Sepsis AND Septic Shock Pathway: Inpatient Management

Children's Healthcare of Atlanta

Inpatient identified with signs or symptoms concerning for Sepsis/Septic Shock:
- Clinical Signs/Symptoms[1] present

OR
- Clinician concern for sepsis/septic shock

- Place on Monitor
- Consider 100% O2 via NRB mask (Consider HFNC as needed to support increased work of breathing)
- Obtain CG8 and notify provider of results
- Insert 2 IV/IO
- Draw Labs[2]

Do NOT delay IV fluids/antibiotics if unable to obtain labs or second IV

Sepsis Huddle
Does the patient have evidence of **shock** or **sepsis associated organ dysfunction?**

No → **Sepsis Watcher**

Yes → **Septic Shock or Sepsis Associated Organ Dysfunction *Call Rapid Response Team**

Sepsis Watcher

Treatment
- Expedited work-up and treatment for infection and organ dysfunction within 180 min of sepsis huddle
- NS or LR 20mL/kg
- Administer antibiotics (see chart pg 2)

Reassess[3] every 30 minutes until resolution of symptoms or improvement
***If signs of septic shock develop, follow the red arrow**

Septic Shock or Sepsis Associated Organ Dysfunction *Call Rapid Response Team

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

Reassess every 15 minutes[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]

Shock Reversed?

Yes → Consider criteria to remain in general care[5]

No → **Transfer to PICU[4]**

[1]Clinical Signs/Symptoms Concerning for Septic Shock

- **Abnormal Perfusion**

Cold Shock
-Decreased or weak pulse
-Capillary refill >2 seconds
-Mottled skin, cool extremities

Warm Shock
-Bounding pulse
-Capillary refill flash <1 second

- **Mental Status Changes**
  -Irritability, confusion, inappropriate crying or drowsiness, lethargy, obtunded
- Oliguria
- Petechial or purpuric rash or erythroderma
- **Low OR High core temperature**
- **Hypotension**
- **Tachycardia**
- **Tachypnea**
  -See vital signs table pg 3

[2]Labs

- **Blood Cultures**-obtain maximum allowable amount, Policy 4.26
- **CMP**, **CBC with Diff**, **PT**, **PTT**, **Type and Screen**
- Consider **CXR; CSF** if indicated; **UA** if concern/ suspicion of UTI and/or no obvious source of infection
- Consider venous lactate (needs free flowing sample)

[3]Reassess

- **Reassess Q15min for septic shock and Q30min for sepsis watcher and/or after each bolus:**
  -Perfusion, Vital Signs, Mental Status, Any evidence of Congestive Heart Failure
- **STOP fluid boluses if auscultate:**
  -Rales, Gallop, Crackles, Hepatomegaly
- **Consider other causes of shock:**
  -Hypovolemia, Metabolic Disorder,
  -Cardiogenic, Anaphylaxis

[4]Additional Therapies

- **Fever Control**
- **Consider foley catheter to monitor UOP**
- **Hypoglycemia**
  -Dextrose 0.5 grams/kg=5mL/kg of D10
- **Hypocalcemia**
  -Calcium gluconate 50mg/kg to max dose of 2000mg

Neonate
-Consider Fever Guideline 0-28 days
-If suspect ductal dependent lesion, consider Prostaglandin 0.01-0.03mcg/kg/min
-Call NICU

- If delay in transfer to PICU and **patient exhibits pressor refractory shock and/or risk for adrenal insufficiency**
  -Hydrocortisone 100mg/m^2, max 100mg IV x 1
  -Neonatal 30-50mg/m^2 (30mg/m^2 for moderate stress)

[5]Criteria to Remain in General Care

- ≤40mL/kg of fluid resuscitation
- Normal BP, Normal Mental Status, UOP present
- Improving Tachycardia
- Patient stable 1 hour after last intervention
- Primary Attending and PICU Attending and/or Fellow discussed and agree patient should remain on floor

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Antibiotic Administration For Sepsis

- When infusing multiple antibiotics, administer antibiotic in bold first
- Antibiotics should be ordered, delivered to bedside, and administered STAT

Give ALL Medications in Group Unless otherwise specified	Medication	Dose	Max Dose	Interval
Healthy Kids >29 days of age	**CefTRIAXone***	75 mg/kg IV	2000 mg	Every 24 hours
	Vancomycin	20 mg/kg IV	1000 mg	Pharmacy to Dose (Every 8 hours)
•If suspect toxic shock, **ADD to CefTRIAXone* and Vancomycin**	Clindamycin*	13 mg /kg IV	900 mg	Every 8 hours
•If suspect Rocky Mountain Spotted Fever or tick borne disease, **ADD to CefTRIAXone* and Vancomycin**	Doxycycline	2.2 mg/kg IV or PO	100 mg	Every 12 hours
•If suspect abdominal pathogen and/or anaerobes, **ADD to CefTRIAXone* and Vancomycin**	MetroNIDAZOLE (Flagyl)	10 mg/kg IV or PO	500 mg	Every 8 hours
If prior history of ESBL (Extended-Spectrum-Beta-Lactamase Resistant Organisms) **ADD with Vancomycin**	**Meropenem**	20 mg/kg IV	1000 mg	Every 8 hours
Oncology, including BMT	**Meropenem**	20 mg/kg IV	1000 mg	Every 8 hours
	Vancomycin	20 mg/kg IV	1000 mg	Pharmacy to Dose (Every 8 hours)
Significant Chronic Medical Conditions: **•Sickle Cell Disease** **•Immunocompromised (excluding Oncology)** **•Immunosuppressive Meds** **•Recent Hospitalization (>4 days within 2 months)** **•Central Line**	**Cefepime**	50 mg/kg IV	2000 mg	Every 8 hours
	Vancomycin	20 mg/kg IV	1000 mg	Pharmacy to Dose (Every 8 hours)
Neonate ≤ 7 days	Ampicillin	100 mg/kg IV	N/A	Every 8 hours
	CefTAZidime	50 mg/kg IV	N/A	Every 12 hours
Neonate > 7 days	Ampicillin	75 mg/kg IV	N/A	Every 6 hours
	CefTAZidime	50 mg/kg IV	N/A	Every 8 hours
•If risk factors for Herpes Simplex Virus are present **ADD to Ampicillin and CefTAZidime** Risk factors: •Maternal history of herpes •Patient presents with seizures •Suspicious skin lesions, including any scalp lesions •Elevated ALT (>50)	Acyclovir	20 mg/kg IV	N/A	Every 8 hours
•If high suspicion for Staph aureus, **ADD to Ampicillin and CefTAZidime**	Vancomycin	20 mg/kg IV	N/A	Pharmacy to Dose (Every 8 hours)

* For patients with mild-moderate allergies to Penicillin, use CefRIAXone or Cefepime. For patients with mild-moderate allergies to Cephalosporins, use piperacillin/tazobactam. For patients with anaphylaxis to Penicillin or Cephalosporins, use Meropenem.
***Clindamycin IV** is on severe shortage. Please refer to institutional notice for alternatives.

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Suggested Reference Values for Identifying Age-Based Vital Sign Abnormalities

Age	Heart Rate	Respiratory Rate	Systolic BP (mmHg)	Diastolic BP (mmHg)	MAP
0 – 6 Months	80 - 180	30 - 55	64 - 96	30 - 62	41 - 73
6 – 12 Months	80 - 150	25 - 40	66 - 107	40 - 66	49 - 80
1 – 2 Years	80 - 140	20 - 30	70 - 110	45 - 70	53 - 83
2 – 3 Years	80 - 140	20 - 30	74 - 115	54 - 70	61 - 85
3 – 4 Years	80 -140	20 - 30	76 - 115	56 - 71	63 - 86
4 -5 Years	70 - 120	18 - 27	78- 115	58 -73	65 -87
5 -6 Years	70 - 120	18 -27	80 - 117	60 - 75	67 -89
6 – 7 Years	70 - 110	14 - 22	82 - 120	62 - 78	69 - 92
7 -8 Years	70 - 110	14 - 22	84 - 120	64 - 80	71 - 93
8 – 9 Years	60 - 110	14 - 22	86 - 120	66 - 81	73 -94
9 – 10 Years	60 - 110	14 - 22	88 - 123	68 - 82	75 -96
10 – 11 Years	60 - 110	14 - 22	90 - 125	70 - 83	77 - 97
11 – 12 Years	60 - 110	14 - 22	92 - 130	72 - 83	79 - 99
12 – 13 Years	60 - 100	12 - 20	94 - 130	74 - 84	81 - 99
13 – 14 Years	60 - 100	12 - 20	96 -135	76 - 85	83 - 102
14 – 16 Years	60 - 100	12 -20	98 - 138	78 - 87	85 - 104
16+ Years	60 - 100	12 - 20	100 - 140	78 - 89	85 - 106

Children's Vital Sign Reference Ranges According to Policy 23.00