

Commentary

The Surviving Sepsis Campaign sepsis change bundles and clinical practice

R Phillip Dellinger¹ and Jean-Louis Vincent²

¹Section of Critical Care Medicine, Cooper University Hospital, Robert Wood Johnson Medical School, Camden, New Jersey, USA

²Department of Intensive Care, Erasme Hospital, Free University of Brussels, Route de Lennik 808, 1070 Brussels, Belgium

Corresponding author: R Philip Dellinger, dellinger-phil@cooperhealth.edu

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See related research by Gao *et al.* in this issue [<http://ccforum.com/content/9/6/R764>]

Abstract

The Surviving Sepsis Campaign (SSC) is an international effort to reduce mortality in severe sepsis and septic shock. The campaign included the creation of evidence-based guidelines sponsored and endorsed by 11 international organizations. From these guidelines, sepsis change bundles for initial resuscitation (6 hours) and management (24 hours) were created as a performance improvement tool. In this issue of *Critical Care*, Gao *et al.* have evaluated performance at their institution by using a close adaptation of the two SSC bundle sets and demonstrated an association between 100% compliance with the bundle elements and clinical outcome. The next step will be to demonstrate that the use of education and feedback for performance improvement will increase compliance and decrease mortality in the patient population in general.

As members of the Surviving Sepsis Campaign (SSC), we are pleased to comment on the study by Gao *et al.* published in this issue of *Critical Care* [1].

Protocolized care now exists for a heart attack or a stroke, based on advances detailed in the medical literature. Until now there has been no attempt to reproduce such an approach in severe sepsis despite recently published studies that have shown decreased mortality and morbidity as a result of interventions applied to patients with severe sepsis [2-6]. The SSC (www.survivingsepsis.org) hopes to change that. The campaign is administered by the Society of Critical Care Medicine (SCCM), the European Society of Intensive Care Medicine (ESICM) and the International Sepsis Forum (ISF), and is partly funded by unrestricted industry educational grants.

Phase 1 of the SSC was the introduction of the campaign at several major international critical care medicine conferences, beginning in late 2002, with the intent of decreasing the mortality in severe sepsis by 25% in 5 years.

Phase 2 of the campaign was the production of evidence-based guidelines for the management of severe sepsis. In 2003, critical care and infectious disease experts representing 11 international organizations developed evidence-based management guidelines for severe sepsis and septic shock for use by the bedside clinician. The guidelines manuscript was published in 2004 in both *Critical Care Medicine* and *Intensive Care Medicine* [7,8].

Transfer of research from the bench to the bedside is typically a long and tortuous process and is minimally accelerated by guidelines.

Phase 3 of the SSC campaign seeks to facilitate operationalizing the guidelines to create a global standard of care for sepsis management [9]. The guidelines are transformed into a core of user-friendly tools that will allow clinicians to incorporate these new recommendations more easily into bedside care. The first step in this next phase has been a joint effort with the Institute of Healthcare Improvement to create 'sepsis change bundles', based on a core set of the previous recommendations, into clinical practice. Chart review or concurrent data gathering identifies and tracks change in practice and clinical outcome. Engendering evidence-based change through motivational strategies while monitoring and sharing impact with healthcare practitioners is likely to be a key to improving outcome in severe sepsis.

The severe sepsis bundles form the core of the SSC's attempt to change clinical practice. A 'bundle' is a group of interventions related to a disease process. When executed together, the interventions produce better outcomes than when implemented individually. The goal now is to motivate providers to deliver the sepsis interventions every time they are indicated and to attempt to accomplish them in an 'all or

nothing' way. We believe that if the bundle elements are reliably performed we can achieve the desired outcome of reducing sepsis-related deaths by 25%.

Hospitals are asked to implement two different sets of severe sepsis bundles. Each bundle articulates the objectives to be accomplished (and graded) within specific time frames – 6 hours (resuscitation bundle) or 24 hours (management bundle) – although in both circumstances the bundle elements are to be accomplished as soon as possible.

In this issue of *Critical Care*, Gao *et al.* have both demonstrated the feasibility of evaluating sepsis bundle performance at their hospitals and presented observational data that show an association between sepsis bundle performance and outcome in patients with severe sepsis. This is indeed encouraging.

There are two possible methodologies for data extraction: retrospective chart review and concurrent data collection. Gao *et al.* use the latter methodology, which they call 'proximate look-back data extraction'. Daily screening for the presence of severe sepsis with the use of the SSC sepsis screening tool (available on the SSC/Institute for Healthcare Improvement (IHI) website: www.survivingsepsis.org with front page link to IHI), and after identification of severe sepsis, ascertaining time zero and bundle performance is probably the best methodology for maximizing the quality of data collection. The SSC provides free software to facilitate data collection. Gao *et al.* chose to customize the SSC bundles and create their own database. This was deemed necessary at their institutions in the short term because of present resource limitation in accomplishing some of the bundle elements. Although this customization would prevent the use of the already available SSC database, this approach is not unreasonable in view of their circumstances.

The concept behind the use of the sepsis bundles as a performance improvement tool to standardize educational efforts and provide performance feedback on a monthly or quarterly basis to facilitate change with the eventual goal of achieving as high a compliance rate as possible with all of the bundle elements. The 52% achievement of 100% compliance with the 6-hour sepsis bundles by the hospitals in the Gao *et al.* study is higher than we would have expected at the start of a programme. A halving of hospital mortality in the 6-hour resuscitation bundle-compliant group is very encouraging, particularly in view of the lack of identifiable differences in the two populations other than bundle compliance. The same can be said for the trend in mortality reduction in the 24-hour sepsis management bundle-compliant group. We congratulate the authors on being the first to publish a demonstration of an association between compliance with an adaptation of the SSC bundles and survival. We look forward to data from other institutions that have instituted the SSC bundles.

The next step for the institutions participating in the Gao *et al.* study is to demonstrate decreasing mortality as performance within the sepsis bundles improves over time through education and performance feedback. We encourage hospitals to institute the sepsis change bundle programme using the free software available from the SSC and IHI and to submit their anonymized data to the SSC for aggregate analysis in accordance with the instructions on the website.

The SSC sepsis bundles are an important step in improving outcome in severe sepsis. As new evidence is published, as experience is gained with the bundles and as experts ponder how the guidelines should best be expressed in the bundles, the bundles will probably change so as to optimize their utility. The first revision of the guidelines is scheduled for 2006.

For the campaign to be successful, it will require more than good publicity: it will require tools that facilitate change and a strong commitment from bedside clinicians to change.

Competing interests

RPD has received speaker's honorarium once from Eli Lilly and once from Edwards Life Sciences over the last 2 years

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