opportunity for self-evaluation. Bilateral internal thoracic artery use with its potential drawbacks of vasospasm⁵ and initial hypoperfusion^{6,7} may discourage surgeons who have had previous bad experiences from using multiple arterial conduits, especially in patients whom they deem less compliant. But if the multiple arterial conduits could bridge a 6.3% difference in survival between patients, we need to reconsider our experience and, thus, our judgment. If nothing else, we need to inform our judgment of the higher risk we put our patients with lower NSES at by continuing the status quo.

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Commentary: Are cardiac surgeons treating patients of lower socioeconomic status differently?

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A recent article by Patrick and colleagues¹ implies that the answer to the question, Are cardiac surgeons treating patients of lower socioeconomic status differently? is: Yes.

Patrick and colleagues¹ elegantly develop a model defining lower socioeconomic status (SES) using 17 US Census Bureau variables in patients undergoing coronary artery bypass grafting at the University of Pennsylvania and define status at block group level. The Penn team divided the patients into neighborhood SES quartiles, demonstrating that patients in lower socioeconomic quartiles have worse short-term and long-term outcomes. There is also an inverse association to the use of arterial grafts,

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CENTRAL MESSAGE

Neighborhood socioeconomic status impacts outcomes after coronary artery bypass grafting; it is doubtful that the impact can be altered by surgical decisions.

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raising the question of a relationship between long-term outcomes and lack of multiarterial grafting.

As a heart surgeon and cardiologist who are also scientists, this concerns us. The implication is that as providers, we may implicitly or explicitly be biased against offering optimal treatment to this group. Although this may be true, it makes all of us who took and believe that we follow the Hippocratic Oath uncomfortable. Anything that makes us uncomfortable is certainly worth consideration.

Unfortunately, we remain unconvinced for many reasons, despite this elaborate analysis. First, every retrospective study is subject to selection bias that cannot ever be fully controlled for. Here, more than half the quartile 1 patients were diabetic compared with less than one-third in quartile 4 before adjustment. Myriad other factors, such as lung disease, peripheral vascular disease, dialysis, kidney disease, and heart failure are higher in the lower 2 quartiles. Many of these patients are likely to have negative Allen test (which was not included, but excludes the use of the radial artery as a conduit) and a higher risk for sternal infection (reducing the chance for bilateral internal thoracic arteries). It is impossible to eliminate selection bias and completely account for it with this dramatic difference in preoperative patient variables. To their credit, the authors acknowledge this, but likely inadequately.

Moreover, in every place in which we have practiced, the physicians are largely unaware of a patient's insurance, let alone his or her SES. Unlike physical characteristics, which are at high risk for implicit bias, it is impossible for most physicians to identify SES, particularly between adjacent quartiles. If the SES is unknown and unidentifiable during decision making, it is likely an associated variable rather than cause.

Finally, the outcomes difference does not support the conclusion. Surgeons are well aware that perioperative complications result in a worse long-term outcome.² The

increase in short-term morbidity, such as stroke, renal failure, and prolonged intubation are unrelated to arterial revascularization and have a substantial negative influence on long-term survival. Moreover, the 10-year results of the Arterial Revascularization Trial at least make us pause in adopting the across-the-board view that more arterial revascularization improves late survival in every population.³

Patrick and colleagues¹ are to be congratulated for developing a sophisticated model of neighborhood SES that will likely be useful in further efforts to identify the disparity in treatment and outcomes in the lower quartiles. However, the solution is likely not going to occur at the time of cardiac surgery nor by the decision whether or not to use an additional artery. In fact, in some cases, this may do more harm. We look forward to their next contribution to help us toward a solution.

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