Addressing high practice variability in reported management of burns

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So sang advocates of the Australian Federation in 1898, recognising that while no colony on the Australian continent had a clearly superior approach to governance, there was merit in adopting a harmonised system for the mutual benefit of all. This ultimately did not lead to centralised dictatorship, but to a country that allows for regional idiosyncrasies while exploiting synergies stemming from greater critical mass.

How is this relevant to the treatment of burns? Australian and New Zealand intensivists believe that their single training pathway, conducted mostly in similar large public hospitals, leads to a uniformly high standard of practice. There are some reasons to believe this is true, including lower severity-adjusted general intensive care unit (ICU) mortality than overseas (although, interestingly, no better for burns), a harmonious binational clinical trials network (www.anzics.com.au/clinical-trials-group), and a robust national audit database that highlights mortality outliers for further investigation. However, despite many factors that should bias towards homogenous practice, it is difficult to find a survey of Australian and New Zealand intensivists that shows broad agreement in any major area of critical care medicine. Four hypothetical patients were prescribed 25 different antibiotics by 84 Australian and New Zealand intensivists, with wide variation in the use of gentamicin, β-lactam dosing, and coverage of methicillin-resistant Staphylococcus aureus. Virtually every possible variant of anticoagulant, flowrate, access catheter and replacement fluid was employed by 194 Australian and New Zealand intensivists responding to a survey of renal replacement therapy. While almost all ICUs monitor tracheal cuff pressure, no-one agrees what this should be. Not even the method by which brain death should be determined is universally practised, despite clear national guidelines. Whatever good results are achieved in Australian and New Zealand ICUs seem to be, rather than because of, consistent adherence to consensus best practice. The situation is analogous to pre-Federation Australia, with individuals pursuing different approaches, and opportunities for scientific practice improvement lost for want of critical mass. Guideline adherence and homogeneity of practice is universally associated with better outcomes in other areas of trauma and general critical care. Current Australian and New Zealand ICU practice appears to have room for improvement.

In this context, the results of the survey by Holley and colleagues in this issue of the Journal might not be surprising, but should raise concern. In response to a hypothetical patient with 75% burns, they found substantial heterogeneity in reported practice, with the greatest disagreements related to type and quantity of fluid and blood product resuscitation, use of bronchoscopy, management of inhalational injury, and use of β-blockers and oxandrolone. However, as the authors note, unlike in other aspects of intensive care practice, there is little high quality evidence to guide these decisions, and consensus guidelines for burns management do not focus on critical care.

Does the absence of evidence and specific guidelines explain the variation observed by Holley and colleagues? Perhaps, but there are many other examples in critical care (eg, selective decontamination of the digestive tract, choice of resuscitation fluid, prioritising light sedation and early mobilisation) where evidence and guidelines have translated slowly, or not at all, into widespread practice. Other recognised barriers to evidence implementation can include lacking necessary resources, having insufficient authority in multidisciplinary decision making, a belief in individualised over protocolised care, and frequent
staff turnover inhibiting the development of ICU-specific initiatives — all of which might need to be addressed. Holley et al’s data provide another insight. Responses were clustered by centre, suggesting clinicians are prepared to follow institutional protocols or perhaps local thought leaders. This is cause for both concern and hope. Many might be concerned that clinicians appear not to be exercising their individual judgement, but rather that they are happy to be led. Equally, there must be hope that they might be led in the right direction.

If outcomes do improve when protocols are followed, the survey by Holley and colleagues should be seen as the first step in a research program that has, as its ultimate aim, leadership towards harmonised, evidenced-based practice. What steps are required? The first step would be to confirm that clinicians practise as they say they do by conducting an observational study of critical care burns treatment. The reported practice heterogeneity identified in Holley et al’s survey justifies the expense of this activity. Subsequently, two lines of investigation could be established. The first line would concentrate on interventions that are supported by sufficient evidence but which are inconsistently implemented. The field of implementation science underpinning this program is well established in critical care medicine. The second line would focus on decisions for which there is little evidence, and for which observed heterogeneity of practice will have demonstrated equipoise for a clinical trial. Prioritisation of which trials to undertake first would logically be approached by investigating associations of observed practice variation with patient outcomes.

Three hundred and forty-four patients with serious burns were admitted to Australian and New Zealand ICUs between July 2017 and July 2018 (Australian and New Zealand Intensive Care Society Centre for Outcome and Resource Evaluation) (unpublished data). For the reasons outlined in the opening paragraph, Australia and New Zealand should be well placed to undertake the work described. We should use this competitive advantage, just as the architects of the Federation realised that the common heritage and shared continental landmass of Australia was too great an asset to waste.

Competing interests
None declared.

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