

## Commentary

# The challenge of sepsis

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Related to *Research* by Poeze *et al.*, see page 513

In this issue of *Critical Care*, Poeze and coworkers [1] report the results of an international survey of physicians' attitudes about sepsis. There are several important messages for clinicians that emerge when reviewing the results of this survey. First, most physicians believed there was no single consensus definition of sepsis, despite the original consensus definitions published in 1992 [2]. Second, the large majority of intensivists believed that better monitoring is needed to diagnosis sepsis earlier. Third, the large majority of respondents believed that patients are treated too late to reverse the onset of sepsis. Finally, patients and their families have a poor understanding of the condition, which makes communication with care givers difficult.

Taken together, these findings identify the challenges most clinicians face when dealing with sepsis in the intensive care unit, namely how best to identify these patients, when to initiate treatment, how to monitor the progress (both resolution and deterioration) of the disease, and how to communicate with patients and families about the nature of one of the most common diseases in critically ill patients.

In the past the need for clinicians to identify and stage critically ill patients with sepsis at the bedside was less important than it is today. Until recently few interventions were available to clinicians that may improve survival in patients critically ill with severe sepsis or septic shock. For many years, the only interventions of proven value in the treatment of patients with sepsis were early institution of appropriate antibiotics, adequate resuscitation, and, finally, good source control [3,4]. These interventions were and continue to be fundamental components of management for critically ill patients with sepsis. However, these interventions, although of obvious importance, were applicable to all patients with infection. They were not specific to patients

with sepsis, severe sepsis, or septic shock. Therefore, the need to identify and stage patients with sepsis was of little clinical importance, and there was no impetus for the bedside clinician to value a staging system for sepsis. This almost certainly has fostered confusion, expressed by the survey respondents, regarding clear definitions of sepsis.

It is important to note that each of the issues raised by respondents in the survey has been addressed in the literature over the past several years. These have led to significant changes in the way in which diagnosis and treatment of sepsis in critically ill patients should be approached.

In response to this survey, conducted in 2001, an international sepsis definitions conference, sponsored by several international critical care societies, was convened in 2001 and tasked with revisiting the sepsis definitions originally published in 1992. The findings of the conference were published in 2002 and reaffirmed the original three stages of the host response to infection [5]: sepsis, severe sepsis, and septic shock. For the practicing clinician, there are now clearly defined consensus definitions of sepsis. Unfortunately, we still lack precise markers that permit early identification of these critically ill patients. However, a staging system, which remains hypothesis generating, was identified by the international definitions conference. This system, named PIRO (predisposition, infection, response, and organ dysfunction), is a model designed to stage as well as monitor the host response to infection on the basis of factors believed to be pertinent to outcomes. Whether the PIRO system will evolve into a useful tool for bedside clinicians will depend on the results of future investigations and epidemiologic studies.

Recently published studies have demonstrated decreased mortality and morbidity as a result of interventions and therapeutics applied to patients with sepsis [6–9]. These

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PIRO = predisposition, infection, response, and organ dysfunction.

new data, resulting from rigorously performed, randomized controlled trials, combined with previous data for beneficial interventions not specific to sepsis management [9–13], lend significant weight to the belief that critical care clinicians can now significantly reduce mortality in patients with severe sepsis and septic shock. These studies have changed the way in which management of sepsis is now viewed by clinicians. Results from these studies are so robust that they have formed the basis for consensus guidelines that were recently published [14,15] and that, taken together, are the foundation for a new, global standard of care in the management of sepsis.

The publication of Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock earlier this year [14,15] was the culmination of phase II of the Surviving Sepsis Campaign. Initiated by the combined efforts of the International Sepsis Forum, the European Society of Intensive Care Medicine, and the Society of Critical Care Medicine in 2002, the Campaign is an international effort to facilitate improvements in sepsis treatment and management through the implementation of guidelines to create a global standard of care for sepsis, thereby reducing mortality from sepsis by 25% over 5 years. An unprecedented 11 organizations sponsored the evidence-based and expert opinion guidelines. Another of the stated goals of the Campaign, and one that directly addresses an issue identified by the survey, is to raise public awareness of sepsis as a common and deadly disease in critically ill patients.

Although there remains a lack of clear markers that might permit precise, early identification and staging of patients with sepsis, clinicians do have important new tools that may assist in the management of these critically ill patients and lead to improved care and survival. The use of consensus definitions for severe sepsis and septic shock will allow identification of those patients who may benefit from the application of the guidelines for management.

Unfortunately, clinicians change very slowly. Historically, transfer of research from the bench to the bedside is a long, tortuous process – one that is not driven by anything very clear and that seems to be based more on fad and coincidence than on a keen, evidence-based evaluation of the literature. Changing clinicians' behaviors in response to published data has long been a glaring failure in medicine. The Surviving Sepsis Campaign represents an important step for international critical care societies. Recognizing the long history of delay in incorporating research into bedside care, these critical care societies have committed to working together to facilitate bench-to-bedside transfer of recent research. In this way, the responses of the participants in the survey published in this issue of *Critical Care* may serve to improve the care for patients with severe sepsis and septic shock.

## Competing interests

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