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Sepsis outcomes continue to improve

Mortality has fallen among critically ill patients both with and without severe sepsis in Australia and New Zealand. These data come from the ANZICS Centre for Outcome and Resource Evaluation (CORE), a quality assurance programme that audits and analyses outcomes from over 90% of intensive care units in the two countries (Kaukonen et al, 2014).

According to investigator Professor Rinaldo Bellomo, University of Melbourne, the findings reflect studies in other countries. 'The observation that an equivalent improvement occurred in non-septic patients supports the view that overall changes in intensive care unit practice rather than in the management of sepsis explain most of our findings,' he added.

Between 2000 and 2012, absolute mortality from sepsis fell from 35.0% (95% confidence interval 33.2–36.8%) to 18.4% (95% confidence interval 17.8–19.0%; $P < 0.001$). There was no significant difference between the annual fall in

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deaths from severe sepsis and from all other diagnoses (odds ratio 0.94, 95% confidence interval 0.94–0.95 vs 0.94, 95% confidence interval 0.94–0.94; $P = 0.37$). However, sepsis patients were significantly less likely to be discharged to a rehabilitation facility or nursing home (odds ratio 1.08, 95% confidence interval 1.07–1.09 vs 1.09, 95% confidence interval 1.09–1.10; $P < 0.001$).

The team is now hoping to investigate possible reasons for different discharge patterns in intensive care unit patients.

Sue Lyon

Kaukonen KM, Bailey M, Suzuki S, Pilcher D, Bellomo R (2014) Mortality related to severe sepsis and septic shock among critically ill patients in Australia and New Zealand, 2000–2012. *JAMA* Mar 18 (Epub ahead of print) doi: 10.1001/jama.2014.2637

Early treatment still key in septic shock

Protocol-based, early goal-directed therapy does not reduce the risk of death in septic shock compared with usual clinical care. Thus concluded the multicentre Protocolised Care for Early Septic Shock (ProCESS) Investigators (2014).

ProCESS randomized 1341 patients to one of three treatments: a 6-hour protocol of early goal-directed therapy; or protocol-based standard therapy without haemodynamic monitoring; or usual care.

On the primary end point of 60-day mortality, there were 92 deaths in the early goal-directed therapy group (21.0%), 81 in the standard therapy group (18.2%), and 86 in the usual care group (18.9%). There were no differences in 90-day mortality, 1-year mortality or the need for organ support.

ProCESS investigator Professor Derek Angus, University of Pittsburgh, emphasized the importance of continuing vigilance for sepsis: '[In this study] "usual care" was in fact usual care when septic shock was recognised... Therefore this study does not undermine efforts to promote sepsis awareness, early diagnosis or prompt treatment.'

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ProCESS Investigators (2014) A randomized trial for protocol-based care for early septic shock. *N Engl J Med* Mar 18 (Epub ahead of print)

Advantages for albumin in septic shock?

Compared to crystalloids alone, albumin plus crystalloids did not improve survival in the overall population of severe sepsis patients in a multicentre, open-label Italian study (Caironi et al, 2014). However, an unplanned analysis found evidence of benefit in patients with septic shock.

Investigators randomized 1818 patients with severe sepsis to crystalloid solution alone or crystalloid plus 20% albumin (target serum concentration ≥ 30 g/litre until intensive care unit discharge or 28 days after randomization).

On the primary outcome, 31.8% of albumin patients and 32.0% of crystalloid

patients died by day 28 (relative risk albumin group 1.00, 95% confidence interval 0.87–1.14; $P = 0.94$). By 90 days, 41.1% of the albumin group and 43.6% of the crystalloid group had died (relative risk 0.94, 95% confidence interval 0.85–1.05; $P = 0.29$). There were no significant differences in other secondary outcomes, including the presence and degree of organ dysfunction, and hospital and intensive care unit length of stay.

On the unplanned sub-analysis, 90-day mortality was significantly lower in septic shock patients receiving albumin than in the crystalloid group (relative risk 0.87, 95%

confidence interval 0.77–0.99; $P = 0.03$). There was a trend to higher mortality in patients receiving albumin who had severe sepsis without shock.

Presenting the results, Professor Luciano Gattinoni, University of Milan, commented: 'I think that the possible real advantages of albumin are in patients with septic shock.' He recommended a further randomized trial to investigate potential advantages of the non-oncotic effects of albumin in these patients.

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Caironi P, Tognoni G, Masson S et al (2014) Albumin replacement in patients with severe sepsis or septic shock. *N Engl J Med* Mar 18 (Epub ahead of print)