5. Koeckert MS, Ursomanno PA, Williams MR, Querijero M, Zias EA, Loulmet DF, et al. Reengineering valve patients' postdischarge management for adapting to bundled payment models. *J Thorac Cardiovasc Surg.* 2017;154:190-8.

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THE BEST TREATMENTS FOR AORTIC STENOSIS AT THE HIGHEST PATIENT VALUE—

COST, CONTRIBUTION MARGIN, AND READMISSION

Reply to the Editor:

We thank Tam and coauthors for their thoughtful response to our study and read their letter and study with great interest. They inquire about predictors of mortality in patients undergoing transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement (SAVR). Our study used Medicare data, which unfortunately do not have sufficient granular clinical detail to enable calculation of preoperative risk of mortality that matches the robust Society of Thoracic Surgeons predicted risk of mortality for SAVR. Other comorbidity indexes exist for administrative claims data, but we did not use them because they have not been validated for cardiac surgical patients, particularly to the level of specific percentage mortality that is part of the US Food and Drug Administration–approved indications for these interventions.

The second important point raised by Tam and coauthors is the relationship between contribution margin, intensive care unit (ICU) and hospital lengths of stay, device cost, and Medicare payments and penalties. As health care continues to push toward value-based care, payers and providers seek to provide improved quality and outcomes at lower costs with greater patient satisfaction. For TAVR and SAVR, this has meant decreasing ICU and hospital lengths of stay and rates of readmission. In our study, both TAVR and SAVR groups had a relatively high 30-day readmission rate of 43%. Among only patients undergoing TAVR, readmission resulted in a significantly more negative contribution margin,

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from a median of −\$3347 with no readmission to −\$4884 with readmission ($P = .02$). The frequency and financial consequences of readmissions suggest that providers, payers, and policy makers might further work to prioritize readmission reduction as well as consider payment structures that recognize the high rates of health care use in this patient population with fewer financial penalties to providers.

In our study there was a relative cutoff for achieving positive contribution margins at institutions performing more than 50 TAVR procedures during the study period, and Tam and colleagues raise the proposition of whether higher-volume centers might achieve similar results when it comes to lower rates of readmission. We evaluated readmission rates by institutional volume stratified into low-, medium-, and high-volume centers (Figure 1). Although there was a general trend toward higher readmission at low-volume centers relative to medium- and high-volume centers, the difference was not statistically significant ($P = .06$). These results show that the value and results in terms of readmissions are preserved across institutions performing TAVR with different institutional TAVR volumes.

We agree with Tam and coauthors that new technologies, cost, quality, and value will always present some competing priorities, particularly for the financial solvency of device companies, providing institutions, and large payers, but these priorities are not necessarily mutually exclusive. New technology can provide novel clinical interventions as well as possible cost savings. Reduced ICU and hospital lengths of stay for patients undergoing TAVR relative to those undergoing SAVR is one compelling example. Policy and payment changes that evolve with technology to allow providers to deliver high-quality care can also align interests in the most important way, meaning that providers are able to deliver the best treatments at the highest value for patients. Even with these changes, it is reasonable to work toward reductions in device costs to reduce costs to payers such as Medicare and to providing institutions.

Fenton H. McCarthy, MD, MS

Nimesh D. Desai, MD, PhD

Leonard Davis Institute of Health Economics

Division of Cardiovascular Surgery and
Cardiovascular Outcomes, Quality, and Evaluative

Research Center

University of Pennsylvania

Philadelphia, Pa

FIGURE 1. Readmission at 30 days by institutional transcatheter aortic valve replacement volume.

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