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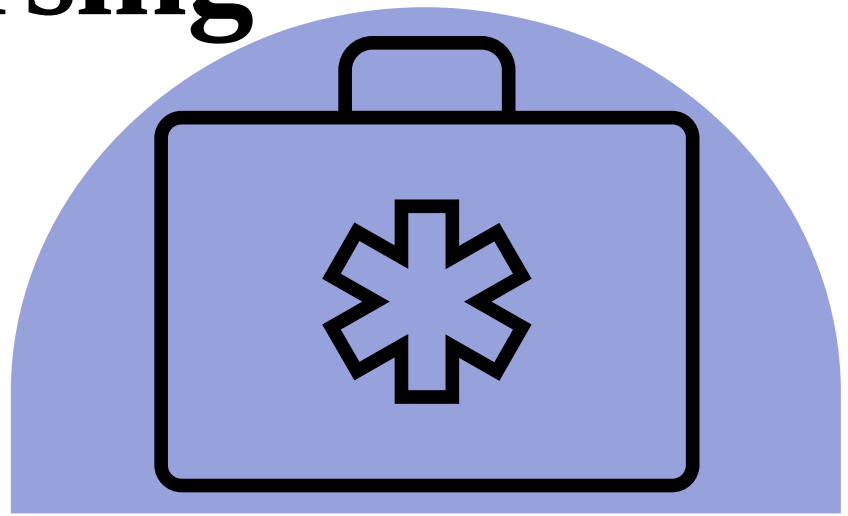
Sepsis Train the Trainer: Early Identification & Treatment In The Nursing Home



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THE GRANT GROUP
Integrated Healthcare Management Solutions

Outline Early Identification and Treatment in the Nursing Home

a. Supplies and Medications Needed

b. Coverage/Monitoring

c. Protocols and Standing Orders

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Sepsis Prevention (World Health Organization)

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Sepsis Signs & Symptoms & Early Recognition of Sepsis in Long-Term Care Settings

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Recognition of Sepsis

- Altered mental status
- Confusion
- Falls
- Malaise
- Tachycardia (heart rate > 90 bpm)
- Arterial hypotension (SBP < 90 mmHg, MAP < 70 mmHg, or an SBP decrease > 40 mmHg)
- Cough, dyspnea, tachypnea (respiratory rate > 22 breaths/minute)

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Factors Complicating Recognition of Sepsis

- **Mental Status Changes** – Many residents have cognitive deficits making it difficult to recognize a cognitive decline
- **Increased respiratory rate** – Conditions such as asthma or COPD are common and can cause increased respiratory rate
- **Hypotension** – Medications given for hypertension, heart failure and psychological disorders can all lower blood pressure.
- **Tachycardia** – Beta blockers or cardiac conduction disorders can cause tachycardia
- **Fever** – Some residents don't exhibit fever when they are infected. Older people may have lower baselines temperatures than younger people.

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Without prompt treatment sepsis can lead to

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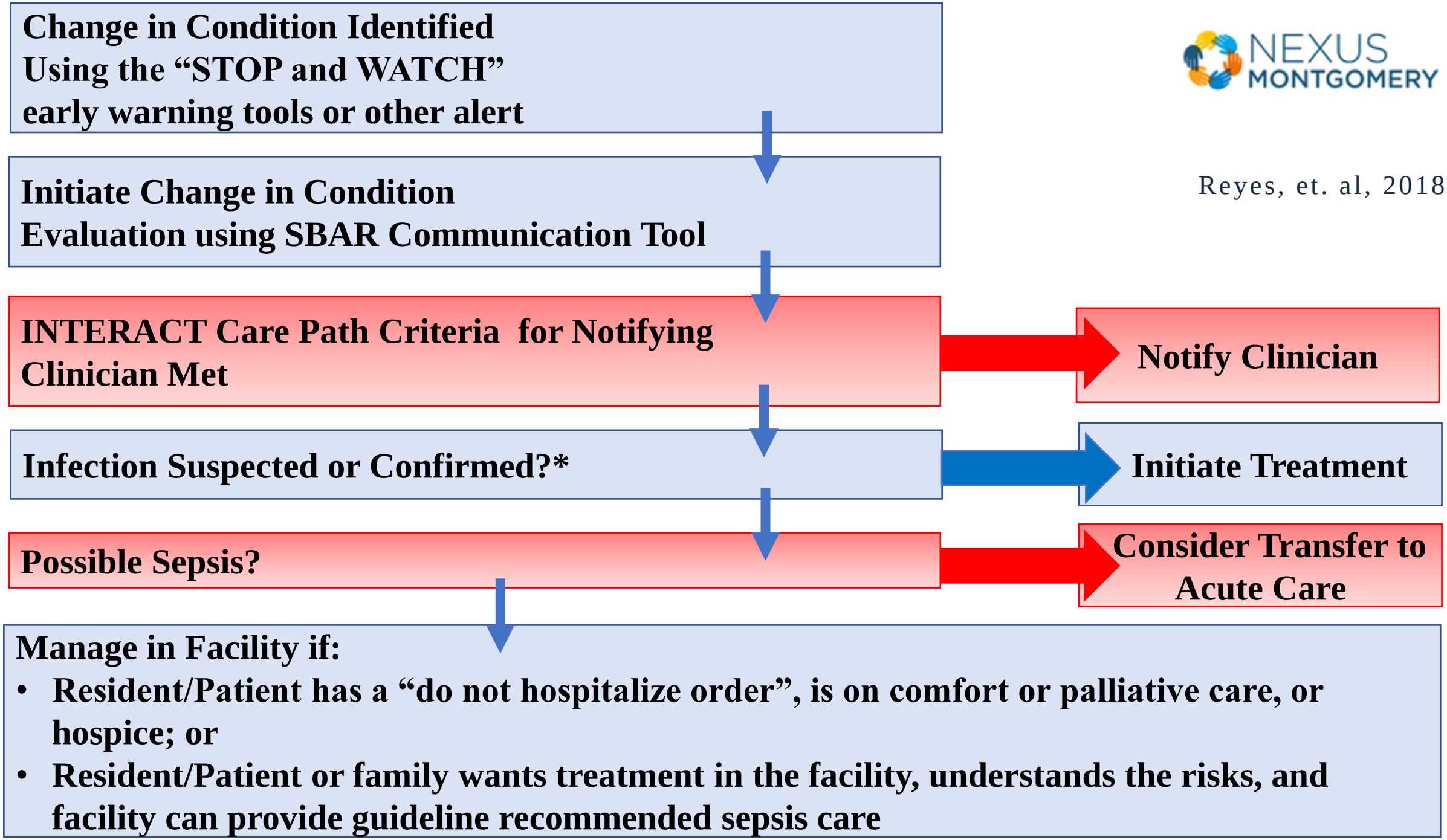

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Reyes, et. al, 2018

STOP and WATCH **early warning tool**

S	**Seems different than usual**
T	**Talks or communicates less**
O	**Overall needs more help**
P	**Pain – new or worsening; Participated less in activities**
a	**Ate less**
n	**No bowl movement in 3 days; or diarrhea**
d	**Drank less**
W	**Weight change**
A	**Agitated or nervous more than usual**
T	**Tired, weak, confused, drowsy**
C	**Change in skin color or condition**
H	**Help with walking, transferring, toileting more than usual**

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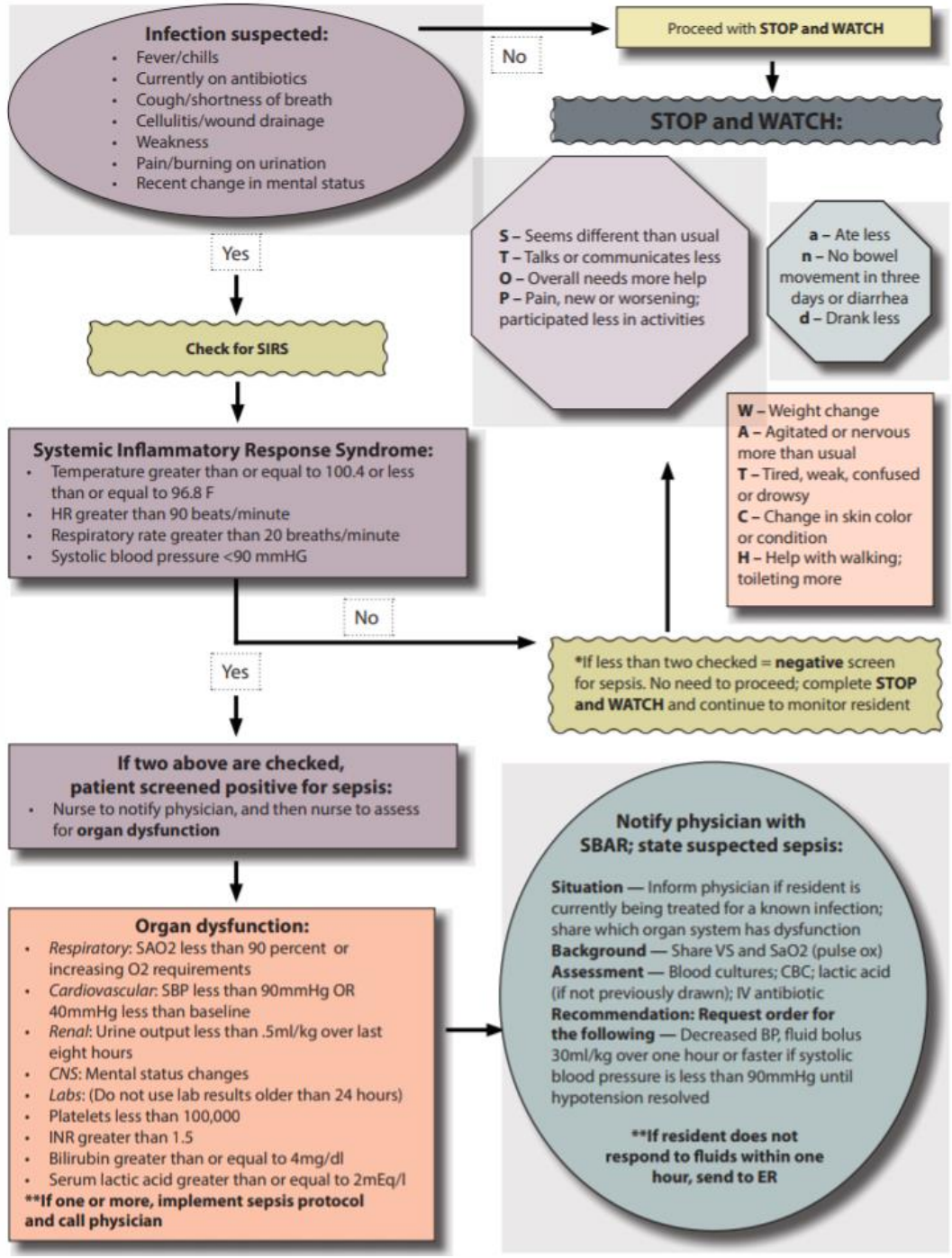

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Sepsis Recognition Flow Chart

Infection suspected
- Fever/chills
- Currently on abx
- Cough/SOB
- Cellulitis/wound drainage
- Weakness
- Recent change in mental status

No → **Proceed with STOP and WATCH**

YES

Check for SIRS

Systemic Inflammatory Response Syndrome:
- ❑ Temperature ≥ 100.4 or ≤ 96.8 F
- ❑ HR > 90 bpm
- ❑ Respiratory Rate > 20 breaths/minute
- ❑ Systolic BP < 90 mmHG

NO

YES

If two above are checked, pt. screened positive for sepsis:
- Nurse notify physician, and then nurse to assess for organ dysfunction

***If less than 2 checked = negative screen for sepsis. No need to proceed, complete STOP and WATCH, continue monitoring Resident.**

STOP and WATCH:

S – seems different than usual
T- Talks or communicates less
O – Overall needs more help
P – Pain, new or worsening participated in less activities

A- Ate less
N – No bowel movement in 3 days or diarrhea
D – Drank less

W – Weight change
A – Agitated or nervous more than usual
T – Tired, weak, confused or drowsy
C – Change in Skin color or condition
H – Help with walking; toileting more

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Sepsis Recognition Flow Chart Continued

Systemic Inflammatory Response Syndrome:

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Organ Dysfunction:

- **Respiratory:** SA02 < 90 % or increasing O2 requirements
- **Cardiovascular:** SBP < 90 mmHG or 40 mmHg less than baseline
- **Renal:** Urine output < 0.5 ml/kg over last 8 hours
- **CNS:** Mental status changes
- **Labs:** (Do not use lab results older than 24 hours)
- **Platelets** < 100,000
- **INR** > 1.5
- **Bilirubin** ≥ 4 mg/dl
- **Serum lactic acid** ≥ 2mEq/l

*If one or more, implement sepsis protocol and call physician

Notify physician with SBAR; state suspected sepsis

Situation: Inform physician if resident is currently being treated for a known infection; share which organ system had dysfunction

Background: Share VS and SaO2 (pulse ox)

Assessment: Blood cultures; CBC; lactic acid (If not previously drawn); IV antibiotic

Recommendation: Request order for the following

- Decreased BP
- Fluid bolus 30 ml/kg over one hour or faster if systolic BP < 90 mmHG until hypotension resolved

Sepsis Recognition Flow Chart Continued

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SITUATION: Tell physician resident screened positive for Severe Sepsis

BACKGROUND: Describe positive SIRS; inform physician if resident is currently being treated for a known infection; share which organ system has dysfunction

ASSESSMENT: Share VS and SaO2 (pulse ox)

RECOMMENDATION – REQUEST ORDER FOR FOLLOWING: Decrease BP, fluid bolus 30 ml/kg over 1 hour or faster if systolic blood pressure is less than 90 mmHg until hypotension resolved. If resident does not respond to bolus within one hour, send to ER.

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Altered mental status

- Acute onset and alternating flow
- Inattention or easily distractible
- Disorganized thinking or illogical flow of ideas
- Altered level of consciousness

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What Questions Can Guide Us In Sepsis Prevention At the Time of Admission?

- Has the patient had sepsis previously?
- Does the patient have an infection?
- Does the patient have cancer?

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Where does Sepsis start?

- Residents who Develop Sepsis in Skilled-Nursing Facility
- Residents who Are Treated for Sepsis in Acute Care and are Discharged to a Skilled Nursing Facility

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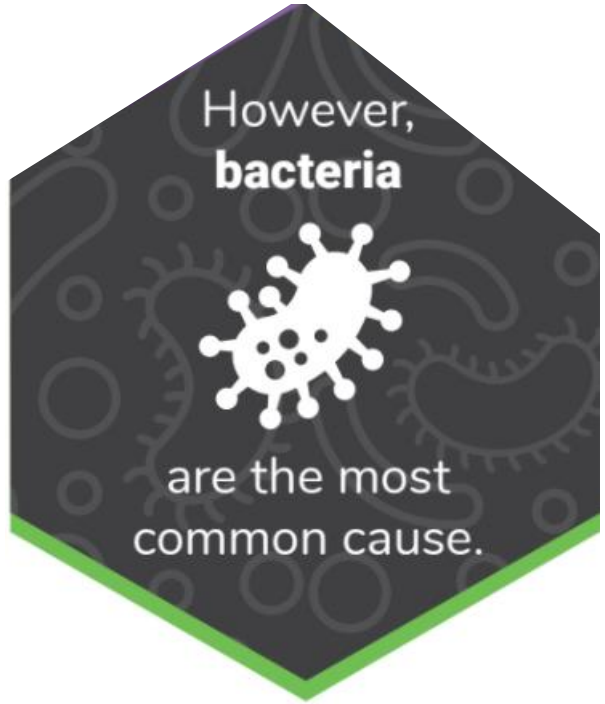
Common Organisms causing Infections in Long-Term Care Settings

- *MRSA*
- *C. Difficile*
- *Vancomycin resistant Enterococcus*



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Prompt Identification of Infections can Interrupt the Pathway to Sepsis.

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Sepsis in the Nursing Home Setting

- Identification
- Management vs Treatment of Sepsis (NH vs Hospital Approach)
- Training of Personnel who Interact with Residents (nurses, CNA's/Med Techs, cleaning staff, maintenance staff, dining staff)
- Roles of Family Members (Caregivers – what to look out for; also family that visits the NH)

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Management/Treatment of Sepsis in Long-term Care Settings

Some initial treatment of Sepsis in NH settings can be done IF

- Access to Laboratory Facilities that can provide results within a few hours
- Standing Sepsis Orders for appropriate medications/tests
- Ability to provide fluid resuscitation
- Ability to monitor vitals at least hourly for patients at risk for sepsis who need monitoring
- System for alerting Nursing and Medical Staff when Signs of Sepsis are identified
- Clear Protocols and Timelines for Action
- Ability to systematically record signs and symptoms, clinical interventions, and the response of the resident to those interventions.

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Sepsis Kit Content

- **Durable Medical Equipment:** Automated Digital BP, Pulse oximeter, Thermometer
- **Supplies:** Supplemental Oxygen, IV Catheter Kits, Blood Drawing Equipment, Urinary Catheter Kits to Monitor Output; PPE, Sterile Crystalloid Fluid, Gloves, Dressing Supplies
- **Lab Supplies:** Blood Culture bottles (aerobic and anaerobic); sterile containers for urine, sputum, stool; bacterial culture swabs
- **Antibiotics:** Both Oral and Intravenous

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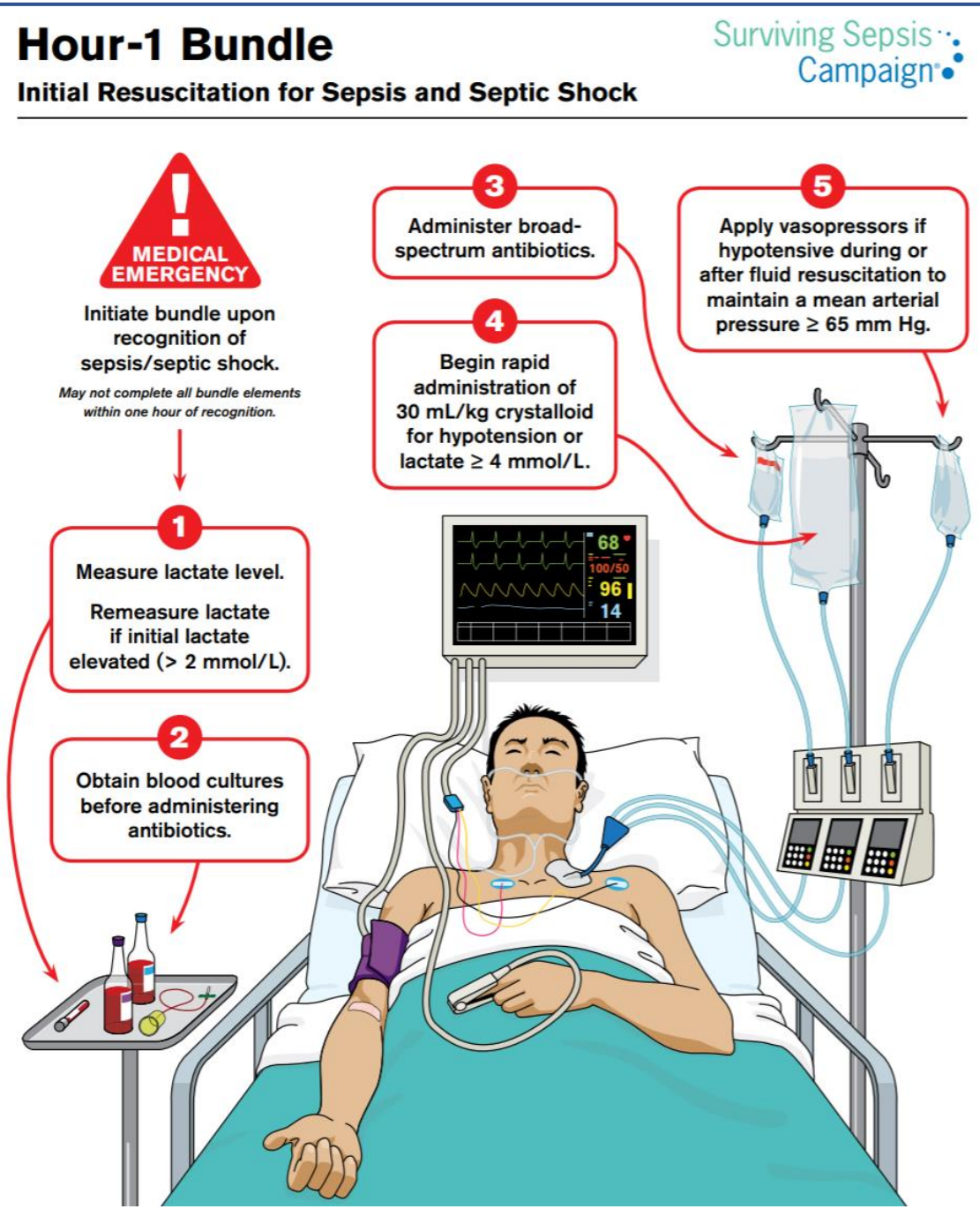
One Hour Bundle

- Measure lactate level
- Remeasure lactate is initial level is > 2 mm/L
- Obtain 2 blood cultures prior to administration of antibiotics
- Begin rapid (bolus) administration of 30 ml/kg of crystalloid for hypotension or lactate > 4 mm/L
- Apply vasopressors if patient is hypotensive during or after fluid resuscitation to maintain a MAP > than or equal to 65 mm Hg
- One hour is measured from first time of notation in chart of indication of sepsis

Hour Bundle



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Three Hour Bundle

- Requires broad spectrum antibiotics to be administered within first 3 hours of care for septic patients
- Criteria: Suspected source of clinical infection
- 2 or more manifestations of systemic infection (SIRS)
- Presence of sepsis induced organ dysfunction including a lactate greater than 2

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Concerns about over prescribing antibiotics may interfere with prompt administration when sepsis is suspected

- Antibiotic Use Can Lead to Adverse Reactions and Allergic Reactions
- The use of multiple drugs in older people is associated with an increased risk of adverse drug events
- *C. Difficile* infections are associated with antibiotic use
- Risk of infection, morbidity
- Some evidence that sepsis is associated with antibiotic use

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ANTIBIOTIC RESISTANCE RESULTING FROM USE OF ANTIMICROBIALS

- *C. Difficile*
- Methicillin Resistant *Staphylococcus Aureus* (MRSA)
- Vancomycin resistant *Enterococcus*
- Estimated more than 2 million illnesses annually from antibiotic resistance
- Estimated more than 23,000 deaths annually from antibiotic resistance
- *C. Difficile* infections affecting 500,000 patients annually
- *C. Difficile* infections causing 15,000 annual deaths

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CLOSTRIDIUM DIFFICILE **RISK AND SEPSIS ANTIBIOTIC ADMINISTRATION**

- CMS Core Sepsis Core Measures (Sep 1) mandates early antibiotic administration
- Infectious Diseases Society of American refused to endorse 2016 recommendations because of concern over excessive antibiotic administration and it's associated risks including C. Difficile
- In this NY hospital center C. Difficile infections decreased after implementation of a sepsis protocol
- This decrease resulted even though overall use of antibiotics increased after the protocol was implemented

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CDC Framework for Antibiotic Stewardship

GOAL: Optimize the treatment of infections while reducing the adverse events associated with antibiotic use.

- The right antibiotic
- At the Right dose
- At the Right Time

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ANTIMICROBIAL STEWARDSHIP IN MANAGEMENT OF SEPSIS

GOAL: Optimize the treatment of infection while reducing the adverse events associated with antibiotic use.

- Four D's: drug, dose, de-escalation and duration
- For sepsis the right antimicrobial is broad spectrum coverage of all likely pathogens
- De-escalation can occur after identification of a likely pathogen
- This usually occurs days later.

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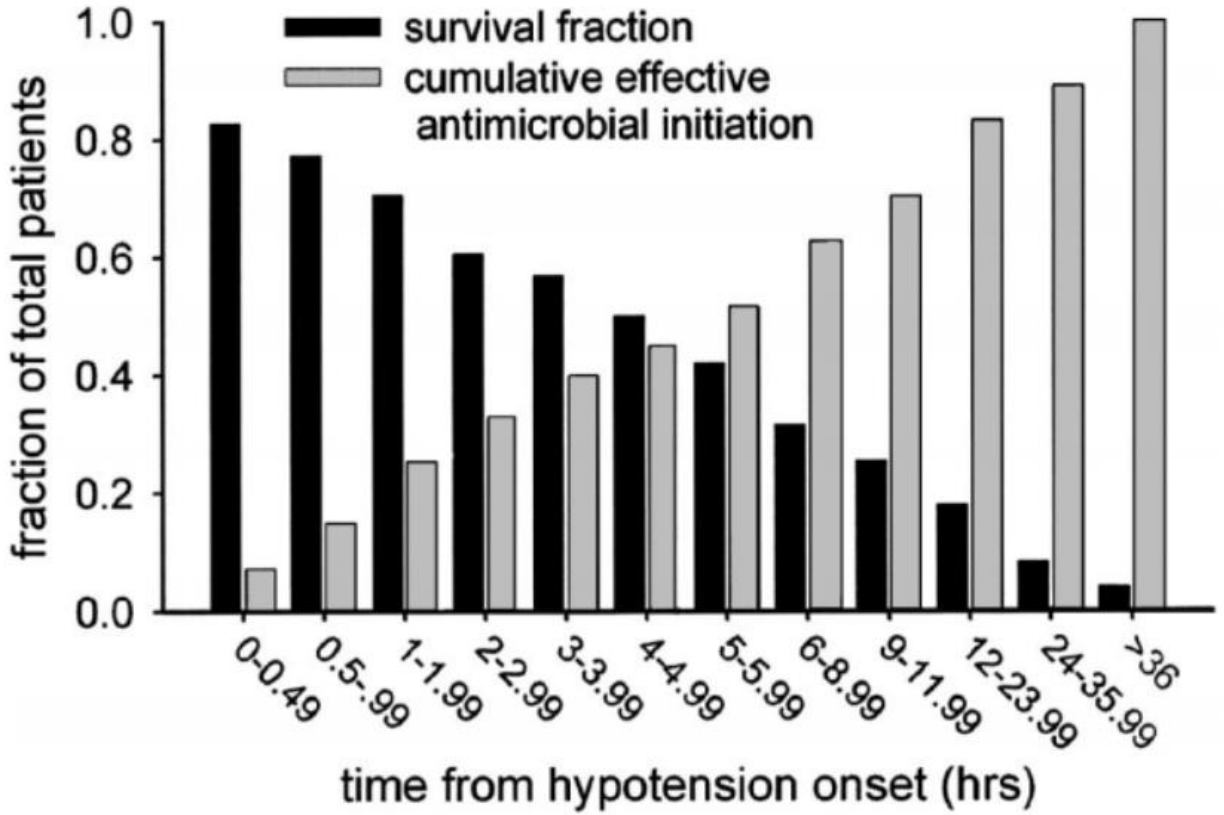

Figure 1. Cumulative effective antimicrobial initiation following onset of septic shock-associated hypotension and associated survival. The x-axis represents time (hrs) following first documentation of septic shock-associated hypotension. *Black bars* represent the fraction of patients surviving to hospital discharge for effective therapy initiated within the given time interval. The *gray bars* represent the cumulative fraction of patients having received effective antimicrobials at any given time point.

Sepsis Case Study

Case Study

The time is 0900 pm. Deborah is a 73-year-old female who has chief complaints of weakness, dizziness, fever, and chills.

She had great difficulty standing this afternoon when she tried to go to dinner. It required two staff members to assist her.

She is a full code. Her medical history includes heart failure and hypertension. She is a one pack per day smoker. She has lived at the nursing facility for two years since her husband died.

Her current weight is 230 pounds. She has no known drug allergies. She has had limited oral intake over last two days due to nausea and decreased appetite. Her skin is pale and moist. Respirations are labored. No family has yet been notified of her condition.

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Initial Assessment

Initial assessment:
Blood pressure: 84/52
NOTE: A blood pressure with a systolic value below 100 is a flag on one of the Sepsis screening tools.

Pulse: 145 – sinus tachycardia
NOTE: A pulse higher than 100 is a flag on one of the Sepsis screening tools.

Temp: 101.5
NOTE: A temperature greater than 100 is a flag on one of the Sepsis screening tools.

Oxygen saturation: 86% on room air

Respirations: 22, labored
NOTE: A respiratory rate higher than 20 is a flag on one of the Sepsis screening tools.

Lung sounds: coarse crackles
NOTE: Lung sounds could indicate infection.

Mental State: Confused. Patient states, “I feel terrible.”
NOTE: Confusion is a flag on one of the Sepsis screening tools.

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Resident Assessed for Infection and Organ Function

Labs were Ordered with instructions to rush results

- Lactate
- Blood cultures
- UA/UC,
- Electrolytes
- BUN
- Creatinine
- PT/INR

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Sepsis Bundle Orders

Standing orders were present in the Electronic Health Record

- 30 mL/kg crystalloid bolus
- 230 pounds (104 kg) x 30 mL/kg = 3136mL for bolus (3 L of fluid)
- Started on broad spectrum antibiotics
- Vital signs at least every 15 minutes

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Resident Reassessed

Vital signs following fluid bolus:

- **Blood pressure:** 78/46 (Initial Value 84/52)
- **Pulse:** 150 (Initial Value 145)
- **Temp:** unchanged
- **Oxygen saturation:** 88% on 2L
- **Respirations:** 20 – shallow (initial value 22)
- **Mental State:** Remains confused: answers questions inappropriately

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Laboratory Values

Two hours later her labs are in:

- Lactate: 4.2
- WBC: 2.0
- Hemoglobin: 9.2
- Creatinine: 2.4
- INR: 2.1

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What would you recommend?

1. What steps should be taken to respond to this new information about Dorothy's condition?
2. What do the results of the labs and the assessment indicate?
3. What would you recommend?

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What would you recommend?

1. What concerns would you have as a nursing supervisor about Deborah?
2. What steps should the CNA take to document Deborah's change in condition?
3. What tools might be used in your facility to assist with documenting the change in condition?
4. Who should be alerted and how should they be alerted to Deborah's change in condition?

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