Commentary: Ensuring Life-Long Competency of Early-Career and Late-Career Surgeons

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Central Message: Cumulative institutional experiences and individual surgeon experience are protective against in-hospital mortality after complex cardiac reoperations, especially among surgeons at the extremes of age and experience level.

Central Picture Legend: Jennifer H. Chen, MD (left), Todd K. Rosengart, MD (right)

Over the next decade, more than 40% of practicing physicians in the U.S. will be 65 years or older. Just as the physician workforce is preparing to care for the rapidly aging baby boomers in the coming years, we as a medical community must also ensure adequate support for late-career surgeon workforce. As such, the relationship between surgeon experience, age, and operative outcomes has received substantial attention. While some studies suggest a U-shaped curve between surgeon experience and re-operative outcomes, whereby mortality is highest early and late in training, others have emphasized the “volume-outcome” relationship modeled after Malcolm Gladwell’s “10,000 hour rule” for skills mastery. Nevertheless, the key question remains as to how we can maximize patient outcomes while mitigating the associated risks of novice early-career surgeons and age-related declines of late-career surgeons.

In this issue of the Journal of Thoracic and Cardiovascular Surgery, Blackstone et al. explore the impact of surgeon experience and age on risk-adjusted hospital mortality after cardiac reoperations at a high-volume institution with thirty-six surgeons. The authors report an overall hospital mortality of < 5% after cardiac reoperations over the past seven decades. From an institutional standpoint, cumulative mortality reached a nadir after 83,000 total cardiac
operations and after 14,000 cardiac reoperations. From a surgeon experience standpoint, risk-adjusted hospital mortality decreased precipitously after 750 cases. Additionally, reoperative mortality rates continued to improve over time among early-career surgeons joining the institution.

One pivotal finding of Blackstone’s study is the decline in hospital mortality with increasing surgeon age up to 75 years. The authors found that up until approximately 4,000 cardiac reoperations per surgeon, surgeon age is inversely proportional to in-hospital mortality. Even beyond 4,000 reoperations, surgeon age did not impact risk-adjusted in-hospital mortality. The authors attribute their improvements in hospital mortality over time to cumulative institutional experiences including but not limited to data-driven technical and research advancements, incremental quality improvements, in-depth review of complications, and utilization of an extended apprenticeship model. The authors note that these mitigation efforts were conducted within a “culture of safety, transparency, accountability, and teamwork.” The authors are to be congratulated for their detailed account of their impressive and important institutional effort that can serve as a model for others. This cumulative experience highlights the synergistic impact of thoughtful leadership, teamwork, and collaboration amongst all stakeholders.

While the authors conclude that surgeon age up to 75 years was associated with decreased hospital mortality after cardiac reoperations, we do want to note some limitations in their study cohort. Importantly, only two surgeons in this study were reported to be in their mid-70s and only eight surgeons were over 60 years of age. As such, the reported institutional surgeon experience cannot be generalized to senior surgeons (typically defined as those 65 years of age or older).
Age-related declines in cognitive and psychomotor competencies are well documented among aging surgeons.\textsuperscript{8–11} Studies do suggest these declines may in part be offset by surgeon experience, but only up to a certain degree until the protective effects are overwhelmed by the aging process.\textsuperscript{12–14} Likewise, while some surgeons can self-correct for their newly perceived, age-related deficiencies in competency, many others may be unaware of such deficiencies.\textsuperscript{15–17}

There is currently no standardized approach to addressing aging-related declines in the senior surgeon, although the Society of Surgical Chairs in 2019 published a career-long framework for such transition.\textsuperscript{10} This and other papers highlight the importance of institutional efforts valuing teamwork, mentorship, and safety as key components in maintaining lifelong surgical competency and the transitioning of senior surgeons.

Overall, findings from Blackstone et al. highlight the importance of ensuring life-long competency of both early-career and late-career surgeons, a task that the authors have undertaken at their institution with great success. Further implementation of similar efforts on a multi-institutional and national level will not only help to support the well-being of future generations of surgeons but also ensure patient safety as a critical priority.
References


