

prevention in patients with atrial fibrillation: a cross-sectional study. *Mayo Clin Proc.* 2019; 94(6):1015-1023.

- Rothberg MB, Sivalingam SK, Ashraf J, et al. Patients' and cardiologists' perceptions of the benefits of percutaneous coronary intervention for stable coronary disease. *Ann Intern Med.* 2010;153(5):307-313.

<https://doi.org/10.1016/j.mayocp.2020.09.006>

Trends in the Use of Isolated Surgical and Transcatheter Aortic Valve Replacement in Patients Younger Than 70 Years of Age



To The Editor: The demonstrated safety and efficacy of transcatheter aortic valve replacement (TAVR) in low-risk patients led to its growing acceptance as a standard therapy for aortic stenosis (AS), regardless of patients' surgical risks.¹ However, concerns arose on expanding TAVR to younger patients (<70 years of age), considering the scarce long-term data in this age group and the remaining questions of transcatheter valve durability, coronary reaccess, impact of long-term permanent pacing, and the risk of future surgical aortic valve replacement (SAVR).²⁻⁵ In this focused analysis, we examined contemporary utilization trends and in-hospital mortality of AVR in patients aged <70 years.

The Vizient Clinical Data Base (CDB) (Vizient Inc., Irving, Texas) was queried to select patients who underwent isolated SAVR or TAVR between 2012 and 2019, using International Classification of Diseases (ICD)-9/10-CM codes.¹ The CDB contains deidentified data of 100% of index hospitalizations at >400 US academic centers and their affiliates. The primary end point was the trend in the proportion of TAVR

to all AVRs. Secondary end points were trends in unadjusted in-hospital mortality. Trends were assessed using the nonparametric Mann-Kendall method. The study was deemed Institutional Review Board exempt because the study uses publicly available deidentified data.

A total of 140,104 patients who underwent isolated AVR were identified, of whom 54,174 were <70 years old (45,093 SAVR; 9081 TAVR). The proportion of TAVR to all AVRs in this age group increased from 6.8% in 2012, to 28.2% in 2019 (P trend<.001) (Figure). Patients who underwent TAVR were older (63.0 ± 7.3 vs 56.2 ± 11.6 years; $P < .001$) and more likely to be women (39.4% vs 28.7%, $P < .001$). In the TAVR group, transfemoral access was used in 95.2% of patients. In the SAVR group, bioprosthetic valves were used in 71.4%. In-hospital mortality decreased over time with TAVR (5.6% in 2012, to 1.8% in 2019; P trend<.001) but remained stable with SAVR (1.9% in 2012, to 2.0% in 2019, P trend=.06) (Figure).

This key finding in this focused analysis is the marked increase in the use of TAVR among patients <70 years of age. Nearly 3 in 10 patients aged <70 who were referred for interventions for isolated severe AS in 2019 received TAVR. It is likely that these trends will continue to grow, considering the recent Food and Drug Administration decision to approve TAVR for suitable patients regardless of estimated surgical risk. Although the continuously improving in-hospital mortality for TAVR in this analysis is reassuring, the increasing trends to offer TAVR in patients younger than 70 years of age warrants additional studies with long-term follow-up. Currently available long-term data are derived from

the original pivotal TAVR trials in intermediate- and high-risk patients, in which the mean age was ~80 years.²

The interpretation of these data also needs to consider the inherent limitation of administrative datasets including potential coding inaccuracies, lack of echocardiographic data, and selection bias. Nonetheless, considering that the purpose of this study is to assess trends in major procedures and in-hospital mortality, those limitations are unlikely to have impact on its results. In conclusion, we document a considerable temporal increase in adoption of TAVR in patients aged <70 years. Long-term follow-up is needed before making TAVR the default strategy in these patients.

Fahad Alqahtani, MD

Department of Cardiovascular Diseases
Mayo Clinic School of Medicine
Rochester, MN

Akram Kawsara, MD

Division of Cardiology
West Virginia University
Morgantown

Mohamad Alkhouli, MD

Department of Cardiovascular Diseases
Mayo Clinic School of Medicine
Rochester, MN

Potential Competing Interests: The authors report no competing interests.

ORCID

Akram Kawsara: https://orcid.org/JMCP3123_0000-0003-1513-416X; Mohamad Alkhouli: https://orcid.org/JMCP3123_0000-0003-3847-0959

- Alkhouli M, Alqahtani F, Ziada KM, Aljohani S, Holmes DR, Mathew V. Contemporary trends in the management of aortic stenosis in the USA. *Eur Heart J.* 2020;41(8):921-928.
- Jawitz OK, Gulack BC, Grau-Sepulveda MV, et al. Reoperation after transcatheter aortic valve replacement: an analysis of the Society of Thoracic Surgeons Database. *JACC Cardiovasc Interv.* 2020; 13(13):1515-1525.
- Rogers T, Greenspun BC, Weissman G, et al. Feasibility of coronary access and aortic valve

reintervention in low-risk TAVR patients. *JACC Cardiovasc Interv.* 2020;13(6):726-735.

4. Alkhouli M. The unrelenting search for bio-prosthetic aortic valve durability. *JACC Cardiovasc Imaging.* 2020;13(2 Pt 1):354-356.
5. Chamandi C, Barbanti M, Munoz-Garcia A, et al. Long-term outcomes in patients with new permanent pacemaker implantation following transcatheter aortic valve replacement. *JACC Cardiovasc Interv.* 2018;11(3):301-310.

<https://doi.org/10.1016/j.mayocp.2020.09.018>

The Patient-Centered Value of the Continuous Certification Process



To The Editor: On behalf of the American Board of Orthopaedic Surgery (ABOS), we are responding to Norby et al¹ and Ellenbogen et al² published in the February 2020 issue of *Mayo Clinic Proceedings*. Ellenbogen et al² indicated, "...Maintenance of Certification (MOC) programs generally are disliked by the very group they were designed to benefit, the diplomates." The ABOS was created to protect the public. Unlike a specialty academy or society, the ABOS is not a member organization and does not exist to serve members but to assess orthopedic surgeons for certification purposes. In 1934, the ABOS was created from the American Orthopaedic Association as a private, voluntary, nonprofit autonomous organization with the intent to serve the best interest of the public by establishing standards for orthopedic surgeons.³ The mission of the ABOS is "to ensure safe, ethical, and effective practice of orthopedic surgery," by maintaining "the highest standards for education, practice, and conduct through examination, certification, and maintenance of

certification for the benefit of the public." That said, the Board of Directors of the ABOS regularly turn to our diplomates for feedback on how best to improve our processes.

We applaud the American Board of Neurosurgeons (ABNS) for developing an effective e-learning tool. Similarly in 2019, the ABOS launched the Web-Based Longitudinal Assessment (ABOS WLA) which permits diplomates to meet the knowledge assessment requirements of MOC by annually answering questions based on current literature. In its first year, over 55% of eligible ABOS Diplomates participated in this platform, and the vast majority of participants were very satisfied with this option.

Whether it is the "Golden Rule" or the "Platinum Rule," this ethos has been pervasive in most religions and theocracies from the beginning of time. While the Golden Rule and the Platinum Rule are important in our daily interactions with peers, patients, family, and friends, we do not think we can necessarily assume that what diplomates want is what the public needs.

Approximately 40% of ABOS diplomates still prefer to sit for a Computer-Based Recertification Examination every 10 years. The ABOS has practice-profiled recertification examinations in all orthopedic subspecialties, and also offer an Oral Recertification Examination. The goal of the ABOS is for our diplomates to have an assessment that fits their practice style.

The authors also indicate that MOC is "...expensive, time-consuming, scientifically unproven process..." The ABOS MOC fees,

when averaged over 10 years, are lower than those of many professional societies. The ABOS has not raised fees associated with MOC in more than 7 years, and like the ABNS, the ABOS has a small, efficient staff who run operations on a revenue-neutral budget. Finally, Jones et al,⁴ among other peer-reviewed articles, suggest a correlation between the Continuous Board Certification process and maintaining an unrestricted state license free of adverse action.

In closing, the ABOS believes that the rigor of our requirements for continued certification set standards that help protect the public through a quality process that is valuable to the diplomate at a reasonable cost.

Peter M. Murray, MD

Mayo Clinic
Jacksonville, FL

David F. Martin, MD

American Board of Orthopaedic Surgery
Chapel Hill, NC

Potential Competing Interests: The authors report no competing interests.

ORCID

Peter M. Murray:  https://orcid.org/JMCP3119_0000-0002-4052-3338

1. Norby SM. A vision of the platinum rule. *Mayo Clin Proc.* 2020;95(2):210-212.
2. Ellenbogen RG, Connolly ES Jr, Meyer FB. Maintenance of certification and the platinum rule: an existential crisis. *Mayo Clin Proc.* 2020;95(2):228-230.
3. DeRosa P. *Seventy-Five Years of Doing the Right Thing: A History of the American Board of Orthopaedic Surgery*. Chapel Hill, NC: American Board of Orthopaedic Surgery; 2009.
4. Jones AT, Koop JP, Malangoni MA. Association between maintaining certification in general surgery and loss-of-license actions. *JAMA.* 2018;320(1):1195-1196.

<https://doi.org/10.1016/j.mayocp.2020.09.014>