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EDITORIAL COMMENT

Enhancing Access to Transcatheter Tricuspid Interventions Amid Disparities

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Significant tricuspid regurgitation (TR) is known to be associated with high morbidity and mortality.[1] The tricuspid valve is no longer the "forgotten valve" after positive clinical trials recently led to the approval of transcatheter tricuspid edge-to-edge repair and transcatheter tricuspid valve replacement by the U.S. Food and Drug Administration.[2,3] However, the rapid growth of transcatheter interventions for TR underscores the expanding but uneven distribution role of these therapies.[4] A Medicare analysis indicated that hospitals involved in trials for transcatheter mitral and tricuspid valve therapies tend to serve more socioeconomically advantaged populations than non-trial participating hospitals.[5] Geographic challenges further compound this disparity, as patients in rural areas face significant logistical challenges in accessing specialized centers offering these therapies predominantly situated in urban settings.[6]

A National Inpatient Sample analysis from 2016 to 2020 showed significant economic disparities in the utilization of common structural heart interventions such as transcatheter aortic valve replacement (TAVR), left atrial appendage occlusion, transcatheter mitral valve repair, and transcatheter mitral valve replacement in the United States.[7] These structural interventions were found to be performed less frequently in low- and medium-income patients compared with high-income patients.[7] Moreover, the impact of procedural and volume requirements set by health care payers on the accessibility of new transcatheter valve technologies often results in care disparities, with rural and socioeconomically vulnerable areas facing significant barriers due to the concentration of qualified centers in wealthier, urban locales.[6]

In this issue of *JACC: Advances*, Barker et al[8] employed a multifaceted approach to assess how procedural and volume requirements set by health care payers influence access to tricuspid valve interventions, focusing particularly on transcatheter TR therapies. Data were sourced from the Definitive Healthcare database, which aggregates hospital-level billing information, and census data to determine the population aged ≥65 across various U.S. ZIP codes. The Area Deprivation Index (ADI) was utilized to evaluate socioeconomic conditions across neighborhoods, providing a composite score based on income, education, employment, and housing quality. Hospitals included in the study were those equipped with cardiac teams performing procedures such as TAVR, transcatheter edge-to-edge repair, tricuspid valve, and mitral valve procedures in 2021. The authors modeled 10 hypothetical scenarios to reflect different procedural and volume thresholds, akin to potential requirements by health care payers, to determine the impact of these thresholds on hospital eligibility and geographical access disparities.

The study highlighted a significant correlation between socioeconomic status as measured by ADI and the accessibility of qualified hospitals, with higher ADI values corresponding to increased travel distances for transcatheter TR therapy. This finding was consistent across multiple regression models and scenarios, emphasizing a persistent barrier to health care access, particularly for socioeconomically deprived populations. Individuals from lower ADI areas would travel approximately 15 to 52 miles, whereas those from higher ADI (more deprived) areas faced distances ranging from 47 to 95 miles to access care, indicating a substantial disparity based on geographic and socioeconomic factors. These outcomes suggest that stringent procedural and volume

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requirements may disproportionately exclude hospitals in poorer or more rural areas, exacerbating existing inequities in access to transcatheter TR therapies.

The limitations of this study are crucial for understanding its broader implications. Its cross-sectional design hinders the ability to infer causality or track changes over time, potentially overlooking fluctuations in health care access and policy impacts. The use of the ADI at the ZIP code level may not capture subtle, community-specific socioeconomic variations, thus masking localized disparities. Additionally, the assumption that all hospitals fulfilling procedural and volume requirements provide similar quality care does not consider outcome variations, which may be influenced by diverse staff expertise, resource availability such as interventional imaging expertise, heart failure specialists, or other related patient management strategies. The absence of patient-level data further limits the analysis, relying instead on broader geographic and institutional data and omitting vital individual factors such as demographics, health status, and insurance specifics. Moreover, the study's use of distance as a proxy for access does not account for transportation infrastructure, which can critically affect real-world service accessibility. Using procedural volumes as indicators of hospital qualification might not truly reflect clinical quality or outcomes, with potential biases introduced by the reliance on administrative data for procedure counts. Finally, the study does not consider broader health care context variables like regional norms or legislative changes, which could significantly affect hospital functionality and service delivery.

However, this study highlights critical implications for health care policymakers and providers, particularly in addressing disparities in access to advanced transcatheter interventions. The impact of procedural and volume requirements set by health care payers mirrors the restrictive patterns for TAVR, with such policies widening the gap in health care access between urban and rural communities and between socioeconomically advantaged and disadvantaged areas.[9] For example, a study in rural Florida revealed that residents traveled an additional 44 miles to receive TAVR, with utilization rates approximately seven times lower than in more densely populated regions.[10] To combat these inequalities, the findings call for policy revisions to accommodate a broader range of hospitals, thereby enhancing the distribution of health care services more equitably. Strategies to improve access should encompass reducing procedural volume thresholds to allow less busy centers to offer new treatments, expanding clinical trial sites to include hospitals serving diverse populations, enhancing the generalizability of research findings, and broadening access to emerging therapies. As demonstrated in other interventions such as TAVR, the volume-outcome relationship needs to be studied in transcatheter TR therapies and balanced with the need for broadening access to such advanced therapies in smaller and rural hospitals. Improved access through increased local and federal funding and amplification of resources by way of advanced interventional and imaging cardiologists and technologies such as 3-dimensional transesophageal echocardiography and intracardiac echocardiography that are needed for transcatheter tricuspid interventions will be needed for rural communities. Additionally, strengthening referral pathways, increasing education about valvular heart disease, and addressing structural barriers that disproportionately affect marginalized populations are crucial. These measures should include community engagement to build trust, tailored educational initiatives to improve health literacy, and the design of inclusive and diverse clinical trials. Integrating these approaches helps create a more inclusive health care landscape, fostering a system that better serves all population segments and advancing health care equity.

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