

BEST PRACTICE RECOMMENDATIONS FOR BLOOD CULTURES



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WHO & WHEN

- Blood cultures (BC) are used to detect bacteraemia, fungaemia, septicemia, infective endocarditis and many infective conditions associated with a clinical presentation of fever of unknown origin.
- BCs form part of The Sepsis Six Care Bundle.
- Avoid taking BC for non-septic patients with low risk of bacteraemia, e.g., isolated fever.
- Take BCs (and other appropriate specimens) as soon as possible, and ideally, before antimicrobials are started. Cultures are far less likely to be positive if delayed until after giving antimicrobials.
- When feasible, collect two blood culture samples from two separate venepuncture sites. This will help distinguish true bloodstream infection (BSI) (in which both specimen bottles are positive with the same organism) from contamination (only one specimen will be positive).
- **DO NOT DELAY STARTING ANTIMICROBIALS IN PATIENTS WITH SEPSIS.**

WHY

- Blood is a sterile fluid - pathogens should not be present.
- Positive BCs provide an opportunity to perform antimicrobial susceptibility testing that will guide targeted antimicrobial therapy, an important aspect of antibiotic stewardship.
- If the organism corresponds with the clinical scenario, then this should be considered as an infection.
- BCs are one of the most common microbiological tests with **low positivity** and **high risk of false-positive** results.
- The **volume** of blood cultured is key to the detection of BSI. There is a 3% increase in yield per mL of blood cultured.
- Inappropriate testing / preparation may overestimate central-line-associated bloodstream infections.

HOW

- Refer to Specimen Optimal Sampling – Blood Culture Checklist.
- Aseptic technique should be used to decontaminate the patient's skin surface before collecting BCs.
- Where feasible a "BC" should be collected: two bottles, an aerobic bottle and an anaerobic bottle.
- Two BC sets (a total of 4 bottles) should be drawn. For adults: collect 8-10 mls of blood per bottle; for paediatrics and neonates: follow local guidelines based on the patient's age and/or weight.
- Delayed sample transportation to the lab = loss of viability of organisms and delay to results.

WHAT

- Preliminary results for Gram stain should be reported immediately if the BC flags +ve while awaiting culture results.
- Coagulase negative Staphylococci in blood should only be considered relevant if grown in **more than 1 bottle** in an appropriate clinical scenario (site of infection).
- True infection is almost always present if BC is +ve or one of the following:
 - Streptococci (non-*Viridans*)
 - *Staphylococcus aureus*
 - Aerobic and facultative Gram-negative rods e.g. *E.coli*, *K.pneumoniae*, *Enterobacter* sp, *Pseudomonas*
 - Anaerobic cocci e.g., *Peptococcus*, *Peptostreptococcus*
 - Anaerobic gram-negative rods e.g. *Bacteroides*, *Prevotella*,
 - *Fusobacterium*
 - Yeast e.g., *Candida* sp
- Suspect contamination:
 - if only one of several cultures is positive with organisms such as coagulase negative staphylococcus, *Corynebacterium* or *Bacillus*
 - if detection of bacterial growth is delayed or
 - if multiple organisms are isolated from one culture
- When no pathogen is isolated, the results shall be "No growth obtained". Antimicrobials may be stopped if this information concurs with the clinical picture of unlikely infection.