Best practice for blood culture collection

Critical reminders for collectors

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When to Collect

Blood cultures should be collected from a patient when there is a clinical suspicion of a bloodstream infection, and the patient is ill enough to be hospitalized. It is important to collect blood cultures before the administration of any antimicrobial treatment to maximize pathogen recovery.[1]

Indications for Obtaining Initial Blood Cultures[1]

Conditions	Notes
Febrile neutropenia	
Fever without a source	
Suspected endovascular infections, including CLABSIs	
Suspected infective endocarditis	
Suspected sepsis	
• Cholangitis • Complicated pneumonia • Complicated SSTIs • Meningitis • Osteomyelitis • Pyelonephritis • Septic arthritis	• These syndromes are frequently associated with bacteremia. • Examples of complicated SSTIs include burn wounds, immersion injuries, puncture wounds from animal bites, infections in patients with neutropenia or other immunocompromising conditions, pyomyositis, gangrene, necrotizing fasciitis, and myonecrosis.
Unexplained leukocytosis	

Abbreviations: CLABSI, central line-associated bloodstream infection: SSTI, skin and soft tissue infection.

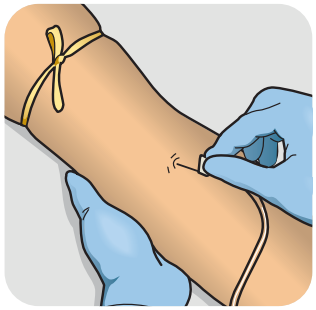
Timing is critical

Step 1

Step 2

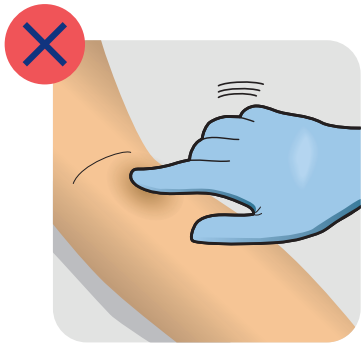
Obtain blood cultures before starting antibiotic therapy.

Utilize peripheral venipuncture



Prefer peripheral venipuncture over catheter draws to reduce contamination of blood cultures.

Use aseptic technique

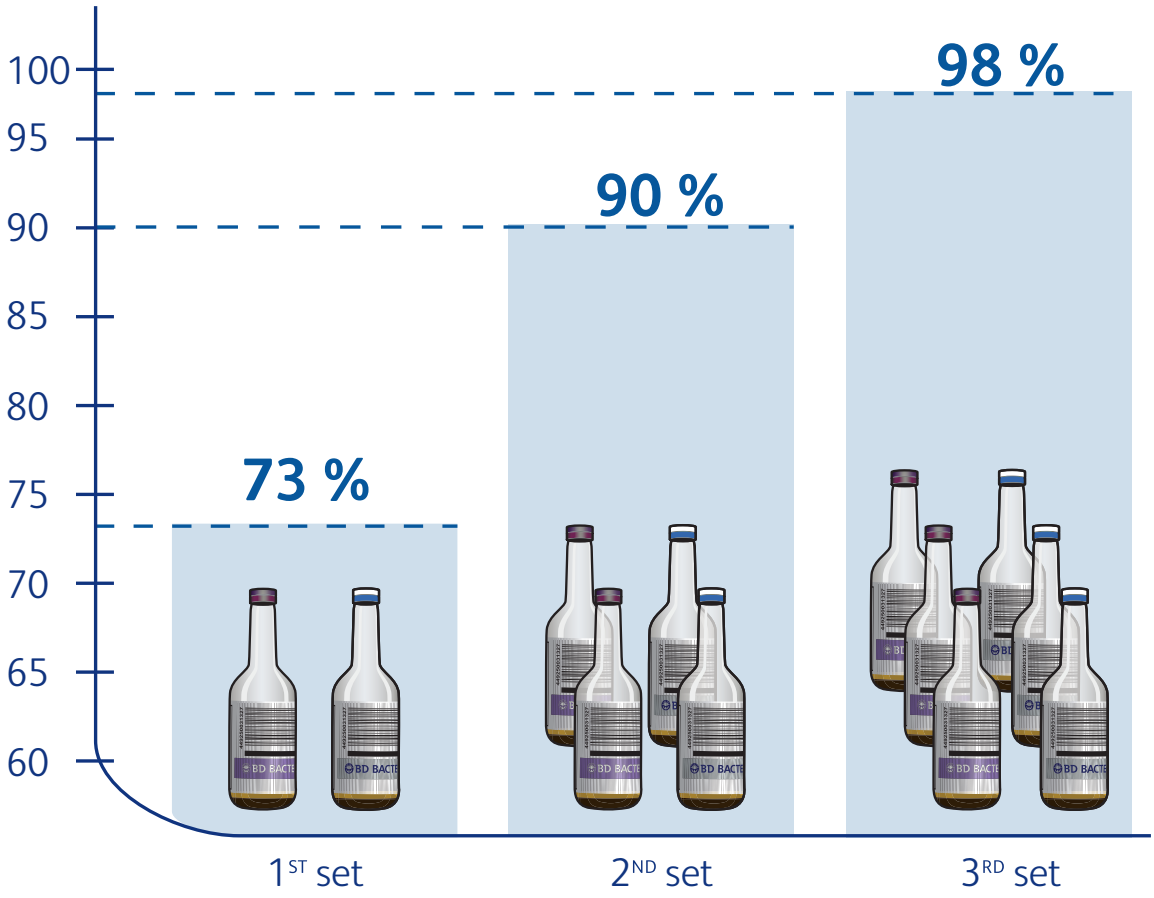


Ensure strict aseptic technique to minimize contamination (e.g., cleanse puncture site, no repalpitating, clean top of vials).[2,3]

Collect multiple blood culture sets

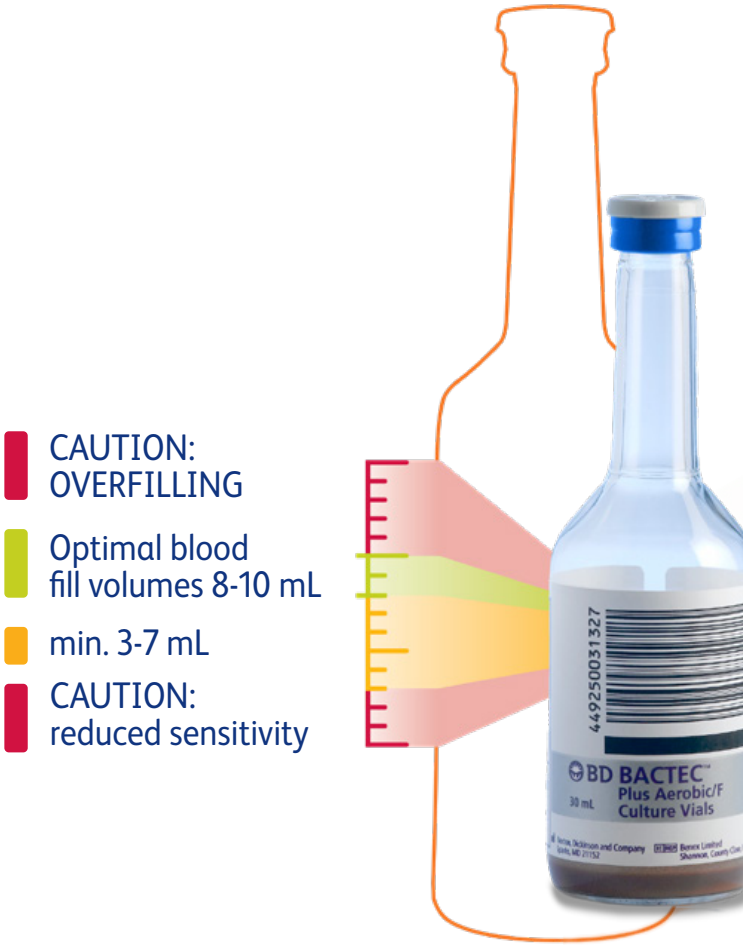
- **Adults:** 2–3 culture sets (1 aerobic, 1 anaerobic) from different sites within 24 hrs, ideally simultaneously or over a short time period.[3]
- **Pediatrics:** Follow institution specific protocols.

Detection of bloodstream infections improves with each set collected, reaching 98% with 3 sets.[4]



Collect proper blood fill volume

- Appropriate fill volume recommendations
  - **Adults:** 8–10 mL[5]
  - **Pediatrics:** 1–3 mL,[6] newborns/infants/children should be no more than 1% of patient's total blood volume.[3]
- Use gradations on vial labels to support accurate fill volumes or if you choose, mark blood culture vials at appropriate fill levels.



Volume matters!
For every 1 mL in increase in fill volume, positivity of blood cultures increases by approximately 3.3%, increasing the likelihood of detecting bacteremia.[3]

Together, let's re-establish best practice for blood culture collection.

Scan here for more information.

References:

1. CLSI. *Principles and Procedures for Blood Cultures. 2nd ed. CLSI guideline M47. Clinical and Laboratory Standards Institute; 2022.*
2. CLSI. *Collection of Diagnostic Venous Blood Specimens, 7th ed* CLSI Standard GP41 Wayne PA. Clinical and Laboratory Standards Institute: 2017.
3. CLSI. *Principles and Procedures for Blood Cultures. 2nd ed.* CLSI guideline M47. Clinical and Laboratory Standards Institute; 2022.
4. Lee A et al. *J Clin Microbiol.* 2007;45(11):3546–8.
5. BD BACTEC™ Plus Aerobic/F Culture Vials Instructions for Use. Sparks, MD: Becton, Dickinson and Company; 2023
6. BD BACTEC™ Peds Plus™/F Culture Vials Instructions for Use. Sparks, MD: Becton, Dickinson and Company; 2019.

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