



Pathology collection tips and techniques

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- A quality sample is achieved by correctly labelling and filling the tube fully, using optimal collection methods, centrifuging the sample when required, and avoiding haemolysis.
- The evacuated system of blood collection is the optimal way to obtain blood from a patient. It is safer for the person collecting because it is a closed system which fills the tubes directly, and allows a single collection to fill as many tubes as required.
- The needle and syringe system is a less desirable method of blood collection as it limits the volume of blood that can be collected.

Introduction

To ensure a quality sample is achieved for laboratory testing there are a number of steps of the collection process which must be followed.

1. Labelling the tubes

The detail that is written on the tube must be the same as that on the referral. The writing must be readable and accurate. The following details should always be included:

- Patient surname and first name
- Patient date of birth
- Date and time of collection
- Collector signature.

Ensure the collection time and date and collector signature are always included on the referral. Collection time is particularly important for time specific tests and a collector signature is a mandatory extra requirement when a blood group is required.

2. Tube selection resources

Online Test Collection Manual

A complete list of tests and collection requirements is available on the Melbourne Pathology website (www.mps.com.au, under the 'Doctors' link).

Help Desk

For tube selection advice, contact our Help Desk on 9287 7799. Help Desk is available Monday to Friday 8am – 6pm and Saturday 8am – 4pm.

Tube guide - order of draw

This collection guide advises the order of draw for each tube.

The image shows a thumbnail of the 'Tube guide - Order of draw' chart from Melbourne Pathology. It is a color-coded chart that lists various blood test tubes and the order in which they should be drawn. The chart includes columns for 'Tube colour', 'Tube content', and 'Tests'. The tubes are listed in a specific order from top to bottom: 1. Light blue (Sodium Citrate), 2. Yellow (Sodium Citrate), 3. Red (Clot), 4. Green (Lithium Heparin), 5. Purple (EDTA), 6. Grey (Sodium Fluoride), 7. Pink (Sodium Citrate), 8. White (Sodium Citrate), 9. Gold (Sodium Citrate), 10. Gold (Sodium Citrate), 11. Gold (Sodium Citrate), 12. Gold (Sodium Citrate), 13. Gold (Sodium Citrate), 14. Gold (Sodium Citrate), 15. Gold (Sodium Citrate), 16. Gold (Sodium Citrate), 17. Gold (Sodium Citrate), 18. Gold (Sodium Citrate), 19. Gold (Sodium Citrate), 20. Gold (Sodium Citrate).

3. Blood collection methods

Evacuated system

This is the preferred method of collection as it allows for efficient collection where blood flows directly into the tube and quickly comes into contact with the tube additive. This minimises pre-analytical errors caused by inappropriate specimen transfer from syringe to tube.

Needle and syringe

Sub-optimal samples can occur when the needle and syringe method of collection is used. The evacuated system is preferred, but a needle and syringe can be used when a difficult collection such as the back of the hand is required.

Transferring the blood from the syringe to the tubes should be undertaken using a blood transfer device.

The lids of the tubes should not be removed to transfer the blood and blood should not be squirted directly from the syringe through the stopper into the tube as this can cause haemolysis of the sample.

Using a blood transfer device

If the needle and syringe method is used, a blood transfer device is required to transfer the blood into the tubes.

Once the syringe is filled with blood, de-notch the needle and attach the transfer device. With the syringe upper most, insert each tube to be filled.

Winged infusion set

This method of collection is desirable for collections from young children or where a large number of tubes are required (more than 5 or 6). It should not be the collection method of choice for all patients.

Attach the barrel to the end of the set to fill each tube. At the completion of the collection, slide the safety lock device over the needle and dispose of the device and barrel into the biohazard bin.



4. Order of Draw

This is the order in which the tubes are filled using the evacuated system of collection or needle and syringe and transfer device.

Why is this important?

There is a small chance that the additive in the tube may be introduced into a subsequent tube when they are changed. The additive may affect the testing outcomes for the tube and this is avoided by tubes being introduced into the barrel in a defined order.

What is the order?

The tube guide supplied to your clinic lists the tubes and their coloured caps and these are also arranged in order of draw.

If you require a tube guide please contact your Business Development Manager on 9287 7700.

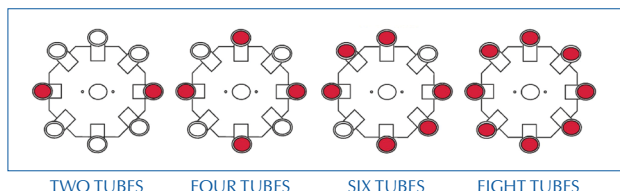
5. Centrifuging samples

Centrifuging samples assists in minimising the degradation of the sample during the time between collection and testing in the laboratory. Levels of various components within the blood alter over time. Separating the blood cells from the serum or plasma helps to preserve the integrity of the sample.

All gold topped tubes should be centrifuged. After centrifuging, the gel in the tube sits between the blood cells and the serum.

How should I centrifuge the samples?

After collection, the tubes should be allowed to clot for 20 minutes in a vertical position, before centrifuging. Failure to allow sufficient time interferes with the clotting process and affects the sample quality.



It is essential that the centrifuge is loaded so that it is balanced. Provide an opposite balance tube of exactly the same sample tube style and volume.

Load tube holders with tubes according to the loading patterns ensuring centrifuge is balanced. Centrifuge tubes must be run in pairs. If you put a tube in one holder, you must put a tube with equal liquid volume in the opposite holder to keep the rotor balanced.

The samples should be centrifuged for 10 – 12 minutes at 3000 rpm and this cycle should not be interrupted or shortened.

What are the consequences if the centrifuge is not balanced?

Severe damage to the motor can occur and the machine will become extremely noisy if it is used out of balance.

If you have concerns about your centrifuge please contact our Facilities Management Department to arrange for servicing on 9287 7700.

6. Erroneous potassium levels

Specimen collection, processing and transport affect potassium levels and any improper handling may result in artificially elevated potassium levels.

Common causes of artificially elevated potassium levels

- Leaving the tourniquet on longer than one minute
- Excessive fist clenching
- Arm in an upward position (wrist high) during collection leads to backflow of tube additives
- Order of draw not followed leading to carryover of potassium additive from EDTA tube entering serum tube
- Delay in centrifuging the sample leads to release of potassium from the cells.

7. Haemolysed samples

What does this mean and why does it occur?

Haemolysis refers to the rupture of red blood cells. It causes the sample to have a pink tinge when centrifuged. This can mean a variety of blood components cannot be tested and is most commonly caused by the person collecting the sample.

Common causes

- Using a needle that is too small
– eg. 25g needle
- Withdrawing blood into syringe too vigorously and rapidly
- Squirting blood into the tube through the lid with needle and syringe
- A slow and difficult collection
- Refrigerating samples which should be kept at room temperature.



Transporting samples

Most blood samples are transported at ambient temperature and should not be placed in the refrigerator before courier pick-up. Should a sample require alternative temperature transportation, contact Help Desk on 9287 7799 who can advise on the best method.