

**VIEWPOINTS**

# Is It Time to Rethink Public Reporting of Surgical Endocarditis Outcomes in Patients Who Inject Drugs?

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**D**espite widespread medical and surgical advancements, infectious endocarditis remains a complex disease with significant in-hospital morbidity and mortality. Nearly 30% of patients with infectious endocarditis have a history of injection drug use, which is both a social and medical illness.<sup>1</sup> The proportion of patients with infectious endocarditis who inject drugs may be even larger in geographic regions with high rates of substance use disorders (SUDs).

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Historically, treatment for endocarditis has focused on appropriate antimicrobial therapy and surgery when indicated. Operative intervention for endocarditis is generally associated with improved long-term outcomes. In recent years, providers have begun to understand addiction as a chronic medical condition rather than an individual moral failing, and there has been increased focus on therapy for underlying SUDs as part of a comprehensive treatment approach to endocarditis. Despite these efforts, short to midterm (3 months to 5 years) mortality for surgically managed patients with SUD and endocarditis are significantly higher than for patients without SUD.<sup>2</sup> This finding is, in part, driven by episodes of recurrent endocarditis associated with continued or relapsed injection drug use. Consequently, some physicians have argued that it is medically futile to initially

operate on or especially reoperate on patients who continue to inject drugs and develop recurrent endocarditis after valve surgery.<sup>3</sup> As contemporary medical literature has come to approach addiction as a chronic medical disease, this approach to surgery seems more peculiar. Certainly, it is crucial to treat both the endocarditis and the inciting SUD that drives the infectious process. However, there are many diseases for which clinicians treat patients despite not always being able to address the underlying problem. For example, endocrinologists will continue to prescribe insulin to patients with type 2 diabetes mellitus even if the patients continue to eat a high-carbohydrate diet or fail to exercise.

Why has the medical system considered withholding lifesaving treatment for patients with SUD-related endocarditis? Prosthetic valves are not a limited resource like transplant organs. Patients with SUD are often younger than the typical patient with endocarditis with fewer comorbid cardiac conditions.<sup>4</sup> Of course, there is the long-standing stigma associated with addiction as well as the relapse probability that impacts how individual providers approach this patient population. However, another often overlooked factor is the effect of public reporting of cardiac surgical outcomes in the United States by the Society of Thoracic Surgeons (STS). The STS national database was established in 1989 “as an initiative for quality improvement and patient safety among cardiothoracic surgeons.”<sup>5</sup> Since 2010, centers have been publicly reporting their surgical outcomes

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through the STS. Institutional outcomes for several procedures, including aortic and mitral valve repairs/replacements, are included in this report. For aortic and mitral valve surgery, the STS uses a 3-star scoring system (1-star=lowest performance; 3 stars=highest performance) to rate a surgical program's morbidity as well as in-hospital and 30-day mortality outcomes and to provide an overall composite score based on those results. The STS morbidity data are based on 5 different parameters including reoperation. These scores are then used by the Centers for Medicaid and Medicare Services as a factor in determining hospital reimbursements. They are also incorporated as part of various widely published hospital rankings.

In general, valve surgery for endocarditis carries a higher operative mortality than the same procedure performed in a similar patient for other indications. Although this is accounted for by the current STS risk model, there are also data to suggest that the STS risk calculator is not the most accurate predictor of the in-hospital surgical mortality associated with endocarditis.<sup>6</sup> Additionally, nearly 25% of patients with SUD and endocarditis will ultimately die of a drug overdose.<sup>7</sup> Because 30-day all-cause mortality (90-day mortality is also tracked by the STS but is not currently publicly reported) is also included in the STS public reporting, the concern about postoperative overdose also becomes a factor in surgical decision making. While surgeons play an important role in helping treat a patient's SUD, under the current circumstances they are being evaluated on the basis of the nature of addiction, rather than the quality of their surgical performance.

Several studies have highlighted that an unintended consequence of mandatory public reporting has been the development of risk-averse behavior among providers. On some level, this response is understandable. If a surgeon is being evaluated on the basis of specific outcome measures that are known to be worse in a population, then it is only natural that they would be less inclined to offer a procedure to those patients. Additionally, although surgical outcomes are publicly reported and tied to reimbursement, medical endocarditis outcomes are not widely available, thereby providing further incentive to defer surgery. However, this approach serves to harm the patients who may be most likely to benefit from surgery. In many cases of infectious endocarditis, the patient's long-term survival is dependent on valve surgery. As one surgical colleague succinctly stated, "If I operate on him, he might die ... if I don't, he's gonna die ... might's better than gonna." Unfortunately, this commonly encountered clinical scenario is not captured by existing surgical risk models.

If there is a rising number of endocarditis cases related to SUD *and* current surgical models may not accurately reflect in-hospital mortality *and* may penalize for mortality beyond surgeons' control *and* surgeons are

held professionally responsible for adverse outcomes, then how can the healthcare system ensure that these patients will receive equitable access to lifesaving treatment? One option is to exclude endocarditis cases from the STS public reporting database on the grounds that many of the cases are performed as a compassionate measure; that is, the patient will almost certainly die without the intervention. There is precedent for this; in 2008, New York state began excluding patients presenting in cardiogenic shock from their publicly released percutaneous coronary intervention reports. A more measured alternative that would still provide transparency would be for the STS to create a separate score for endocarditis valve surgery that is not included in the composite valve rating. The authors would not advocate for completely removing these patients from the STS but rather are suggesting that they not be included in the composite valve score used for the star rating of programs. Surgeons could then operate on critically ill patients without fear of repercussions, while patients and healthcare providers could still access the outcomes. With either approach it would be important to continue to track outcomes longitudinally to identify additional high-risk clinical factors not presently considered by the STS risk calculator. Currently, the system asks only about the presence of drug use, and selecting this variable does not significantly impact the estimated surgical mortality despite evidence that patients who inject drugs may have higher in-hospital mortality.<sup>4</sup> The calculator does not inquire about a patient's number of relapses, their social supports, or whether they have received appropriate medication-assisted treatment for their addiction. However, it would take time to acquire all the appropriate data to accurately demonstrate the impact of these variables on surgical outcomes.

In the interim, physicians across the country are faced with an increasing number of life-threatening endocarditis cases in patients with SUD. Novel interventions, such as the use of oral antibiotics and implementation of addiction medicine and multidisciplinary endocarditis teams, have the potential to positively impact the care of this population. However, there are still significant barriers to accessing surgery, particularly for patients with multiple episodes of endocarditis. A compassionate, thoughtful, and scientific rethinking of the current STS public reporting system could change that for the better.

## ARTICLE INFORMATION

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## Disclosures

None.

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