

# STANDARD OPERATING PROCEDURE

<b>1. SOP for and prepared by:</b> <p style="text-align: center;"><b>Blood taking by Cannulation in SoMS</b>          Yati Boucher, Health and Exercise Science, Lower ground, LG02D x52419</p>	
<b>2. Description</b> Includes the standard operating procedure for the collection of blood by cannulation within SoMS	
<b>3. Authorisation eg</b> Cannulation is only to be undertaken by staff and research students who have appropriate training in blood collection.	
<ul style="list-style-type: none"> <li>◆ <b>Authorisation provided by:</b></li> <li>◆ <b>Custodian of equipment:</b></li> <li>◆ <b>Training required for task:</b></li> <li>◆ <b>Supervision required for task:</b></li> <li>◆ <b>Responsibility for Review of this SOP:</b></li> </ul>	<p>Individual laboratory heads.</p> <p>None allocated at this point in time.</p> <p>Staff and research students must complete an accredited theoretical and practical cannulation training course and be certified as proficient by an accredited assessor prior to performing this procedure. For example, the Prince of Wales Hospital Venipuncture and Cannulation Course.</p> <p>Once trained and observed to carry out the procedure correctly, no additional supervision is required</p> <p>SoMS Occupational Health and Safety Committee</p>
<b>4. Resources eg. is there anything you need in advance before commencing ie.....</b>	
<ul style="list-style-type: none"> <li>◆ <b>Equipment</b></li> <li>◆ <b>Substances</b></li> <li>◆ <b>Other people</b></li> <li>◆ <b>PPE</b> (see section 6)</li> </ul>	<p>Non-sterile gloves          Tourniquet          Gauze          Underpad          Cannulas (eg. 20GA/18GA)          Vacutainer (eg. EDTA)          Vacutainer adapter          Vacutainer holder          Syringe          Alcohol swabs          Tegaderm dressing          Surgical tape          Tube + three way stop cock          Band-aids          Consent Form          Sharps container          Waste Disposal Bag</p> <p>Saline</p> <p>Antiseptic hand rub with chlorhexidine gluconate 0.5%w/v</p> <p>Following appropriate training no other personnel are required</p> <p>Safety glasses for eye protection          Latex gloves          Closed shoes          A laboratory coat to protect clothing</p>
<b>5. Instructions. Include the Hazards, Risks and Controls at the appropriate stage where they could occur</b> <i>Ref. Risk Assessment if applicable</i>	
<b>Environment</b>	<ul style="list-style-type: none"> <li>• The procedure should take place in a designated place in the lab, free of through traffic and on a bench with a protective covering (underpad). The participant should be seated on a chair with armrests (reclining chair; if there is possibility of fainting) with a room temperature of 23-24°C.</li> <li>• Currently, two labs (Cardiovascular and Exercise Physiology) in LGO2 are designated for blood taking.</li> </ul>

<p><b>Preparation</b></p>	<ul style="list-style-type: none"> <li>• All blood should be considered potentially infectious and universal precautions should always be followed (refer to the UNSW Infection Control Policy)</li> <li>• Prepare work area</li> <li>• Wash hands with soap</li> <li>• Gather all necessary equipment: Lay the underpad on the bench; fill the 5ml/10 ml syringe with saline, then fill the tube + three way stop cock with saline</li> <li>• Explain procedure to the participant/subject</li> <li>• Ensure consent has been given and screened for possibility of HIV/Hepatitis</li> <li>• Position subject appropriately</li> <li>• Select appropriate limb</li> <li>• Carefully observe the veins; always start with the veins in the forearm. Then, in a case of missing the puncture site, move to the vein on the antecubital vein. However, if the puncture site is the antecubital vein, the next puncture site has to be in a different limb.</li> </ul>
<p><b>Step by Step Instructions</b></p>	<p><b><u>Inserting the catheter:</u></b></p> <ul style="list-style-type: none"> <li>• Remove restrictive clothing and unnecessary jewellery.</li> <li>• Support the forearm from which blood is to be taken by a pillow or an arm of a chair.</li> <li>• Apply the tourniquet; place a finger behind the tourniquet clip to prevent skin or hairs being pinched. Place the tourniquet approximately 15-20 cm above the insertion site.</li> <li>• Assess subject for a suitable vein (antecubital or forearm vein). Gently palpate vein to see if it feels elastic, well anchored, and has rebound resilience. Loosen tourniquet.</li> <li>• Wash hands with antiseptic hand rub with chlorhexidine gluconate 0.5%w/v.</li> <li>• Don gloves and reapply the tourniquet.</li> <li>• Pull the plastic cover from the cannula, loosen the tip seal by rotating the barrel 360°.</li> <li>• Clean the skin with an alcohol swab and allow to dry.</li> <li>• Inform the patient that they may feel a sharp sting when the skin is pierced.</li> <li>• Anchor the vein, approach vein slowly at a low angle, and maintain good skin traction throughout the insertion. With the needle bevel up, insert the needle into the skin at 25-30°. Upon initial flashback visualisation, lower the needle angle almost parallel to the skin and advance the needle to ensure the catheter tip placement within the line of the vein.</li> <li>• Hold the flash chamber stationary, and advance the catheter off the needle into the vein (use the push-off tab located on the hub).</li> <li>• Remove the tourniquet prior to needle retraction. Apply gentle digital pressure directly above the tip of the catheter and stabilise the coloured (pink/green) hub.</li> <li>• Keep the needle unit straight. Push the white activation button for needle retraction while the needle is still located within the lumen of catheter.</li> <li>• Discard the retracted needle immediately into the sharp container.</li> <li>• Keep applying gentle digital pressure directly above the tip of the catheter with one hand, reach the tube + stopcock with another hand, connect the tube to the catheter by screwing the end of the tube to the opening of the catheter.</li> <li>• Apply sterile dressing (tegaderm) on top of the catheter. Also apply the surgical tape on top of the tube to secure it.</li> <li>• Attach the vacutainer holder and syringe filled with saline into the stopcock.</li> </ul> <p><b><u>There are some occasions when subjects faint during or at the end of insertion of the cannula. Below are the step by step instructions to handle fainting.</u></b></p> <ul style="list-style-type: none"> <li>• Prior to the cannulation; seat the subject on a reclining chair.</li> <li>• Ask the second person (ie. a research assistant to hold the subject).</li> <li>• If a faint occurs during the cannulation; finish off the cannulation as per instructions above, then adjust the seat so the patient can lie down. Elevate the subject's legs to accommodate</li> </ul>

the blood back to the brain area.

- Let the subject to lie down for about 5 minutes or until they regain normal status.

**Multiple blood taking:**

- Attach the vacutainer, open the stopcock (by turning the three way stopcock), and push the vacutainer into the vacutainer holder; draw about 5 ml of blood and discard it as the initial sample is not needed (because it is mixed with saline).
- Attach the second vacutainer (for the real sample) and draw the blood depending on the need (5 ml/10 ml of blood). Mix the blood by inverting the vacutainer gently 8 times.
- Close the stopcock before removing the vacutainer from the vacutainer holder.
- Place the sample on ice or straight into the centrifuge.
- Open the other end of the stopcock (the one that is connected to the syringe filled with saline) and administer about 3-5 ml of saline to flush and keep the line open (to avoid coagulation of the blood inside the tube).
- Repeat the step above for the subsequent sampling (multiple blood taking).

**Problems with the blood drawing and cannulation:**

- No blood
  - The vein may possibly collapse or the room is too cold, as a result veins will be constricted; check the subject's body, make sure the subject feels warm. Wait for a couple of minutes, and try to withdraw the blood again. If the above conditions are fine, but the blood still cannot be drawn, check the vacutainer adapter (vacutainer holder); it could be there is a blood clot at the tip of the adapter; if there is, replace it with a new one.
- The saline can be administered but the blood cannot be drawn
  - Possibility, there is a blood clot on the tip of the catheter; the catheter needs to be removed, and re-insert a new one.
- The resting blood can be drawn but no blood during exercise (cycle exercise on the bike)
  - If the catheter was inserted in the antecubital vein, make sure the subject does not bend the elbow as the catheter can get twisted, so that blood cannot get through.
- Missing the puncture site
  - In the case of missing the puncture site (no flash back from the catheter), remove the catheter, and cover the puncture site with a band-aid. Then perform a second cannulation. If the second cannulation fails again, remove the catheter, and cover the second puncture site with a band-aid. Then call another qualified person to perform a cannulation. Each qualified person can only perform a maximum of two cannulations.

**Removing the catheter:**

- Wash hands and use gloves.
- Remove carefully the surgical tape and the sterile dressing.
- Apply gauze on top of the catheter, remove the catheter slowly, then apply firm pressure on the puncture site. Discard the catheter with the tube immediately into the sharp container.
- Ensure that the bleeding from the puncture site has stopped.
- Cover the puncture site with a band-aid.
- Remove gloves.
- Wash hands.

<b>Clean up and Waste Disposal</b>	<ul style="list-style-type: none"> <li>• Biological waste must be disposed of in a contaminated waste bin.</li> <li>• Care should be taken to ensure any spillages are completely cleaned up with bleach.</li> <li>• See Key Hazards and Controls below</li> </ul>	
<p>This procedure is rated <b>LOW to MODERATE</b> (AS 4360) when carried out to the above instructions and incorporating the appropriate control measures. Refer to Risk Assessment: <b>Cannulation risk assessment v1 11.05.06</b></p>		
<b>6. Key Hazards</b> Refer to Risk Assessment <b>Cannulation risk assessment v1 11.04.06</b>	<b>Risks from Hazard</b>	<b>Control Measure including PPE</b> Ref the <a href="#">Hierarchy of Controls</a>
1. Needle stick injury or exposure to blood or blood products (e.g. eye splash)	1.a Infection with a blood borne biological agent	<p><b>Step 1</b></p> <p><b>First Response Clean/Decontaminate</b></p> <ul style="list-style-type: none"> <li>• <b>SKIN:</b> Immediately wash affected area thoroughly with soap and water. Note that there is no advantage to the use of a stronger solution than soap and water for cleaning as some disinfectants may inhibit wound healing.</li> <li>• <b>MOUTH, NOSE, EYE(S):</b> Flush mucous membranes/conjunctiva with normal saline or water. Use eye wash facility if available. If contact lenses are worn, remove after flushing eye and clean as usual.</li> </ul> <p><b>Step 2</b></p> <p><b>Seek medical advice</b></p> <ul style="list-style-type: none"> <li>• Notify your local First Aid Officer and your supervisor.</li> <li>• Go to the Casualty Department of the nearest Public Hospital or to your own medical practitioner for assessment as soon as possible (<b>within 2 hours if possible exposure to HIV</b>).</li> <li>• A blood sample and prophylactic antiviral treatment may be required depending upon the risk level of the exposure.</li> <li>• Fill in the <u>UNSW Accident / Incident form</u> and return it to your supervisor.</li> </ul> <p><b>Step 3</b></p> <p><b>Counselling/Further Information</b></p> <ul style="list-style-type: none"> <li>• Contact Professor Andrew Lloyd ext 52534 for immediate advice, or</li> <li>• Contact NSW Health Needlestick Injury Hotline for confidential advice/counselling (1800 804 823 - this is a Free 24 hour service) .</li> </ul>
2. Contamination of work area or clothing with blood or blood products	2a. Potential risk of contamination with blood borne viruses. Potential fall risk	A biological spill kit will be kept in the blood taking area and this requires: <ul style="list-style-type: none"> <li>• Written spill clean-up procedures.</li> <li>• Door “Do not enter” sign with universal “bio-hazard” sign.</li> <li>• Latex gloves.</li> <li>• Tape or marking device to mark off spill area</li> </ul>

		<ul style="list-style-type: none"> <li>• Suitable disinfectant supplies.</li> <li>• Absorbent material (cotton balls, incontinent pads, cloth rags or paper towels).</li> <li>• Sharps collector and forceps for picking up broken glass or sharps.</li> <li>• Appropriate containers or autoclave bags (disposal bags- leak proof, autoclavable and labelled with a biohazard symbol).</li> </ul> <p>As we use a vacutainer to draw blood, spills are likely to be confined to a small area within the blood taking area (a wet area). It is also most likely to occur during the process of taking the blood sample. After the spill has occurred the following procedures should be followed:</p> <ul style="list-style-type: none"> <li>• First ensure the subject (if present) is comfortable, the tourniquet has been released, the needle removed from the vein and pressure applied to the blood collection site according to the above procedure.</li> <li>• If any blood has come into contact with the subject (it is the subject's own blood), get the subject to wash the area with soap and water.</li> <li>• Help the subject to leave the blood taking area.</li> <li>• Place the biohazard sign on the entrance to the blood collection area and apply gloves.</li> <li>• Dispose of any sharps using forceps and the sharps collector.</li> <li>• Mop up the blood spill with absorbent material and dispose of the contaminated material in the appropriate biohazard waste disposal bags.</li> <li>• Disinfection of the contaminated area should be carried out by the addition of an equal volume of chlorine-releasing disinfectant of 0.5 to 1 percent available chlorine to the cleaning solution.</li> </ul> <p>The area should be completely dry and before allowing subjects or other staff back into the area again.</p>
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**7. Emergency Procedures and Shut down**

In case of needlestick injury contact:

- Professor Andrew Lloyd ext 52534
- NSW Health Needle Stick Injury Hotline (1800 804 823)
- Attend Prince of Wales Casualty Department for treatment

**8. Legislative References**

**9. Definitions (optional)**

SoMS, School of Medical Sciences