

CAMPAIN Update

A global effort to improve care for patients with severe sepsis and septic shock

September/October 2007



Campaign Update is the official newsletter of the Surviving Sepsis Campaign. The Surviving Sepsis Campaign is a partnership of the European Society of Intensive Care Medicine, the International Sepsis Forum and the Society of Critical Care Medicine. This bi-monthly communiqué focuses on topics related to local, regional and national SSC activities. Feedback and content suggestions may be sent to campaignupdate@survivingsepsis.org.



Survive SEPSIS launch in UK 6-hour bundle is initial focus

By Dr. Ron Daniels
Consultant in Critical Care and Anesthesiology
Good Hope Hospital, Heart of England
Chair, Surviving Sepsis Campaign UK Steering Committee
Survive SEPSIS Programme Director

The special edition of *Campaign Update* (April 2007) focusing on the Plan-Do-Study-Act cycle highlighted that improvement is needed in the early recognition and immediate management of patients with severe sepsis. Critical care staff have the foundations of knowledge, skills, and motivation to complete the tasks in the 6-hour resuscitation bundle. Clinicians outside the ICU may be less aware of the Campaign and may not have skills in line placement and infusions management.

Empowerment crucial

Engaging staff beyond critical care is crucial. If individuals with the ability to assess patients for physiological abnormality and apply the screening tool are not at the front door, valuable time has elapsed on the 6-hour clock.

We know that staff members

are more likely to buy in to a project if they feel empowered to contribute to it. Even the most inexperienced nurses and doctors are able to implement elements of the resuscitation bundle by taking blood cultures, administering antibiotics, measuring lactate, and initiating fluid resuscitation.

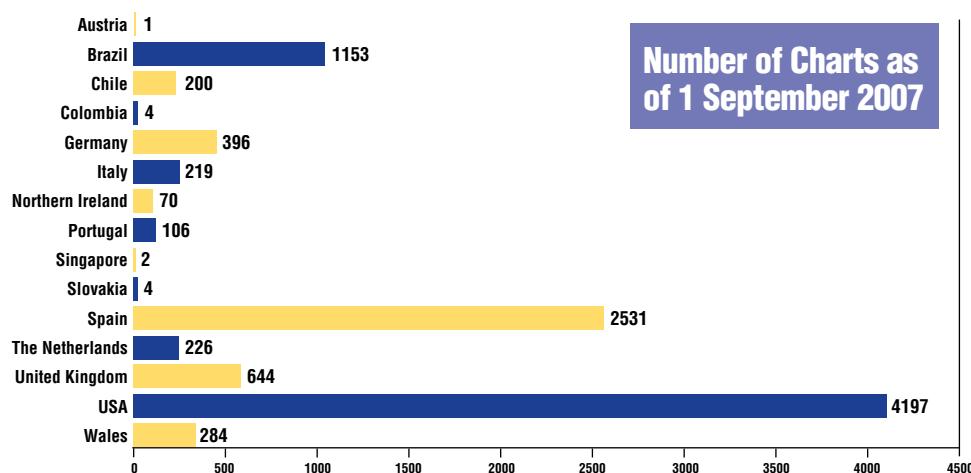
Education program design

Survive SEPSIS is an education program developed in the United Kingdom with the primary aim of improving compliance with the Surviving Sepsis Campaign care bundles. The program is available and applicable worldwide. Aimed at a multiprofessional audience and particularly targeted at junior nursing and medical staff in acute care areas, the focus is on early recognition and immediate management, with timely and appropriate referral to critical care.

These principles are underpinned by a background in the pathophysiology of sepsis from humoral changes through cellular dysfunction to organ compromise. The importance of the prevention of transmission of infection and judicious antimicrobial therapy is stressed. Case studies are used to highlight good and bad practices, and to establish the value of accurately pinpointing time zero.

(continued on page 4)

Copyright © 2007 by the European Society of Intensive Care Medicine, the International Sepsis Forum, and the Society of Critical Care Medicine.



In addition to the 15 countries represented in the chart above, 31 countries have registered the SSC data tool but have yet to submit charts to the global database.

In This Issue

- 2 Leadership Perspective: ED/ICU Collaboration
- 3 In the Literature
- 3 Calendar
- 4 Venezuelan launch
- 4 Campaign-at-a-Glance

R. Phillip Dellinger

ED and ICU Collaboration: A US Perspective

The importance of collaboration between the emergency department (ED) and intensive care unit (ICU) for improvement in the management of severely septic patients in the US was evident from the beginnings of the Surviving Sepsis Campaign. Like most US hospitals, at Cooper the majority of the patients in the SSC database (60%) come from ED admissions. Contributions of the American College of Emergency Physicians in the planning and development of the care bundles, particularly in clinician outreach efforts, have been crucial to the data collection that drives the performance improvement efforts. An association between 6 hour or longer stay in the ED of severe sepsis patients and worsened outcome was recently described by Chalfin et al.¹ These data reinforce the need for strong interdepartmental relationships between ED and critical care staff in achieving the goal of improved patient care.

Challenges in managing severe sepsis patients in the ED include limited resources and overcrowding in the ED. Schorr et al described one hospital's experience in reducing mortality and use of resources through aggressive early application of multiple therapies in a comprehensive approach to sepsis management.² Similar success stories have been shared by participants in the North American SSC networks and among hospitals in the IHI Critical Care Collaborative. Relying on critical care team resources to assist the ED staff in caring for severe sepsis patients has been a useful strategic approach at Cooper. The seamless continuum of care beginning with the initial efforts of the ED staff requires follow through and support from the critical care team when and where it is needed. To ensure that the timely application of the bundle elements occurs at triage in the ED, providing critical care staff to assist with central line insertion, hemodynamic monitoring, and nursing staff for patients remaining in the ED can make a demonstrable difference in patient care.

Identifying champions among key department leaders who promote multidisciplinary collaboration has been essential in attaining and maintaining success with the SSC performance improvement strategies. Gaining the support of administrators, physician directors in the ICU and ED as well as residents, and nurse managers and clinical nurse specialists is essential. Key to successful Campaign implementation includes careful evaluation of interdepartmental relationships encompassing communication channels, culture,

resources, and specific workplace issues such as staffing, medical record protocols, and support from other departments. Interdepartmental alliances can also facilitate making critical care beds available quickly. Continuing regular joint meetings is valuable.

To achieve improved patient care, a receptive environment for learning emphasizing "education over" training" is helpful. The Campaign and IHI provide tools to promote a culture of clinical behavior change leading toward measurable improvement at <http://www.survivingsepsis.org> as well as through educational programs, manuals, and networking opportunities. Using standardized terminology and protocols during interdepartmental sepsis education (eg, current definitions of sepsis, severe sepsis, septic shock, screening tools, application of the bundle elements) will generate demonstrable data to evaluate progress and encourage rapid cycle change in patient care.

To generate enthusiasm for the program, involve all staff members in establishing performance improvement goals. You may choose to start small, eg, measuring lactate in all patients suspected of having severe sepsis, and collect data consistently. Deliver feedback in a timely fashion and highlight areas of improvement. Add elements as the program evolves and celebrate achievements. To address deficiencies in achieving goals, conduct regular chart reviews to identify potential causes and provide data. Employ the Plan-Do-Study-Act process regularly. If necessary, alter protocols promptly with re-education, emphasis on performance goals, and reinforcement of collaboration and support. Above all, keep your and your team's emphasis on improving outcomes in the management of patients with severe sepsis and septic shock. The results of your efforts will speak for themselves..

R. Phillip Dellinger, MD, FCCM

Professor of Medicine
Robert Wood Johnson Medical School
Director, Section of Critical Care Medicine
Director, Medical/Surgical ICU
Cooper University Hospital
Camden, New Jersey, U.S.

Member, SSC Executive Committee

1. Chalfin DB, Trzeciak S, Likourezos A, Baumann BM, Dellinger RP: Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Crit Care Med* 2007; 35:1477-1483.

2. Schorr A, Micek S, Jackson W, Kollef M: Economic implication of an evidence-based sepsis protocol: Can we improve outcomes and lower costs? *Crit Care Med* 2007; 35(5) 1257-1261.

Articles below may provide additional background for SSC implementation.

Huang DT, Clermont G, Dremsizov TT, Angus DC. **Implementation of early goal-directed therapy for severe sepsis and septic shock: A decision analysis.** *Crit Care Med* 2007; 35(9): 2090-2100.

Implementation of early goal-directed therapy (EGDT) faces several barriers, including perceived costs and logistic difficulties. These authors conducted a decision analysis to explore the potential costs and consequences of EGDT implementation for hospitals and for society under three alternative implementation strategies: emergency department-based, mobile intensive care unit team, and intensive care unit-based (after emergency department transfer). They demonstrated that cost savings primarily depended on achieving ICU length of stay (LOS) reductions. Their estimates were particularly sensitive to effect of time delay to implementation and EGDT's efficacy on reducing mortality and LOS. They concluded that EGDT has important start-up costs, and modest delivery costs, but assuming LOS and mortality are reduced, EGDT could be cost-saving to the hospital and associated with favorable lifetime cost-effectiveness projections.

Jones AE, Focht A, Horton JM, Kline JA. **Prospective external validation of the clinical effectiveness of an emergency department-based early goal-directed therapy protocol for severe sepsis and septic shock.** *Chest* 2007; 132 (2):425-32.

Prospective interventional study conducted to determine the clinical effectiveness of implementing EGDT as a routine protocol. This protocol differed from the original Rivers' protocol in that: (1) it was executed by the physicians and nurses who were providing clinical care to the patient (Rivers et al provided additional physician staffing at the bedside); and (2) it was initiated in the ED, but care was subsequently transitioned to the ICU. The protocol was discontinued at the discretion of the admitting attending physician (Rivers et al delivered care in the ED for 6 h). This study supports the clinical effectiveness of EGDT to treat sepsis and septic shock in the ED with a 9% absolute (33% relative) mortality reduction.

Rivers EP, Kruse JA, Jacobsen G, Shah K, Loomba M, Otero R, Childs EW.

The influence of early hemodynamic optimization on biomarker patterns of severe sepsis and septic shock. *Crit Care Med* 2007; 35(9): 2016-2024.

Although early hemodynamic optimization strategies repeatedly have been shown to improve resuscitation end points, decrease organ dysfunction and mortality, and decrease health care resource consumption in patients with severe sepsis and septic shock, the associations between the magnitude and pattern of biomarker response with resuscitation strategy, severity of global tissue hypoxia, severity of organ dysfunction, and mortality of patients during the early phase of severe sepsis and septic shock have never been investigated until this study. A significant association existed between temporal biomarker patterns in the first 72 hrs, severity of global tissue hypoxia, severity of organ dysfunction, and mortality. The authors provide the most convincing human data to date that hypoxia triggers the expression of inflammatory mediators. Indeed, patients randomized to receive early goal-directed therapy had a lower cytokine and caspase expression than patients assigned to the control group, showing that interventions aiming at ameliorating tissue hypoxia lead to a modulation of the inflammatory response. These data show that hypoxia and inflammation are inter-related in patients with severe sepsis and septic shock and provide a potential mechanistic link for why early effective resuscitation can be beneficial.

Cinel I and Dellinger RP. **Advances in pathogenesis and management of sepsis.** *Curr Opin Infect Dis.* 2007; 20(4): 345-52

The authors highlight the recent developments in the pathogenesis of sepsis and the importance of early identification of sepsis with protocolized screening leading to the triggering of evidence-based protocolized care. When accomplished in a timely manner in sepsis treatment, recognition and early intervention is anticipated to reduce sepsis morbidity and mortality.

CALENDAR

2007

September 24

SSC North American Summit, Session I
East Coast Collaborative
8am-5pm
Hyatt Regency Miami
Miami, Florida, USA

September 26-29

Sepsis 2007
Institute Pasteur
Paris, France

October 7-10

ESICM 20th Annual Congress
SSC Educational Session
Wednesday, October 10, 2007
11:10am-noon
Berlin, Germany

November 7

SSC North American Summit
Web Conference
East Coast Collaborative
2-3:30pm EST

November 29

SSC North American Summit, Session I
West Coast Collaborative
8am-5pm
The Brown Palace
Denver, Colorado, USA

2008

January 16

SSC North American Summit
Web Conferences (2)
East Coast Collaborative
2-3:30pm EST
West Coast Collaborative
11am-12:30pm EST

February 2-6

SCCM 37th Annual Congress
SSC Educational Session
Monday, February 4
6:30-8:30am
Honolulu, Hawaii, USA

March 5

SSC North American Summit, Session II
East Coast Collaborative
8am-5pm
Hyatt Regency Miami
Miami, Florida, USA

March 26

SSC North American Summit
Web Conference
West Coast Collaborative
2-3:30pm EST

April 29

SSC North American Summit, Session II
West Coast Collaborative
8am-5pm
The Brown Palace
Denver, Colorado, USA

Send us your SSC meeting information and we will include it in future issues of *Campaign Update*. Send submissions to campaignupdate@survivingsepsis.org.



Asia

China

Europe

Denmark—*Lone Poulsen*

England—*Jane Eddleston*

Germany—*Konrad Reinhart*

Ireland—*Jeanne Moriarty,*

Brian McCloskey

Italy—*Roberto Furnagalli*

Netherlands—*Arthur Van Zanten,*

Dave Tjan

Poland—*Andrzej Kubler*

Portugal—*Antonio Cameiro*

Scotland—*Simon Mackenzie,*

Louie Plenderleith

Spain—*Antonio Artigas*

Sweden—*Hans Hjelmqvist*

Wales—*Mark Smithies*

Latin America

Brazil—*Eliezer Silva*

Chile

Venezuela—

Pablo A. Pérez d'Empaire

North America

Alabama—*Moustaffa Hassan*

Arizona—*Donald Maxwell*

California (Southern)—

Herbert Rogove

California (Sutter)—*John Mesic*

Colorado—*Ron Rains*

Connecticut—*Dawn Martin*

Florida—*Edgar Jimenez*

Georgia—*Kenneth Kalassian*

Illinois—*Nathan Lidsky, John Butler,*

Michael Ries, Jay Cowen

Iowa—*James Boddicker, Jill Morgan*

Kansas—*Steve Simpson*

Maryland/Washington, DC—

Gabriel Hauser

Michigan—*Joseph Bander*

Minnesota—*Henry Mann*

New Jersey—*R. Phillip Dellinger*

New York (NYHHC)

North Carolina—*C. Diane Byrum*

Puerto Rico—*Gloria Rodriguez*

Texas (Memorial-Hermann)—

James Heisler

Virginia—*William Brock*

Survive SEPSIS launch in UK

(continued from page 1)

4-part educational program

Survive SEPSIS comprises four elements:

1. A one-day training program approved for professional development portfolios by the Royal College of Anaesthetists, Royal College of Physicians, and Royal College of Nursing. This day uses a combination of didactic lectures, tutorials, group workshops, and case studies.
2. A 45-minute point-of-care tutorial
3. A toolkit comprising the SSC Evaluation for Severe Sepsis Screening Tool and care pathways
4. A full-color provider manual

In addition to professional development approvals, the program is endorsed by the Surviving Sepsis Campaign internationally and within the United Kingdom by the Intensive Care Society, Society for Acute Medicine, Intercollegiate Board for Training in Intensive Care Medicine, and British Association of Critical Care Nurses. Survive SEPSIS is actively promoted by the SSC UK Steering Committee. The national launch on September 7 included in excess of 320 individuals representing more than 45 healthcare organizations and 6 universities.

The launch was designed to bring about the creation of a national network of centers implementing the SSC Guidelines, with the aim of raising compliance with the resuscitation bundle (currently 11% nationally) and the management bundle (currently 36% nationally) over time.

To evaluate effectiveness, organizations participating in the program are expected to install the Chart Review Database and contribute a minimum number of datasets to the Campaign each quarter, with a statement of intent to collect and submit data for all patients.

It is anticipated that compliance frequencies will initially fall, since the number of centers contributing data for the first time will rise; but compliance targets of 25% for the resuscitation bundle and 50% for the management bundle by April 2009 have been set.

Survive SEPSIS is a non-commercial initiative in the interests of maximizing benefit to the Campaign and to patients. There is to be no license fee and no charge for electronic materials to approved institutions. Advertising materials, posters for emergency departments, and provider manuals will be provided at cost.

Global applications

Survive SEPSIS is designed to complement rather than replace existing education in the care of patients with severe sepsis. Training packages exist elsewhere in Europe. To be effective, an episode of training must be accessible to all relevant staff, and the messages delivered must be acceptable to them. In the UK, it would be difficult in the majority of facilities to complete the resuscitation bundle in its entirety on an individual patient without involving critical care staff. Elsewhere, needs may differ, but it remains crucial that these needs are assessed locally prior to designing or importing an education resource.

Further information on the program is available at www.survivesepsis.org. To learn more about the UK launch or to implement the program outside the UK, e-mail ron.daniels@survivesepsis.org.

Venezuela in Latin American Network

According to Dr. Pablo Pérez d'Empaire, Unidad de Cuidados Intensivos del Hospital de Clínicas Caracas, Caracas, Venezuela, the development of local and global networks has promoted data collection and improved sepsis diagnosis and treatment worldwide. Case in point is the activity now occurring in Venezuela.

With the support of the Venezuelan Society of Critical Care Medicine, the first step toward implementing the Campaign occurred in May 2007 with pilot activity in Hospital de Clínicas Caracas. As interest in the Campaign grows throughout Venezuela, activities were launched to inform physicians and healthcare professionals about the Campaign. Training of emergency department and ICU staff has taken place in the pilot program, and the SSC tools have been translated into Spanish.

Adaptations have been made for local concerns and specific health system conditions so the goals could be met more effectively. This is an example of the Plan-Do-Study-Act cycle in action. Data collection has begun in the pilot hospital, with the plan to begin collection in additional hospitals soon.

Venezuelan clinicians recognize the difficulties of implementing the Campaign, but are eager to accept the challenge and concentrate on the effort to achieve effective goals quickly.