

What is Sepsis?

A Greek word for Putrefaction

For centuries, nurses have been caring for patients with sepsis, known as “blood poisoning” until the recent past.

- Systemic Inflammatory Response Syndrome (SIRS) is a specific consequence to an infection, trauma, burn, other offense.
- Sepsis is not an infection, but rather an uncontrolled inflammatory response to an infection.
- Severe Sepsis: Sepsis plus at least one sign of hypoperfusion or organ dysfunction, that is *new*, and not explained by other known etiology of organ dysfunction.
- Septic shock: Severe sepsis associated with refractory hypotension (SBP < 90 or MAP < 65 mmHG) despite adequate fluid resuscitation and/or a serum lactate level ≥ 4.0 mmol/L.

How serious is sepsis? Why the focus today?

- With every 3rd heartbeat, someone dies from sepsis, totalling 1,200 people per hour.
- Globally, 7 million children die annually from sepsis.
- Mortality rates from severe sepsis range between 28-50%.
- 10th leading cause of death in U.S.
- Costs 17 billion dollars annually in the U.S.
- Every 1 hour delay in treatment raises mortality rates by 7.6%.

Who are the most susceptible patients?

- Immunocompromised
- Very young/very old
- Nursing home patients
- Patients with invasive devices
- Diabetics

Please review the included resources:

Sepsis Screening Tool
Resuscitation Targets
Patient Pathway
Surviving Sepsis: 1 Hour Bundle Infographic and Printable
Sepsis Fact Sheet

Additional information can be found by reviewing these resources:

[Sepsis Online Training Module](#)
[CSM Sepsis Toolkit](#) (Available via the CSM Intranet)

(File or scan with patient's medical record)

Sepsis Screening Tool (Version 2/ 10-3-18)

Complete this screening in ED, for hospitalized patients admitted outside the ED, during rapid responses, and for change in patient condition if sepsis suspected. If screening completed by RN, notify MD of any positive sepsis screen results for sepsis, severe sepsis or septic shock (or infection concerns that physician not already aware). Physician determines the diagnosis.

1. Infection: Is the patient's history suggestive of a new infection?

- | | | |
|--|---|---|
| <input type="checkbox"/> Pneumonia, empyema | <input type="checkbox"/> Bone/joint infection | <input type="checkbox"/> Implantable device infection |
| <input type="checkbox"/> Urinary tract infection | <input type="checkbox"/> Wound infection | <input type="checkbox"/> Bloodstream catheter infection |
| <input type="checkbox"/> Acute abdominal infection | <input type="checkbox"/> Endocarditis | <input type="checkbox"/> Skin/soft tissue infection |
| | <input type="checkbox"/> Meningitis | <input type="checkbox"/> Other _____ |

___ Yes ___ No

2. SIRS Criteria (Systemic Inflammatory Response Syndrome Criteria): Are any two of following signs & symptoms of infection both present and new to the patient?**Note: Laboratory values may have been obtained for inpatients but may not be available pre-hospital**

- | | | |
|--|--|--|
| <input type="checkbox"/> Hyperthermia > 38°C (100.4°F) | <input type="checkbox"/> Leukopenia
(WBC < 4000/mm ³) | <input type="checkbox"/> Leukocytosis
(WBC > 12,000 mm ³) |
| <input type="checkbox"/> Hypothermia < 36°C (96.8 °F) | <input type="checkbox"/> Tachycardia > 90 bpm | <input type="checkbox"/> > 10% immature bands |
| <input type="checkbox"/> Tachypnea > 20 bpm | | |
| <input type="checkbox"/> PaCO ₂ < 32 mm Hg | | |

___ Yes ___ No

3. Signs of Organ Dysfunction: Are any of the following organ dysfunction criteria present? (excluding chronic conditions)

- Systolic BP < 90 mmHg or Mean Arterial Pressure (MAP) < 65 mm Hg
- Systolic BP decrease > 40 mm Hg from baseline
- Acute respiratory failure (new non-invasive ventilation [BiPAP], invasive ventilation)
- Creatinine > 2.0 mg/dL or Urine Output < 0.5 mL/kg/hour for > 2 hours
- Bilirubin > 2 mg/dL
- Platelet count < 100,000 microliters
- Coagulopathy (INR > 1.5 or aPTT > 60 secs) for patients not on warfarin
- Lactate >2 mmol/L

___ Yes ___ No

qSOFA score + Suspected Infection: Tachypnea >22/min Systolic BP < 100 mmHg Altered Mental Status
(qSOFA ≥ 2 reflects increased mortality risk) *qSOFA = Quick Sepsis Organ-Related Failure Assessment*

4. Screening Completed by _____ RN MD

Date _____ Time _____ (screening completed)

Screening suggestive of:

- Infection
- Sepsis (Infection + 2 SIRS Criteria)
- Severe Sepsis* (Infection + 2 SIRS Criteria + 1 Organ Dysfunction Criteria)
(*Severe Sepsis included in CMS Core Measure SEP-1, but not in 2016 sepsis consensus definitions)
- Septic Shock (Sepsis characterized by unresponsive hypotension and lactic acidosis (lactate > 2 mmol/L) requiring vasopressor therapy to maintain MAP > 65 mmHg despite adequate fluid resuscitation)

**SEPSIS CLINICAL PATHWAY
ENDPOINTS / TARGETS FOR RESUSCITATION
3 & 6 HOUR TARGETS (version 2: 6/8/18)**

START (Time) _____
3-Hour Goal Time _____
6-Hour Goal Time _____

(ED/Sepsis triage time or time symptoms evident)
Search for source, source control, antibiotics, volume resuscitation

Resuscitation Bundle: 3-Hour Bundle Goal

To be accomplished within an hour if possible, but *at least* within 3 hours

Time Met	Indicator
	Serum lactate: Measured
	Blood cultures: Obtained prior to antibiotic administration.
	Antibiotics: Broad-spectrum antibiotics administered within 1 hour if possible (at least within 3 hrs.)
	Fluids (for <i>any</i> hypotension or lactate ≥ 4 mmol/L): Deliver an initial minimum of 30 mL/kg of crystalloid.

****Consider RRT/transfer for non-ICU patients not responding to 3-hr. bundle****

Resuscitation Bundle: 6-Hour Bundle Goal

To be accomplished as soon as possible but *at least* within 6 hours

Time Met	Indicator
	Re-measure lactate if initial lactate elevated (> 2 mmol/L)
	(Below Interventions done in ED or ICU)
	Vasopressors For hypotension not responding to initial fluid resuscitation (30 ml/kg within 3 hrs.) to maintain mean arterial pressure (MAP) ≥ 65 and SBP >90 mm Hg.
	(Remaining interventions done in ED or ICU)
	For persistent hypotension after fluids (30 mL/kg) OR lactate ≥ 4 mmol/L reassess volume status and tissue perfusion by using <i>one</i> of the following strategies
	Strategy A: Documentation of repeat focused exam of tissue perfusion (after initial fluid resuscitation) by licensed independent practitioner (MD/Nurse Practitioner)
	OR
	Strategy B: Reassessment using <i>two</i> of the following
	Measure CVP (goal 8-12 mmHg / fluids)
	Measure ScvO₂ (goal $\geq 70\%$)
	Bedside cardiovascular ultrasound
	Dynamic assessment of fluid responsiveness with passive leg raise or fluid challenge

***Refer to Sepsis Guidelines for complete information <http://survivingsepsis.org/Guidelines/Pages/default.aspx>**

Notes:

- Sepsis Screening Tools & automated E.H.R. alerts are excellent tools to discover presence of severe sepsis, but may not capture all patients. Use clinical judgement & notify MD for concerns for sepsis even if screening tools are negative.
- **ANY hypotension** (while in ED) counts as hypotension*
*Hypotension = MAP < 65 mmHg, SBP < 90 mmHg or SBP decrease ≥ 40 mm Hg
- **Septic Shock:** Sepsis characterized by unresponsive hypotension and lactic acidosis (serum lactate > 2 mmol/L) requiring vasopressor therapy to maintain MAP > 65 mmHg, despite adequate fluid resuscitation”
 - ICU required for patients requiring vasopressors
 - Consider ICU placement for sepsis patients with lactates ≥ 4 mmol/L upon presentation (mortality risk)
- **CVP or ScvO₂** if appropriate catheter is present
 - CVP & ScvO₂ can be monitored intermittently through IJ, subclavian or PICC line. ScvO₂ can also be monitored continuously through special ScvO₂ catheters.
 - CVP & ScvO₂ have not demonstrated mortality benefits, but are still part of CMS core measure. Monitoring trends might be helpful.

qSOFA: Score ≥ 2 criteria suggests greater mortality risk: **Hypotension < 100 mgHg / Altered mental status / Tachypnea > 22 /min**

Sepsis and Your Hospital Stay

S

Sepsis is a whole body response to an infection. The source of infection can be easy or hard to find. Common symptoms are: fast heart beats, rapid or labored breathing, fever, confusion, sleepiness, dehydration, and even falling down. Sepsis can affect various organs in your body. Patients with Sepsis can either be critically ill or can remain relatively stable. Sepsis can occur at any age.

E

Exams by your nurses and doctors will help to find out why you are sick. We will draw blood for lab work. We will collect urine and blood for tests that tell us what type of bacteria is growing (cultures). We might need an EKG to see how your heart is feeling and X-rays or other imaging to help find where your infection is. We will check your vital signs, meaning we will assess your heart rate, your breathing pattern and how well you move oxygen through your body, blood pressure, and temperature. We will also assess you for pain and work to make you comfortable.

P

Planning your care starts as soon as you arrive. It is important that we work fast in the beginning to stop you from getting sicker. ***The first six hours are critical!*** You can expect one or more IVs, or possibly a central line (a special type of IV that delivers medications and fluids close to your heart for faster results and allows us to give you more than one medication at once), fluids, and medications. You might need oxygen to help you breathe. You might need a urinary catheter so that we can monitor your urine output closely. Depending on your condition, you may need other things as well. We will include you in these discussions so that you know what is happening.

S

Staying in the hospital until you are healthy enough to go home is important. Depending on how sick you are, you might need to be in the hospital for only a few days or for a longer period of time. As we learn more about your infection and the ways in which it has affected your body, we will discuss your individual needs with you and will update you with an expected length of stay.

I

Isolation may be necessary depending on what type of infection you have and where in your body it is. This means that your all of your care providers, as well as any visitors, may be asked to wear special gowns, gloves, and/or masks when visiting you. If you leave your room, you may be asked to wear these items as well. This is to help spread infection to others. Sepsis itself is not contagious, however the infection causing it may be.

S

Sepsis can be scary! We want you to ask questions while you are here with us. Getting you healthy includes keeping you informed and including you in your care decisions. We will help you understand why you got sick, how we are working to make you better, and what you need to do when you leave to continue to recover.

Hour-1 Bundle



Initial Resuscitation for Sepsis and Septic Shock (begin immediately):

Time Zero/Time Presentation

*"Time zero" or "time of presentation" is defined as the time of triage in the Emergency Department or, if presenting from another care venue, from the earliest chart annotation consistent with all elements of sepsis (formerly severe sepsis) or septic shock ascertained through chart review.

1

Measure lactate level.

Remeasure lactate if initial lactate elevated (> 2mmol/L).

2

Obtain blood cultures before administering antibiotics.

3

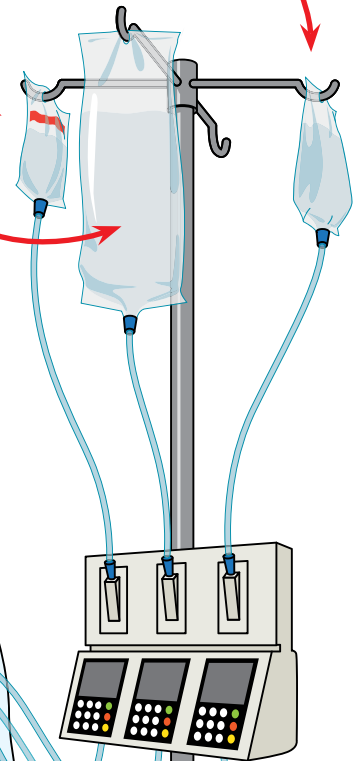
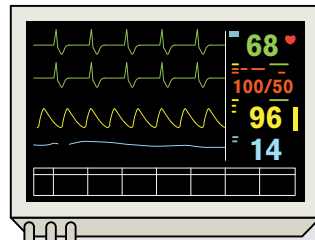
Administer broad-spectrum antibiotics.

4

Begin rapid administration of 30 ml/kg crystalloid for hypotension or lactate > 4 mmol/L

5

Apply vasopressors if hypotensive during or after fluid resuscitation to maintain a mean arterial pressure \geq 65 mm Hg.



Bundle: SurvivingSepsis.org/Bundle

Complete Guidelines: SurvivingSepsis.org/Guidelines

HOURLY ONE BUNDLE: INITIAL RESUSCITATION FOR SEPSIS AND SEPTIC SHOCK (BEGIN IMMEDIATELY):

- 1) Measure lactate level.*
- 2) Obtain blood cultures before administering antibiotics.
- 3) Administer broad-spectrum antibiotics.
- 4) Begin rapid administration of 30ml/kg crystalloid for hypotension or lactate ≥ 4 mmol/L.
- 5) Apply vasopressors if hypotensive during or after fluid resuscitation to maintain a mean arterial pressure ≥ 65 mm Hg.

*Remeasure lactate if initial lactate elevated (> 2 mmol/L).

Surviving Sepsis Campaign®

www.survivingsepsis.org

GET AHEAD OF SEPSIS

FOR HEALTHCARE PROFESSIONALS IN URGENT CARE /
EMERGENCY DEPARTMENTS

KNOW THE RISKS. SPOT THE SIGNS. ACT FAST.

BE ALERT. SUSPECT SEPSIS. SAVE LIVES.

One in three patients who die in a hospital have sepsis.

More than **1.5 million** people get sepsis each year in the U.S.

At least 250,000 Americans die from sepsis each year.

You can protect your patients by recognizing and treating sepsis quickly.

TIME MATTERS

Sepsis is a medical emergency. Protect your patients by acting fast. Your patients' risk of death increases with delayed recognition and treatment of sepsis.

To learn more about sepsis and how to prevent infections, visit www.cdc.gov/sepsis.

RECOGNIZE THE SIGNS AND ACT FAST

Be alert to the signs of sepsis. If you suspect sepsis, act fast and initiate care.

Signs of sepsis can include any one or a combination of the following:



CONFUSION OR
DISORIENTATION



SHORTNESS OF BREATH



HIGH HEART RATE



FEVER, OR SHIVERING,
OR FEELING VERY COLD



EXTREME PAIN OR
DISCOMFORT



CLAMMY OR
SWEATY SKIN

- Immediately alert the clinician in charge if it is not you.
- Start antibiotics as soon as possible, in addition to other therapies appropriate for the patient.
- Check patient progress frequently. Reassess antibiotic therapy within 24-48 hours to stop or change therapy as needed. Be sure antibiotic type, dose, and duration are correct.

Know your facility's existing guidance for diagnosing and managing sepsis.

