UNMH Pediatric Sepsis Pathway

Positive Screen is 2 RED + 1 BLUE OR HYPOTENSION

- Hypotension
- Abnormal Temperature
- Abnormal Heart Rate
- High Risk Condition
- Abnormal Mental Status
- Impaired Perfusion

Provider/RN Swarm Sepsis Huddle Checklist (on Page 2) Both Positive?

No → **Hem/Onc Patient?**

No → **Sepsis Huddle Checklist (on Page 2) One Positive?**

No → **Treat & Reevaluate**

Yes ↓ (Both Positive)

Yes ↓ (Hem/Onc Patient)

Yes ↓ (One Positive)

Abnormal Temperature

> 38.5°C or < 36°C
Or > 38 °C if < 3 months or a cancer patient

Abnormal Heart Rate

< 1 year	> 180	or	< 90
1 – 2 years	> 160	or	< 80
3 – 5 years	> 140	or	< 65
6 – 12 years	> 130	or	< 55
13 – 18 years	> 120	or	< 50

High Risk Condition

Hardware (central line, VP shunt, trach, prosthetic valve)
Recent Hospitalization (>4 days within 2 months)
Static encephalopathy (cerebral palsy)
Immunocompromised (sickle cell, cancer, transplant)
Major GI Patient (TPN dependent, Hirschsprung)
Red Flag Rash (petechiae, purpura, erythroderma)
Age < 2 months

Abnormal Mental Status

Anxious, restless, agitated, crying inappropriately, drowsy, confused, obtunded, lethargic

Impaired Perfusion

- Cool extremities, capillary refill > 3 seconds, diminished pulses, mottled
- Warm extremities, flushed, bounding pulses, flash capillary refill
- New or increased oxygen need

Hypotension (systolic)

< 1 month	< 60	5 years	< 80
1 m – 1 y	< 70	6 years	< 82
1 years	< 72	7 years	< 84
2 years	< 74	8 years	< 86
3 years	< 76	9 years	< 88
4 years	< 78	> 10 years	< 90

SEVERE SEPSIS Tool

Use: Peds and Neonatal Sepsis and Febrile Oncology Powerplan

Resuscitation Flowsheet
Blood Culture & STAT Antibiotics

- Full Monitors
- IV Access x2
- Fluid Bolus(es)
- O_2 (> 2LPM)
- POC Glucose
- Labs with **lactate**

Hydrocortisone if Adrenal Insufficiency

< 20 min

Evaluate for normalization of **Vitals, Mental Status, Perfusion**

Stop for rales or hepatomegaly

Repeat boluses as needed (up to 3, 20 mL/kg)
Use Rapid Infuser

< 40 min

Fluid Refractory

Yes ↓ / No ↓

Cold Shock: Titrate epinephrine
Warm Shock: Titrate norepinephrine
Admit/Transfer to PICU

Admit/ Monitor

60 min

Your patient has sepsis

Develops Organ dysfunction:

- Abnormal Mental Status
- Impaired Perfusion
- Hypotension

SUSPECTED SEPSIS Tool

Use: Peds and Neonatal Sepsis and Febrile Oncology Powerplan

Consider Blood Culture & Antibiotics

- Pulse Oximetry
- IV Access x1
- Fluid Bolus
- Labs with **lactate**
- POC Glucose

Other tests/treatments as indicated

< 30 min

60 – 120 min

Vitals normalize

Yes ↓

Infectious Process

Yes ↓ / No ↓

Sepsis Unlikely

Treat infection

At risk for sepsis

No ↓

Give antibiotics
Admit or escalate care

< 180 min

Your patient has sepsis

UNMH Children Hospital Sepsis Huddle Checklist

Sepsis Huddle Checklist

Actions:

CALL	RESPONSE
Sepsis Risk	
1 ❑ **Suspected Infection**	Yes/No
❑ **High Risk Condition**	Yes/No
Organ Dysfunction	
2 ❑ **New or increased oxygen need**	Yes/No
❑ **Central Capillary Refill**	__ seconds (normal 1-3)
❑ **Mental Status**	Normal/Abnormal
❑ **Blood Pressure**	__/__ mmHg
❑ **Decreased urine output (Defined < 1 mL/kg/hr)**	Yes/No/Unknown

Any yes or abnormal = Positive

High lactate, LFT's, or creatinine also suggest organ dysfunction

Positive in both 1 and 2 = Severe Sepsis

Positive in 1 or 2 = Suspected Sepsis

Not positive in either 1 or 2 = Sepsis Unlikely

Severe Sepsis
- Update Family
- Inform Attending Regardless of Hour
- Notify Charge Nurse and Admin Supervisor
- Use UNMH Pediatric Sepsis Pathway
- Document Status Change

Suspected Sepsis
- Update Family
- Inform Attending within an hour (immediately during the day)
- Notify Charge Nurse (and consider Admin Sup)
- Use UNMH Pediatric Sepsis Pathway
- Document Status Change

Sepsis Unlikely
- Update Family
- Treat cause of vital sign changes (pain, anemia, dehydration)
- Re-evaluate for resolution

High Risk Condition

Hardware (central line, VP shunt, trach, prosthetic valve)
Recent Hospitalization (> 4 days within 2 months)
Static encephalopathy (cerebral palsy)
Immunocompromised (sickle cell, cancer, transplant)
Major GI Patient (TPN dependent, Hirschsprung)
Red Flag Rash (petechiae, purpura, erythroderma)

Hypotension

< 1 month	< 60	5 years	< 80
1 m – 1 y	< 70	6 years	< 82
1 years	< 72	7 years	< 84
2 years	< 74	8 years	< 86
3 years	< 76	9 years	< 88
4 years	< 78	> 10 years	< 90

Update Family (with Interpreter)

Your child has signs of a serious infection that we are worried is getting worse

We are worried your child may be getting a more serious infection

We came to check on your child because we were worried they might have a serious infection, but we don't think they have a serious infection. Instead we think your child is (in pain, having a medication side effect, dehydrated).

We are going to (run more tests, give pain medication, give fluids, antibiotics, admit to hospital, transfer to PICU)

A team member will be back within 30 minutes 1 hour to see how your child is doing

Please tell us if your child is (breathing faster, not waking easily)

You can tell us by (using your call button, telling your bedside nurse)

(Teach back to confirm) I want to make sure I explained this well for you. Can you tell me what we are going to do for your child, and what we want you to do?

Created 2022 by Natasha James MD, Kimberly Bolton,
Rachel Tuuri MD, Anna Duran MD, Matthew Kadish MD, David Jolley MD

SEPSIS MEDICATION RECOMMENDATIONS

Pediatric Sepsis and Oncology (>60 days) Powerplan	
Previously Healthy, No Central Line	Ceftriaxone +/- Vancomycin
Immunocompromised*, Transplant, Recent Hospitalization (> 4 days within 2 months), or Central Line	Cefepime +/- Vancomycin

***Immunosuppressive Medications**
Azathioprine/Mercaptopurine, Anakinra, Cyclophosphamide, Etanercept, Monoclonal antibodies (e.g., infliximab, vedolizumab, rituximab, etc.), mycophenolate mofetil, oral or SQ methotrexate > 5 mg, Prednisone 2 mg/kg/day or >20 mg daily (> 2 weeks), Tacrolimus/Sirolimus

< 60 days old

≤28 days: Ampicillin + Ceftazidime ± Acyclovir
>28 days: Ceftriaxone OR [Ampicillin + Gentamicin]

Shock Definitions

Fluid Responsive	< 60 mL/kg isotonic fluids resolves shock
Fluid Refractory	Persists with ≥ 60 mL/kg isotonic fluids
Warm Shock	Flash capillary refill, bounding pulses, wide pulse pressure
Cold Shock	Capillary refill > 2 seconds, mottled extremities, diminished pulses

Unusual antibiotic situations

Suspected Intraabdominal Source (Major GI and TPN dependent patients)	Ceftriaxone + Flagyl (if no shock) **OR** Piperacillin/ Tazobactam + Vanc (if ill)
Anaphylactic Penicillin Allergy or True Cephalosporin Allergy	Aztreonam

Adrenal Insufficiency

0 – 3 Years: 25 mg IV Hydrocortisone
3 – 12 Years: 50 mg IV Hydrocortisone
> 12 Years: 100 mg IV Hydrocortisone

Ceftriaxone (order q12h)
Cefepime (order q8h)

< 10 kg	50 mg/kg
10 – 11.9	540 mg
12 – 14.6	660 mg
14.7 – 17.7	800 mg
17.8 – 21.3	960 mg
21.4 – 25.6	1160 mg
25.7 – 31.1	1400 mg
31.2 – 37.7	1700 mg
37.8+ kg	2000 mg

Vancomycin
(Loading Dose – Do not load if < 6 months)

< 10 kg	25 mg/kg*	44.5-55.5	1250 mg
10– 12.2	275 mg	55.6 – 66.5	1500 mg
12.3 – 14.8	335 mg	66.6 – 77.5	1750 mg
14.9 – 17.7	400 mg	77.6+ kg	2000 mg
17.8 – 22.2	500 mg		
22.3 – 27.1	610 mg		
27.2 – 33.3	750 mg		
33.4 – 40	900 mg		
40.1 – 44.4	1000 mg		

***CHANGE TO 20 mg/kg loading dose if GFR < 30 or check creatinine if low GFR suspected**

Zosyn
(based on Pipercillin)

10 – 12.2 kg	1100 mg
12.3 – 14.8	1340 mg
14.9 - 18	1620 mg
18.1 - 22	1980 mg
22.1 – 26.6	2400 mg
26.7 - 30	3000 mg

>30 kg: 3375 mg LOAD, then 3375 mg extended 4-hour infusion q8h

Vasopressor Starting Doses for Fluid Refractory Shock
(mixing instructions on code sheets)

Dopamine (Cold Shock)	5 - 15 mcg/kg/min
Epinephrine (Cold Shock)	0.03 – 0.3 mcg/kg/min
Norepinephrine (Warm Shock)	0.03 – 0.5 mcg/kg/min