. Suggested KPIs could include collection losses (e.g. failed venepunctures, underweight donations, contaminated donations) and donor adverse events (e.g. rates of bruising, arm pain, suspected arterial punctures).

There should be a clear process for reviewing venepuncture performance data and acting on it as required.