

Improving Long-Term Outcomes After Sepsis

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KEYWORDS

- Cognitive impairment • Physical disability • Re-hospitalization • Anxiety
- Depression • Stress

KEY POINTS

- Acute survival from sepsis has improved dramatically in recent years, resulting in a large population of sepsis survivors.
- Many sepsis survivors experience long-term sequelae of sepsis, including weakness, cognitive impairment, frequent hospital readmission, and increased risk for death.
- In-hospital care should focus on treatment of sepsis; minimizing exposure to delirium, distress, and immobility; and preparing patients and families both emotionally and physically for hospital discharge.
- Posthospital care should focus on validating a patient's experience, referral to appropriate therapies (eg, physical or speech therapy), and actively screening for and preventing medical deterioration.

INTRODUCTION

Short-term survival from sepsis has improved dramatically in recent years.^{1,2} As a result, there is a growing population of sepsis survivors.³ These patients frequently experience new symptoms, long-term disability,⁴ worsening of chronic health conditions, and increased risk for death following sepsis hospitalization.⁵ In light of these poor outcomes, the Society for Critical Care Medicine has defined “post-intensive care syndrome” as new or worsening cognitive, physical, and mental health impairments that persist beyond acute hospitalization.⁶ Sepsis survivors are at particularly high risk for this syndrome.

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Elderly sepsis survivors experience a 10% absolute increase in moderate-to-severe cognitive impairment relative to their own presepsis rates,⁴ and middle-aged adult patients fare similarly.⁷ Elderly patients also develop an average 1 to 2 new limitations of activities of daily living (eg, dressing, bathing) and instrumental activities of daily living (eg, taking medications, managing money) around the time of sepsis hospitalization.⁴ Rates of anxiety, depression, and posttraumatic stress disorder are higher than population norms.^{8–10} For these reasons, sepsis hospitalization often represents a pivotal downturn in patients' ability to function independently.¹¹

These new disabilities after sepsis represent a significant public health burden, with an estimated 500,000 older sepsis survivors with functional impairments in the United States and 100,00 with moderate-severe cognitive impairment.¹² More than 1 in 4 older survivors is discharged to a post-acute care facility.¹³ Approximately 40% are readmitted to the hospital at least once in the next 90 days.¹⁴ One in 5 survivors has a late death that is not explained by presepsis health status.⁵

Not all sepsis survivors experience poor long-term outcomes. Of patients surviving hospitalization, approximately one-third die during the following year,^{13,15} one-sixth experience severe persistent impairments, and one-half have a good recovery. The severity of impairments immediately after hospitalization do not correlate well with later outcomes¹⁶ because patients have different trajectories (eg, progressive decline vs recovery) after sepsis.¹⁷ Although there are no routinely used tools to predict long-term disability after sepsis, several factors have been associated with worse outcomes (**Box 1**).

Although the long-term burdens of sepsis survivorship are increasingly recognized, the best in-intensive care unit (ICU), in-hospital, and postdischarge practices for improving long-term outcomes after sepsis are still evolving. In this article, we review the available evidence on management strategies to improve long-term outcomes after sepsis hospitalization.

MANAGEMENT GOALS

In the Intensive Care Unit

Delirium,¹⁸ acute distress,¹⁹ and immobility have each been identified as a key in-ICU factor that is associated with long-term cognitive impairment and physical

Box 1

Risk factors associated with poor long-term functional outcomes

- Burden of chronic health conditions⁸¹
- Duration of delirium during hospitalization⁸²
- Hearing impairment⁸³
- Immobility
- Frailty⁸⁴
- No spouse⁸¹
- Older age
- Premorbid disability⁸⁵
- Prior nursing home care
- Severity of acute illness⁸¹
- Vision impairment⁸³

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