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**OBJECTIVES**

1. Identify causes of sepsis in the post-acute setting.
2. Understanding signs and symptoms of sepsis for early recognition and reduction of hospital re-admission.
3. Discuss prevention and treatment approaches of sepsis for treating resident in your facility.

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**CDC's updated stats are showing**

<p><b>SEPSIS STATS</b></p> <p>More than <b>1.5 MILLION</b> people get sepsis each year in the U.S.</p>	<p>At least <b>250,000</b> Americans die from sepsis each year</p>	<p>About <b>1 IN 3 PATIENTS</b> who die in a hospital have sepsis</p>
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### National Statistics

- Sepsis is the leading cause of death in U.S. hospitals.
- 62% of people hospitalized with sepsis are re-hospitalized within 30 days.
- As many as 92% of sepsis cases originate in the community.
- Mortality from sepsis increases 8% for every hour that treatment is delayed.
- As many as 80% of sepsis deaths could be prevented with rapid diagnosis and treatment.

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### Most Expensive Conditions Treated in Hospitals in 2013

Table 1. The 20 most expensive conditions treated in U.S. hospitals, all payers, 2013

Rank	CCS principal diagnosis category	Aggregate hospital costs, \$ millions	National costs, %	Number of hospital stays, thousands	Hospital stays, %
1	Septicemia	23,663	6.2	1,297	3.6
2	Osteoarthritis	16,520	4.3	1,023	2.9
3	Liveborn	13,287	3.5	3,765	10.6
4	Complication of device, implant or graft	12,431	3.3	632	1.8
5	Acute myocardial infarction	12,092	3.2	602	1.7
6	Congestive heart failure	10,218	2.7	882	2.5

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Tan, C. et al

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### Identify causes of sepsis in the post-acute setting

- Sepsis is the most common admitting diagnosis for patients that are transferred to hospitals from many skilled nursing facilities.
- Certain patients at increased risk include adults 65 and older, people with chronic medical conditions such as diabetes, lung and kidney disease and cancer.
- People with weakened immune systems and children younger than one are also considered more at risk.
- The most frequently identified pathogens that cause infections that can develop into sepsis include Staphylococcus aureus (staph), Escherichia coli (E. coli), and some types of Streptococcus (strep).

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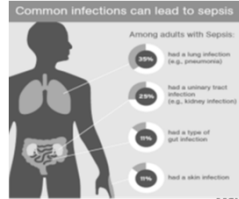
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**Identify causes of sepsis in the post-acute setting**

- Four types of infections that are often linked with sepsis
  - ❖ Lung (respiratory/pneumonia) secondary complication of flu is pneumonia,
  - ❖ Urinary UTI
  - ❖ Skin and wound in LTC patients,
  - ❖ and gut.



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The word "sepsis" was first introduced by Hippocrates (ca. 460-370 BC) and is derived from the Greek word sipsi ("make rotten").

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**What is Sepsis?**

- Sepsis is a life threatening organ dysfunction caused by a dysregulated host response of infection.
- As part of the body's inflammatory response to fight infection, chemicals are released into the bloodstream. These chemicals can cause blood vessels to leak and clot, meaning organs like the kidneys, lung, and heart will not get enough oxygen. The blood clots can also decrease blood flow to the legs and arms leading to gangrene.
- Septic shock is defined as a subset of sepsis that is profound enough to substantially increase mortality over sepsis alone

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### Identification of Sepsis

#### WHAT SHOULD I DO IF I SUSPECT SEPSIS?

- Immediately alert clinician in charge if it is not you.
- Know your facility's existing guidance for diagnosing and managing sepsis.
- Start antibiotics as soon as possible, in addition to other therapies appropriate for that individual patient.
- Check patient progress frequently. Reassess antibiotic therapy 24-48 hours to stop or change therapy as needed. Be sure antibiotic type, dose, and duration are correct.

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### qSOFA (Quick Sepsis Organ Failure) Score

Quick Sepsis Organ Failure Assessment Score – when suspect infection, predict who is at risk for mortality. Higher the score = greater risk.

Score = 0 to 3.

1 point for low blood pressure (SBP≤100 mmHg), high respiratory rate (≥22 breaths per min), or altered mentation (Glasgow coma scale<15).

qSOFA reference site: [www.qsofa.org](http://www.qsofa.org)

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### Progression of Sepsis



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### SIRS (Systemic Inflammatory Response Syndrome)

- Widespread inflammatory response to microbial invasion or cell injury
- May or may not be due to infection
- Signs & Symptoms:
  - ✓ Fever or hypothermia,
  - ✓ Tachycardia,
  - ✓ Tachypnea,
  - ✓ Leukocytosis or leukopenia

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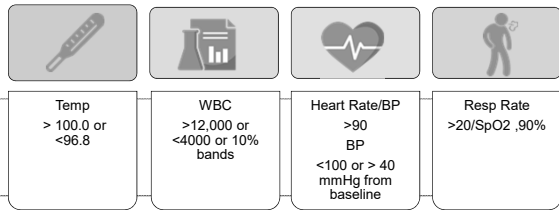
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### SIRS Criteria



- If patient's numbers are noted to be at baseline for particular residents, then change HR > 110 and RR > 25
- If concerned that this is baseline (patient has spikes), recheck in 30 min and notify if still elevated

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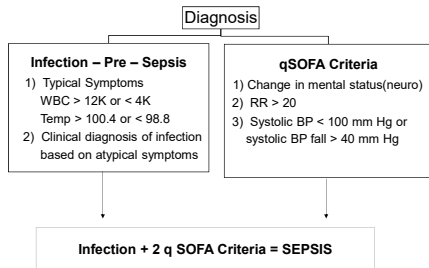
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### Example of Sepsis Protocol in the SNF



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### Example of Sepsis Management in the SNF

**Intermediate Interventions**  
Begin treatment ASAP within 1 hour

<p><b>Infection – without sepsis (pre – sepsis)</b> <b>Begin Level 1 Treatment</b></p> <ol style="list-style-type: none"> <li>1) Start PO Antibiotics</li> <li>2) Perform CBC w/ diff, BMP, CXR and urine CAS (if needed)</li> <li>3) Follow-up within 24 hrs for treatment response</li> </ol>	<p><b>If Sepsis, perform Level 1 Treatment</b></p> <ol style="list-style-type: none"> <li>1) Obtain bid culture, CBC/BMP (don't delay treatment for lab/culture results)</li> <li>2) Place IV and begin antibiotics</li> <li>3) Administer 500cc NS IV bolus then start 250ml/hr then run at 100 ml/hr to 2 liters (if heart failure diagnosis verify fluid rate w HCP)</li> <li>4) Perform CSR or urine CAS (if needed)</li> <li>5) Follow-up in 24 hrs for treatment response, order vitals q4h</li> </ol>
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### Post-Acute Care Early Identification and Treatment of Sepsis Pathway

**Assess for infection and SIRS**

**Symptoms or signs of infection can include:**

- Fever/chills
- Cough/sputum or breath
- Calf/tenderness/diarrhea
- Changes in urine (volume, color, odor)
- Confusion or more or than usual
- Just does not look right
- Weakness
- SOB/short of breath

**Assess for two or more of the following SIRS criteria:**

- Temperature  $\geq 38.3$  F or  $\leq 36.8$  F
- Heart rate  $\geq 90$  bpm
- Respiratory rate  $\geq 20$  bpm
- White blood cell count  $\geq 12,000$  or  $\leq 4,000$
- Altered mental status

SIRS = Systemic Inflammatory Response Syndrome

**Yes to Both? THINK SEPSIS!**

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### Post-Acute Care Early Identification and Treatment of Sepsis Pathway

**Prepare to contact the medical provider:**

- Review the record for medications, allergies, recent infection or antibiotic use
- Note the patient's advance directive or care wishes (if comfort care, see suggested interventions\* below)
- Educate resident/family about status
- Complete sepsis SBAR.

**Notify Provider**

**\*Comfort care interventions:**

- Pain control
- Medications to lower fever
- Frequent repositioning
- Frequent oral care
- Offer fluids (if tolerated)
- Keep family informed
- Adjust care plan as needed

**Prepare for these possible interventions to be completed as soon as possible:**

- Transfer to a higher level of care
- Draw labs: lactate, CBC with differential, blood cultures
- Establish IV access
- Administer broad-spectrum intravenous antibiotics

For hypotension (SBP  $< 90$  mm/Hg) or lactate  $\geq 4$  mmol/L:

- Administer IV fluid bolus at 30 mL/kg

**Monitor the patient and notify the medical provider of any worsening or progression of sepsis.**

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*Understanding signs and symptoms of sepsis for early recognition and reduction of hospital re-admission.*

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**GET AHEAD  
OF SEPSIS**

KNOW THE RISKS. SPOT THE SIGNS. ACT FAST.

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**Signs and Symptoms of Sepsis**

➤ Symptoms: Just don't look right. Resident weak, more confused, and have other symptoms of infection

- ✓ Urinary Tract = frequency, urgency, burning on urination, or pain
- ✓ Respiratory = cough, shortness of breath, increase in sputum
- ✓ Skin = draining wound, redness, swelling, and warm to touch
- ✓ Neurologic = confusion, headache, stiff neck and sensitivity to light

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**Early recognition signs:**

**Initiate the 100, 100, 100 rule staff screen**

Is their temperature above 100?

Is their heart rate above 100?

Is their blood pressure below 100?

And does the resident just not look right? Tell the nurse, screen for sepsis and notify the physician immediately.

Minnesota Hospital Association

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**Prevent Hospitalization:**

**Initial Management Based off Level of Care and Ability**

- Your goal in the nursing home is to do everything you can to avoid septic shock
- Early recognition and early antibiotic administration and fluid resuscitation
- **Check patient progress frequently.** Reassess antibiotic therapy 24-48 hours to stop or change therapy as needed. Be sure antibiotic type, dose, and duration are correct.

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**The Relationship of Infection Prevention to Sepsis and Antimicrobial Stewardship**

- To reduce the chances of employing broad spectrum antibiotics for sepsis, prevent infections from occurring in the first place.
- To reduce the chances of acquiring multi-drug resistant pathogens, which makes treatment of sepsis more challenging, emphasize infection control measures.

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### Antimicrobial Stewardship

- To promote the appropriate use of antimicrobials and combat antimicrobial resistance, the surviving sepsis campaign recommends that empiric antimicrobial therapy be narrowed once pathogen identification and sensitivities are established and/or adequate clinical improvement is noted.
- The surviving sepsis campaign also recommends that an antimicrobial treatment duration of 7-10 days is adequate for most serious infections associated with sepsis and septic shock.

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### Antimicrobial Therapy

- Start P.O. Antibiotics if infection without sepsis (pre-sepsis)
- Empiric broad-spectrum IV antimicrobial therapy initiated as soon as possible when sepsis or the risk of sepsis is identified

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### Educate Patients (and their Families) About Infection Prevention, Antibiotic Stewardship & More

- The informed patient is more likely to be adhere with therapy, and can assist in preventing infection and understand when antibiotics are needed - and when they are not.
- The informed family member can also learn how to prevent infection.

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**Developed and validated sepsis screening tools generally evaluate three areas:**

**1. Known or suspected infection**

**2. Systemic manifestations:**

- Hyperthermia or hypothermia
- Tachycardia
- Tachypnea
- Acute mental status change
- Leukocytosis or leukopenia
- Hyperglycemia

**3. New or worsened organ dysfunction:**

- Hypotension
- Increasing oxygen requirements
- Elevated lactate, creatinine, bilirubin level –
- Thrombocytopenia
- Coagulopathy

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**What can be done to prevent Sepsis?**

- Make sure you, your staff, visitors and resident's WASH THEIR HANDS
- How to engage people to wash their hands:
  - Make hand hygiene a topic of conversation with your residents
  - Address hand hygiene before you begin your care
  - Explain how and why you clean your hands before, after, and sometimes during patient care.
  - THANK THEM FOR BEING ENGAGED IN THEIR CARE




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**Get your flu shot- encourage staff, residents and families get vaccinated against the flu**



**LONG-TERM CARE STAFF IMMUNIZATION**

Healthcare personnel in long-term care settings have the lowest reported influenza vaccination rates among all healthcare personnel.

In the 2014 – 2015 flu season:



Influenza outbreaks in long-term care facilities have been attributed to low influenza vaccination coverage among healthcare personnel. Vaccination of healthcare professionals in long-term care settings is extremely important because<sup>2</sup>:

- People 65 years and older are at greater risk of serious complications from the flu.
- Flu vaccine effectiveness is generally lowest in the elderly, making vaccination of close contacts critical.
- Multiple studies have demonstrated health benefits to residents with vaccination of healthcare professionals, including reduced flu-related complications and reduced risk of death.

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### What else can you do to prevent Sepsis?

Encourage residents over the age of 65 to the pneumonia vaccine



Infection Education



Infection Prevention



Antimicrobial Stewardship



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### Patient Teaching for prevention



**Green Zone**  
No signs of infection.

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### Patient Teaching for prevention



**Yellow Zone**  
Take action today.

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### Patient Teaching for prevention



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### Recovery:



- Many individuals fully recover from sepsis,
- Many others are left with long-lasting effects, such as missing limbs or organ dysfunction, like kidney failure.
- Other after-effects of sepsis are less obvious, such as memory loss, anxiety, or depression.

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### Minnesota Hospital Association (MHA)

- MHA
  - developed LTC-specific Seeing Sepsis Tool Kit
- MHA's LTC resources
  - Seeing Sepsis cards and posters that alert the user to notify the nurse to screen for sepsis if
    - the resident's temperature is higher than 100° F,
    - heart rate is greater than 100 beats per minute, and/or
    - systolic blood pressure is lower than 100 mmHg and the resident "doesn't look right"
- Act Fast document for LTC
  - same screening alerts plus next steps for medical providers in the event of a positive sepsis screen

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<http://www.mhohospitals.org>

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### Questions and Thoughts?



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### Thank You!

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