Editorial

Post-acute and Long-term Care Settings as First Responders for the Surviving Sepsis Campaign

Robin L.P. Jump MD, PhD a,b,* , Susan M. Levy MD, CMD c, Wayne S. Saltsman MD, PhD, CMD d,*

a Geriatric Research Education and Clinical Center (GRECC), Specialty Care Center of Innovation, Louis Stokes Cleveland Veterans Affairs Medical Center (VAMC), Cleveland, OH
b Division of Infectious Diseases and HIV Medicine, Department of Medicine and Department of Epidemiology and Biostatistics, Case Western Reserve University, Cleveland, OH
c SMU Geriatric Medicine Consulting, Frankford, DE
d Division of Geriatrics, Lahey Hospital and Medical Center, Burlington, MA

In 2016, the Society of Critical Care launched its Surviving Sepsis Campaign, emphasizing early recognition and management of sepsis. Sepsis disproportionately affects older adults, particularly nursing facility residents who, compared to non-nursing facility residents, experience higher rates of intensive care unit admission (40% vs 21%), have a longer hospital length of stay (7 vs 5 days), and have higher in-hospital mortality (37% vs 15%). Factors that contribute to an increased risk of adverse outcomes include age-related changes such frailty, immune senescence, alterations in temperature regulation, cognitive decline, and malnutrition. Furthermore, the prevalence of colonization and infection with drug-resistant pathogens and Clostridium difficile is high among nursing facility residents, which makes subsequent infections more difficult to treat.

In a recent discussion about the challenges for recognizing early sepsis among nursing facility residents, Reyes et al reviewed 2 tools, the “Seeing Sepsis” 100-100-100 tool available from the Minnesota Hospital Association, and the quick Sepsis-Related Organ Failure Advisory boards for P residents, which makes subsequent infections more dif
cile to treat. The authors also introduced an approach to early recognition of sepsis built around the freely available INTERACT bundle, replacing the 3- and 6-hour bundles. The hour-1 bundle demonstrated by the success of the hour-3 and -6 sepsis bundles in the reduction of mortality among hospitalized patients with sepsis. In 2018, the Surviving Sepsis Campaign introduced the hour-1 sepsis bundle, replacing the 3- and 6-hour bundles. The hour-1 bundle defines time zero as arrival to the emergency department or the earliest development of sepsis signs and symptoms among patients arriving from another care venue (Table 1). Nursing facilities that recognize and initiate early management of sepsis can improve outcomes through a swift response that begins before the resident arrives in the emergency room.

Even under the best of circumstances, such as a transitional care unit physically connected to a tertiary care hospital that uses a shared electronic medical record, the transfer of a patient from a nursing
goals may also lengthen the time between the recognition of a septic for whom there is a concern for sepsis and also to communicate their decisions. Sepsis-screening tools may help PALTC staff assess residents depend on the assessment of PALTC staff for making treatment de-
not present when PALTC staff notes a change in condition and must treatment for possible sepsis varies. In most cases, practitioners are
insufficient information about a resident’s goals of care or reconsideration of those goals may also lengthen the time between the recognition of a septic patient and transfer to an acute care setting.
Access to on-site practitioners who can diagnose and initiate treatment for possible sepsis varies. In most cases, practitioners are not present when PALTC staff notes a change in condition and must depend on the assessment of PALTC staff for making treatment decisions. Sepsis-screening tools may help PALTC staff assess residents for whom there is a concern for sepsis and also to communicate their findings to on-call practitioners. Similar nurse-led protocols have improved sepsis-related outcomes in hospitals and emergency departments.1

As first responders, PALTC staff can and should initiate efforts to support a resident with concerns for early sepsis. These activities should occur simultaneously with assessing the need for transfer to acute care and, provided that hospitalization is part of the resident’s goals of care, making those arrangements when indicated. We recognize that the level of care possible varies widely across different nursing facilities. Even settings with limited resources, however, can initiate active management of a resident who may have sepsis until the emergency transport team arrives. At a minimum, this may include frequent monitoring of vital signs, oral rehydration, and recording the clinical events onto a flow sheet that may be shared with the transport team.

In addition to positioning PALTC staff as first responders, we also propose that each nursing facility develop a sepsis protocol tailored to its institution and in accordance with the care offered through its major referring hospitals. The protocol should take into account the skills of the staff, such as placing a peripheral intravenous catheter, and consider that staff members will need to provide close evaluation and management of the resident while making a decision to transfer and/or while awaiting the emergency transport team if transfer is part of the resident’s goals of care (Figure 1).

First, the PALTC team should initiate early management for residents with suspected sepsis, incorporating elements from the Surviving Sepsis Campaign hour-1 bundle that are feasible in the skilled setting. Specifically, although few nursing facilities can measure a serum lactate level, most should be able to obtain blood samples to send for microbiological culture, initiate resuscitation with crystalloid fluids in residents who are hypotensive, and, when indicated, administer broad-spectrum antibiotics. To facilitate active management of residents with suspected sepsis, nursing facilities should consider having a sepsis “kit” (S-KIT), analogous to emergency medicine kits (E-KITs), stocked with several key components: dedicated equipment to monitor vital signs, including a pulse oximeter, supplies for placing peripheral intravenous catheters, crystalloid intravenous fluids, phlebotomy equipment, and tubes for typical laboratory tests (Table 2). Additional equipment should include bottles for collecting 2 sets of blood cultures and, when appropriate, swabs for purulent

Table 1
Components of the Surviving Sepsis Campaign (SSC) Hour-1 Bundle that may Be Feasible to Implement in Post-acute and Long-term Care (PA/LTC) Settings

<table>
<thead>
<tr>
<th>Surviving Sepsis Campaign Hour-1 Bundle</th>
<th>Implementation in Post-Acute and Long-Term Care Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure lactate level. Remeasure if initial lactate is &gt;2 mmol/L.</td>
<td>Blood cultures, urine culture from a newly placed urinary catheter. When appropriate, obtain a sputum culture and swabs of gross pus.</td>
</tr>
<tr>
<td>Obtain blood cultures prior to administration of antibiotics.</td>
<td>Administer broad-spectrum antibiotics (see text for details)</td>
</tr>
<tr>
<td>Administer broad-spectrum antibiotics.</td>
<td>For hypotension (&lt;90/60 mmHg for residents with a baseline ≥120/80), begin rapid administration of 1-2 L of crystalloid, with the first liter going in over 1 h.</td>
</tr>
<tr>
<td>Begin rapid administration of 30 ml/kg of crystalloid for hypotension or lactate ≥4 mmol/L.</td>
<td></td>
</tr>
<tr>
<td>Apply vasopressors if patient is hypotensive during or after fluid resuscitation to maintain a mean arterial pressure of ≥65 mmHg.</td>
<td></td>
</tr>
</tbody>
</table>

*Based on resources and staffing available in acute care settings.

Facility to the emergency department or acute care ward consumes precious time. Factors that may contribute to delays in transfer include reaching the on-call provider for the nursing facility, finding an accepting physician at a hospital, determining the availability of a bed, arranging for transport, the physical distance between institutions, and additional confounders such as weather. Furthermore, insufficient information about a resident’s goals of care or reconsideration of those goals may also lengthen the time between the recognition of a septic patient and transfer to an acute care setting.

Access to on-site practitioners who can diagnose and initiate treatment for possible sepsis varies. In most cases, practitioners are not present when PALTC staff notes a change in condition and must depend on the assessment of PALTC staff for making treatment decisions. Sepsis-screening tools may help PALTC staff assess residents for whom there is a concern for sepsis and also to communicate their findings to on-call practitioners. Similar nurse-led protocols have

---

**Table 2**

**Table 2** Components of the Surviving Sepsis Campaign (SSC) Hour-1 Bundle that may Be Feasible to Implement in Post-acute and Long-term Care (PA/LTC) Settings

<table>
<thead>
<tr>
<th>Early Management by PALTC First Responders</th>
<th>Arrange Hospital Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Blood cultures (2 sets)</td>
<td>• Review medical record to determine if hospital admission is part of the resident’s goals of care</td>
</tr>
<tr>
<td>• Other cultures as clinically indicated</td>
<td>• Discuss with physician</td>
</tr>
<tr>
<td>• Fluid resuscitation</td>
<td>• Notify family members</td>
</tr>
<tr>
<td>• Laboratory studies</td>
<td>• Include record of events/flow sheet with the documentation accompanying the resident</td>
</tr>
<tr>
<td>• Broad spectrum antibiotics (after cultures are obtained)</td>
<td></td>
</tr>
<tr>
<td>• Frequent monitoring of vital signs (at least hourly)</td>
<td></td>
</tr>
<tr>
<td>• Record signs &amp; symptoms lead to early recognition of sepsis</td>
<td></td>
</tr>
<tr>
<td>• Record clinical interventions and the resident’s response</td>
<td></td>
</tr>
</tbody>
</table>

**Fig. 1.** Overview of a general protocol for early management of sepsis in a post-acute/long-term care (PALTC) resident, emphasizing the role of PALTC staff as first responders.
The recognition of PALTC staff as first responders will also need to document the clinical findings that prompted the concern for sepsis, the interventions, and the clinical response of the resident to those interventions. Nursing facilities might consider practicing their sepsis protocols (ie, a “sepsis code”) to help staff become familiar with processes, materials, workflows (ie, through the event flow sheets), and communication pathways with hospital personnel. These sepsis “codes” may also help identify opportunities to improve or streamline the process prior to invoking it for an actual resident.

The appropriate diagnosis and management of sepsis may become an opportunity for nursing facilities and acute care settings to work together to improve the outcomes of residents who develop sepsis. The recognition of PALTC staff as first responders in potential sepsis identification also positions them to become champions for their residents. They can be empowered with the potential to reduce mortality. Early recognition and management of sepsis in PALTC residents may mitigate some of the long-term effects related to critical illness. Evidence to support this supposition may help advance the development of policies that encourage strong engagement of nursing facilities in acute illness management strategies.

**References**


