Capillary Blood Collection via Finger Prick

Vernon Coffey  
*Bond University*

Katsu Shike  
*Bond University*

Follow this and additional works at: [http://epublications.bond.edu.au/crn_inj](http://epublications.bond.edu.au/crn_inj)

Part of the [Analytical, Diagnostic and Therapeutic Techniques and Equipment Commons](https://digitalcommons.bond.edu.edu.au/crn_inj)

This work is licensed under a [Creative Commons Attribution 4.0 License](http://creativecommons.org/licenses/by/4.0/).

Recommended Citation

Capillary Blood Collection via Finger Prick

Contributed by: Katsu Shike and Vernon Coffey, Bond University
Table of contents

1 Introduction/Background ........................................................................................................3
2 Key papers / theoretical basis for the method ........................................................................3
3 Scope ..................................................................................................................................3
4 Facility and equipment ..........................................................................................................4
  4.1 Location of laboratory .......................................................................................................4
  4.2 Equipment .......................................................................................................................4
    4.2.1 Laboratory-based equipment ....................................................................................4
    4.2.2 Reagents and consumables ......................................................................................5
    4.2.3 Personal Protective Equipment (PPE) ....................................................................5
5 Training/qualifications/competencies ......................................................................................6
6 Restricted access ....................................................................................................................6
7 Health and safety / Risk Assessment .....................................................................................6
8 Workflow ...............................................................................................................................7
  8.1 Location provision and equipment organisation ..............................................................7
  8.2 Site Selection ..................................................................................................................8
  8.3 Site Preparation .............................................................................................................9
  8.4 Data Analysis ................................................................................................................9
  8.5 Follow-up Care .............................................................................................................11
9 Supplier and ordering information ..........................................................................................12
10 Appendices ........................................................................................................................13
1 Introduction / Background

This SOP has been developed to describe the methodology for capillary blood sampling via finger-prick, for specific application to the Bond University CRN-AESS.

In this laboratory, blood sampling by finger-prick involves the use of an Accu-Chek® Safe-T-Pro Plus Lancet. Hygiene and site disinfection, site selection and quality control are priorities for this procedure, which can be optimised by strictly following this SOP.

With reference to analysis, this procedure is commonly used for lactate or glucose analysis through the use of Lactate Pro 2 or Accu-Chek® Glucometer, respectively. Blood may also be collected into capillary tubes for further analysis.

2 Key papers / theoretical basis for the method


3 Scope

This procedure applies to all staff and students who are collecting, handling, and processing biological (blood) samples in the HASL.
4 Facility and equipment

4.1 Location of laboratory

Must have access to **BIHS Room 1.08**, located on the 1st floor (accessible via the lift).

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Portable Trolley</th>
<th>Disposal Container</th>
<th>Sharps Disposal Container – puncture-proof container marked “biohazardous”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Photo</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image1.png" alt="Portable Trolley" /></td>
<td><img src="image2.png" alt="Disposal Container" /></td>
<td><img src="image3.png" alt="Sharps Container" /></td>
<td></td>
</tr>
</tbody>
</table>
4.2.2 Reagents and consumables

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Liv-Wipe Alcohol Swab</th>
<th>Accu-Chek Safe-T-Pro Plus Lancet</th>
<th>Absorbent Towel or Cotton Balls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.2.3 Personal Protective Equipment (PPE)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Disposable Gloves (Mandatory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo</td>
<td></td>
</tr>
</tbody>
</table>
## 5 Training / qualifications / competencies

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☒</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

If yes, please provide details:

- **Health and Safety training**
- **Laboratory induction**
- **Current First Aid / CPR**
- **Immunisation**

### 6 Restricted access

The use of this method does not require specific qualifications.

### 7 Health and safety / Risk Assessment

- Working with human blood and tissue involves a risk of infection with microbial pathogens. Viruses such as HIV and hepatitis B and C are the main concern. Vaccination of the researcher against hepatitis B and an antibody titer check is required before starting work. Risk of infection to the researcher is addressed by wearing protective equipment (especially gloves), being aware of risk of needlestick injuries, and handling ALL blood products as potential biohazards.
- Experiments involving blood sampling pose multiple risks. Risk of subject fainting should be addressed by giving plenty of fluids prior to sampling, ensuring subject remains seated in a stable chair during sampling, and for at least 10 min afterwards. Risk of infection to subjects from sampling is addressed by using sterile equipment, good aseptic technique, use of single-use lancets for finger pricks and swabbing the sample site with isopropanol or ethanol prior to sampling.
- Finger-tip blood collection may only be performed by a trained staff member. Disposable gloves must be worn, and a new pair of gloves must be used for each participant to prevent cross-contamination.
- Appropriate PPE must be worn/used at all times when working with biological samples.
- All blood samples and handling must be performed on a surface protected with absorbent bench coat.
- Any blood spills must be cleaned up immediately using Viraclean disinfectant according to the standard laboratory spills procedure.
- Wash hands thoroughly after collection and handling of blood samples.
• Read and understand the SOP for working with human blood, plasma, and other potentially infectious tissue. If anything is unclear or if you are unsure of the risks, consult your supervisor before starting any hands-on work.

• Before commencing work, ensure that the spill kit is stocked: apron, gloves, goggles, paper towels, and Viraclean.

8 Workflow

8.1 Location provision and equipment organisation

Before beginning the blood collection procedure, ensure the following steps are completed:

• **Location:** The subject receiving the finger prick may be supine, sitting, standing or on an exercise machine. Regardless of body position, ensure the area is clean with sufficient space to access the fingers for blood collection. The room should have a wash basin, soap and paper towels, with proximal access to alcohol swabs and disposal bins (Room 1.08). The trolley should also be nearby with all of the equipment readily available.

• **Equipment organisation:** Ensure that a trolley and disposal container are nearby. The trolley should have all of the equipment needed for the testing, with sufficient amounts to suit the test purposes. This includes: a sharps container, lancets, alcohol swabs, gloves (correctly sized) and an absorbent towel/cotton swabs.
8.1 Site Selection

- The best locations to perform finger-pricks are the third and fourth fingers (middle and ring finger). Refrain from blood collection from the index finger and thumb (to avoid calluses) and the little finger (due to thin tissue).

- Avoid puncturing the tip, edge and centre of the finger.
8.2 Site Preparation

1. Wash hands using soap and water, and dry using a single-use paper towel.
2. Put on well-fitting, non-sterile gloves
3. After taking into consideration the site selection guidelines outlined previously, apply alcohol to the entry site using the Liv-Wipe alcohol swabs in a circular motion.

4. Allow the alcohol to dry (Note: Ensure the site is not contaminated between site preparation and puncture)

8.3 Site Puncture

1. After appropriate site cleaning and preparation, determine the appropriate needle depth for the subject. Needle depth is represented by indicators on the side of the lancet, with the longest length line indicating the deepest needle. Generally, the medium and short lengths are used for capillary blood collection via fingerprick. Needle depths are shown below.

2. Depending on the subject’s body position and the practicality of this step, secure the subject’s elbow at ~120⁰ extension by trapping it between your arm and torso (This will allow for greater blood flow and stabilise the finger for puncture and sampling.)
3. Next, FIRMLY apply the lancet to the cleaned site and PRESS the purple button on the top of the Safe-T-Pro Lancet to puncture the site (This will make a dull clicking sound; ensure the subject is aware of a ‘slight sting’ when punctured). The puncture should be quick and deliberate to avoid the need for re-puncture.

**Note:** DO NOT puncture the site with the SAME lancet, or used the SAME puncture site more than ONCE to avoid site contamination and infection.

4. **DISCARD** the used lancet into the SHARPS CONTAINER

5. **WIPE** the first drop of blood away using an un-used cotton ball or paper towel. This is done to ensure the blood is not contaminated with debris or tissue fluid.

6. **GRASP** the punctured finger as shown below. The index and middle finger should be on the dorsal aspect of the finger, and the thumb just below the puncture site on the palmar aspect of the finger.
7. MILK the finger by rolling your thumb from the promixal-to-distal phalanx just below the puncture site (using the interphalangeal joint as the fulcrum).
   Note: Avoid squeezing the finger because this dilutes the sample with plasma.
8. Continue ‘milking’ the finger until a reasonable blood sample is visible.

8.4 Data Analysis

Data analysis depends on the variable being measured. Refer to specific SOPs for details for data analysis.

8.5 Follow-up Care

1. After sample analysis, provide the subject with a paper towel or cotton ball with which they can apply pressure to the finger to stop the bleeding. Get subjects to hold this on their punctured finger for ~1min to ensure the blood flow has stopped.
2. Perform hand-hygiene again using soap and water, and dry using a single-use paper towel.
9 Supplier and ordering information

Complete the table with the list of items, the manufacturer, reference/order numbers, suppliers, alternative items, other notes to assist in re-ordering or sourcing items.

<table>
<thead>
<tr>
<th>Item description (with photo)</th>
<th>Product code</th>
<th>Supplier</th>
<th>Alternative supplier (if applicable)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of contact:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact details:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10 Appendices