Chequers Academy

We will go through key principles in the practical class.

Venepuncture

Procedure

Factors Influencing Vein Choice (Particularly Important for Cannulation):

- Patient Age – older patients have more fragile, friable veins.

- Medication – patients using anticoagulants are more likely to bleed and bruise, this included drugs such as aspirin.

- Needle Phobia – this can cause vasoconstriction, making venepuncture more difficult. Discussion and reassurance may help, as well as offering a smaller size needle and possibly topical anaethesia (this may require pre appointment application).

- Rheumatoid Arthritis – the joint capsule could be inflamed and cause pain at the tourniquet site.

- Local inflammation – such as eczema, wounds and phlebitis (inflammation of the vessel) increase the risk of infection from venepuncture and cannulation.

- Lymphoedema – swelling may inhibit assessment and affect circulation.

- Cerebrovascular Accident (stroke) – risk of less sensation and circulation in the stroke affected arm, meaning complications are more likely to happen and less likely to be reported due to the loss of sensation.

- Dehydration – loss of skin elasticity makes insertion more difficult and the veins less palpable.

Condition of Vein

A good vein is:

- Bouncy
- Soft
- Refills when depressed
- Visible
- Well supported
- Straight

Avoid veins which are:

- Thrombosed / sclerosed / fibrosed
- Inflamed / bruised
- Hard
- Thin / Fragile
- Mobile / tortuous (twisted)

- Near bony prominences (painful)
- Areas or sites of infection, oedema or phlebitis
- In the lower extremities (unless no other vein available – this training covers venepuncture from the antecubital fossa only – not feet)
- Have undergone multiple previous punctures

Improving Venous Access

- Ensure adequate hydration.
- Application of a tourniquet promotes venous distension. The tourniquet should be tight enough to impede venous return but not affect arterial flow.
- Lower the extremity below the level of the heart.
- Use muscle action to force blood into the veins - e.g. open and closing of the fist (gently)
- Apply warm compresses or immerse limb in bowl of warm water to increase vasodilatation – risk assess against scalding.

Preparation

Venepuncture is complex, requiring both knowledge and skill to perform. Several essential steps are required for every successful collection procedure:

1. Identify the patient – ask their name and DOB and check this aligns with the notes.
2. Prepare the patient – discussion and informed consent. Ensuring the patient is comfortable.
3. Check the requisition form for requested tests, patient information, and any special requirements.
4. Prepare the equipment using ANTT.
5. Select and prepare a suitable site for venepuncture.
6. Perform the venepuncture.

7. Collect the sample in the appropriate container and ensure it is accurately labelled and safe for transportation.
8. Check welfare of the patient and document procedure and any issues in patient notes. Safety net and ensure follow up is clear.

Equipment

Labelling of Samples

- The patient's wristband/notes/verbal confirmation of identity should be checked prior to sampling.

- Blood sample tubes should be labelled in the presence of the patient AFTER the blood has been taken. * it is dangerous practice to pre-label samples as this can easily lead to samples being mixed.

- It is essential that this information is provided on the sample and is accurate (including incorrect spellings of the name). The relevant laboratory will not process the sample unless labelling is accurate. This often results in the patient having to have a repeat

sample taken. This causes inconvenience and unnecessary pain to the patients as well as a delay in results.

- Where a minor mistake occurs, correction may be acceptable with a single line initialed. The correction can only be done by the phlebotomist who takes the sample. Corrections are not allowed on transfusion samples. N.B. The person who draws the blood sample is the only person who is authorised to label sample.

- Where electronic labelling system is in place phlebotomist follows local procedures. It is the responsibility of the phlebotomist to ensure that all samples are correctly identified and labelled or scanned.

- The utmost care should be taken when labelling samples, as incorrectly labelled samples have the potential to compromise patient safety.

- Sample bottles should be labelled immediately and should NEVER be pre-labelled under any circumstances.

- When labelling a general sample, the following information is required:
    - Patient's surname
    - Patient's full forename (an initial for the first name is not sufficient).
    - Patient's hospital number/NHS number
    - Patient's date of birth.
    - Initials of phlebotomist and date/time of sample.

Methods

Vacuum Tube

Venipuncture Procedure using Vacuum Needle

This is the basic, and most often performed, type of venipuncture procedure. It is also referred to as the Evacuated Phlebotomy Method. Using a system known as needle and sheath, the phlebotomist is able to fill several tubes from a single venipuncture. This method serves the patient well in that only one “stick” is required. One of the critical elements involved in this vacuum tube venipuncture procedure is the proper labeling of the various tubes of blood.

Also, you have to become adept at keeping the needle still while changing the tubes.

Butterfly Needle

This venipuncture procedure uses a special type of needle known as a butterfly needle. A butterfly needle is specially designed with wings on the sides. These wings help to hold the needle in place after insertion and aid the phlebotomist in gripping the needle.

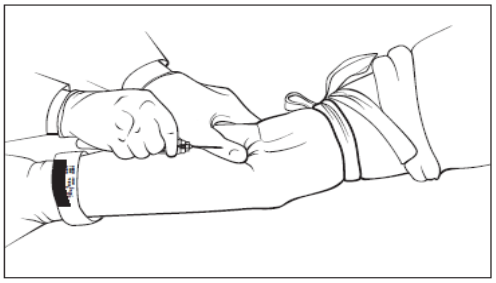
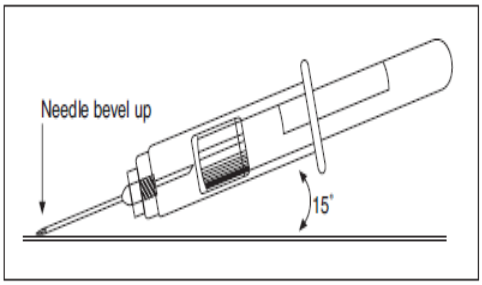
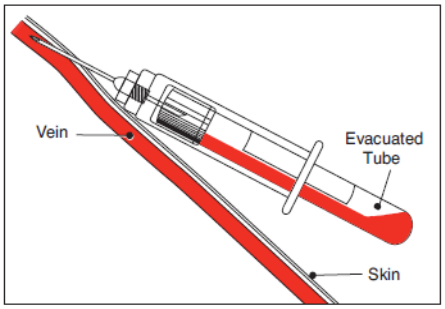
The butterfly needle is connected to a tube through which blood flows into a collection reservoir. Butterfly needles are used frequently in venipuncture procedures involving small

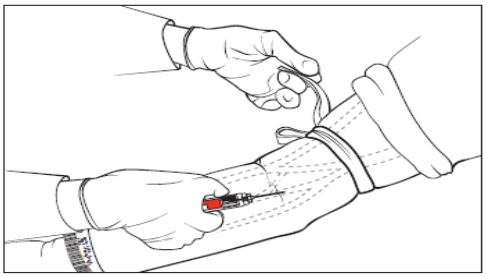
children because of the potential for them to move or squirm. It is also often used with elderly patients who may have what is known as “rolling veins”.

Procedure

Action	Rationale
1. Wash hands	To ensure hands not contaminated- prevent cross infection
2. Approach patient in a confident manner and explain and discuss the procedure with the patient	To ensure that the patient understands the procedure and gives his/ her valid consent
3. Allow the patient to ask questions and discuss any problems which have arisen previously.	Anxiety results in vasoconstriction; therefore a patient who is relaxed will have dilated veins, making access easier.
4. Consult the patient to any preferences and problems that have been expressed at previous venepuncture appointments.	To involve the patient in the treatment To acquaint the nurse fully with the patient's previous venous history and identify any changes in clinical status e.g. Mastectomy as both may influence vein choice or allergies.
5. Check the identity of the patient and ensure it matches the form by asking their full name and date of birth (and if available check their identity bracelet)	To ensure sample taken from the correct patient
6. Carefully wash hands using soap and water or bactericidal hand rub and dry before commencement	To minimize the risk of infection. Check hands for visibly broken skin and cover with a waterproof dressing.
7. Assemble the equipment necessary for venepuncture (Tourniquets advised to be disposable).	To ensure time not wasted and that the procedure goes smoothly without interruptions

8. Check all the packaging before opening and prepare equipment on the chosen clean receptacle/ area (includes checking expiry dates).	To maintain asepsis throughout and check that no equipment is damaged or out of expiry date. Aseptic Non-Touch Technique should be used for all venepuncture procedures (see Infection Prevention booklet).
9. Take all the equipment to the patient exhibiting a competent manner	To make the patient at ease with the procedure.
10. In both the inpatient and outpatient – community setting lighting, privacy and positioning must be checked	To ensure that both the patient and practitioner are comfortable and that adequate light is available to illuminate this procedure
11. Support the chosen limb on a pillow	To ensure patients comfort and facilitate venous access
12. Apply the tourniquet to the upper arm on the chosen side, making sure it does not obstruct arterial flow.	To dilate the veins by obstructing venous return. (If the radial pulse cannot be palpated then the tourniquet is too tight (Weinstein 2000). Use disposable single use tourniquets.
13. The arm may be placed in dependent position. The patient may assist by clenching and unclenching the fist	To increase the prominence of the veins. The veins may be tapped gently to increase the prominence of the veins
14. Select veins using aforementioned criteria	Select the devise based on vein site, size etc. To reduce damage or trauma to vein.
15. Wash hands or use alcohol hand rub & apply PPE (refer to Infection Prevention booklet).	To maintain asepsis and prevent possible contamination of the practitioner of patient.
16. Clean the patients skin using appropriate skin preparation	To maintain asepsis and minimise risk of infection. Clean in a circular motion from the injection site outwards. DO NOT TOUCH the

(70% alcohol impregnated swab for 30 seconds) and allow to dry	site you have wiped before the procedure! i.e rechecking the position of the vein before the stab.
17. Anchor the vein by applying manual traction on the skin a few cm below the proposed insertion site. Ensure you are not close enough that you touch the needle, or sustain a needle stick injury.	To immobilise the vein. To prevent counter tension to the vein this will facilitate a smoother entry. 
18. Reduce the line of descent of the needle as soon as a flashback of blood is seen in the vacationer device or when entry to the vein wall is felt (you will feel the resistance leave indicating you have passed the vessel wall).	To prevent advancing too far through vein wall and causing damage to the vessel. 
19. Slightly advance in the needle into the vein if possible. Do not exert any pressure on the needle.	To stabilise the device in the vein and prevent it from becoming dislodged during withdrawal of blood. To prevent a puncture occurring through a vein wall.
20. Gently but firmly push bottles onto end of WID through the vacutainer holder and withdraw blood for sampling in appropriate order. Ensuring that the vacutainer fills to the line and that the samples are collected in the correct order.	To allow the vacutainer bottles to fill with blood 

21. Release the tourniquet. In some instances this may be necessary at the beginning for sampling as inaccurate measurement s caused by haemostasis may occur eg. When taking blood for calcium levels.	To decrease pressure on the vein. If you remove the needle before the tourniquet – blood goes everywhere! 
22. Remove tube from plastic tube holder.	To prevent spillage caused by vacuum in tube.
23. Place swab over the puncture point. Remove the needle but **do not apply pressure until the needle has been fully removed.**	To prevent pain on removal and damage to the intima of the vein.
24. Do not re-sheath needle; Use safety guard by pressing the needle on to the guard on a hard surface (ie, your tray) dispose of needle into yellow sharps bin.	To reduce the risk of sharps injury. The sharps bin should be within an arm's length so you are not walking around with a needle.
25. Apply light digital pressure directly over puncture site – pressure should be applied until bleeding has ceased. May need longer in patients who have disease or are on medications that interfere with clotting mechanisms ie. Asprin.	To stop leakage and heamotoma formation. To preserve vein by preventing bruising. The patient may apply pressure with the finger but should be discouraged from bending the arm if a vein in the antecubital fossa is used (Mc Call and Tankersley 2002)
26. Gently invert the blood tubes a few times.	To prevent damage to blood cells and to mix with additives.

27. Immediately label the bottles with patient's relevant details. Addressograph labels should be used if possible on forms but not sample bottles. In the case of blood cultures take care not to contaminate sample.	To ensure that the specimens from the right patient are delivered to the laboratory, the requested tests are performed and returned to the patients' records. (Refer to Path links Guidance – National Safety Patient Guidelines).
28. Inspect the puncture point before applying the dressing.	Do not wipe at the site as you will remove the clot. Wait until bleeding has stopped before applying a dressing.
29. Ascertain whether the patient is allergic to adhesive plaster. Apply suitable dressing plaster.	To prevent an allergic reaction. To cover the puncture point and prevent any leakage or contamination.
30. Ensure the patient is comfortable.	To ascertain if any other measures need to be taken.
31. Follow local guidelines PCT policy for collection and transportation of specimens to the laboratory – Ensure policy guidelines followed for management of high risk specimens.	To make sure that specimens reach their intended destination
32. Remove gloves and apron and discard - wash hands. Discard waste correctly in accordance with guidelines and local policy.	To ensure safe disposal and avoid any injuries to staff. To prevent re-use of equipment.
33. Ensure patient receives advice re accessing results of investigations.	

(Dougherty & Lister 2004)

Venepuncture should not be performed in the following situations:

1. Non-emergency in-patients and A&E patients not properly identified.
2. Patient who refuses to have blood drawn.
3. From a limb with an IV that is open. The laboratory will accept blood drawn below an IV site after an IV is closed for three (3) minutes.
4. The arm of a patient with a cannula, fistula or vascular graft.
5. The arm on the same side as mastectomy surgery.
6. If the patient is receiving a blood transfusion (blood may be drawn 30 – 60 minutes after completion of transfusion).
7. Any leg or foot veins.
8. Active infection and the puncture site.

If Phlebotomist is unable to draw a venous sample, this should be escalated to the appropriate professional/service promptly. If you are unable to draw a sample after two stabs, you should request another practitioner to try. This is not a failure on your part – sometimes you have a run of patients that have difficult veins. However to maintain safety and trust, you should refer after two attempts in most circumstances.

Time Sensitive Sampling:

Therapeutic Drug levels - for accurate testing, peak and trough levels must be drawn at the correct interval. For outpatients, the level will be drawn as close to the appropriate interval as practical. For example, coagulation studies on a patient on treatment dose anticoagulation therapy need to be taken at specific times – it is good practice to note the time of the last medication (only if it relates to test) and time of blood draw on the sample form notes.

Trouble Shooting

Problem	Possible Cause	Suggested action
Excessive pain	Anxiety, fear, low pain threshold Nerve touched	Reassure the patient. Confident unhurried approach, Remove the needle immediately and proceed to a different site if the patient is agreeable; venepuncture may need to be abandoned for that day
Missed vein	Inadequate anchoring of the needle Wrong position Poor lighting Less than 100% concentration	Withdraw the needle almost to the bevel and manoeuvre and advance gently to realign needle and vein, but if it becomes painful remove the needle and proceed to a different site. Better preparation next time
Spurt of blood on entry	Bevel tip of needle entering vein before entire needle is under the skin, due to vein being very superficial	Ignore the blood spurt and proceed with venepuncture. Reassure patient if a small blood blister develops
Blood flow stops	Overshooting vein or advancing needle while withdrawing blood. Vein collapse due to contact with valve or vein wall Poor blood flow	Gently ease the needle back and continue Gently manoeuvre needle within the vein, if still unsuccessful, remove it and proceed to a different site

Haematoma	Perforation of opposite wall of vein. Forgetting to release the tourniquet before removing the needle Inadequate pressure at puncture site after removal of needle	Insert the needle at correct angle and hold steady while blood flows. Do not advance the needle during taking of sample. Remember to release the tourniquet when blood begins to flow. Ensure pressure (comfortable for the patient) is applied for at least a minute- the patient is not always able to do this effectively
Inability to collect sample	Various reasons	Inform health care professional i.e. GP, Practice Nurse, District Nurse
Fainting	Anxiety Pain Overheating Low blood sugar (ie patient had not eaten). Low blood pressure.	Summon help. Ensure airway is maintained by positioning patient in recovery position. Reassure patient and encourage to lie down until recovered. Patient to request future phlebotomy in a lying position. Report incident and record appropriately.

With experience and continued effort to maintain a good technique, incidence of difficulties will lessen and the phlebotomist will grow in confidence and expertise in performing venepuncture.

Blood testing for calcium levels

When this is required, the blood should be taken 'uncuffed' * can be cuffed but release after one minute to prevent raised calcium and potassium levels. The advice of the laboratory is to take 3 tubes of blood and to discard the first 2. It is not necessary to completely fill the tube for this test, ½-¾ full is adequate.

Urea and electrolytes

Blood taken for urea and electrolytes, must not be stored overnight as this process can lead to inaccurate results in respect of potassium levels.

High Risk Patients

The following groups are considered High Risk:

- Persons known to be or suspected of being HIV antibody positive.
- Persons known to be or suspected of being Hepatitis B Hbs Ag positive.
- Known intravenous drug abusers.
- Those with identified Creutsfeldt Jakob Disease.
- Haemophiliacs on regular treatment.

Specimens from patients with known HIV or Hepatitis B may be taken by the phlebotomist and should be treated with the same care as any other patient. Most cases that are known are under treatment and are likely to have an undetectable viral load; this makes infection unlikely. Remember: PPE should always be used as there is no way of knowing if a patient has a blood borne infection without testing – the patient may not know, medical science may not know (The existence of hepatitis C and CJD are relatively new). The specimen must be placed and sealed in the transparent transport bag. ENSURE PATIENT CONFIDENTIALITY IS NOT BREACHED. **NB.** Please also refer you your Trust/company policies.

Additional Considerations

- Keep the collection basket well stocked. Supplies within the basket must be inventoried at regular intervals to ensure that all supplies are within expiration date. Do not use any product which has exceeded the manufacture's expiration date.
- While it is fine to advise patients what a test is/tests for, you should not try to explain the reason that the requesting practitioner has ordered it. The patient should be referred to the clinician if they need further explanation. Providing too much information to the patient as a non-registered practitioner can lead to misinformation and possible legal action.
- Carefully observe the patient for signs of reaction during and immediately following the venipuncture. If they feel cold or clammy, sweat profusely or look pale, be prepared for them to faint. Call for help as appropriate depending on where you are working this may be a first aider, nurse, or other health professional. Call 999 if at all concerned for the patient condition.
- Immediately report an accidental needle stick or contamination of a break in the skin in accordance with local policies.

Venesection

Venesection is a procedure which will remove blood. Generally, one unit of blood (approximately one pint) is removed. Two common reasons for doing a venesection are to remove excess iron (Hb) or red blood cells from the circulation, for example conditions such as haemachromatosis (iron overload in the blood). Further training would be needed to offer venesection, usually inhouse.

Competency

Competency is an ongoing process that needs time and to meet specific standards. Learners can start demonstrating competency on mannequins, as well as palpating each other's veins,

so they get familiar with the procedure and techniques needed. In the NHS there is a specific structured framework that has been adopted by many NHS trusts, with clear steps to be taken by the trainee, clearly documented, to achieve competence. Individuals are different and time needed to achieve competence is also different. As a professional you are responsible and accountable for your own competence including this theory learning and should seek support where it is needed to ensure good patient experience and safety.