

Newsletter**Best Practices in Blood Culture Collection****Guidelines for Pediatric Patients**

Blood cultures are used to detect bacteraemia in children and infants. The validity of results obtained is entirely dependent on specimen collection. Inaccuracies can lead to diagnostic and therapeutic difficulties. Contamination, or false positive blood cultures, can lead to inappropriate treatment, increased hospital stays and hospital, laboratory and pharmacy costs.¹ Alternatively a false negative blood cultures can incorrectly exclude bacteraemia, leading to inadequate microbial coverage.²

Collection Site

When comes to paediatric and neonatal blood sampling, there are options available. The choices made depending on the expertise and the amount of volume needed for the procedure. Venepuncture is always recommended as the blood samples collected at this site is less likely to be contaminated and higher volume can be obtained.³ However

er venepuncture requires an experienced and trained phlebotomist to perform. If experienced and trained phlebotomist are not available at the moment, physician can always use finger prick or heel prick because they have the same amount of oxygen to arterial samples.⁴ However this technique will contain higher number of skin flora and the total volume collected will be much lower. The choice of the sites are also dependent on the age and weight of the paediatric.

Blood Volume

Generally in adults, the more blood volume is inoculated from a patient, the higher accuracy the result will be.⁵⁻⁶ For infants and young children it has been published that the yield of pathogens increases in direct proportion to the volume of blood that is cultured.⁷⁻⁸ The volume of blood drawn should be no more than 1% of the patient's total blood volume.⁹ In accordance to Cumitech, it is summarized in table 1 that

approximately 3-4% of blood are to be collected for paediatric patients.¹⁰

Table 1. Blood volumes suggested for cultures from infants and children^a

Wt of patient		Total blood vol (ml)	Recommended vol of blood for culture (ml)		Total vol for culture (ml)	% of total blood vol
kg	lb		Culture no. 1	Culture no. 2		
≤1	≤2.2	50–99	2		2	4
1.1–2	2.2–4.4	100–200	2	2	4	4
2.1–12.7	4.5–27	>200	4	2	6	3
12.8–36.3	28–80	>800	10	10	20	2.5
>36.3	>80	>2,200	20–30	20–30	40–60	1.8–2.7

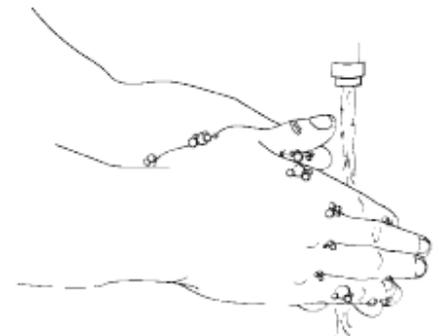
Pairing with Anerobics

As mentioned in the last newsletter, it is good to pair the paediatric aerobic bottle with an anaerobic as it could increase the yield of facultative anaerobic bacteria.¹¹



Method of Blood Collection

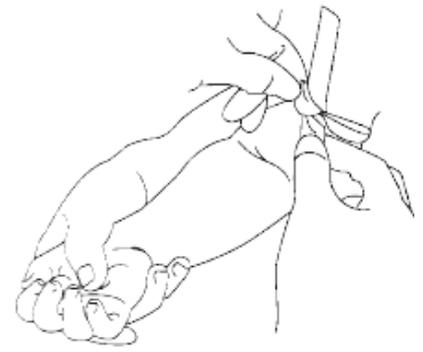
There are many guidelines available on the internet in regards to this topic hence in this issue of newsletter, we will show in graphics, the paediatric and neonatal blood sampling methods from WHO Guidelines on drawing blood: Best Practices in Phlebotomy.¹²



1. Use a winged steel needle, usually 23 or 25 gauge, with an extension tube (butterfly). Keep the tube and needle separate until the needle is in the vein.
2. Collect supplies and equipment.
3. Perform hand hygiene (if using soap and water, dry hands with single-use towels).



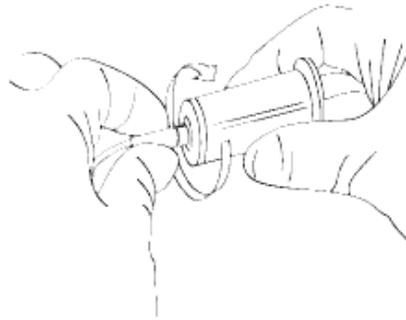
4. Immobilize the baby or child.



5. Put the tourniquet on the patient about two finger widths above the venepuncture site.



6. Put on well-fitting, non-sterile gloves.



7. Attach the end of the winged infusion set to the end of the vacuum tube and insert the collection tube into the holder until the tube reaches the needle.



8. Remove the plastic sleeve from the end of the butterfly.



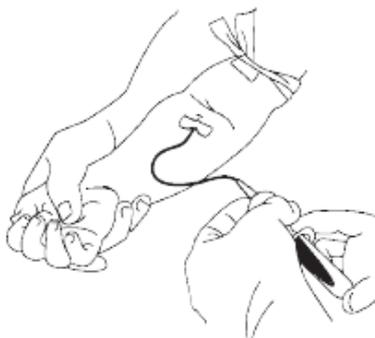
9. Disinfect the collection site and allow to dry.



10. Use a thumb to draw the skin tight, about two finger widths below the venepuncture site.



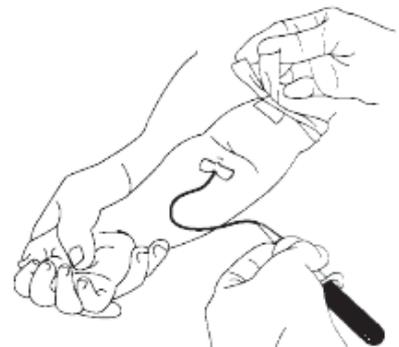
11. Push the vacuum tube completely onto the needle.



12. Blood should begin to flow into the tube.



13. Fill the tube until it is full or until the vacuum is exhausted; if filling multiple tubes, carefully remove the full tube and replace with another tube, taking care not to move the needle in the vein.



14. After the required amount of blood has been collected, release the tourniquet.

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