

Surviving Sepsis: Tests, Tools, and Treatments

Christine Kilgore

Sepsis identification and management is as controversial and vexing as ever, but efforts in nursing facilities to identify and track changes in condition, use tools for structured communication, and initiate early management can make an impact, according to a panel of geriatricians and medical directors who addressed this life-threatening response to infection at the annual conference of AMDA — The Society for Post-Acute and Long-Term Care Medicine.

The “hour-1 bundle,” introduced in 2018 by the Society of Critical Care’s Surviving Sepsis Campaign (combining the 3- and 6-hour bundles), again calls for measuring lactate levels to assess risk and using vasopressors (Crit Care Med 2018;46:997–1000) — but it is still far from applicable in most nursing facilities. Even so, said Swati Gaur, MD, CMD, medical director of post-acute long-term care for the Northeast Georgia Health System, elements of the 1-hour bundle are feasible.

“We can do a lot in long-term care” for patients with suspected sepsis, she said. Most facilities should be able to obtain blood samples to send for culture, administer crystalloid fluids in residents who are hypotensive, and administer broad-spectrum antibiotics when indicated. “Remember, we’re having to

address two important things: decreasing the microbial load, and limiting tissue injury by maintaining perfusion pressure,” she said. “These are the two big elements we need to take care of.”

The recommended timing of antibiotic initiation — within an hour of suspected sepsis — is important. “There is pretty much a linear correlation of mortality to delay in antibiotic administration,” said Dr. Gaur, referring to a review that mapped the survival fraction against the time from hypotension onset of antibiotic administration (Curr Infect Dis Rep 2015;17:493–496).

Screening tests and criteria for sepsis have been disappointing. The Systemic Inflammatory Response Syndrome (SIRS) criteria and the quick Sequential Organ Failure Assessment (SOFA) were both dropped from international sepsis guidelines in 2016 and 2017, respectively — changes that highlight “that we have a lot to learn about sepsis and how to define it,” said Theresa Rowe, DO, assistant professor at Northwestern University in Chicago.

And a recently published chart audit of nursing home residents transferred to the hospital suggests that these and other criteria, including temperature thresholds and the 100-100-100 Early Detection Tool, generally perform poorly

in screening for early sepsis in the nursing home population (J Am Med Dir Assoc 2018;19:492–496). The 100-100-100 tool, recommended for long-term care by the Minnesota Hospital Association, was among the most sensitive tools in the study. And like the Interventions to Reduce Acute Care Transfers (INTERACT) sepsis tools, it has the advantage of “providing for more structured communication from front-line staff to clinicians,” said Dr. Rowe.

Dr. Gaur’s strategy has been multipronged: certified nursing assistants use the Stop & Watch tool and the 100-100-100 tool — along with active surveillance — to detect and monitor changes, and they communicate with the nurses. The nurses use the INTERACT SBAR (Situation, Background, Assessment, Recommendation) for sepsis as well as the goals of care (Physicians Orders for Life-Sustaining Treatment/advance care plans) to consult with physicians. When sepsis is suspected, “we order labs, fluids, antibiotics and call the family,” she said, noting that

HOURLY BUNDLE OF CARE ELEMENTS:

- Measure lactate level (and re-measure if initially elevated, >2 mmol/L).
- Obtain blood cultures before administering antibiotics.
- Administer broad-spectrum antibiotics.
- Begin rapid administration of 30mL/kg crystalloid for hypotension or lactate level \geq 4 mmol/L.
- Apply vasopressors if hypotensive during or after fluid resuscitation to maintain a mean arterial pressure of \geq 65 mm Hg.

Source: Society of Critical Care Medicine, <http://bit.ly/2LPpIGU>

having goals of care is extremely helpful for decision-making in “a very quick timeframe.”

When on-site treatment is preferred or being considered, families need to know, Dr. Gaur noted. “When our residents are septic and go to the hospital, they have high rates of ICU [intensive care unit] admission, longer length of stay, and higher in-hospital mortality — almost twice as high”: 37% compared with 15% for non-nursing facility residents. In-house treatment, she said, includes continued fluid boluses to maintain mean arterial pressure (MAP) at 65 mm Hg or above, the administration of broad-spectrum antibiotics that will be narrowed after culture results are in, serial monitoring of vital signs, and follow-up lactate levels if initial levels were obtained and were high.

The goal, after recognizing early sepsis, is to initiate early management for all patients — in some cases, while hospital transfer is being arranged, Dr. Gaur said. She referenced an editorial recently published in *JAMDA* detailing how post-acute and long-term care settings can serve as “first responders” for the Surviving Sepsis Campaign (J Am Med Dir Assoc 2019;20:275–278).

In the editorial, Robin L.P. Jump, MD, PhD, of the Louis Stokes Cleveland Veterans Affairs Medical Center, Ohio, and coauthors Susan M. Levy MD, CMD, and Wayne S. Saltsman, MD, PhD, CMD, urge nursing facilities to consider having a sepsis “kit” (an S-KIT, they call it) stocked with a pulse oximeter, supplies for placing peripheral intravenous catheters, crystalloid intravenous fluids, supplies for blood cultures and other tests, specific intravenous and oral formulations of broad-spectrum antimicrobials, and other items. 

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GET AHEAD OF SEPSIS
KNOW THE RISKS. SPOT THE SIGNS. ACT FAST.

FOR HEALTHCARE PROFESSIONALS IN LONG-TERM CARE

BE VIGILANT. PROTECT YOUR RESIDENTS FROM 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.

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

SPOT THE SIGNS

Sepsis is the body’s extreme response to an infection. It is life-threatening, and without prompt treatment, often rapidly leads to tissue damage, organ failure, and death. It happens when an infection your resident already has—like in their skin, lungs, or urinary tract—triggers a chain reaction throughout their body.

KNOW THE RISKS

Anyone can get an infection, and almost any infection can lead to sepsis. Adults 65 or older are at an increased risk of developing infections that can lead to sepsis. Sepsis also more commonly occurs in:

- People with chronic medical conditions, such as diabetes, lung disease, cancer, and kidney disease
- People with weakened immune systems

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*.

PREVENT INFECTIONS AND ACT FAST

You play a critical role. Remember to:

- **Act fast if you suspect sepsis**, or if your residents’ infections are not getting better or are getting worse. Signs of sepsis can include any one or a combination of the following:



- **Prevent infections** by following infection control practices (e.g., hand hygiene, catheter removal) and ensuring residents receive recommended vaccines.
- **Ensure residents’ cuts are kept clean and covered until healed.**

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



The Centers for Disease Control and Prevention has developed these and other educational materials, available online at <https://www.cdc.gov/sepsis/education/hcp-resources.html> (Accessed on July 19, 2019).