

# Early Identification and Management of the Septic Patient in the Emergency Department

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## KEYWORDS

• Sepsis • Septic shock • Emergency department

## KEY POINTS

- Early detection of sepsis in the undifferentiated patient is critical to decrease mortality rates.
- Early antimicrobial treatment is indicated with adequate fluid therapy for best outcomes.
- Goals for treatment include maintaining tissue and organ perfusion while identifying and treating the source.

## INTRODUCTION

Sepsis and septic shock affect millions of people around the globe and kills more than 1 in 4 patients worldwide.<sup>1</sup> Emergency departments (EDs) nationwide have implemented evidence-based protocols to facilitate the early detection and treatment of patients with sepsis. Despite these efforts, patients present to the ED undifferentiated and can often have an unclear source of infection. The latest literature provides refined definitions and clinical criteria for sepsis identification and indicates that early detection combined with the appropriate early management improves the septic patients' morbidity and mortality rates.<sup>1-3</sup> ED medical providers have a unique opportunity to improve the septic patient's outcomes when using current clinical practice guidance.<sup>4</sup>

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Disclosure: None.

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Crit Care Nurs Clin N Am ■ (2018) ■-■  
<https://doi.org/10.1016/j.cnc.2018.05.009>  
0899-5885/18/Published by Elsevier Inc.

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## SEPSIS-3 CLINICAL PRACTICE GUIDANCE

### *New Definitions*

The Sepsis-3 guidelines refined the definitions and categories of sepsis in an effort to connect the diagnoses with the clinical manifestations seen on patient presentation. New definitions shift the focus of sepsis from an infection causing a systemic inflammatory response syndrome (SIRS), such as a bacteremia, to an infection causing SIRS and organ dysfunction (formally called severe sepsis).<sup>2</sup> The most recent sepsis research indicated patients found to have sepsis without organ dysfunction may have experienced iatrogenic volume overload and the overexposure of broad spectrum antibiotics subsequently increasing their morbidity and mortality rates. The shift of focus for the sepsis definition to patients with organ dysfunction captures those patients with the highest risk for death and avoids the potential for the overtreatment of patients with an infection but no evidence of organ dysfunction.<sup>2</sup>

Sepsis is now defined as “life-threatening organ dysfunction caused by a dysregulated host response to infection.”<sup>2</sup> Septic shock is now defined as a subset of sepsis involving “circulatory and cellular/metabolic dysfunction that is associated with a higher risk of mortality.”<sup>2</sup> The urgency needed in the early identification of sepsis, as it is now defined, exists because of the patient’s increased risk for mortality.<sup>1,2</sup>

### *Clinical Criteria for Sepsis*

To screen a large number of undifferentiated patients for sepsis or septic shock, an index of suspicion and valid screening mechanism is required at the time of the patient’s arrival.<sup>3</sup> For many years, SIRS criteria have been used in hospital-wide sepsis screening protocols across the United States for more than 20 years (**Box 1**). However, these criteria have been found to be nonspecific to the patient diagnosed with sepsis and less predictive of the septic patient’s risk for in-hospital mortality in comparison with organ dysfunction assessments.<sup>2,5</sup> A patient can meet SIRS criteria in nonseptic conditions such as a simple upper respiratory viral infection or in people who have undergone recent vigorous exercise. The sequential organ failure assessment (SOFA) and quick SOFA (qSOFA) scores can be useful for sepsis screening at the time of presentation to the ED (see **Box 1**).<sup>2</sup> The SOFA and qSOFA scores were originally used to assist medical providers’ ability to identify intensive care unit patients at high risk for in-hospital mortality. However, the predictive validity of either of the SOFA scores was greater than SIRS criteria.<sup>1,2</sup>

The SOFA score ranges from 0 to 5 and consists of an evaluation of 6 organ systems: respiratory, renal, hepatic, cardiovascular, hematological, and neurologic.

#### **Box 1**

##### **Systemic inflammatory response syndrome**

Temperature greater than or equal to 38°C or less than 36°F

Heart rate greater than 92

Respiratory rate greater than 20/min or  $Paco_2$  less than 32

White blood cell count greater than 1200/mm<sup>3</sup> or less than 4000/mm<sup>3</sup> or greater than 10% immature bands

*Data from Rhodes A, Alhazzani W, Antonelli M, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock: 2016. Soc Crit Care Med 2017;45(3):1–29.*

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