

Invited Commentary

Is Depression an Important New Mortality Risk Factor After Aortic Valve Replacement or Simply a Component of the Geriatric Disease Spectrum?

Amisha Patel, MD, MS; Martin B. Leon, MD

Renewed enthusiasm for treating aortic stenosis derives from a rapidly aging global population with increased disease prevalence as well as the emergence of new, less invasive therapies



[Related article](#)

that have expanded patient treatment cohorts, namely transcatheter aortic valve replacement (TAVR). By several metrics, TAVR qualifies as a disruptive breakthrough technology; it addresses an unmet clinical need not well served by other therapies, is an innovative concept and novel device strategy, is validated by rigorous evidence-based clinical research, has been generalized to the practicing medical community, and elevates beyond subspecialty medicine and resonates as a significant sociomedical cultural advance. The accumulated clinical evidence on the value of TAVR from numerous well-controlled randomized trials and observational studies¹⁻⁶ has strongly affected evolving society guideline recommendations.^{7,8} As we progress through the maturation phase of TAVR and begin to include varied patient cohorts, a compelling goal must be to optimize clinical outcomes and improve patient selection criteria. Although surgical risk stratification had been the previous standard for selecting appropriate patients for TAVR, an emerging trend is to identify anatomic and clinical factors that would more strongly favor either TAVR or surgery or palliative care as the preferred therapy.

The article by Drudi et al⁹ in this issue of *JAMA Cardiology* studying the association of depression with mortality after TAVR or surgery for aortic stenosis is a worthwhile attempt to delineate additional clinical factors (ie, clinically relevant depression) that may be important to consider in refining the choice of therapy and optimal management of the postprocedure course of these patients. In this planned subanalysis of the Frailty Assessment Before Cardiac Surgery and Transcatheter Interventions multicenter prospective cohort study, among 1035 older patients participating, 31.5% had evidence of depression, as determined using a 5-item Geriatric Depression Scale Short Form. After adjusting for clinical and geriatric confounders, baseline depression was a univariate and multivariate predictor of 1-month and 12-month all-cause mortality after aortic valve replacement (AVR). Stratified analyses of TAVR and surgery showed similar results. The highest risk cohort consisted of patients with persistent depression (both at baseline and after 6 months), which was associated with a 3-fold increase in mortality at 12 months. The authors conclude that baseline screening and follow-up assessment for depression is important in patients after AVR to provide a coordinated care approach that allows

the identification and management of patients exhibiting depressive symptoms.⁹

Based on the aforementioned findings, should baseline depressive symptoms now be considered a new, common, and important mortality risk factor after TAVR? From our perspective, this may be a bridge too far. First, the high prevalence of baseline depression in this study (much higher than documented in these patients' medical records) is likely an artifact of using a questionnaire instrument for diagnosis compared with interviews by mental health professionals. Second, the authors clearly indicate that multiple previous studies have demonstrated a high prevalence of baseline depression and an association with increased subsequent mortality in patients with aortic valve surgery, coronary artery disease, and congestive heart failure.⁹ Because this symptomatic older patient population with aortic stenosis also has frequent coronary disease (approximately 60%) and the dominant symptom is usually heart failure, it is difficult to isolate depression caused by valvular disease from these other comorbidities. Third, although the authors have attempted to adjust for the presence of other geriatric syndromes, including cognitive impairment and frailty, there is clear overlap; these conditions are often linked with depression and are also associated with increased early and late mortality after AVR. The strong linkage of these geriatric syndromes renders adjustment of confounders problematic. Fourth, the identification of depressive symptoms either by questionnaire or by mental health professionals is unlikely to significantly affect AVR treatment decisions. The association with mortality is present for both surgery and TAVR, which discourages favoring either therapy in patients with depression. Perhaps the one clinical scenario of relevance is the rare patient with multiple comorbidities and depressive symptoms that are acute and severe, tilting the management in the direction of favoring palliative care. Finally, to our knowledge, there is no evidence that short-term treatment of depressive symptoms in this population by any means, including pharmacotherapy, will either resolve symptoms or affect mortality.

An important trend in TAVR has been the minimalist clinical care pathway.¹⁰ This strategy deliberately reduces the systematic use of intraprocedural general anesthesia and multiple accessory invasive therapies (eg, Foley catheters and Swan-Ganz catheters) while encouraging rapid ambulation, the avoidance of intensive care units, and early discharge to a home environment. The requirement of additional routine serial screening tests for depression is certainly counter to this simplicity approach and should only

be embraced if clinical decision making is enhanced or clinical outcomes can be improved.

Nevertheless, the findings presented are intriguing and cross the delicate interface of neuropsychiatric disorders and somatic disease. The authors should be applauded for

embarking on this novel research program and should be encouraged to probe further with additional studies to determine if intensive therapy of depressive symptoms in patients after AVR (or other procedures) can improve subsequent outcomes.

ARTICLE INFORMATION

Author Affiliations: Center for Interventional Vascular Therapy, Columbia University Medical Center, New York, New York.

Corresponding Author: Martin B. Leon, MD, Center for Interventional Vascular Therapy, Columbia University Medical Center, 161 Fort Washington Ave, Herbert Irving Pavilion, 6th Floor, New York, NY 10032 (ml2398@cumc.columbia.edu).

Published Online: January 17, 2018.
doi:10.1001/jamacardio.2017.5065

Conflict of Interest Disclosures: Both authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

REFERENCES

- Leon MB, Smith CR, Mack M, et al; PARTNER Trial Investigators. Transcatheter aortic-valve implantation for aortic stenosis in patients who cannot undergo surgery. *N Engl J Med.* 2010;363(17):1597-1607.
- Smith CR, Leon MB, Mack MJ, et al; PARTNER Trial Investigators. Transcatheter versus surgical aortic-valve replacement in high-risk patients. *N Engl J Med.* 2011;364(23):2187-2198.
- Adams DH, Popma JJ, Reardon MJ, et al; U.S. CoreValve Clinical Investigators. Transcatheter aortic-valve replacement with a self-expanding prosthesis. *N Engl J Med.* 2014;370(19):1790-1798.
- Leon MB, Smith CR, Mack MJ, et al; PARTNER 2 Investigators. Transcatheter or surgical aortic-valve replacement in intermediate-risk patients. *N Engl J Med.* 2016;374(17):1609-1620.
- Reardon MJ, Van Mieghem NM, Popma JJ, et al; SURTAVI Investigators. Surgical or transcatheter aortic-valve replacement in intermediate-risk patients. *N Engl J Med.* 2017;376(14):1321-1331.
- Capodanno D, Leon MB. Upcoming TAVI trials: rationale, design and impact on clinical practice. *EuroIntervention.* 2016;12(Y):Y51-Y55.
- Nishimura RA, Otto CM, Bonow RO, et al. 2017 AHA/ACC Focused Update of the 2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: a report of the American College of Cardiology/American Heart Association Task Force on clinical practice guidelines. *Circulation.* 2017;135(25):e1159-e1195.
- Falk V, Baumgartner H, Bax JJ, et al; ESC Scientific Document Group. 2017 ESC/EACTS guidelines for the management of valvular heart disease. *Eur J Cardiothorac Surg.* 2017;52(4):616-664.
- Drudi LM, Ades M, Turkdogan S, et al. Association of depression with mortality in older adults undergoing transcatheter or surgical aortic valve replacement [published online January 17, 2018]. *JAMA Cardiol.* doi:10.1001/jamacardio.2017.5064
- Gurevich S, Oestreich B, Kelly RF, et al. Outcomes of transcatheter aortic valve replacement using a minimalist approach [published online August 12, 2017]. *Cardiovasc Revasc Med.* doi:10.1016/j.carrev.2017.08.002