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# Recognition and Management of Sepsis in the Long-term Care Setting: An Interactive Work Group

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# Objectives

- Define sepsis and its impact on our communities and health systems.
- Outline early identification strategies for sepsis.
- Review sepsis best practices.
- Review a sepsis case study utilizing the Nursing Home Sepsis Screening Tool.
- Discuss next steps to take to your leadership and medical director.

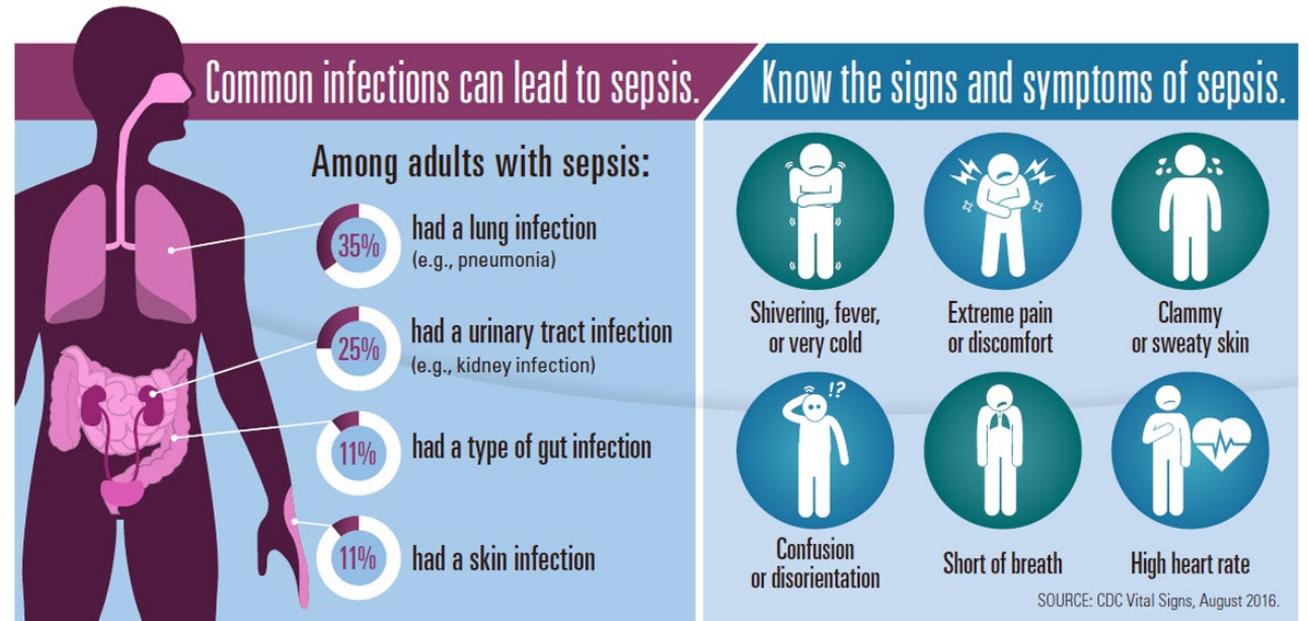
# Sepsis

- Sepsis is a life-threatening condition that arises when the body's response to an infection injures its own tissues and organs.<sup>1</sup>
  - The term is used to describe when infections get out of control and cause the body to shut down.
- Sepsis is a leading cause of death and health care spending globally.<sup>2,3</sup>

1. Singer, et al. JAMA 2016;315(8) 801-810  
2. Fleischmann, et al. Am J Resp Crit Care Med. 2016; 193:259-272  
3. Iwashyna, et al. J Am Geriatr Soc. 2012;60:1070-1077

# Sepsis: Centers for Disease Control and Prevention (CDC) Vital Sign

- 80% of sepsis begins outside the hospital.
- Seven out of 10 patients with sepsis had recently used health services or had chronic diagnosis requiring frequent care.
- Four types of infections most connected to sepsis; lung, urinary tract, skin and gut.



**Health Care Professionals: Think sepsis and act fast**

# The Cost of Sepsis

- Sepsis is the number one cost of hospitalization in the U.S.
  - Costs for acute sepsis hospitalization and skilled nursing are estimated to be \$62 billion annually.
- The average cost per hospital stay for sepsis is double the average cost per stay across all other conditions.
- Sepsis is the leading cause for hospital readmissions to the hospital, costing more than \$3.5 billion each year.
- Despite all this, a larger percentage of American adults have *never* heard of sepsis.

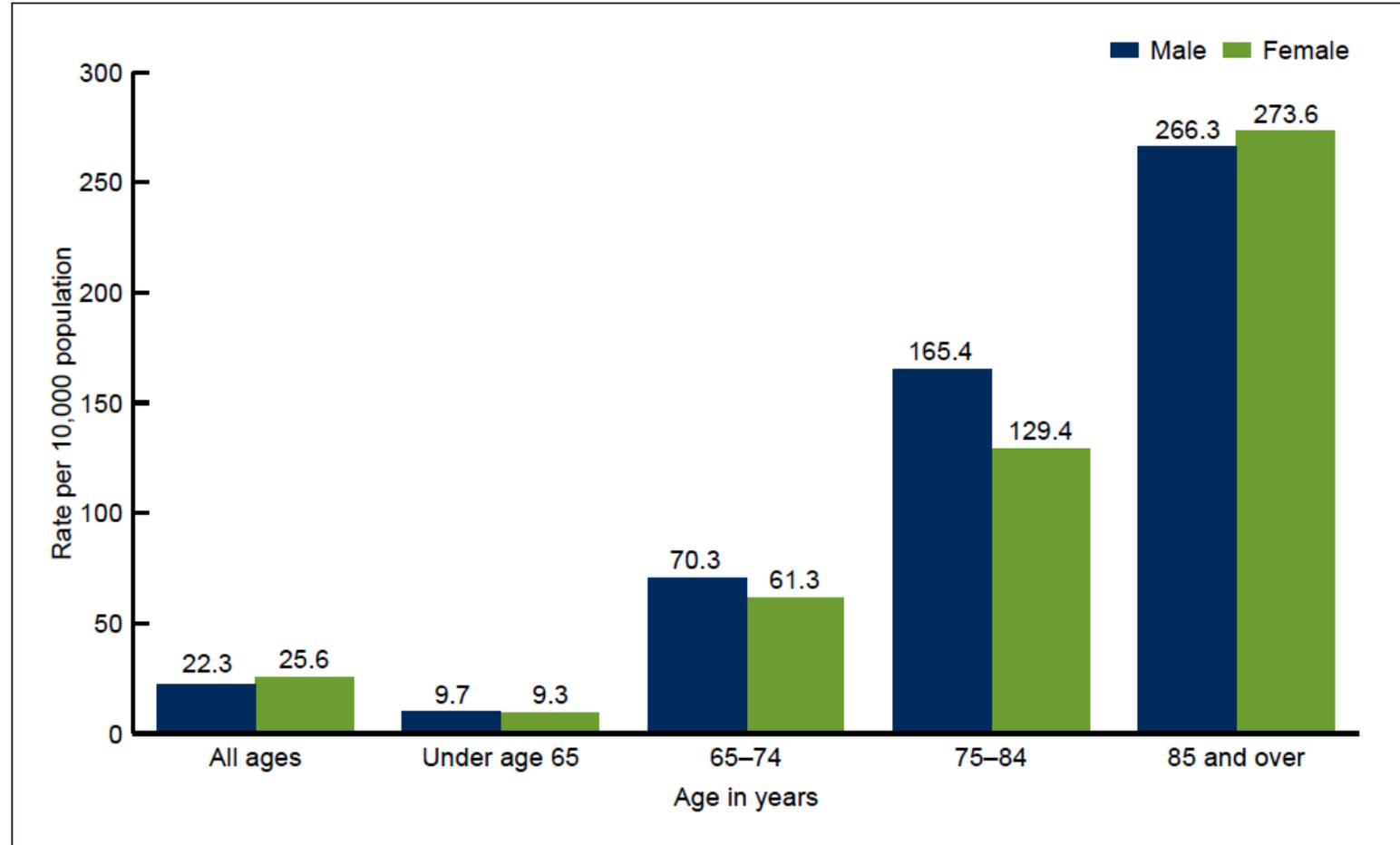
# Considerations for the Elderly

- Elderly constitute one-fifth of the US population but two-thirds of patients admitted to the hospital with sepsis.<sup>1</sup>
- Risk factors specific to this demographic:
  - Increased incidence of chronic co-morbidities.<sup>2</sup>
  - Prone to urinary tract infections (UTIs) - a common source of sepsis.
  - Malnutrition is common in the elderly.<sup>3</sup>
  - Increased incidence of colonization by drug resistant bacteria.<sup>4</sup>
  - Declining immune functionality (more susceptible to infections).

1. *Crit Care Med.* 2006;34:15-21  
2. *Crit Care Med.* 2007;35:1244-1250  
3. *North Am.* 2001;30:313-334  
4. *N Engl J Med.* 1978;298:1108-1111

## Hospitalization rates for sepsis or septicemia were similar for males and females and increased with age.

Figure 2. Rates of hospitalization for septicemia or sepsis, by sex and age, 2008



NOTES: Rates are significantly higher for males and females in each successive age group.  
SOURCE: CDC/NCHS, National Hospital Discharge Survey, 2008.

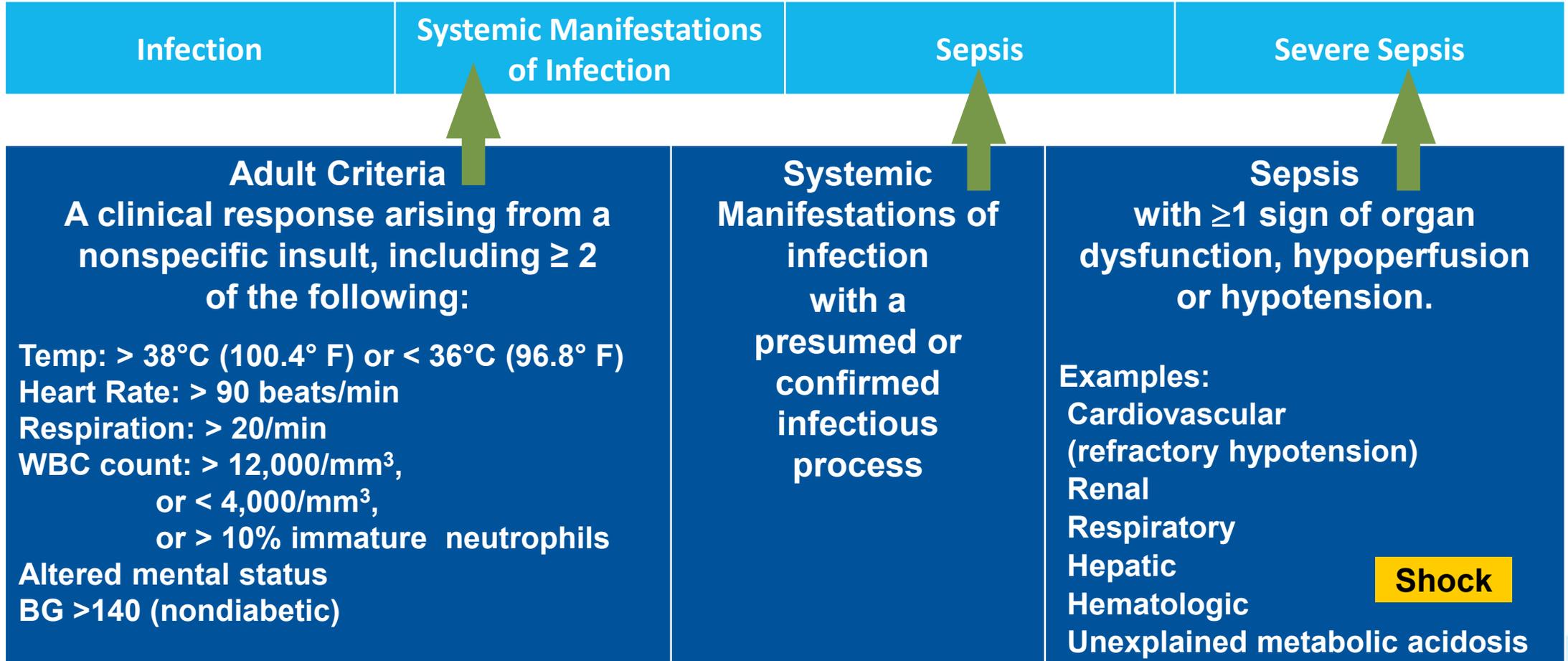
# Impact on the Elderly

- More likely admitted to intensive care unit (ICU).
- Highest mortality in the old elderly, 85+.
- Prolonged hospitalization.
- Post-sepsis impact.
- Contributes to cognitive decline.
- Contributes to physical long-term disabilities (walking, activities of daily living [ADLs] and instrumental activities of daily living [IADLs]).

# Definitions, used by the Centers for Medicare & Medicaid Services (CMS) and coders

- **Infection:** a pathological process caused by invasion of normally sterile tissue or fluid or body cavity by pathogenic or potentially pathogenic micro-organisms.
- **Sepsis:** infection plus two or more systemic inflammatory response syndromes (SIRS)
- **Severe Sepsis:** infection plus two or more SIRS plus new organ dysfunction
- **Septic Shock:** severe sepsis with a lactic acid greater than or equal to 4mmol/L OR continued hypotension (systolic blood pressure < 90 or 40mmHg decrease from their baseline) after initial fluid bolus (30ml/kg)

# Severe Sepsis: Defining a Disease Continuum



# Cornerstones of Multidisciplinary Management of Severe Sepsis

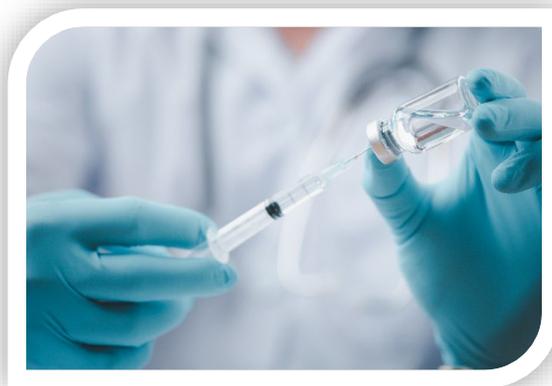
- Prevention using best-practices:
  - Hand hygiene
  - Oral care and pneumonia prevention
  - Wound/skin care
  - Catheter and urinary care
- Screening and early identification.
- Early Intervention: source control, blood cultures and broad-spectrum antibiotics.
- Protocols when to send resident for acute treatment versus what can be done in your facility.

# To Save Lives...



## **Early** identification

Assess  
Assess  
Assess



## **Early** antibiotics

Broad spectrum  
within one hour of  
positive screen.



## **Early** fluid resuscitation

Per facility protocol –  
30ml/kg

# Nursing Home Sepsis Screening Tool

## Long Term Care Severe Sepsis Screening Tool

Resident name: \_\_\_\_\_  
 Medical Record Number: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

Directions: The screening tool is for identifying residents with sepsis. Complete the checklist upon admission, with any new suspected or confirmed infections and with any change in condition.

Section One	
Infection: Are one or more of the following present?	
<ul style="list-style-type: none"> <li>• Currently on antibiotic therapy to treat any infection?</li> <li>• Clinical suspicion of infection</li> <li>• Pneumonia</li> <li>• UTI (painful urination, urgency, feels need to urinate despite empty bladder)</li> <li>• Abdominal pain or distension</li> <li>• Meningitis</li> <li>• Indwelling medical device</li> <li>• Cellulitis/septic arthritis</li> <li>• Chemotherapy &lt; 6 weeks prior or recent organ/bone marrow transplant</li> <li>• Recent surgery</li> </ul>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>If No checked in Section One - Negative screen for sepsis.  <b>Stop here.</b> No need to proceed to Section Two. Repeat sepsis screen for any new or suspected or confirmed infections or changes in condition.</p> <p>If <b>YES</b> checked in Section One:            Assess Vital Signs and PROCEED TO SECTION TWO</p>	
Section Two	
Are there <b>two or more</b> of the following signs of sepsis present?	
Temperature greater than or equal to 100.4°F or less than or equal to 96.8°F	<input type="checkbox"/> Yes <input type="checkbox"/> No
Heart rate greater than 90 beats/minute	<input type="checkbox"/> Yes <input type="checkbox"/> No
Respiratory rate greater than 20 breaths/minute	<input type="checkbox"/> Yes <input type="checkbox"/> No
Systolic blood pressure (BP) is less than 100	<input type="checkbox"/> Yes <input type="checkbox"/> No
New onset mental status changes (mild confusion or disorientation)	<input type="checkbox"/> Yes <input type="checkbox"/> No

<p>If less than two items are checked <b>YES</b> in Section Two - Negative screen for sepsis. <b>Stop here.</b> No need to proceed to Section Three. Repeat sepsis screen for any new or suspected or confirmed infections or changes in condition.</p> <p>If two or more items are checked <b>YES</b> in Section Two, resident screens <b>positive</b> for POSSIBLE SEPSIS.</p>	
SECTION TWO ACTION STEPS	
<ol style="list-style-type: none"> <li>1. Check Pulse Oximetry (SaO<sub>2</sub>)</li> <li>2. Review advance directives and code status</li> <li>3. PROCEED TO SECTION THREE to assess for signs of severe sepsis</li> </ol>	
Section Three	
Renal dysfunction: dark, concentrated and little to no urine	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cardiovascular dysfunction: Systolic BP less than 90 mmHg or 40 mmHg drop below baseline systolic	<input type="checkbox"/> Yes <input type="checkbox"/> No
Respiratory dysfunction: Pulse oximetry (SaO <sub>2</sub> ) less than 90% and/or New or increasing need for Oxygen to keep sat >90% or prevent dyspnea	<input type="checkbox"/> Yes <input type="checkbox"/> No
Neurologic dysfunction: New onset severe mental status change or decreased level of consciousness (severe confusion or agitation/severe lethargy or difficulty waking up)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Perfusion dysfunction: Mottled Skin (patchy red/purple discoloration on trunk or extremities) or Cap Refill greater than or equal to 3 seconds (while hand above heart level)	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>SECTION THREE ACTION STEPS: If one or more items is checked <b>YES</b> in Section Three- resident screens positive for <b>SEVERE SEPSIS!</b></p> <ol style="list-style-type: none"> <li>1. Notify physician of "possible severe sepsis" and positive findings</li> <li>2. Notify the resident's representative of the situation and need for transport if necessary</li> <li>3. Follow your facility's policy and procedure regarding potential resident transfer</li> </ol>	

# Screening

## When do you screen?

- Upon admission, with any new or suspected infection, or a change in condition.
  - Follow your facility's protocol.
- **First step:** Does the resident have a known or suspected infection?

### Section One

Infection: Are one or more of the following present?

- Currently on antibiotic therapy to treat any infection?
- Clinical suspicion of infection
- Pneumonia
- UTI (painful urination, urgency, feels need to urinate despite empty bladder)
- Abdominal pain or distension
- Meningitis
- Indwelling medical device
- Cellulitis/septic arthritis
- Chemotherapy < 6 weeks prior or recent organ/bone marrow transplant
- Recent surgery

Yes  No

# Screening, Second Step

Does the resident have signs of systemic inflammatory response syndrome (SIRS)?

Section Two	
Are there any signs of sepsis present?	
Temperature greater than or equal to 100.4°F or less than or equal to 96.8°F	<input type="checkbox"/> Yes <input type="checkbox"/> No
Heart rate greater than 90 beats/minute	<input type="checkbox"/> Yes <input type="checkbox"/> No
Respiratory rate greater than 20 breaths/minute	<input type="checkbox"/> Yes <input type="checkbox"/> No
Systolic blood pressure is less than 100	<input type="checkbox"/> Yes <input type="checkbox"/> No
New onset mental status changes (mild confusion or disorientation)	<input type="checkbox"/> Yes <input type="checkbox"/> No
If less than two checked YES in section two - Negative screen for sepsis. Stop here, no need to proceed to Section Three—repeat sepsis screen for changes in condition. If two or more checked YES in section two, patient screens positive for POSSIBLE SEPSIS.	
SECTION TWO ACTION STEPS	
Check Pulse Oximetry (SaO <sub>2</sub> ) Look for sign of severe sepsis: Dehydration (dark concentrated, little or no urine) PROCEED TO SECTION THREE to assess for signs of severe sepsis before using SBAR below to notify physician	

# Screening, Third Step

Does the patient have any new organ dysfunction in an organ system distant from site of infection?

Section Three	
Renal dysfunction: dark, concentrated and little to no urine	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cardiovascular dysfunction: Systolic BP less than 90 mmHg or 40 mmHg drop below baseline systolic	<input type="checkbox"/> Yes <input type="checkbox"/> No
Respiratory dysfunction: Pulse oximetry (SaO2) less than 90% and/or New or increasing need for Oxygen to keep sat >90% or prevent dyspnea	<input type="checkbox"/> Yes <input type="checkbox"/> No
Neurologic dysfunction: New onset severe mental status change or decreased level of consciousness (severe confusion or agitation/severe lethargy or difficulty waking up)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Perfusion dysfunction: Mottled Skin (patchy red/purple discoloration on trunk or extremities) or Cap Refill greater than or equal to 3 seconds (while hand above heart level)	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>SECTION THREE ACTION STEPS:</b> If one or more items is checked <b>YES</b> in Section Three- resident screens positive for <b>SEVERE SEPSIS!</b>	

1. Notify physician of "possible severe sepsis" and positive findings
2. Notify the resident's representative of the situation and need for transport if necessary
3. Follow your facility's policy and procedure regarding potential resident transfer

# Case Study

Mr. John Smith lives at Superior Health Care Facility and has been struggling with severe dementia and chronic cardiac disease. About two weeks ago, he had a case of pneumonia and was admitted to the hospital from June 23-27 and has returned home to your facility.



# Admission Nurse Pertinent Assessment Findings

- 88-year-old male admitted back home from a 5-day hospital stay related to pneumonia
  - History: Dementia, heart failure, hypertension, pneumonia and UTIs in the past few months.
  - VS: BP-98/58; HR 112; RR 28; Temp 99.8F, SaO2 89% on room air, cap refill <3 seconds
- Productive cough noted, not on long-term oxygen historically.
- Still on oral antibiotics from recent pneumonia.
- The family reports concern regarding increasing restlessness since pneumonia diagnosis and lack of appetite.
- Catheter is draining small amounts of dark urine.
- It is unknown if confusion has increased due to baseline dementia diagnosis.

# Case Study: Sepsis Screen

## Section One

Infection: Are one or more of the following present?

- Currently on antibiotic therapy to treat any infection?
- Clinical suspicion of infection
- Pneumonia
- UTI (painful urination, urgency, feels need to urinate despite empty bladder)
- Abdominal pain or distension
- Meningitis
- Indwelling medical device
- Cellulitis/septic arthritis
- Chemotherapy < 6 weeks prior or recent organ/bone marrow transplant
- Recent surgery

Yes  No

If No checked in Section One - Negative screen for sepsis.

**Stop here.** No need to proceed to Section Two. Repeat sepsis screen for any new or suspected or confirmed infections or changes in condition.

If **YES** checked in Section One:

Assess Vital Signs and PROCEED TO SECTION TWO

## Section Two

Are there **two or more** of the following signs of sepsis present?

Temperature greater than or equal to 100.4°F or less than or equal to 96.8°F  Yes  No

Heart rate greater than 90 beats/minute  Yes  No

Respiratory rate greater than 20 breaths/minute  Yes  No

Systolic blood pressure (BP) is less than 100  Yes  No

New onset mental status changes (mild confusion or disorientation)  Yes  No

# Case Study: Sepsis Screen, Section Two

Positive for  
possible sepsis.

If less than two items are checked **YES** in Section Two - Negative screen for sepsis. **Stop here.** No need to proceed to Section Three. Repeat sepsis screen for any new or suspected or confirmed infections or changes in condition.

If two or more items are checked **YES** in Section Two, resident screens **positive** for POSSIBLE SEPSIS.

## SECTION TWO ACTION STEPS

1. Check Pulse Oximetry (SaO2)
2. Review advance directives and code status
3. PROCEED TO SECTION THREE to assess for signs of severe sepsis

## Section Three

Renal dysfunction: dark, concentrated and little to no urine	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Cardiovascular dysfunction: Systolic BP less than 90 mmHg or 40 mmHg drop below baseline systolic	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Respiratory dysfunction: Pulse oximetry (SaO2) less than 90% and/or New or increasing need for Oxygen to keep sat >90% or prevent dyspnea	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Neurologic dysfunction: New onset severe mental status change or decreased level of consciousness (severe confusion or agitation/severe lethargy or difficulty waking up)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Perfusion dysfunction: Mottled Skin (patchy red/purple discoloration on trunk or extremities) or Cap Refill greater than or equal to 3 seconds (while hand above heart level)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

# Case Study: Sepsis Screen, Section Three

Positive for  
severe sepsis.

SECTION THREE ACTION STEPS: If one or more items is checked **YES** in Section Three- resident screens positive for **SEVERE SEPSIS!**

1. Notify physician of "possible severe sepsis" and positive findings
2. Notify the resident's representative of the situation and need for transport if necessary
3. Follow your facility's policy and procedure regarding potential resident transfer

- Discuss positive findings and interventions with physician.
  - Fluid bolus
  - Antibiotic review
  - Potential labs – lactic acid, CBC, etc.
  - Include resident's representative and/or medical decision maker
  - Review code status
  - Potential transfer

# Next Steps

Step	Who? When?	Status
1. Get team together to create early recognition process		
2. Get medical staff support for screening and early intervention		
3. Develop screening tool/process <ul style="list-style-type: none"><li>• Define frequency</li></ul>		
4. Define content for your staff education, who will provide education and implementation plan for the program		
5. Prioritize sepsis as a performance improvement project with oversight by the QAPI program		
6. Evaluate screening audit: define outcome and process metrics		
7. Develop an ongoing sustainability plan to hardwire the sepsis program		

# Questions?

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# Resources

- [New Jersey Sepsis Learning Action Collaborative](#)
- [Surviving Sepsis Campaign](#)
- [Centers for Disease Control and Prevention - Sepsis](#)

# Continue the Conversation in

# Superior Health Connect



Connect is a shared learning environment for Superior Health participants to come together to foster and promote an all-teach-all-learn climate that provides the framework to improve and sustain mutual health care quality improvement initiatives locally, regionally, and nationally.

[Nursing Home Sepsis Affinity Group - Connect](#)



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# SUPERIOR HEALTH

## Quality Alliance

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