Editorial

Why is early goal-directed therapy successful – is it the technology?

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See review by Gunn and Fink, page 349 [http://ccforum.com/content/9/4/349]

When assessing outcome studies, the beneficial portion of any therapeutic strategy may not be clearly identified, especially in a condition as complex as sepsis. In the randomized controlled trial conducted by Rivers and coworkers [1], early goal-directed therapy (EGDT) was associated with significantly improved outcomes in sepsis. The study group received a package of care that focused on early resuscitation for the first 6 hours as an inpatient. This comprised fluid, including blood, pressors and inotropes. The goals of resuscitation were based on hemodynamic variables and central venous oxygen saturation ($Scv O_2$). The technology used to measure this was a central venous catheter with integrated oximetry. This device is examined in this issue of *Critical Care* [2]. In keeping with the style we previously adopted for technology assessment reviews, the article begins with a Q&A from the industry.

Early resuscitation in sepsis is standard practice [3]. If the treatment effect reported by Rivers and coworkers is not due to bias in the study design, then to what part(s) of the resuscitation 'package' is the benefit attributable? Opinions vary regarding the contribution an oximetric catheter makes in severe sepsis [4]. Previous studies of therapy directed by mixed venous saturation have found no similar improvement in outcome [5,6]. It seems more likely to us that the timing of resuscitation is the crucial aspect rather than the technology employed [7,8].

Another aspect of the study by Rivers and colleagues that has attracted discussion is the difference in the use of blood transfusion between the groups. The use of blood to improve oxygen delivery is controversial; a liberal transfusion strategy is not beneficial in general intensive care patients [9] and the ability of stored red cells to improve oxygen delivery acutely is known to be impaired [10]. Finally, although blinding in a trial of resuscitation is very difficult to achieve, unfortunately the capacity for this methodological shortcoming to introduce bias remains undiminished.

In light of these considerations, we present a review, paired with the Q&A, which forms part of a process of critical review that any new health technology should be subjected to by the critical care community. In our view, we must remain critical; $Scv O_2$ monitoring cannot be assumed to be central to the success of EGDT [11]. Other goals are presented in the review that are feasible and less invasive. It will take time for $Scv O_2$ monitoring to find its rightful place.

Competing interests

The author(s) declare that they have no competing interests.

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EGDT = early goal-directed therapy; $Scv O_2$ = central venous oxygen saturation.

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