

Anesthesiologists and Value-based Care: Comment

To the Editor:

We read with great interest the recent Special Article by Mahajan *et al.*,¹ who pointed out the anesthesiologists' role in value-based perioperative care during the COVID-19 pandemic and the subsequent financial implications facing hospitals. Anesthesiologists should serve as clinical leaders to drive healthcare transformation across the perioperative process, to implement integrated standardized pathways with the goal to improve outcomes, and to manage costs as healthcare systems transition toward value-based care. While we appreciate the notion of the anesthesiologist as a leader, we believe the focus on directly providing anesthetic care misses the opportunity to further develop and implement clinical pathways for procedures, which can be safely performed without the direct presence of an anesthesiologist.

The authors cite an article by Toppen *et al.*,² who stratified patients to undergo transcatheter aortic valve replacement with either conscious sedation or general anesthesia. The clinical outcomes suggest that sedation is safe, is cost effective, and results in shorter hospital stays. Although many structural heart teams consist of an anesthesiologist, a cardiologist, and a cardiac surgeon, studies have demonstrated the safety and reliability of sedation without the direct presence of an anesthesiologist. For example, Kezerashvili *et al.*³ noted the long history of nurse-led sedation in cardiac procedures based on patient safety, clinical efficacy, and cost effectiveness. Similarly, Keegan *et al.*⁴ completed a 5-yr review of a minimalist transcatheter aortic valve replacement protocol comparing anesthesia-led sedation with nursing-led sedation. Using a strict protocol based on transcatheter aortic valve replacement and sedation risk, the authors showed that both anesthesia-led sedation and nursing-led sedation groups had comparable survival to discharge (98.3% nursing-led sedation *vs.* 100% anesthesia-led sedation, $P = 0.05$), procedural success at discharge, and 1-yr death/readmission rates.⁴ In short, nurse-led sedation under the guidance and purview of an anesthesiologist in a well-selected patient population maximizes resource allocation and generates cost savings while preserving outcomes, both essential components of value-based care.

Ultimately, we believe that the perspective presented by Mahajan *et al.* represents a framework for anesthesiologists to leverage their expertise and impact team-based care. Value at

the hospital, accountable care organization, and national level requires the efficient application of resources where all health-care providers work to the top of their license, while remaining within their scope of practice. Reframing the question from what procedures are scheduled with anesthesia services to which patients require the services of an anesthesiologist will greatly assist our specialty in the transformation of value-based care. As the reimbursement landscape changes, staffing flexibility allows hospitals to determine how to efficiently deploy resources to achieve the best possible patient outcomes. We agree that anesthesiologists must remain a leader in the development of procedural sedation protocols, including patient selection, sedation policies, and management of complications, to ensure ongoing patient safety and procedural efficacy. We also humbly recognize that the notion of nurse-led sedation may reduce our presence in the clinical setting, but it may move healthcare systems toward sustainable, value-based care.

Competing Interests

The authors declare no competing interests.

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Anesthesiologists and Value-based Care: Reply

In Reply:

We appreciate the response from Drs. Carlson and Martin¹ in their comment on our recent article, “Anesthesiologists’ Role in Value-based Perioperative Care and Healthcare Transformation,”² and we welcome the opportunity to address their comment.

As stated in our article, we agree that the focus of the anesthesiologist should expand beyond directly providing anesthetic care at a procedural site to innovation in clinical pathway development that will reduce mortality and complications. Anesthesiologists, as clinical experts and leaders in the perioperative space, should guide the development of optimal care delivery models at their healthcare facilities. The comment cited two studies that suggested that nurse-delivered sedation under the guidance of an anesthesiologist for some cardiac procedures, including transcatheter aortic valve replacement, was safe, reliable, and cost-effective and resulted in shorter hospital stays.^{3,4} Indeed, other care delivery models will be proposed as hospitals and clinicians seek value-based care, as long as the key patient outcomes are not compromised. Technology will also be an important driver in such healthcare changes, and anesthesia practitioners should consider disruptive innovation such as automation and algorithm-based approaches that further impact the value of their practices in the future. Joosten *et al.*⁵ recently published a randomized controlled trial in a single center that evaluated the performance of multiple, algorithm-driven, independently working closed-loop systems for administration of anesthesia (hypnosis and analgesia), fluids, and ventilation management in 90 patients undergoing major noncardiac surgery. The automated system outperformed manual (in-room personnel) control and had a significant and beneficial impact on neurocognitive recovery after surgery. Although the indications for automation- and algorithm-driven/supported are still evolving, such evidence adds greater importance to the idea that anesthesiologists gradually expand their domain of practice without losing any of our current focus, a framework presented in our study, as the comment affirmed. Segmentation of patients based on their medical and surgical risk can help anesthesiologists and hospitals drive value-based care and allow best use of resources in the perioperative period. However, it is essential that as new care delivery models are developed, we don’t only focus on cutting cost as a driver for these changes but also attend to improving patient-centric outcomes. Future clinical studies that investigate the efficacy and safety of new practice models should incorporate a robust design that accounts for the patient and surgical risks and complexity.

The key theme of our article² is a framework for future growth of our specialty and the unique contributions anesthesiologists can make regarding the health and healthcare of our patients. We must continue to work at the top end of the value curve, and indeed to innovate and find new areas to improve what matters most to patients—their healthspan.

Competing Interests

Dr. Mahajan is the founder of Sensydia, Inc. (Los Angeles, California; activity not related to the subject matter of the letter). Dr. Mahajan received grants and stipend from the National Institutes of Health (NIH; Bethesda, Maryland) as an NIH investigator and a study section reviewer (activity not related to the subject matter of the letter). The other authors declare no competing interests.

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