

# Approaches to Addressing Blood Cultures Bottle Shortages

## CONVENTIONAL STRATEGIES

- **Facility-level tracking, monitoring, and policy considerations**
  - Consider facility-wide use of a clinical decision support tool (e.g., mShapiro tool) to identify patients at the highest risk of BSI
  - Identify and track the supply of blood culture bottles as well as hospital/system blood culture utilization.
  - Active supplies and anticipated resupply rates should be communicated to hospital leadership to enhance regional coordination efforts.
- **Strategies to maximize sensitivity of blood cultures for individuals responsible for collecting blood cultures.**
  - Adequate specimen volume (10-20ml/bottle)
  - Adequate aseptic technique. Blood culture contamination is common ranging from 0.5-12.5% of samples
- **Clinical strategies to reduce blood culture bottle use**
  - Do not collect more than 2 sets of blood cultures at any given time.
  - Do not collect "hold" blood cultures. Only draw cultures with appropriate indications and orders.
  - Do not collect blood cultures for patients in Emergency Departments or Urgent Care settings with infections not requiring hospitalization (e.g., mild CAP or lower UTI)
  - Wait for at least 48 hours after starting antibiotics to check surveillance cultures for patients with suspected or diagnosed *S. aureus* BSI, *Candida spp* BSI, or endovascular infections.
  - Avoid routine blood culture collections for immunocompetent patients with isolated fevers or leukocytosis
  - Avoid routine surveillance cultures to document clearance of BSI in adult patients who are clinically improving, have adequate source control, for whom no endovascular infection is suspected, and do not have BSI with a microorganism that requires documentation of clearance (e.g., *S aureus* and *Candida spp*).
  - Avoid surveillance cultures in patients without suspicion for BSI (e.g., daily cultures in patients receiving CRRT or ECMO, etc.).
  - Avoid blood culture collection for isolated uncomplicated fevers within 48 hours of surgery.
  - After initial cultures, avoid daily blood cultures in patients with neutropenia and persistent fevers if stable and/or improving.
  - In the absence of ongoing concern for infection or other clinical risk factors, do not repeat blood cultures for patients with 1 of 2 blood cultures positive for typical skin flora (e.g., Coagulase-negative *staphylococci* species)

## CONTINGENCY STRATEGIES

- **Facility-level tracking, monitoring, and policy considerations**
  - Consider sequestration of blood culture bottles which could include eliminating blood culture bottles in outpatient settings and/or restricting access to blood culture bottles to phlebotomy staff or other authorized staff only.
- **Clinical strategies to reduce blood culture bottle use**
  - For patients with documented BSI where documentation of clearance is necessary (e.g., *S. aureus* or *Candida spp*), use only 1 set of blood cultures for surveillance.
  - Do not collect blood cultures in patients requiring hospitalization for infection but without sepsis with low risk of BSI such as:
    - Uncomplicated community acquired pneumonia
    - Uncomplicated non-purulent cellulitis
    - Uncomplicated lower urinary tract infections
    - Uncomplicated cholecystitis
    - Uncomplicated diverticulitis.
- **Consider not collecting blood cultures for patients with intermediate risk for BSI including:**
  - Septic arthritis
  - Cholangitis
  - Pyelonephritis
  - Moderate community acquired pneumonia

## CRISIS STRATEGIES

- **Clinical strategies to reduce blood culture bottle use**
  - Collect a single set of blood cultures for patients with suspicion for sepsis. Collecting just one set of blood cultures reduces the sensitivity for the detection of BSI and may lead to difficulty distinguishing true infection from contamination for certain pathogens.
  - Restrict blood cultures to use for only critically ill patients or patients with severe immunocompromised states (e.g., neutropenia).
  - If a facility runs out of blood culture bottles, consider transferring patients with critical illness or severe immunocompromised states who require hospitalization to other facilities. EMS systems should attempt to "divert" these patients to hospitals with blood culture capacity enroute if possible. If such patients present to a hospital with no blood culture capacity, consider transferring them to other institutions with blood culture capacity early in their care process. Do not delay giving appropriate antibiotics.

## Guidance from the Medical Advisory Panel for the Mountain Plains Regional Disaster Health Response System for CMS Region VIII