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## BLOOD SAMPLE COLLECTION NUTRITION CENTRES

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## **BLOOD SAMPLE COLLECTION NUTRITION CENTRES**

### **1. Scope**

This procedure is to be followed by the ECRIN Nutrition Centres when collecting a blood sample.

### **2. Responsibilities**

It is the responsibility of the Management team in the Nutrition Centres to ensure that this procedure is adapted and followed.

### **3. References**

- WHO guidelines on drawing blood: best practices in phlebotomy, 2010
- Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Clinical Laboratory Standards Institute, Approved Standard—Sixth Edition December, 2010
- UK Biobank Blood Sample Collection, Processing and Transport, Version 1.0, 2011
- BioSHaRE Blood Withdrawal, Version 1.0, 2012

### **4. Terms, definitions, abbreviations**

ECRIN: European Clinical Research Infrastructures Network

UK: United Kingdom

WHO: World Health Organisation

SOP: Standard Operation Procedure

### **5. Documentation**

### **6. General**

The purpose of this Standard Operation Procedure is to ensure that the process of blood sample collection for Nutrition Centres is performed under standardised conditions.

### **7. Safety Considerations**

- A white laboratory coat or tunic is worn and fastened to the top.
- Gloves must be worn when handling blood samples.
- Any member of staff handling blood samples are advised to be vaccinated against Hepatitis B.

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- Safety glasses should be available for staff if required.
- Used needles and syringes or blood sampling devices must be discarded into a puncture-resistant sharps container.
- Cover all non-intact skin located on parts of the body exposed to blood or body fluid with a water-impermeable occlusive bandage.
- Remove all personal protective equipment before leaving the laboratory or work area.

### 8. Sample Requirements

- Draw blood collection tubes in the correct order, to avoid cross-contamination of additives between tubes. As colour coding and tube additives may vary, verify recommendations with local laboratories; Appendix 2; Order of Draw

### 9. Materials

Collect all the equipment needed for the procedure and place it within safe and easy reach on a tray or trolley, ensuring that all the items are clearly visible.

The equipment required includes:

- A supply of sample tubes within the expiration date, which should be stored dry and upright in a rack, blood can be collected in
  - Sterile glass or plastic tubes with rubber caps (the choice of tube will depend on what is agreed within the Centre)
  - Vacuum-extraction blood tubes; or
  - Glass tubes with screw caps
- Never combine tubes, holders or needles from different manufacturers.
- A sterile glass or bleeding pack if large quantities of blood are to be collected.
- Well fitting, non-sterile gloves.
- An assortment of blood-sampling devices, of different sizes
- A tourniquet
- Alcohol hand rub

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- Antiseptic swabs for skin disinfection
- Gauze or cotton-wool ball to be applied over puncture site
- Laboratory sample labels
- Writing equipment
- Laboratory forms
- Leak proof transportation bags and containers
- A puncture resistant sharps container

### **10. Preparation of blood sampling**

- Introduce yourself to the subject and ask the subject to state their full name.
- Check that the laboratory form matches the subject's identity
- Ask whether the subject has allergies, phobias or has ever fainted during previous injections or blood draws. Check latex sensitivities.
- Verify fasting states, verify diet restrictions,
- If the subject is anxious or afraid, reassure the person and ask what would make them more comfortable.
- Ensure that the subject is in a comfortable position.
- Place a clean paper or towel under the subject's arm.
- Discuss the test to be performed and obtain verbal consent. The subject has a right to refuse a test at any time before the blood sampling, so it is important to ensure that the subject has understood the procedure.

### **11. Means of Sample Identification**

Check the label and forms for accuracy. The label must be clearly written with the information required by the local laboratory, the subject's first and last names, hospital number, date of birth and date and time when the blood was collected. Never draw blood if there is a discrepancy.

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- If there are any concerns regarding the subject or the procedure, discuss the concerns with the relevant manager before continuing with the procedure.

For clinical trials, an appropriate identification code is given to each sample according to the research protocol instead of full name to protect anonymity of the patients in biomedical research

### **12. Blood Sample Collection and Processing**

- Wash hands with soap and water, and dry with single use towels.
- Extend the subject's arm and inspect the antecubital fossa or forearm.
- Ask the subject to form a fist so the veins are more prominent.
- Locate a vein of a good size that is visible, straight and clear. The median cubital vein lies between muscles and is usually the most easy to puncture. Under the basilica vein runs an artery and a nerve, so puncturing here runs the risk of damaging the nerve or artery and is usually more painful. Do not insert the needle where veins are diverting, because this increases the chance of haematoma; Appendix 1: Venipuncture
- The vein should be visible without applying the tourniquet. Locating the vein will help in determining the correct size of needle.
- Apply the tourniquet about 4-5 finger widths above the venepuncture site and re-examine the vein.
- Clean hands with alcohol rub – use 3ml of alcohol rub on the palm of the hand, and rub into fingertips, back of hands and all over the hands until dry.
- After performing hand hygiene, put on well-fitting, non-sterile gloves.
- Clean the site with an antiseptic swab for 30 seconds and allow to dry completely.
- Apply firm but gentle pressure. Start from the centre of the venepuncture site and work downward and outwards to cover an area of 2cm or more.
- Allow the area to dry. Failure to allow enough contact time increases the risk of contamination.

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- Do not touch the cleaned site. If the site is touched repeat the disinfection.
- Anchor the vein by holding the subject's arm and placing a thumb below the venepuncture site.
- Enter the vein swiftly at a 30 degree angle or less and continue to introduce the needle along the vein at the easiest angle of entry.
- When obtaining multiple tubes of blood, use evacuated tubes with a needle and tube holder. This system allows the tubes to be filled directly. If this system is not available, use a syringe or winged needle set instead.
- If a syringe or winged needle set is used, best practice is to place the tube into a rack before filling the tube. To prevent needle sticks, use one hand to fill the tube or use a needle shield between the needle and the hand holding the tube.
- Pierce the stopper on the tube with the needle directly above the tube using slow, steady pressure. Do not press the syringe plunger because additional pressure increases the risk of haemolysis.
- Where possible, keep the tubes in a rack and move the rack towards you. Inject downwards into the appropriate coloured stopper. Do not remove the stopper as it will release the vacuum.
- If the sample tube does not have a rubber stopper, inject extremely slowly into the tube as minimising the pressure and velocity used to transfer the specimen reduces the risk of haemolysis. Do not recap and remove the needle.
- Before dispatch, invert the tubes containing additives for the required number of times (as specified by the local laboratory).
- Once sufficient blood has been collected, release the tourniquet before withdrawing the needle.

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- Withdraw the needle gently and apply gentle pressure to the site with a clean gauze or dry cotton wool ball. Ask the subject to hold the gauze or the cotton wool ball in place with the arm extended and raised. Ask the subject not to bend the arm because doing so causes a haematoma.
- Discard the used needle and syringe or blood sampling device into a puncture-resistant sharps container.
- Discard used items into the appropriate category of waste.
- Recheck the labels on the tubes and the forms before dispatch.
- Inform the subject that the procedure is over.
- Check the insertion site to verify that it is not bleeding.
- Notify your manager if bleeding lasts more than five minutes.
- Pack samples safely in a plastic leak-proof bag with an outside compartment for the laboratory request form. Placing the requisition on the outside helps avoid contamination.
- If there are multiple tubes, place them in a rack or padded holder to avoid breakage during transportation.
- Perform hand hygiene again.
- Record the activity either manually or electronically

### **13. Limitations & Pitfalls of the Examination**

- In hospitalised patients do not take blood from an existing peripheral venous access site because this may give false results. Haemolysis, contamination and presence of intravenous fluid and medication can all alter the results. Nursing staff and physicians may access central lines for specimens following protocols. However, specimens from central lines carry a risk of contamination or erroneous laboratory test results.

### **14. Method Validation**

- WHO guidelines on drawing blood: best practices in phlebotomy, 2010

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### **15. Procedure Notes & Other Pertinent Information**

- Draw blood collection tubes in the correct order, to avoid cross-contamination of additives between tubes. As colour coding and tube additives may vary, verify recommendations with local laboratories; Appendix 2, Order of Draw

### **16. Appendices**

- Appendix 1: Venipuncture
- Appendix 2: Order of Draw

### **Appendix 1**

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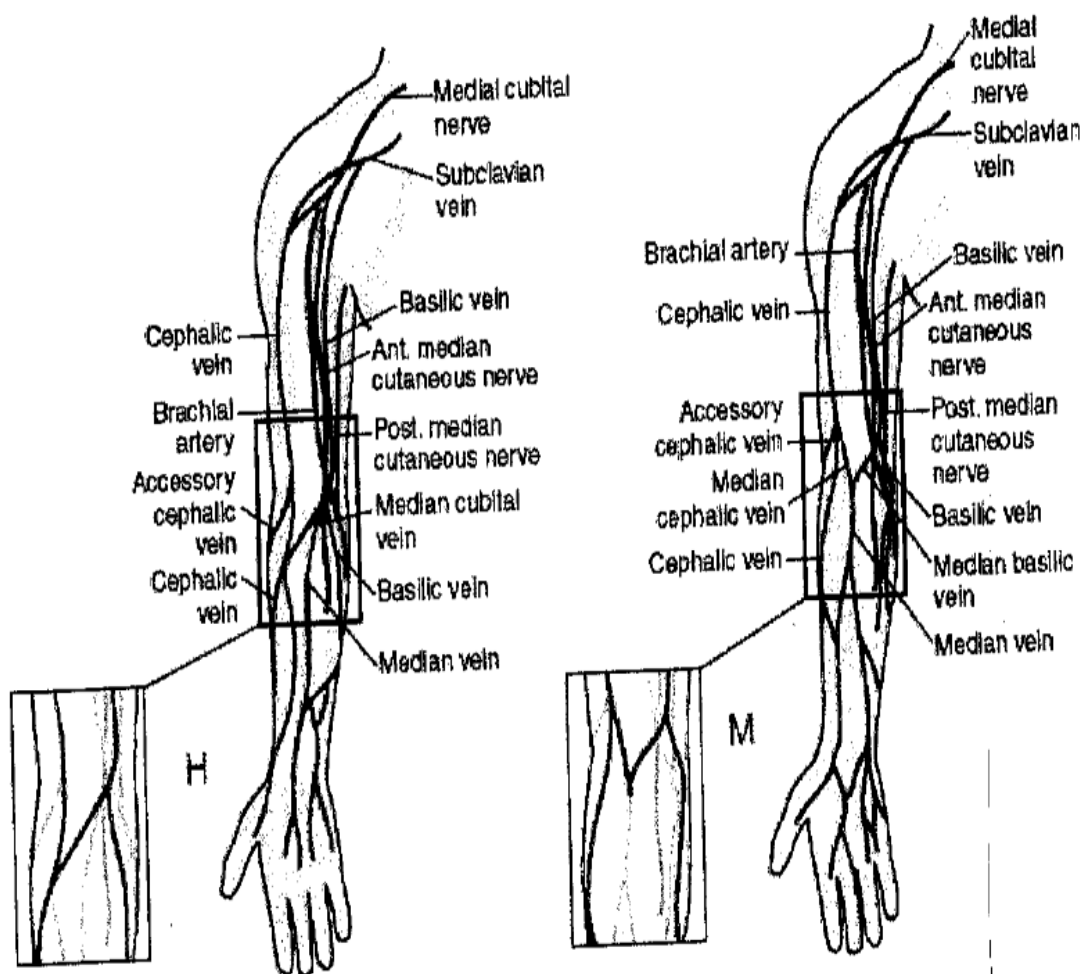


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# VENIPUNCTURE



*Ref: Clinical and Laboratory Standards Institute, 2010*

### Appendix 2

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# ORDER OF DRAW

COLOUR	COLLECTION TUBE
• <b>YELLOW</b>	SPS (Blood Cultures)
• <b>LIGHT BLUE</b>	Sodium Citrate
• <b>PLAIN RED</b>	No Additive
• <b>PLASTIC RED</b>	Clot Activator
• <b>GOLD, RED/GRAY</b>	SST/Gel w/ Clot Activator
• <b>GREEN</b>	Heparin-Lithium or Sodium
• <b>LAVENDER, TALL PINK</b>	EDTA
• <b>PURPLE</b>	EDTA
• <b>GRAY</b>	Sodium Fluoride, Potassium Oxalate

*Ref: Clinical and Laboratory Standards Institute, 2010*