

Sepsis

Note: Refer to specific sections in these guidelines for empiric treatment recommendations for specific sources of infection. Sepsis treatment should be targeted at the specific source whenever possible.

SEVERE SEPSIS

If patient meets ALL 3 of the criteria listed below, the patient has severe sepsis:

1. Suspected infection
2. ≥ 2 SIRS Criteria:
 - Temperature greater than 100.4 F (38°C) or less than 96.8 F (36°C)
 - Heart rate greater than 90 bpm
 - Respiratory rate greater than 20 or PaCO₂ less than 32 mmHg or mechanical ventilation
 - WBC greater than 12,000 or less than 4,000 mm³
3. Systolic BP less than 90 mmHg after 1500 ml fluid bolus OR serum lactate ≥ 4 mmol/L

EMPIRIC TREATMENT WITH NO CLEAR SOURCE

Two sets of blood cultures must be obtained **prior** to initiating antibiotics to help guide therapy. For proper bundle compliance, use the physician Sepsis Order set in CareConnect. This is required as part of the UCLA sepsis bundle:

- Blood cultures x 2 sets prior to antibiotics
- Lactate
- Broad spectrum antibiotics
- IV Fluids of 30 ml/kg bolus, unless direct contraindication.

Medicare core measures also requires the following within 6 hours of time of presentation as part of the sepsis bundle:

- Repeat lactate level if the initial lactate level is elevated
- If hypotension persists after IVF administration:
 - Vasopressors
 - Repeat volume status and tissue perfusion assessment consisting of either a focused physical exam or 2 of 4 of the following: CVP measurement, central venous oxygen measurement, bedside ultrasound, additional fluid challenge or passive leg raise

Empiric therapy should be broad-spectrum and should be guided by patient's allergies, recent antibiotic exposure (if applicable), risk factors for multidrug resistant pathogens, local susceptibility patterns (see antimicrobial susceptibility summary), suspected source of infection, etc.

Recommended empiric treatment regimens

- [Pip/Tazo 3.375 g IV bolus f/b 3.375g IV q8h infused over 4 hours **OR** Cefepime 1-2 g IV q8h **OR** Meropenem 1-2 g IV q8] \pm Vancomycin (if at risk for MRSA) \pm Gentamicin **OR**
- Severe beta-lactam allergy: [Aztreonam 2 g IV q8h **OR** Ciprofloxacin 400 mg IV q8h] \pm Gentamicin **PLUS** Vancomycin

Risk factors for MRSA

- Central venous catheter in place
- Other indwelling hardware
- Known colonization with MRSA

- Recent (within 3 mos) or current prolonged hospitalization > 2 weeks
- Transfer from a nursing home or subacute facility
- Injection drug use
- Hemodialysis dependent patients

TREATMENT NOTES

- In sepsis, timing of antibiotics is crucial. Every hour in delay of antibiotics increases the patient risk of mortality ~10%. The first dose of antibiotics should be administered within **1 hour** from the time of presentation.
- For patients with renal insufficiency where aminoglycosides are not desired, a beta-lactam may be combined with a fluoroquinolone only **IF** 2 agents are needed. See section on double-coverage of gram-negative infections. Two beta-lactam agents should not be used concurrently (e.g. Pip/Tazo/Cefepime/Meropenem).
- Potential sources (e.g. pneumonia, peritonitis, central venous catheters) must be considered when selecting therapy.
- Broad-spectrum empiric therapy is **ONLY** appropriate while cultures are pending i.e. first 48-72 hours. Antibiotic regimen should be evaluated daily and regimen should be streamlined based on culture data.
- **Vancomycin should almost always be stopped if no resistant Gram-positive organisms are recovered in cultures.**