Blood Culture

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Outline:

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1.What is a blood culture?

A laboratory test in which blood, taken from the patient,

is inoculated into bottles containing culture media to determine whether

infection-causing microorganisms (bacteria or fungi) are present in the patient’s bloodstream.

Blood cultures are intended to:

- Confirm the presence of microorganisms in the bloodstream
- Identify the microbial etiology of the bloodstream infection
- Help determine the source of infection (e.g., endocarditis)
- Provide an organism for susceptibility testing and optimization of antimicrobial therapy

2. Why are blood cultures important?

- Most widely used diagnostic tool for the detection of bacteremia and fungemia.
- It is the most important way to diagnose the etiology of bloodstream infections and sepsis and has major implications for the treatment of those patients.
- Its establishes or confirms that there is an infectious etiology for the patient’s illness.
- Provides the etiologic agent for antimicrobial susceptibility testing, enabling
- optimization of antibiotic therapy.
- Sepsis is one of the most significant challenges in critical care, and early diagnosis is one of the most decisive factors in determining patient outcome.
- Early identification of pathogens in the blood can be a crucial step in assuring appropriate therapy, and beginning effective antibiotic therapy as early as possible can have a significant impact on the outcome of the disease.

Providing adequate antibiotic therapy within the first 24-48 hours leads to:

- Decreased infection-related mortality (20-30%)
- Earlier recovery and shorter length of hospital stay
- Less risk of adverse effects
- Reduced risk of antimicrobial resistance
- Cost reduction (length of stay, therapy, diagnostic testing)

3.When should a blood culture be performed?

1. Clinical symptoms in a patient which may lead to a suspicion of a bloodstream infection are:

- undetermined fever (≥38°C) or hypothermia (≤36°C)
- shock, chills, rigors
- severe local infections (meningitis, endocarditis, pneumonia,
- pyelonephritis, intra-abdominal suppuration…).
- abnormally raised heart rate
- low or raised blood pressure
- raised respiratory rate

2. Blood cultures should be collected:

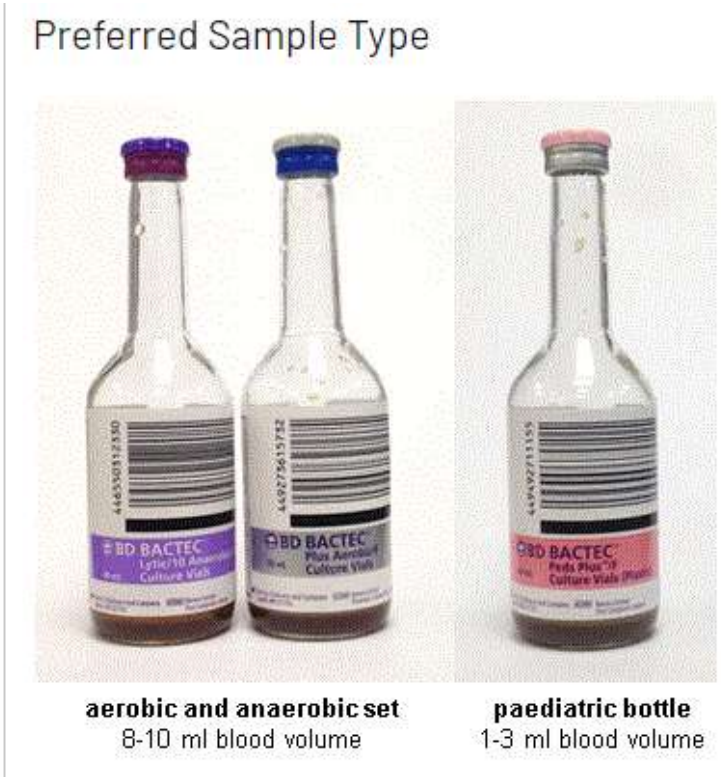
- as soon as possible after the onset of clinical symptoms;
- ideally, prior to the administration of antimicrobial therapy.

4.Type of blood culture bottles:

- Mycobacterial blood culture bottle (BD BACTEC myco/F Lytic)
- BD BACTEC™ Plus Aerobic medium
- BD BACTEC™ Lytic Anaerobic medium
- BD BACTEC™ Peds Plus™ medium

5.What volume of blood should be collected?

- 1-5 ml of blood



aerobic and anaerobic set
8-10 ml blood volume

paediatric bottle
1-3 ml blood volume

6.How many blood culture sets should be collected?

- Since bacteria and fungi may not be constantly present in the bloodstream, the sensitivity of a single blood culture set is limited.
- However, to achieve a detection rate of >99% of bloodstream infections, as many as four blood culture sets may be needed.

7. How many days of incubation are recommended?

- The current recommendation, and standard incubation period, for routine blood cultures performed by continuous-monitoring blood systems is five days for Aerobic, anaerobic and peads bottles
- 30 days for Myco-lytic bottles.

8.Type of Bactec system in SJMC

- BD BACTEX FX

- BD BACTEC 9050

9.Processing blood culture positive:

- Once blood culture positive, unload from Bactec FX or 9050.
- Culture on Blood agar, Chocolate Agar,MacConkey and CDC
- Do gram stain also
- Inform Doctor immedialety once gram stain is ready

- A positive blood culture is a critical result and must be reported as soon as available, due to the immediate impact on patient care decisions.
- When reports are delivered rapidly, studies have shown broadly improved outcomes and efficiencies in patient management.

- Once organism grows, perform identification and sensitivity testing using VITEK 2.
- To release results once confirmed ID and sensitivity.

10.Conclusion

- When processed correctly, blood cultures provide clinically relevant information that can help improve patient outcomes,
- decrease length of hospital stay and reduce use of antibiotics.