

Eliézer Silva¹

Sepsis: a problem for everyone

Sepse: um problema de todos

1. Department of Severely Ill Patients –
Hospital Israelita Albert Einstein –
HIAE - São Paulo (SP), Brazil.

Several epidemiological studies indicate that sepsis is very common in both Brazilian and worldwide intensive care units (ICU). With progressively higher incidences,^(1,2) sepsis has been addressed by different professionals in a relentless endeavor to mitigate its impact.

Considering its magnitude, a model centered on one single perspective is not feasible. Therefore, the development of a multifaceted program, involving different groups such as health care providers, investigators and managers is more likely to succeed.

Let us consider some examples. Severe sepsis patients have been treated in different departments, such as operating rooms and/or post-anesthesia recovery units, emergency departments, intensive and semi-intensive care units and low-complexity wards. The characteristics of these patients and the methods used to treat them lead to different outcomes. Several studies have demonstrated that patients initially treated in the emergency department have more favorable outcomes than those treated in regular wards and ICUs. In the EPIC II,⁽³⁾ for example, there has been a growing risk of death, with an odds ratio (OR) 0.94 for patients admitted from the emergency room, 1.0 for those coming from surgery, and 1.3 for those admitted from a regular ward into the ICU, even considering the infected and non-infected patient groups. In a recent trial, evaluating the impact of the Surviving Sepsis Campaign,⁽⁴⁾ we found that the risk of death was higher among patients admitted from the regular ward than with patients admitted from the emergency room (ER) (OR 1.87); also, this risk was better for patients who developed sepsis during their ICU stay than for patients admitted from the ER (OR 2.25). This highlights the need to elucidate both patient characteristics and the flow of institutional treatment.

Another perspective is related to regional differences. The Progress trial,⁽⁵⁾ involving only patients with severe sepsis, showed different mortality rates in different countries. Brazil has shown the highest hospital mortality rate. These differences are apparently unrelated to socio-economic issues (unpublished data). This difference was also identified by the above-mentioned EPIC II study, and Latin America had the highest rates of infection and mortality.⁽³⁾ Georeferencing trials have begun to assess spatial and socio-economic variables. This tool allows for exploration of the environmental factors associated with different outcomes. Specifically in sepsis, no consistent data are currently available in the literature; however, preliminary data are currently being analyzed in an effort to understand if socio-economic factors are as important as the hospital infrastructure.

A third perspective in this complex puzzle would involve a better understanding of infectious process-related factors. Community-acquired infections are known to have better prognoses because their causal agents are less resistant and their hosts are healthier. However, the natural history of these infections is only rarely discussed in the literature. Overall severity scores are used to evaluate these infections, as in community-acquired pneumonia, in which these scores can be used to guide resource allocation, diagnosis and therapy. Some scores have been used to guide health-care professionals on the need for ICU admission.⁽⁶⁾ However, the management of these patients in non-hospital facilities is still not clearly understood. In addition, to the questions that may be precipitated by georeferencing, data related to pre-hospital assistance, such as access and therapeutic strategies, are necessary. For this last issue, we have

information on healthcare-associated infections. With initiatives aimed at close-to-zero infection rates (www.ihl.org), many worldwide hospitals are, indeed, reporting very low infection rates. The impact of these initiatives is beyond medical considerations, as they may redefine safety and care standards as well as remodel the interface with health care providers, both private and public.

Finally, these and other perspectives should be born in mind when adventuring into the world of sepsis. The development of national initiatives approaching each of these questions shall result in reduced prevalence and mortality, with considerable impacts on both direct and indirect costs. By issuing edits and launching programs that involve research-fomenting institutions and the Brazilian Ministries of Health and Science and Technology, we, Brazilians, may eventually reach the levels currently seen in other countries.

REFERENCES

1. Angus DC, Linde-Zwirble WT, Lidicker J, Clermont G, Carcillo J, Pinsky MR. Epidemiology of severe sepsis in the United States: analysis of incidence, outcome, and associated costs of care. *Crit Care Med.* 2001;29(7):1303-10.
2. Martin GS, Mannino DM, Eaton S, Moss M. The epidemiology of sepsis in the United States from 1979 through 2000. *N Engl J Med.* 2003;348(16):1546-54.
3. Vincent JL, Rello J, Marshall J, Silva E, Anzueto A, Martin CD, Moreno R, Lipman J, Gomersall C, Sakr Y, Reinhart K; EPIC II Group of Investigators. International study of the prevalence and outcomes of infection in intensive care units. *JAMA.* 2009;302(21):2323-9.
4. Levy MM, Dellinger RP, Townsend SR, Linde-Zwirble WT, Marshall JC, Bion J, Schorr C, et al. The Surviving Sepsis Campaign: results of an international guideline-based performance improvement program targeting severe sepsis. *Intensive Care Med.* 2010;36(2):222-31. Review.
5. Beale R, Reinhart K, Brunkhorst FM, Dobb G, Levy M, Martin G, Martin C, Ramsey G, Silva E, Vallet B, Vincent JL, Janes JM, Sarwat S, Williams MD; PROGRESS Advisory Board. Promoting Global Research Excellence in Severe Sepsis (PROGRESS): lessons from an international sepsis registry. *Infection.* 2009;37(3):222-32.
6. Chalmers JD, Mandal P, Singanayagam A, Akram AR, Choudhury G, Short PM, Hill AT. Severity assessment tools to guide ICU admission in community-acquired pneumonia: systematic review and meta-analysis. *Intensive Care Med.* 2011 Jun 10. [Epub ahead of print].