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Commentary: Are serious adverse events inevitable?

Rizwan A. Manji, MD, PhD, FRCSC, MBA,^{a,b} and
Rakesh C. Arora, MD, PhD, FRCSC^{a,b}

In this issue of the *Journal*, Lala and colleagues¹ show that 30% of patients undergoing cardiac surgery (CS) for ischemic mitral regurgitation will not be able to go home at discharge. These patients not discharged to home have more than a 4-fold risk of death and 1.5 times risk of new serious adverse events (SAEs) over the next year. The authors state that preoperative factors of age, diabetes mellitus, heart failure (HF), and postoperative SAEs are important risk factors for not being discharged to home.

As the authors state, this information is important for decision making and guiding expectations after CS; however, it does not address the fact that SAEs during the postoperative hospital stay may be preventable. Surgeons can try and optimize preoperative variables (eg, diabetes mellitus, HF), but their influence is more on postoperative events. Adverse events occur in 12% of patients undergoing CS, and more than 50% are potentially preventable.² Hospital-acquired infections are a common reason for adverse events after CS³ and was the most common SAE influencing not being discharged to home in the article by Lala and colleagues (odds ratio, 7.42; 95% confidence interval, 2.31-30.77).

Could a delay in recognizing infection lead to preventable SAE? It is known that one of the most common diagnoses missed in hospitalized patients is infection (often pneumonia and sepsis).^{4,5} The reason that infection may be missed is that older definitions (systemic inflammatory

Rizwan A. Manji, MD, PhD, FRCSC, MBA, and Rakesh C. Arora, MD, PhD, FRCSC

CENTRAL MESSAGE

Serious adverse events (eg, infection) may be preventable if we are aware of the most recent evidence and are vigilant.

response syndrome) that rely on temperature and white blood cell count to diagnose infection are often solely used to make the diagnosis. In addition, there may be excessive dependence on positive culture results to diagnose infection. However, there are newer criteria to diagnose infection. Thirty-one societies have endorsed the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3), which states that systemic inflammatory response syndrome has inadequate specificity and sensitivity to diagnose infection and that the Sequential Organ Failure Assessment (SOFA) score should be used instead.⁶ Sepsis-3 suggests using SOFA to look at end organ dysfunction in a patient with suspected infection to quickly start investigations and treatment.⁶ Sepsis 3 also suggests that infection may be occult, and the phenotype of sepsis can be altered in a patient by multiple factors; therefore, one should think of infection in any patient presenting with organ dysfunction and be vigilant in looking for infection.⁶ In addition, there is literature noting that good-quality sputum samples are obtained in only 14.4% of patients,⁷ and cultures in septic patients are negative in 29%⁸ to 68%⁹ of cases; thus, one cannot solely rely on getting a positive culture to diagnose infection.

We must resist thinking that SAE after CS, such as infection, is inevitable. Using updated evidence (SOFA instead of systemic inflammatory response syndrome) and realizing the error present in culture results may allow earlier detection of infection allowing prompt treatment to avoid getting an SAE. Research endeavors to increase awareness of newer evidence and being vigilant to avoid

From the ^aDepartment 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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Address for reprints: Rizwan A. Manji, MD, PhD, FRCSC, MBA, I.H. Asper Clinical Research Institute, St Boniface Hospital, CR 3014 – 369 Tache Ave, Winnipeg, Manitoba, R2H 2A6 Canada (E-mail: rmanji@sbgh.mb.ca).

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SAE needs to be done. Prevention is key to getting patients home.

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Commentary: Ptolemy versus Copernicus: The times they are a-changin'

James R. Edgerton, MD, FACC, FACS, FHRS

In this issue of the *Journal*, Lala and colleagues¹ report a secondary analysis of 552 patients discharged alive after surgery for moderate or severe mitral insufficiency. Patients were followed at least a year and analyzed for risk factors for non-home discharge (NHD) and associated outcomes including death, serious adverse events (SAEs), and quality of life (QOL). The risk factors for NHD included older age (odds ratio [OR], 1.52), history of diabetes (OR, 1.94), and previous heart failure (OR, 1.64). Postoperative SAEs almost doubled the risk of NHD. Comparing patients discharged to home versus NHD, at 1 year the hazard ratio for death among the NHD was an impressive 4.29. Curiously, there was no difference in QOL.

Putting patients' concerns at the center of data reporting requires a shift in practice.

CENTRAL MESSAGE

As we move to patient-centered medicine, outcomes we track must be those meaningful to patients and their families. To do this, we must transition from proceduralists to practicing disease management.

From the Baylor, Scott, & White Health, Dallas, Tex; and Department of Biology, College of Charleston, Charleston, SC.

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Address for reprints: James R. Edgerton, MD, FACC, FACS, FHRS, Baylor, Scott, & White Health, Dallas, TX 75246-2017 (E-mail: JamesEdgertonMD@gmail.com).

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For many practitioners, the 1-year outcomes of NHD are unknown. However, similar results have been demonstrated with other cardiac surgical procedures,^{2,3} and our own pre-publication data demonstrate the same after transcatheter aortic valve replacement. We have further shown that for revascularization patients followed 8 years, NHD conferred an OR for mortality of 62.2 in the first 120 days and 1.62 thereafter compared with home discharge (data pending publication).