

Reducing Sepsis Mortality: The Journey Continues

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Provided by BEACON Collaborative
www.beaconcollaborative.org

Novato Community Hospital



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The Journey Begins – July 2007

2007 Baseline Rate:

- Multidisciplinary Sepsis Team
- Education
- Order Sets
- Screening Tools

Drivers: PACE Council

Support Crew: Physicians, Administration, Quality,
Pharmacy

Early Identification / Recognition Through Screening

- Emergency Department
- Med/Surg
- ICU



Screening

Instructions: Use this tool to screen every patient for severe sepsis in the ED.

1. Is the patient's history suggestive of a new infection?		
<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> Pneumonia, empyema <input type="checkbox"/> Urinary tract infection <input type="checkbox"/> Acute abdominal infection	<input type="checkbox"/> Skin/soft tissue infection <input type="checkbox"/> Bone/joint infection <input type="checkbox"/> Catheter or implantable device infection <input type="checkbox"/> Endocarditis <input type="checkbox"/> Meningitis <input type="checkbox"/> Other _____

Since the last screening:

2. Are any <u>two</u> of the following signs & symptoms of infection both present & new to the patient?		
Are 2 Boxes checked at Right?	<input type="checkbox"/> Hyperthermia > 38.3° C (101.0° F) <input type="checkbox"/> Hypothermia < 36° C (96.8° F) <input type="checkbox"/> Tachycardia > 90 bpm <input type="checkbox"/> Tachypnea > 20 bpm	<input type="checkbox"/> Acutely altered mental status <input type="checkbox"/> Leukocytosis (WBC count > 12,000 µL-1) <input type="checkbox"/> Leukopenia (WBC count < 4000 µL-1) <input type="checkbox"/> New or significant increase in pain
<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> Hyperglycemia (plasma glucose > 120 mg/dl) in the absence of Diabetes <input type="checkbox"/> Cap. Refill > 3 sec. <input type="checkbox"/> Headache with stiff neck <input type="checkbox"/> Chills with rigors	

If the answer is YES to step 1 and 2

Suspicion of Infection/Sepsis is present

No

Sign & Date the form
You are finished

3. Record the current time & date (bottom left)
4. Obtain Orders for: lactic acid blood cultures Bilirubin
 CBC with differential basic chemistry labs
5. At the physician's discretion obtain: UA chest x-ray
 amylase lipase ABG CT scan

6. Are any of the following organ dysfunction criteria present at a site remote from the site of the infection that are not considered to be chronic conditions?

- Lactate > 4 mmol/L
- SBP < 90 mmHg or MAP < 65 mmHg
- SBP decrease > 40 mmHg from baseline
- Bilateral pulmonary infiltrates with a new (or increased) oxygen requirement to maintain SpO₂ > 90%
- Bilateral pulmonary infiltrates with PaO₂/FIO₂ ratio < 300
- Creatinine > 2.0 mg/dl (176.8 mmol/L) or Urine Output < 0.5 ml/kg/hour for > 2 hours
- Platelet count < 100,000
- Bilirubin > 2 mg/dl (34.2 mmol/L)
- Coagulopathy (INR > 1.5 or aPPT > 60 secs)

Yes?

Alert physician to positive screen for Severe Sepsis.

7. If suspicion of infection is present AND organ dysfunction is present AND the patient is NOT in shock, the patient meets the criteria for SEVERE SEPSIS & should be entered into the severe sepsis bundle pathway protocol.

Severe Sepsis protocol initiated Time: _____

Signature: _____

Print Name: _____

Date: ____/____/____

Time: _____ (24 hr. clock)



FORM NO.

ED Screening for
Severe Sepsis

PATIENT LABEL

Screening cont.

+ Scanned to Pharmacy STAT
 DATE ___/___/___ TIME: _____
 Signature _____

Instructions: Use this tool to screen every patient over 12 years of age for severe sepsis in the ED.

1. Could it be an infection?

No Yes

No Yes

Date/Time/Sign below. You are finished.

2. Could it be sepsis?

Are 2 boxes checked at right?

No Yes

<input type="checkbox"/> Fever > 100.4	<input type="checkbox"/> Tachypnea RR > 20
<input type="checkbox"/> Hypothermia < 96.8	<input type="checkbox"/> Chills/rigors
<input type="checkbox"/> Tachycardia > 90 bpm	<input type="checkbox"/> Weakness/malaise

No Yes

Date/Time/Sign below. You are finished.

3. Is the patient high risk for severe sepsis?

No Yes

Is any box checked at right?

<input type="checkbox"/> Age > 50	<input type="checkbox"/> Chronic Kidney Disease
<input type="checkbox"/> Immunocompromised	<input type="checkbox"/> Chronic Liver Disease
<input type="checkbox"/> Recent Chemotherapy, Cancer	<input type="checkbox"/> Acutely altered mental status
<input type="checkbox"/> Diabetic	<input type="checkbox"/> Hypotension or relative hypotension (SBP 40 mmHg decrease from usual)
<input type="checkbox"/> Hypoxia <93% on room air	

No Yes

Date/Time/Sign below. You are finished.

Alert physician to start Initial Orders (back page) MD notified: _____ time

RN's Signature _____ Date _____ Time _____

Affix patient ID label here

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ED Severe Sepsis Screen & Initial Orders
 Page 1 of 2 Revised 11/13/09 Unapproved Abbreviations: U, IU, QD, QOD, Trailing Zero, Lack of leading zero, MS, MSO4, MgSO4

+ Scanned to Pharmacy STAT
 DATE ___/___/___ TIME: _____
 Signature _____

- Establish venous access – start peripheral IV.
- Labs/Diagnostic tests – Call lab for STAT draw**
 - Lactate
 - CBC with differential
 - Complete metabolic panel
 - Blood cultures x2
 - UA and culture
 - Chest x-ray
- For hypotensive patients, give fluid bolus and initial antibiotics:**
 - Normal saline 2 liters IV over 30 minutes.
 - Do NOT use a pump, use pressure bag if needed**

Initial antibiotics

Piperacillin/Tazobactam (Zosyn®) 4.5 Gm IV x1
 -and-
 Vancomycin 1 Gram IV x1, adjust per pharmacy protocol

OR (for severe PCN allergy, anaphylaxis)

Levofloxacin (Levaquin®) 750 mg IV x1, pharmacy to adjust for renal dysfunction
 -and-
 Tobramycin _____ mg (2 mg/kg) IV x1, adjust per pharmacy protocol
 -and-
 Vancomycin 1 Gram IV x1, adjust per pharmacy protocol

- Fax order to pharmacy.**

Severe sepsis is sepsis with acute organ failure	Severe sepsis 6-hour bundle:
<ul style="list-style-type: none"> Lactate > 2 mmol/L CV failure: shock or SBP decrease of 40 mmHg from baseline Pulmonary failure: bilateral pulmonary infiltrates with a new oxygen requirement to maintain SpO2 > 90% Renal failure: acute rise in Creatinine > 2 mg/dL or decreased urine output < 0.5 mL/kg/hour for > 2 hours Hepatic failure: acute rise in T. bili > 2 mg/dL or coagulopathy (INR > 1.5) Hematopoietic failure: acute decrease in platelets < 100,000 	<ol style="list-style-type: none"> Measure serum lactate Blood cultures before antibiotics Rapid administration of antibiotics (less than 1 hour from triage to antibiotics) If there is hypotension or lactate > 4 mmol/L: <ol style="list-style-type: none"> Fluid bolus > 20 mL/kg Apply vasopressors for ongoing hypotension If hypotension persists despite fluid bolus (septic shock) or lactate > 4 mmol/L: <ol style="list-style-type: none"> Achieve CVP > 8 Achieve ScvO2 > 70%

Prescriber's Name (PRINTED) _____ MD ID# _____

Prescriber's Signature _____ Date _____ Time _____

RN's Signature _____ Date _____ Time _____

Affix patient ID label here

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ED Severe Sepsis Screen & Initial Orders
 Page 2 of 2 Revised 11/13/09 Unapproved Abbreviations: U, IU, QD, QOD, Trailing Zero, Lack of leading zero, MS, MSO4, MgSO4

Screening cont.

DATE		- HOUR						- HOUR						- HOUR											
		00	04	08	12	16	20	00	04	08	12	16	20	00	04	08	12	15	20	00	04	08	12	16	20
BLOOD PRESSURE																									
TEMPERATURE	38.3-103																								
	38.0-101																								
	37.7-100																								
	37.2-99																								
	36.6-98																								
PULSE	120																								
	110																								
	100																								
	90																								
	80																								
RESPIRATIONS																									
O ₂ SAT																									
O ₂ FLOW/ NC/MASK																									
PAIN 0-10																									
LOCATION																									
SIGNATURE	1	T = 38°C or >38°C HR = 60 RR = 20 O ₂ sat = 90% O ₂ FLOW = 2L PAIN = 0-10 CNS = 1-3 G.I. = 4-5																							
	2	Suspected Infection #1 has 2 or more +, and #2 is +; Notify MD & anticipate orders for sepsis. Document time MD notified																							
	WEIGHT		KG				KG				KG				KG										
	INTAKE		Oral		IV		Oral		IV		Oral		IV		Oral		IV								
	1100 - 0700																								
	0700 - 1500																								
	1500 - 2300																								
	24-Hr. Total																								
	OUTPUT		Urine		Stool		Urine		Stool		Urine		Stool		Urine		Stool								
	1100 - 0700																								
0700 - 1500																									
1500 - 2300																									
24-Hr. Total																									
FREQUENT VITAL SIGN RECORD																									
Date: 7/1																									
Time: 11:00																									
Blood Pressure: 110/70																									
Heart Rate: 60																									
Temperature: 37.2																									
Resp 30/18																									
INITIALS: []																									

Sepsis SBAR Script

Sepsis SBAR

Communication with MD when patient screens positive for sepsis

Situation:

_____ has screened positive for sepsis at _____
(patient name) (time)

Background:

1. _____ has the following **positive criteria** for SIRS
(patient name) (state only those that apply)
 - a. Temperature > 100.6 (38C) or < 96.8% (36)
 - b. BP < 90 mmHg or > 40 mmHg from baseline
 - c. HR > 90/min
 - d. Respiratory rate > 20/min
 - e. Change in mental status, ALOC
2. I suspect infection
The most recent WBC is _____
(Consider infection if WBC > 12, 000 or < 4,000)

Assessment:

1. Vital signs are: _____
2. SAO₂ is _____, compared to _____ (last reading)
3. Mental status is now _____
4. Urine output is _____ cc per hour or _____ over the last 8°
5. The most recent creatinine is _____; Creatinine on admission was _____

Recommendation:

1. I need you to evaluate the patient to confirm if they have severe sepsis
2. In addition to a stat Lactate, what other labs would you like me to order?
3. Should I start an IV and give a fluid bolus? (if patient hypotensive)



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Interventions

- Lactate
- Fluids
- Antibiotics
- Central Lines
- ScvO₂ Monitoring



Fluids

- Fluid Resuscitation
- Physician Orders
- Administration
 - Policies/Practice
 - Supplies
 - Patient Venous Access



Road Blocks / Bumps in the Road

- EGDT Criteria & Definitions
- Handoffs and Transitions



Handoffs & Transitions

SEVERE SEPSIS Handoff & Transition

Patient Name: _____ Date: _____ Time: _____

Please complete the following:

- ED Diagnosis: _____
- ED Diagnosis included: Severe Sepsis Septic shock Sepsis None
- Comfort Care Decision in first 24 hours after diagnosis Yes No
- Discharge Date: _____
- Discharge status: Alive Expired

***Septic Shock defined as:**

SBP less than 90mmHg or 40mmHg decrease from baseline or MAP less than 65mmHg after 20ml/kg fluid bolus

****Vasopressor unresponsive defined as:**

Requiring vasopressors after fluid resuscitation completed

Severe Sepsis Goals	Date _____ to _____ 0-1 Hours	Date _____ to _____ 1-6 Hours	Date _____ to _____ 6-24 Hours	Date _____ to _____ 24-72 Hours
1. Maintain BP systolic > 90	____ Initial Labs: <input type="checkbox"/> Lactate _____ <input type="checkbox"/> CBC WBC _____	Yes No Was initial lactate > 4.0 ?	Yes No Did patient require Vasopressor(s) ? ____ Time started _____ Drug	____ Confirmed Infectious Source
2. Maintain MAP > 65 mmHg	Yes No Serum lactate drawn within 6 hours?	Yes No Was WBC > 14K?	Yes No Was hydrocortisone considered if vasopressor unresponsive**	____ Re-assess need for broad spectrum antibiotics based on culture reports.
3. CVP goal: 8-12mmHg and maintained for 6 hours (12-15 mmHg if patient on ventilator)	Yes No Blood Cultures X 2 Time 1: _____ Time 2: _____ ____ Other Cultures: ____ Establish IV access	Yes No Did patient remain hypotensive after initial fluids?	Yes No Was blood transfusion Required to achieve ScvO2 goal > 70%? ____ units	Yes No NA Was the organism that was identified sensitive to the initial antibiotic?
4. ScvO2 > 70%	Type: _____ Tpe: _____	Yes No CVP placed ? Time: _____ If no, why? _____	Yes No Was inotrope (Dobutamine) required to achieve ScvO2 goal of >70%? ____ Start Time: _____	____ D/C or taper steroids if vasopressors off
5. Urine output > 0.5 ml/kg/hour	____ Volume resuscitation: initial 20ml/kg over 30 minutes then additional boluses as needed per order ____ Total fluids infused over _____ min ____ Broad Spectrum Antibiotic started	____ Initial CVP: _____ Yes No ScvO2 measured ? ____ Initial ScvO2: _____ Record the first time the following is achieved: ____ CVP 8-12 mmHg (on vent 12-15 mmHg) ____ MAP greater than or equal to 65 mmHg ____ SCV02 > 70%:	Yes No Was serial lactate drawn 6 hrs after initial? ____ Lactate level: _____	____ Re-evaluate need for invasive lines and tubes
Signature: _____				

Keys to Reaching the Finish Line

- Directions – Keep your focus
- Check your Gauges – Observe & monitor performance
- Have an Alternate Plan – Test & modify
- Track Data – Measure results
- Enjoy the Ride – Celebrate
- Select Your Next Destination