



Suspected Sepsis



History

- Duration and severity of fever
- Past medical history
- Medications/ Recent antibiotics
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Indwelling medical device
- Last acetaminophen or ibuprofen
- Recent Hospital/ healthcare facility
- Bedridden or immobile
- Elderly and very young – at risk
- Prosthetic device / indwelling device

Signs and Symptoms

- Warm
- Flushed
- Sweaty
- Chills/ Rigors
- Delayed cap refill
- Mental status changes

Associated Symptoms (Helpful to localize source)

- myalgias, cough, chest pain, headache, dysuria, abdominal pain, rash

Differential

- Infections: UTI, Pneumonia, skin/ wound
- Cancer/ Tumors/ Lymphomas
- Medication or drug reaction
- Connective tissue disease: Arthritis, Vasculitis
- Hyperthyroidism
- Heat Stroke
- Meningitis
- Hypoglycemia/hypothermia
- MI/ CVA

Consider: Contact, Droplet, and Airborne Precautions	
Temperature Measurement Procedure <i>if available</i>	
	Fever/ Infection Control Protocol UP 10 <i>if needed</i>
	Altered Mental Status Protocol UP 4 <i>if needed</i>
B	12 Lead ECG Procedure
	IV or IO Access Protocol UP 6 <i>If indicated</i>
P	Cardiac Monitor

Age Specific Blood Pressure indicating possible shock

Age 0 – 28 days: SBP < 60
Ages ≥ 1 month: SBP < 70
Age 1 – 9: SBP < 70 + (2x Age)

Ages 10 – 64: SBP < 90
Ages ≥ 65: SBP < 110

All ages Shock Index:
HR > SBP

Exit to
Age Appropriate
Condition Appropriate
Protocol(s)

**Sepsis Screen
Positive**

SEPSIS ALERT
Notify Receiving Facility
Immediately

MAP
(Mean Arterial Pressure)

$$\frac{SBP + 2(DBP)}{3}$$

Monitor usually calculates this
value on screen

Adult SIRS Criteria

Temperature

≥ 100.4° F (38° C)
Or
≤ 96.8° F (36° C)

AND

Any 1 of the following:
HR > 90
RR > 20
EtCO < 25 mmHg

Adult qSOFA Criteria

SBP ≤ 100 mmHG

RR ≥ 22

AMS or new mental status change

Pediatrics SIRS Criteria

Temperature

Same as adult

AND

Heart Rate

1 month – 1 year > 180
2 – 5 years > 140
6 – 12 years > 130
13 – 18 years > 120

A	Venous Access Blood Draw <i>if applicable</i>
	Normal Saline 500 mL Bolus Repeat as needed Titrate SPB ≥ 90 mmHg MAP > 65 mmHg Maximum 2 L
P	Peds: 20 mL/kg IV / IO Repeat to titrate Age Appropriate SBP ≥ 70 + 2 x Age Maximum 60 mL/kg
	Levophed 5 mcg/min IV / IO Titrate to effect: SBP ≥ 90 mmHg MAP ≥ 65 mmHg
Age Appropriate Hypotension/ Shock Protocol AM 5/ PM 3	



**Notify Destination or
Contact Medical Control**



Universal Protocol Section



Suspected Sepsis



Push-Dose Vasopressors:

- Levophed is the preferred vasopressor in sepsis, though push-dose epinephrine or Levophed can be used prior to infusion.
- Epinephrine:** Mix 1:1000 (1mg in 1mL) into 1000 mL of NS or LR.
- Norepinephrine:** Mix 1 mg into 1000 mL of NS or LR
- Yields a concentration of 1 mcg/mL of Epinephrine or Norepinephrine.
- Give 5 – 10 mcg every 2 – 3 minutes** to effect SBP \geq 90 and/or MAP of \geq 65 mmHg.
- Use push-dose vasopressors, in conjunction with fluid resuscitation, with RSI procedure when hypotensive.
- Use push-dose vasopressors with hypotension unresponsive to fluid resuscitation.
- Use push-dose vasopressor as you are setting up a Epinephrine or Levophed drip.
- If patient requires \geq 2 push dose vasopressors, start vasopressor infusion.

Levophed:

If patient requires \geq 2 push dose vasopressors or has suspected sepsis, initiate Levophed drip.

Levophed 5 mcg/min IV / IO and titrate by **2 mcg/min every 2 – 3 minutes** to effect SBP \geq 90mmHg and/or MAP \geq 65 mmHg.

Types of Shock Pediatrics:

Pediatric dosing DO NOT exceed adult dosing.

Warm shock: Warm extremities, slightly delayed to normal capillary refill:

Give **Norepinephrine 0.5 mcg/kg/min IV / IO** and titrate to effect SBP $> 70 + 2(\text{Age})$.

Maximum starting dose 5 mcg/min

Cold shock: Cool to cold extremities with delayed capillary refill.

Give **Epinephrine 0.5 mcg/kg/min IV / IO** and titrate to effect SBP $> 70 + 2(\text{Age})$.

Maximum starting dose 5 mcg/min

Epinephrine or Norepinephrine DRIP

Patient weight \times 0.6 = mg amount to add to 100 mL of NS or LR in the Bunitrol

mL / hr	Dose
1 mL/hr	0.1 mcg/kg/min
2 mL/hr	0.2 mcg/kg/min
3 mL/hr	0.3 mcg/kg/min
4 mL/hr	0.4 mcg/kg/min
5 mL/hr	0.5 mcg/kg/min
6 mL/hr	0.6 mcg/kg/min
7 mL/hr	0.7 mcg/kg/min
8 mL/hr	0.8 mcg/kg/min
9 mL/hr	0.9 mcg/kg/min
10 mL/hr	1 mcg/kg/min

Pearls

- Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Recommended Exam Pediatrics: In childhood, physical assessment reveals important clues for sepsis. Look for mental status abnormalities such as anxiety, restlessness, agitation, irritability, confusion, or lethargy. Cardiovascular findings to look for include cool distal extremities, capillary refill > 3 seconds, or mottled skin.**
- Sepsis is a life threatening condition where the body's immune response to infection injures its own tissues and organs.**
- Severe sepsis is a suspected infection with 2 or more SIRS criteria (or qSOFA) along with organ dysfunction, such as AMS, hypotension, or hypoxia.**
- Septic shock is severe sepsis and poor perfusion unimproved after fluid bolus.**
- Agencies administering antibiotics should inquire about drug allergies specific to antibiotics or family of antibiotics.**
- Following each fluid bolus, assess for pulmonary edema. Consider administration of agency specific vasopressor.**
- Supplemental oxygen should be given and titrated to oxygenation saturation $\geq 92\%$.**
- EKG should be obtained with suspected sepsis, but should not delay care in order to obtain.**
- Abnormally low temperatures increase mortality and are found often in geriatric patients.**
- Quantitative waveform capnography can be a reliable surrogate for lactate monitoring in detecting metabolic distress in sepsis patients. $\text{EtCO}_2 < 25$ mm Hg are associated with serum lactate levels > 4 mmol/L.
- Patients with a history of liver failure should not receive acetaminophen.
- Droplet precautions** include standard PPE plus a standard surgical mask for providers who accompany patients in the back of the ambulance and a surgical mask or NRB O2 mask for the patient. This level of precaution should be utilized when influenza, meningitis, mumps, streptococcal pharyngitis, and other illnesses spread via large particle droplets are suspected. A patient with a potentially infectious rash should be treated with droplet precautions.
- Airborne precautions** include standard PPE plus utilization of a gown, change of gloves after every patient contact, and strict hand washing precautions. This level of precaution is utilized when multi-drug resistant organisms (e.g. MRSA), scabies, or zoster (shingles), or other illnesses spread by contact are suspected.
- All-hazards precautions** include standard PPE plus airborne precautions plus contact precautions. This level of precaution is utilized during the initial phases of an outbreak when the etiology of the infection is unknown or when the causative agent is found to be highly contagious (e.g. **SARS, SARS-CoV-2, COVID-19, MERS, Monkeypox**).
- Allergies to NSAIDs (non-steroidal anti-inflammatory medications) are a contraindication to Ibuprofen.
- Agency Medical Director may require contact of medical control prior to EMT / MR administering any medication.
- Sepsis Screen:**
 - Agencies may use Adult / Pediatric Systemic Inflammatory Response Syndrome (SIRS) criteria or quickSOFA (qSOFA) criteria.
 - Receiving facility should be involved in determining Sepsis Screen utilized by EMS.