PEDIATRICS (< 18 years-old)
ED Sepsis BPA Tips Sheet – Nurses

In Epic, a Best Practice Alert (BPA) warns when pediatric patients (< 18 years-old) are at risk for decompensation and/or sepsis and require immediate assessment to determine the appropriate care.

- 3 tools aid in early decision-making for pediatric patients at risk for decompensation:
  1. **Arrival Vital Sign Alert**
  2. **Sepsis Evaluation Alert**
  3. **Sepsis Upgrade Alert**
- A 4th tool allows providers to initiate the sepsis pathway based on clinical judgment.

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1. **Arrival Vital Sign Alert**: fires based on first set of ED vital signs (VS) taken within 1 hour of arrival

- RN takes VS and patient weight, and enters them into Epic; if ED tech takes VS, he/she will document VS and alert RN of abnormal values.
- The BPA will fire for the provider, RN and ED tech based on the criteria below:

Low Systolic Blood Pressure[1] (SBP) by age

OR

At least **3 of 4** abnormal vital signs:

- **Temp. ≤ 35.8° or ≥38.0°**
- **Heart Rate[1] by age**
- **O_2 Sat < 90%**
- **Resp. Rate[1] by age**

[1] Abnormal VS criteria are age-specific

- Pediatric patients have certain age-specific criteria that trigger the BPA:

Pediatric Age Group	WBC Count	HR Over	SBP Under	RR Over
0 to 6 Days	>34	180	59	50
1 Week to < 1 Month	>19.5 or <5	180	79	40
1 Month to < 2 Years	>17.5 or <5	180	75	34
2 Years to < 6 Years	>15.5 or <6	140	74	22
6 Years to < 13 Years	>13.5 or <4.5	130	83	18
13 Years to < 18 Years	>11 or <4.5	110	90	13

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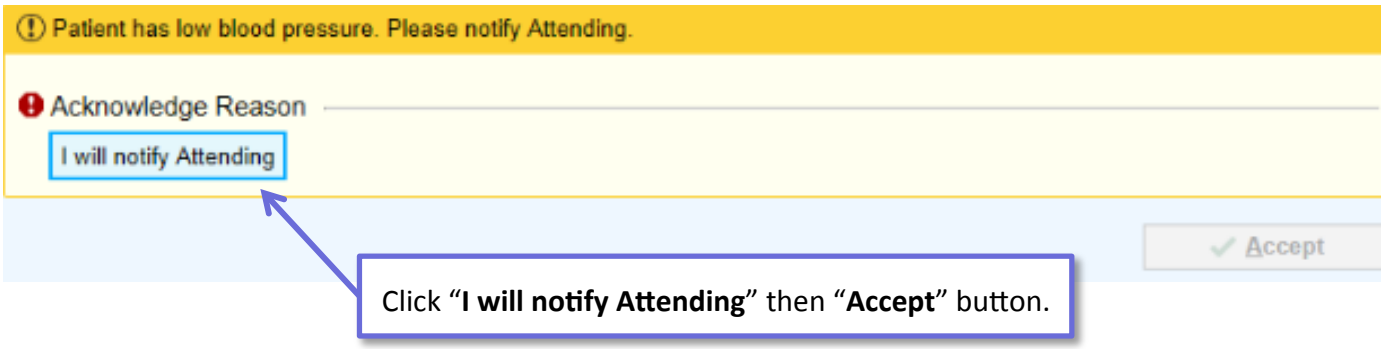
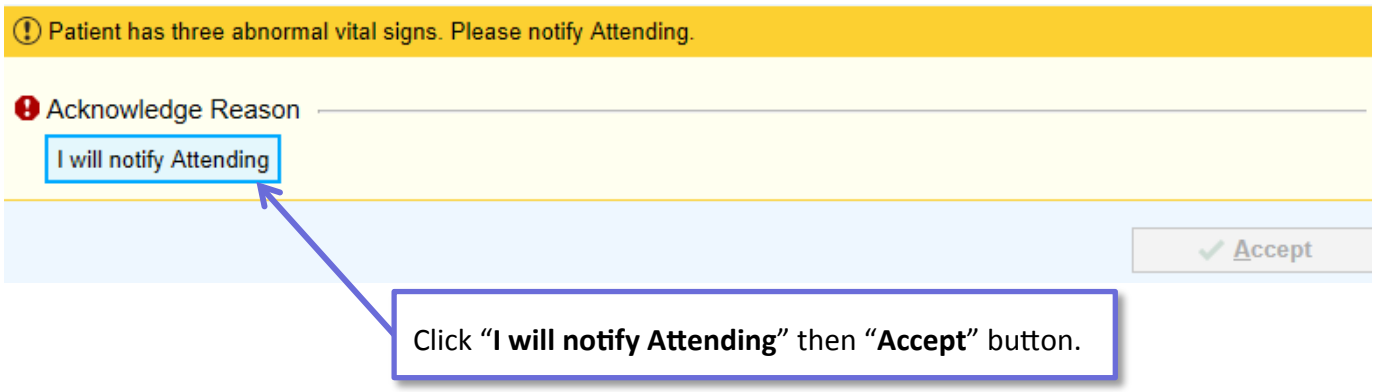
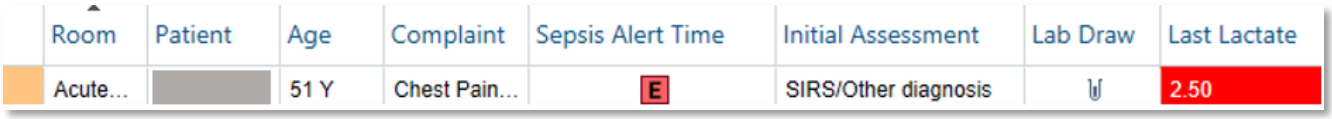
a. **SBP is Low for Age:** RN must **immediately** escalate to the ED Attending to evaluate the patient within 10 minutes of BPA triggering:



b. **3 of 4 Abnormal VS Alert:** RN must **immediately** escalate to the ED Attending to evaluate the patient within 30 minutes of BPA triggering:



- If patient meets alert criteria, a **red** icon with an "E" will populate the ***Sepsis Alert Time*** column (located in *Sepsis Tracking* tab of the *ED Track Board*). This icon cues the RN to escalate to the Attending because the patient requires an immediate assessment



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- RN immediately **escalates care to ED Attending** to evaluate the patient.
- If sepsis or infection is suspected, the provider documents "Yes" to suspected infection in Epic; this action places the patient on the sepsis pathway in Epic and initiates the sepsis bundle.
  a. Provider and RN discuss diagnosis and care plans.
  b. RN documents time of BC draw and sends specimen to lab.

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2. Sepsis Evaluation Alert: fires for abnormal vital signs (VS) and/or lab values > 1 hour after ED arrival

- Evaluates patients NOT previously placed on the sepsis pathway
- Looks for abnormal vital signs & lab values over a rolling 6-hour window

Low Systolic Blood Pressure[1] (SBP) by age

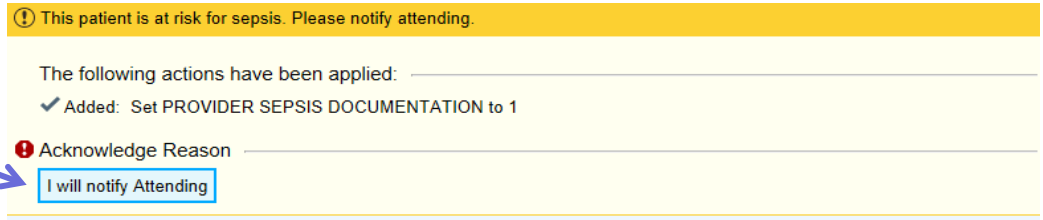
OR

At least **3 of 7** abnormal VS/lab criteria:

- **Temp. ≤ 35.8° or ≥ 38.0°**
- **O_2 Sat < 90%**
- **Band cells > 15%**
- **Lactate > 2**
- **Heart Rate[1] by age**
- **Resp. Rate[1] by age**
- **WBC[1] by age**

[1] Abnormal VS or lab criteria are age-specific (See table on Page 1)

Click "I will notify Attending" & escalate to **Attending**



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3. Sepsis Upgrade Alert: fires for new or worsening SBP or lactate criteria due to concern for decompensation after "Sepsis" or "Severe Sepsis" diagnosis

- Evaluates ONLY patients previously placed on the sepsis pathway (i.e., Provider diagnosed "Sepsis" or "Severe Sepsis" in the *ED Progress Note*)

Lactate (LA) > 2 trending upwards

OR

No previous LA, New LA Result > 2

OR

Low SPB for age trending downward

Click "I will escalate to the Attending" and escalate

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Pediatric Sepsis Definitions:

- **Sepsis**: SIRS and a documented infection
- **Severe Sepsis**: Sepsis with low systolic blood pressure for patient's age despite fluid resuscitation and/or evidence of associated organ dysfunction
- **Septic Shock**: Severe Sepsis with low systolic blood pressure for patient's age, despite adequate fluid resuscitation or requiring a vasopressor

Pediatric Sepsis Care Bundle:

Within 1 hour of placement on pathway

- Initiate Isotonic fluid 20 mL/kg boluses up to 60 mL/kg unless rales or hepatomegaly develops
  - Consider 30 mL/kg boluses if patient weight > 60kg
- Draw 1 set of Blood Cultures (BCs)
  - 2 sets if patient at risk for endocarditis or has central line in place
- Initiate Antibiotics
  - After interdisciplinary huddle and discussion with PEM and/or PICU consultant*s, select ABX may be administered VIA the IM route if lack of access prevents admin within 1 hr of recognition. This does not supplant the need for definitive IV access in septic patients; continuing efforts should be made to obtain IV access for rapid fluid and med administration
- Draw Labs: CBC, blood gas, urine culture, electrolytes & liver enzymes
- Initiate vasopressors for septic shock

**Note: If unable to obtain IV/IO access w/in 30 min of sepsis recognition, a multidisciplinary huddle with the care team & PEM or PICU services is needed to determine next steps for access and treatment plan*

Within 2 hours of placement on pathway

- Complete sepsis reassessment

Key RN Actions

- Document Patient Weight
- Take Vital Signs every 15 minutes
- Blood Culture/s **BEFORE** Antibiotics
- Document Intake & Output
- Document fluid Start & Stop times
- Document 2 blood pressure readings after fluids complete

ED Sepsis Adults & Pediatrics Protocol Response Guidelines*

Bundle Elements	Adults (≥ 18 years-old)	Pediatrics (< 18 years-old)
Blood Cultures (BCs)	2 sets of BCs within 1 hour from 2 different sites	1 set of BC within 1 hour 2 sets of BCs within 1 hour if at risk for endocarditis or has a central line
Antibiotics	Appropriate ABX within 1 hour	Appropriate ABX within 1 hour After interdisciplinary huddle and discussion with PEM and/or PICU consultants, select ABX may be administered VIA the IM route if lack of access prevents admin within 1 hr of recognition. This does not supplant the need for definitive IV access in septic patients; continuing efforts should be made to obtain IV access for rapid fluid and med administration
Lactate (LA)	1st LA drawn within 1 hour 2nd LA drawn within 4 hours if initial LA > 2	1st LA draw is optional 2nd LA drawn within 4 hours if initial LA > 2
Fluids	Initiate 1L within 1 hour for all sepsis Complete 30 ml/kg within 3 hours for pts with LA ≥ 4 and/or sustained hypotension	Initiate 20 ml/kg bolus and repeat if needed up to total 60 ml/kg within 1 hour Consider 30 ml/kg for patients > 60 kg
Additional Labs	Optional	Urine culture, CBC, electrolytes & liver enzymes, & blood gas within 1 hour
Reassessment	Within 4 hours for all sepsis cases	Within 2 hours for all sepsis cases
Vasopressors	Initiate within 6 hours for septic shock	Initiate within 1 hour for septic shock

*Unless otherwise specified, timeframes are in reference to the time that the patient was placed on the sepsis pathway (i.e., "Time Zero").

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ED Sepsis Tracking Board Clinical Definitions	
Sepsis Alert Time	Displays icons indicating that patient has triggered an alert for sepsis/decompensation (see page 8 for icon descriptions)
Initial Assessment	From ED Provider's Initial Assessment Note ▪ *Sepsis are this time (SIRS and documented infection)* ▪ *Severe Sepsis at this time (SBP <90 and/or lactate level >2)* ▪ *Septic Shock at this time (persistent hypotension after fluid resuscitation or initial LA ≥ 4)* ▪ *SIRS/Other diagnosis*
Lab Draw	Does patient have a Print or Collect task?
Last Lactate	Most recent venous lactate result within the past 24 hours
Lactate Ordered?	Was a lactate ordered?
Order Set?	Was the Sepsis Order Set used?
1st Bolus	Was the first bolus documented as administered?
2nd Bolus	Were two boluses documented as given?
3rd Bolus	Were three boluses documented as given?
Intake	Documented intake volume, including volume of all infusions
30 cc/kg	Recorded intake/weight is > 30 cc/kg
Antibiotics Started	Were antibiotics documented as given?

ED Track Board will display adult default (30 cc/kg) although default for pediatric patients is 20 cc/kg

Other columns on the Sepsis Tracking Board

- Room
- Patient Name
- Age
- Complaint
- Attending
- Mid-level Provider
- Nurse
- Comments
- IP (Handoff status to inpatient)
- Length of Stay (LOS)

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Icons for Sepsis/Decompensation Alerts

- Icons appear in ***Sepsis Alert Time*** column of ED Sepsis Tracking Board
- Icons standardized across ED & IP settings, with 1 exception:
  - Icons with **black** text*: pt. located in ED when alert criteria met and/or ED Provider placed pt. on Sepsis Pathway
  - Icons with **white** text^: pt. located on IP unit when alert criteria met and/or IP Provider placed pt. on Sepsis Pathway (including ED Boarders)
- After icon turns green, it could revert back to red if patient meets alert criteria again after lockout period:
  - 24 hours for patients placed on the Sepsis Pathway
  - 6 hours for patients with a non-sepsis diagnosis
- Icons/colors progress based on Provider actions, but also have relevance for nurses.

ED Icon	IP Icon	Status	Action
		Patient met alert criteria & is at-risk for Sepsis and/or decompensation	RN must **ESCALATE** care Provider must **EVALUATE** patient immediately
		Provider evaluated patient & placed patient on Sepsis Pathway	RN & Provider need to **DELIVER** care by initiating the sepsis bundle Provider needs to **DOCUMENT** initial assessment in the *ED Progress Note or IP Alert Event Note*
		Provider documented *Sepsis*, *Severe Sepsis*, or *Septic Shock* in the *ED Progress Note* / *IP Alert Event Note*	RN & Provider need to continue sepsis interventions &, upon completion of fluid resuscitation, **REASSESS** patient
		Patient was placed on Sepsis Pathway > 1 hour ago	RN needs to ensure **REPEAT** LA was drawn (if initial > 2) & **REASSESS** & document blood pressure Provider needs to **REASSESS** patient & complete the *Sepsis Reassessment Note* within 1 HOUR
		Provider completed *Sepsis Reassessment Note* for patient with diagnosis of *Sepsis*, *Severe Sepsis*, or *Septic Shock*	RN & Provider need to **MONITOR** patient with **SEPSIS** diagnosis
		Provider evaluated patient & documented *SIRS/Other Diagnosis* (not sepsis)	RN & Provider need to **MONITOR** high-risk patient

Hover over any icon to see a description & what needs to be done next

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Pediatric ED Sepsis Workflow Overview

Stop Sepsis BPA Triggers

RN contacts Attending

Provider assesses the patient

Sepsis Suspected?

NO → Evaluate & monitor patient for other causes triggering the BPA; **Provider** documents initial assessment in *ED Progress Note*

YES

At least **3 of 7** abnormal VS/lab criteria:

- **Temp. ≤ 35.8° or ≥ 38.0°**
- **O_2 Sat < 90%**
- **Band cells > 15%**
- **Lactate > 2**
- **Heart Rate[1] by age**
- **Resp. Rate[1] by age**
- **WBC[1] by age**

OR

Low Systolic Blood Pressure (SBP) for age

Initiate Sepsis Protocol using ***Pediatric Stop Sepsis Order Set*** & complete bundle **within 1 hour** of placement on pathway:

- Initiate Isotonic fluid 20 mL/kg boluses up to 60 mL/kg unless rales or hepatomegaly develops
  - Consider 30mL/kg if weight is > 60kg
- Draw 1 set of Blood Cultures (BCs)
  - 2 sets if risk for endocarditis or a central line in place
- Initiate Antibiotics*
- Draw Labs: CBC, blood gas, urine, electrolytes & liver enzymes
- Initiate vasopressors for septic shock

Provider documents initial assessment in *ED Progress Note*

Patient is reassessed patient **within 2 Hours** of initiating Sepsis Protocol & Provider completes *Sepsis Reassessment Note*

SBP low for age?

NO → Monitor patient as appropriate

YES → Consider additional fluids & Critical Care consult for pressors

*After interdisciplinary huddle & discussion with PEM and/or PICU consultants, select ABX may be administered VIA the IM route if lack of access prevents admin within 1 hr of recognition. Septic patients still need definitive IV access, efforts need to be continued to obtain IV access for rapid fluid & med administration