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Commentary: Searching for liquid gold

Hellmuth R. Muller Moran, MD,^{a,b} and
Rakesh C. Arora, MD, PhD, FRCSC^{a,b}

Like prospectors scouring the reaches of the American frontier, many physicians regularly conduct their own kind of prospecting in the intensive care unit (ICU), seeking to optimize postoperative urine output in their patients after cardiac surgery. The association between renal dysfunction and adverse outcomes has been demonstrated numerous times—in cardiac surgery patients¹ and others²—but the decision for and timing of intervention are less clear. In their Expert Review, Merritt-Genore and colleagues³ attempt to provide insight into this important question by examining the evidence for early and late initiation of renal replacement therapy (RRT) for acute renal injury or failure after cardiac surgery.

The authors highlight a number of important issues related to RRT in cardiac surgery patients. Large studies and meta-analyses from the ICU literature have suggested that the timing of RRT does not affect outcomes, yet this conflicts with data derived from cardiac surgery patients. Early RRT seems to promote the maintenance of euvolemia with a consequently shorter ICU length of stay, although not consistently. Finally, in the cardiac surgery literature there is evidence to suggest that patients with advanced conditions such as right ventricular failure, recent heart transplantation, shock, or the need for mechanical circulatory support, may react differently to RRT than their counterparts, which certainly is biologically plausible.

From the ^aDivision of Cardiac Surgery, Department of Surgery, Max Rady College of Medicine, University of Manitoba, Winnipeg, Manitoba, Canada; and ^bCardiac Sciences Program, St. Boniface Hospital, Winnipeg, Manitoba, Canada.

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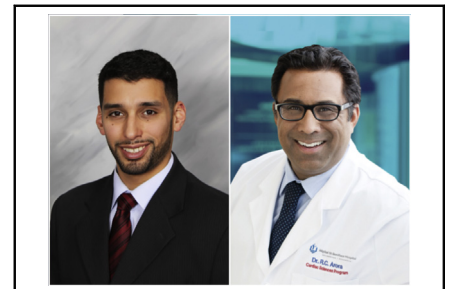
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Address for reprints: Rakesh C. Arora, MD, PhD, FRCSC, I.H. Asper Clinical Research Institute, CR3015, 369 Tache Ave, Winnipeg, Manitoba, Canada R2H 2A6 (E-mail: rakeshcarora@gmail.com).

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CENTRAL MESSAGE

The optimal timing of renal replacement therapy after cardiac surgery is unclear, but available perioperative care recommendations may still reduce the burden of postoperative renal injury.

This review is limited by the heterogeneity of included studies, particularly with regard to their design, population, endpoints, and even definition of what constitutes early and late RRT. Much of the available data is derived from the general ICU population and not from cardiac surgery patients. As the authors rightly state and as is corroborated by the observed differences in data signals, enough factors exist to call into question whether cardiac surgery patients are sufficiently similar to the general ICU population for these results to be applicable. It can be argued that they are not.

Nonetheless, although we agree wholeheartedly with the authors' recommendations designed to generate high-quality data that are directly applicable to cardiac surgery patients, there are still opportunities to translate available evidence to the bedside. It is clear that acute kidney dysfunction is harmful and that the consequences are worse with increasing severity.^{1,2} Once a patient's renal function has deteriorated to the point when RRT is being considered, the opportunity for risk reduction of serious perioperative morbidity has likely passed. Thus, strategies to identify such patients early and to preemptively curb the progression of perioperative kidney injury are likely to pay dividends. With this in mind, the Enhanced Recovery After Cardiac Surgery Society recommends the use of urinary biomarkers to identify at-risk patients and goal-directed fluid therapy to guide perioperative resuscitation.⁴ Until such time as more definitive data are available to guide the timing of RRT in

cardiac surgery patients, the consistent implementation of such recommendations may be a useful process measure for units seeking to reduce the impact of postoperative renal-related morbidity and mortality.

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