Venepuncture protocol

Aim

Every researcher who will be taking blood from participants must be adequately trained to take blood independently, so as to ensure the safety not only of the participant but also that of the member of staff.

Training on taking blood (venepuncture) for new staff members

Before researchers can independently collect blood samples, they must be able to show proof of competence in the form of the "Checklist for assessment of practical skills: venepuncture". If they do not have this, they must complete a training course.

Preparation

Make sure all the necessary equipment for taking blood samples is to hand (see Supplies).

Equipment:

- Tourniquet;
- Sterile specimen bottles;
- Disposable gloves;
- Safety needle Eclipse (BD);
- Eclipse 22G;
- Eclipse 21G;
- Butterfly needles (push button butterfly needle, BD);
- Push Button 23G;
- Push Button 21G;
- Cutisoft gauze;
- Leukopor tape;
- Disinfectant (Chlorhexidine solution 0.5% or alcohol 70%);
- Waste disposal container: Sharps bin and clinical waste container.

Procedure

While collecting blood samples, make sure that:

- "Protocol Calamity" is known and available;
- The safety of the participant and the researcher is ensured;
- The quantity of blood taken is kept to a minimum;
- The risk of complications as a result of the venepuncture is kept to an absolute minimum;
- The venepuncture takes place in the appropriate place within the FSW science labs, and the participant is sitting in the prescribed chair. It is forbidden to collect blood in any other location, i.e., the science labs, canteens, showers or toilets;
  At this moment such a place is not available in one of the FSW labs;
- In the faculty building only safe needles may be used.

General hygiene

- See "Protocol Personal hygiene".

Cleaning and disinfecting hands

- Please see "Protocol Hand hygiene" for the proper hand hygiene procedure;
- When starting work (at the start of the day or after a break), you must always wash your hands;

- Hands must also be cleaned before and after contact with each participant by washing or disinfecting;
- Hands must also be cleaned:
    - In case of visible or noticeable contamination;
    - After contact with bodily fluids and mucous membranes;
    - After visiting the toilet;
    - After sneezing, coughing or blowing your nose.
- You should also disinfect your hands in the following situations:
    - Before contact with invasive devices, even if gloves are to be worn.
- After use of disinfectants, allow the skin to air dry completely;
- After disinfecting a participant's skin, you must not touch the cleansed area again with your hands.

Tourniquet

A tourniquet applies greater pressure to the vein, making it easier to feel and see.

- Apply the tourniquet one hand-width above the site of collection and tighten it, keeping one or two fingers between the fastening of the tourniquet and the arm;
- It is easy to find veins by hand. They feel springy which makes them easy to distinguish from muscles and tendons;
- Keeping the tourniquet on for too long will reduce the quality of the sample, so do not compress for longer than 1 minute;
- If the tourniquet is in place for longer, there will be measurable differences in the concentration of various blood components. If you have been compressing for longer, you should release the tourniquet for a moment before collecting blood;
- It is best not to ask the participant to make a fist. Creating this extra compression increases the chance of higher potassium and haemolysis;
- The (non-disposable) tourniquets are cleaned afterwards with Incidin Plus. The researchers are responsible for this.

Procedure for venepuncture

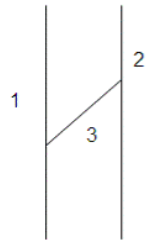
- Wash and/or disinfect your hands according to the protocol;
- Tell the participant what you will be doing and ask if he/she has a preference for a particular arm. Respect the participant's choice in this;
- Check that the bottles have been labelled with the correct identifying information as per the research protocol. Verify the identification by asking for name and date of birth and checking this against the order label;
- Get the necessary equipment ready (see Equipment);
- Choose a site (see Choosing a collection site);
- Ask the participant to hyperextend his/her arm;
- Disinfect the collection site with chlorhexidine solution 0.5 % (skin disinfectant);
- After using the disinfectant, allow the skin to air dry completely;
- After disinfecting, you must not touch the cleaned area with your hands again;
- Palpate for the vein and check that the vein you have found is not pulsating (you could have found an artery);
- If the arm that was offered (the preferred arm) is not suitable, you should try the other arm. If no venepuncture can be performed on that arm either, then venepuncture cannot take place;
- Apply the tourniquet a hand's width above the collection point, but do not pull it too tight (< 1 minute);

- Pull the skin taut and insert the needle, with the opening facing upwards, at an angle of about 15-35 degrees;
- Connect the collection bottles in the correct order and release the tourniquet;
- Fill the bottles completely;
- Invert the bottles a number of times immediately;
- Press a piece of gauze against the site when enough blood has been drawn and then calmly pull the needle out of the vein;
- With the thumb of the hand that is holding the needle, press the safety cap over the tip of the needle until you hear a click;
- Firmly press the vein shut or ask the participant to apply pressure themselves. Never ask them to bend their arm, as this can cause a haematoma;
- Immediately dispose of the needle in the sharps container;
- Once the bleeding has stopped, tape off the collection site (if bleeding continues for longer, you should get the participant to continue to press down while you apply a compression bandage);
- If the bleeding has not stopped after 10 minutes, call Reception on +31 (0)71 527 3701.

NB: tubes must be cleaned and disinfected before being stored.

Venepuncture site selection

There are various superficial veins in the arm that can be used for collecting blood. Two anatomic patterns can be discerned in the veins in the arm: the H-shape.



1. Cephalic Vein;
2. Basilic Vein;
3. Median Cubital Vein;

- The order of preference for the collection site is:
  - Median Cubital Vein;
  - Cephalic Vein;
  - Basilic Vein.

Complications

In case of suspected heart failure: call +31 (0)71 527 3701. See Calamities Protocol.

Fainting during blood collection

Always be aware that this can happen. Early warning signs are feeling dizzy, nausea, sweating, muffled hearing and yawning.

- Tilt the chair backwards (if possible) so that the participant is lying down;
- Warn Reception +31 (0)71 527 3701!
- Stay with the participant;
- Give them space and loosen any tight clothing.

Blood is no longer flowing into the tube

- Press the tube firmly into the rubber top. If the blood is now flowing into the tube again, it means the lid was not properly punctured;
- Pull the skin taut or tilt the needle a little. If the blood is now flowing into the tube again, it means the needle was sticking to the inside of the vein;
- Pull the needle back a little. If the blood is now flowing into the tube again, it means the tip of the needle penetrated the other wall of the vein (watch for haematoma);

- Push the needle in a little further. If the blood is now flowing into the tube again, it means that the needle was not properly inside the vein;
- Use a new tube. If the blood flows into the new tube, it means there was no vacuum in the tube;
- If the tube is not filled completely, vent the tube by lifting the lid or vent the tube by puncturing (aerating) the tubes in the right order with a new needle;
- If these actions do not resolve the problem, end the blood collection and find another site;
- You may only make a second attempt if you are confident that this attempt will be successful. If not, consult a colleague.

Pain during blood collection

This may be caused by puncturing a nerve, tendon or artery. Stop the blood collection. In the case of a perforated artery, firm pressure must be applied to the collection site and the Calamities Protocol must be followed.

Haematoma

This may occur if the needle has been pushed through the vein. Apply pressure to the collection site and reassure the patient.