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AGE- AND SEX-MATCHED CONTROLS SHOULD NOT BE THE STANDARD FOR THE ROSS PROCEDURE



To the Editor:

The optimal treatment for aortic valve pathology in young patients is a subject of debate in the current literature. This subset of patients constitutes a clinical challenge due to their longer life expectancy and increased lifetime risk of prosthesis-related complications.¹ With numerous options for aortic valve replacement, the Ross procedure has been championed as the only intervention capable of restoring late survival to that of the age- and sex-matched general population.^{2,3}

Dedicated Ross programs have been established at several high-volume tertiary-care centers, with expert surgeons and ancillary staff experienced in the complex post-operative care required by these patients. Notable disparities in access, quality, and cost of tertiary-care centers have been well-established.⁴ The patient population at these centers is generally highly educated, wealthier, and has longer life expectancies than the general population.⁵ A recent Society of Thoracic Surgeons Adult Cardiac Surgery Database study of 3054 patients who underwent the Ross procedure across registered centers in North America between 1994 and 2010 reported that 87% of patients were White, compared with 75.1% and 72.4% of the US population from the 2000 and 2010 census, respectively.^{6,7} Our own registry of Ross patients between 1990 and 2021 showed similar disparities, with 94% of patients self-reporting as non-Hispanic White compared with 86.1% and 84.5% of the Ohio population from the 2000 and 2010 census, respectively.⁷ The patient population served by tertiary-care centers does not necessarily reflect the overall population. In context, the average Ross patient, a 43-year-old White male, has a 3.3-year longer life expectancy than his Black counterpart.⁸ Appropriate comparisons with age- and sex-matched norms must take into account race in

addition to other social determinants of health, such as income, education, marital status, lifestyle factors, and area of residency. This requires more complex analysis than with age- and sex-matched comparisons, so tools from National Institutes of Health data have been constructed to account for such variables.⁹

While the Ross procedure has demonstrated excellent outcomes with superior hemodynamics and freedom from lifelong anticoagulation, the survival benefit must not be overstated and outcomes from high-volume referral centers should not be overgeneralized. Evidence supporting the efficacy of the Ross procedure is promising but remains inconclusive, resulting in a Class IIB recommendation from the 2020 American College of Cardiology/American Heart Association valve guidelines.¹⁰ We caution against describing the Ross procedure as restorative of survival to age- and sex-matched controls without accounting for confounding factors, such as demographics and social determinants of health. We previously reported poorer quality of life in Ross patients relative to matched aortic valve replacement controls, which may reflect greater patient expectations and a potential overstatement of anticipated quality of life in the informed consent process.¹¹ Our center's experience in managing the failed autograft after the Ross operation using a variety of strategies, including the Ross reversal procedure, has also demonstrated successful outcomes in a heterogenous cohort of patients who underwent the initial Ross operation at other centers.¹²⁻¹⁴ In the context of evaluating all potential aortic valve interventions, we emphasize the importance of holistic review of the evidence in shared decision-making.

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