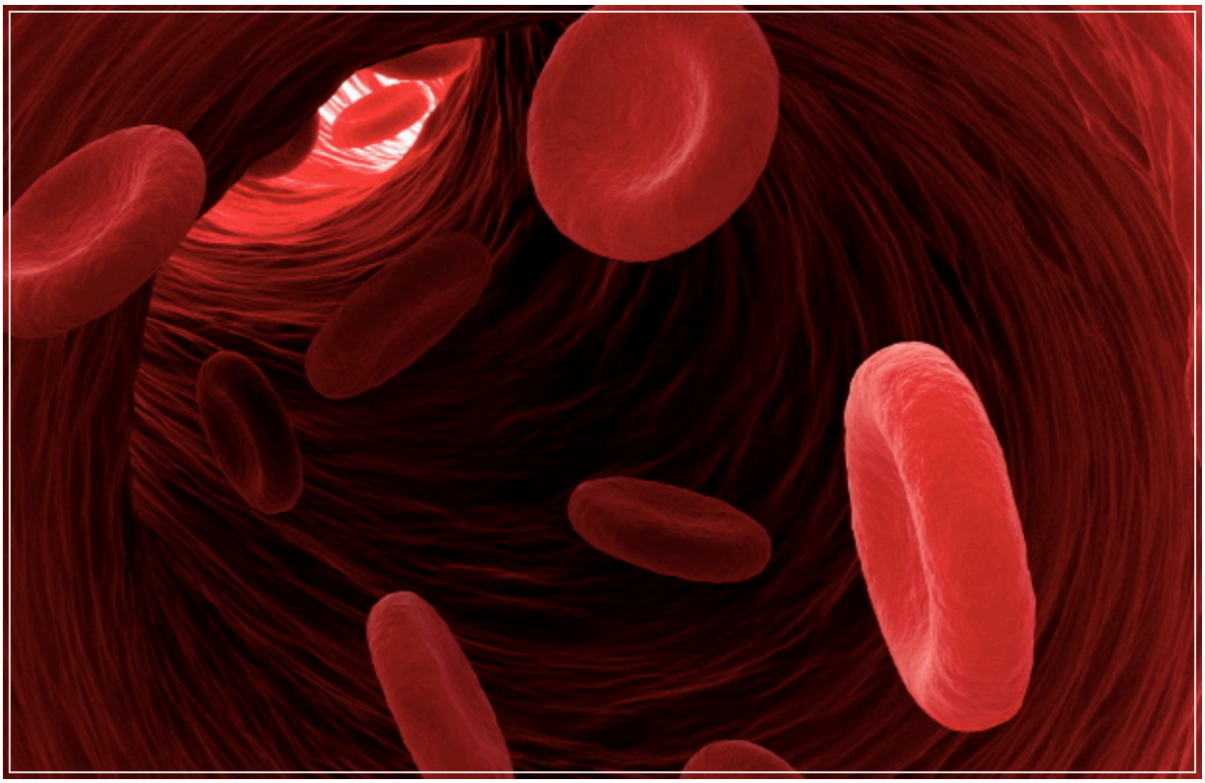

How to collect a set of Blood Cultures.

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The early detection and aggressive management of sepsis is vital in reducing morbidity and mortality, and the gold standard in detecting bacteraemia in our patients is the blood culture.

Contamination of blood culture specimens or poor technique may lead to delay in optimum clinical decisions and management with inappropriate or unnecessary antibiotics. Not to mention wasted expenses.

Blood culture bottles contain a soup of nutrients that feed a wide range of bacteria/fungi. Some bottles (including the BD BACTEC Plus media) also contain a resin to neutralise any antibiotics present in the patient's blood in order to promote organism growth.

When taking blood cultures aseptic non-touch technique should be followed. Emphasis should be placed on following your hospital blood culture collection policy without taking shortcuts.

Decontamination:

The most common cause of false positive results occurs due to contamination from the patient's own skin at the collection site.
Solutions that can be used for site decontamination include:

- greater than 0.5% alcohol chlorhexidine (drying time 60 seconds)
- 70% isopropyl alcohol (drying time 0 seconds)
- povidone iodine (drying time 2 minutes)

Always allow enough time for antiseptic solution to dry before taking cultures. It is also important to thoroughly clean the tops and necks of culture bottles prior to collection.
There are also commercially available one-step applicators containing combinations such as chlorhexidine gluconate and isopropyl alcohol.
Studies have found alcohol-based products show statistically significant improvement in reducing false positives from skin contamination (Dawson 2013).

Technique:

One randomized, study involving 64 interns in an ICU/medical wards found that **the routine use of sterile gloves resulted in lower contamination rates.**
Sterile or not, it is important to resist the urge to re-palpate the vein after cleaning the site as this increases contamination risk.
Blood specimens obtained after an antibiotic has been administered may contain enough quantities of antibiotic to kill any bacteria collected in the bottle (Halm 2011).
Therefore, specimens should be collected prior to antibiotics…. with the important caveat that blood collection must not significantly delay time to antibiotic administration.
If antibiotics have been administered the cultures should be taken just prior to the next dose for this same reason (Dawson 2013)

Volume:

It is very important to obtain the correct volume of blood. The preferred volume for each blood culture bottle is 10mls (However, you should refer to your individual manufacturers recommendation).
So that means a **20mls collection from a single site divided into each bottle.**
Under filling may result in an insufficient 'yield' of microorganisms.
Overfilling may result in false positive results.
Each blood culture collection should comprise a paired set, each set taken from a different location.
In patients with limited peripheral access both sets can be taken from the same site. However, the second specimen should be obtained as if from a separate site with new equipment and re-cleaning of the area etc.
If an infected central line is suspected (eg. cellulitis or discharge from the insertion site or extended use of the line), the second set of cultures may be taken from this site. Blood should be drawn from the distal lumen after decontamination as above.

Order of draw:

Which bottle should you fill first?
Actually, it depends on the technique used. The idea is to prevent air being introduced into the ANAEROBIC bottle and altering its environment.
If a butterfly needle and needle-safety connector device is used the AEROBIC bottle should be filled first as there will likely be air in the tubing.
If a needle and syringe is used the ANAEROBIC bottle should be filled first as any air is likely to be at the top of the syringe and thus introduced into the second bottle.
If blood is being collected for other tests at the same time the culture bottles should be filled first to prevent cross contamination from other blood tubes.
Collection of separate samples can be done "back to back". **The common practice of separating collection samples by 15 to 30 minutes does not enhance the yield of bacteria and may increase the time to antibiotic administration.** (Halm 2011)

The labelling of the specimen bottles is important.
As well as patient details information should be included describing: Source of sample (eg central line, anatomical location). Time sample was obtained

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