# Clinical Practice Guideline for Rapid Management of Sepsis AND Septic Shock in the Emergency Department

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***Patient Presents to the ED with one of the following:***

***Sepsis/Compensated Septic Shock:***
- Clinical Signs/Symptoms[1] present

**AND**
- Physician concern for sepsis/compensated septic shock

**OR**

***Hypotensive Shock:***
Hypotension with known or suspected infection

0 min

Move to Trauma Bay, Blue Acuity
Place on Monitor
Place on 100% O2 via mask (Consider HFNC as needed to support increased work of breathing)
Obtain CG8, print and hand to provider
Insert 2 IV/IO [4]
Draw Labs[2]
*Do NOT delay IV fluids/antibiotics if unable to draw labs*

10 min

0-20 min

***Rapidly Infuse/ Push Fluid Resuscitation***
NS or LR 20mL/kg Bolus[3]

Reassess[3]

Begin Antibiotics (see chart pg 2)

Assess need for additional therapy[4]

**Goal within 60 min:**
- Cap refill < 2sec
- Restore & Maintain HR
- Normal BP
- Begin Antibiotics

- Repeat fluid boluses as needed up to 60mL/kg total[3]; then consider adding pressors
- Notify PICU of admission if ≥40mL/kg

0-40 min

Shock Reversed?

YES → Admit to Inpatient[5]

NO

60 min

## Begin Pressors & Continue IV Fluid Resuscitation

*Epinephrine/Norepinephrine preferred; if not readily available, administer DOPamine*
*Central Line or IO preferred, may use PIV if necessary*

**Cold Shock**

**EPINEPHrine**
- Start at 0.1 mcg/kg/min
- Titrate 0.05-0.1mcg/kg/min per MD order
- Max dose 1mcg/kg/min

**Warm Shock**

**Norepinephrine**
- Start at 0.1mcg/kg/min
- Titrate 0.05-0.1mcg/kg/min per MD order
- Max dose 1mcg/kg/min
- Not preferred for cardiac dysfunction

**DOPamine**
Start at 10 mcg/kg/min and ***titrate rapidly by 5 mcg/kg/min q5min*** to establish BP per MD order
**Max dose 20 mcg/kg/min**

**Transfer to PICU[4]**

## [1]Clinical Signs/Symptoms

- **Abnormal Perfusion**
  - Pulses
    - Decreased or weak (cold shock)
    - Bounding (warm shock)
  - Capillary refill
    - >2 seconds (cold shock)
    - Flash <1 second (warm shock)
  - Skin
    - Mottled, cool extremities (cold shock)
    - Flushed, ruddy, erythroderma (warm shock)
- **Mental Status Changes**
  - Irritability
  - Confusion
  - Inappropriate crying or drowsiness
  - Poor interaction with parents
  - Diminished arousability
  - Lethargy
  - Obtunded
- **Low OR High core temperature**
- **Hypotension**
- **Tachycardia**
- **Tachypnea**

## [2]Labs

- Blood Cultures-obtain maximum allowable amount, Policy 4.26
- CMP
- CBC with Diff
- CXR, CSF if indicated
- PT, PTT
- Type and Screen
- If concern or suspicion of UTI and/or no obvious source of infection, consider UA

## [3]Reassess

- **Reassess Q15min and/or after each bolus:**
  - Perfusion
  - Vital Signs
  - Mental Status
  - Any evidence of Congestive Heart Failure
- **STOP fluid boluses if auscultate:**
  - Rales
  - Hepatomegaly
  - Gallop
  - Crackles
- **Consider other causes of shock:**
  - Hypovolemia
  - Cardiogenic
  - Metabolic Disorder
  - Anaphylaxis

## [4]Additional Therapies

- **Fever Control**
- **Consider foley catheter to monitor UOP**
- **Use Atropine/Ketamine PIV/IO/IM if needed for Central Vein or Airway Access; Avoid Etomidate**
- **Hypoglycemia**
  - Dextrose 0.5 grams/kg = 5mL/kg of D10
- **Hypocalcemia**
  - Calcium gluconate 50mg/kg to max dose of 2000mg
  - Calcium chloride 20mg/kg to max dose of 1000 mg (*Use only if CVL present)*
- **Neonate**
  - Consider Fever Guideline 0-28 days
  - If suspect ductal dependent lesion, consider Prostaglandin 0.01-0.03mcg/kg/min
- If delay in transfer to PICU and **patient exhibits pressor refractory shock and/or risk for adrenal insufficiency**
  - Hydrocortisone 2mg/kg, max 100mg IV x 1

## [5]Admission Criteria to General Care

- ≤40 ml/kg of fluid resuscitation
- Normal BP, Normal Mental Status, UOP present
- Improving Tachycardia
- Patient stable 1 hour after last intervention
- ED Attending to Admitting Attending discussion and agreement on admission

## Antibiotic Administration For Sepsis

When infusing multiple antibiotics, administer in the following order → Use the antibiotics ***readily available*** in the pyxis first → Use the antibiotic with the ***shortest administration time*** before others

| Give ALL Medications in Group *Unless otherwise specified* | Medication | Dose All x1 in ED | Max Dose |
|---|---|---|---|
| **Healthy Kids ≥29 days of age** | CefTRIAXone* | 75mg/kg IV | 2000mg |
| | Vancomycin | 20mg/kg IV | 1250mg |
| *•If suspect toxic shock,* ***ADD*** | *Clindamycin* | 13mg /kg IV | 900mg |
| *•If suspect Rocky Mountain Spotted Fever or tick borne disease,* ***ADD*** | *Doxycycline* | 2.2mg/kg IV | 100mg |
| *•If high suspicion for Staph aureus,* ***ADD*** | *Nafcillin* *Can be given in PICU* | 50mg/kg IV | 2000mg |
| *•If suspect abdominal pathogen and/or anaerobes,* ***ADD*** | *MetroNIDAZOLE (Flagyl)* | 10mg/kg IV | 500mg |
| **If prior history of ESBL** (Extended-Spectrum-Beta-Lactamase Resistant Organisms) | Meropenem | 20mg/kg IV | 1000mg |
| **Oncology, including BMT** | Meropenem | 20mg/kg IV | 1000mg |
| | Vancomycin | 20mg/kg IV | 1250mg |
| **Significant Chronic Medical Conditions:** **•Sickle Cell Disease** **•Immunocompromised (excluding Oncology)** **•Immunosuppressive Meds** **•Recent Hospitalization (>4 days within 2 months)** **•Central Line** | Cefepime | 50mg/kg IV | 2000mg |
| | Vancomycin | 20mg/kg IV | 1250mg |
| **Neonate ≥2kg** | Ampicillin | 100mg/kg IV | N/A |
| | CefTAZidime | 50mg/kg IV | N/A |
| *•If risk factors for Herpes Simplex Virus are present* ***ADD*** Risk factors: •Maternal history of herpes •Patient presents with seizures •Suspicious skin lesions, including any scalp lesions •Elevated ALT (>50) | *Acyclovir* | 20mg/kg IV | N/A |
| *•If high suspicion for Staph aureus,* ***ADD*** | *Vancomycin* | 20mg/kg IV | N/A |

* If allergic to PCN or Cephalosporins use Meropenem at 20mg/kg; Max dose of 1000mg