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Treatment of Severe Sepsis and Septic Shock in Germany – the Gap Between Perception and Practice

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Research into perceived and actual treatment behaviour in German ICUs highlights the barriers to the adoption of evidence

based guidelines for the treatment of sepsis and septic shock.

Epidemiology

The German Competence Network for Sepsis (SepNet) has completed a prospective observational cross-sectional and representative study, "Prevalence of severe sepsis and septic shock in Intensive Care Units in Germany". From this study, the incidence of sepsis in German ICUs can be estimated to be 75,000 cases per year (110 per 100,000 inhabitants), comparable to the incidence of acute myocardial infarction (143 per 100,000 inhabitants). With an estimated 40,000 deaths per year, sepsis is the third most frequent cause of death in Germany, after coronary artery disease and acute myocardial infarction (German Ministry of Science and Education 2004). Furthermore, sepsis substantially reduces the quality of life of those who survive and is a major economic burden for the healthcare system. In Germany 21-46% of total costs of intensive care are spent on sepsis treatment (direct costs: 1.7 billion Euro, indirect costs: 4.5 billion Euro).

Recently several studies have demonstrated that various therapeutic and preventive strategies can reduce sepsis mortality and the incidence of sepsis by between 6.1 to 16% (absolute, not relative mortality reduction) compared with the non-interventional study groups (Dellinger et al. 2004; The International Sepsis Forum 2001). For example low-pressure ventilatory strategies have resulted in relative mortality reduction from 39.8 to 31.0%, goal-based haemodynamic support (EGDT) from 46.5 to 30.5%, targeted treatment with hydrocortisone 65.0 to 50.0% and treatment with rhAPC 30.8 to 24.7%. SepNet has defined recommendations for the diagnosis and treatment of sepsis. These recommendations are graded based on a modified Delphi methodology and have been developed in accordance with the recommendations of the International Sepsis Forum (2001) and the International Surviving Sepsis Campaign (Dellinger et al. 2004).

Barriers to Implementation of Guidelines

Guidelines, however, are not self implementing. Manifest difficulties arising when clinical trials are translated into clinical practice suggest multiple physician, patient and health system related barriers to implementation. In the aforementioned German Prevelance Study, 454 ICU-directors from 310 hospitals – chosen as a random sample representing a total of over 2000 ICUs with approximately 20,000 beds nationwide – were interviewed about whether guidelines recommended by the Surviving Sepsis Campaign (SSC) with varying degrees of evidence were implemented ("interview"). These data were compared with data from 415 files of patients with severe sepsis on the day of the study ("audit"). Table 1 shows four examples of poor correlation between perceived and actual implementation of evidence based guidelines and one example of good correlation.

In this highly representative sample of German ICUs, actual therapy habits in severe sepsis and septic shock differ from perceived therapy habits and furthermore do not comply with recommended guidelines. It is known from other areas of medical care that a gap exists between trial results and realisation into clinical practice (Spiegel et al. 2003).

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Solutions

Additional strategies are necessary to encourage physicians, nurses and hospital boards to accept and actually use these guidelines. Novel technologies must be used which are derived from total quality management and other quality improvement methods. Multifaceted interventions that have proven to be most successful combine real time feedback, education, marketing, academic detailing, and reminders or prompting (Bero et al. 1998; Davis and Taylor-Vaisey 1997; Smith 2000; Weingarten et al. 1994). An “opinion-leader” and a local research nurse should be responsible for

the implementation and documentation of the goals of care (quality indicators) in each hospital, and staff kickoff meetings about the goals of care. A Sepsis Tool Kit“ should be prepared, with preset orders, critical pathways for nurses, pocket guidelines for physicians, signs and visual cues at the bedside and visual triggers within charting systems.

To achieve a 25% reduction in sepsis mortality within five years (by 2009) by implementing evidence-based guidelines for the management of septic patients as outlined by the SSC, the Institute for Healthcare Improvement (IHI) has recently developed bundle elements for sepsis treatment (http://www.ihi.org/). This benchmark IHI project uses an Internet-based data collection tool enabling ICUs to improve their standards of care over time.

The 2nd International Congress on Sepsis and Multiorgan Dysfunction, Weimar, September 7-10 (www.sepsis-gesellschaft.de), will focus on implementation strategies to close the gap between perception and practice.

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