

Facing the Uncomfortable Truth: Your Choice of Anesthesiologist Does Matter

Duminda N. Wijeyesundera, MD, PhD,*†‡§ and W. Scott Beattie, MD, PhD, FRCPC*

Everything's got a moral, if only you can find it.

Alice's Adventures in Wonderland, Lewis Carroll

Most anesthesiologists will acknowledge that among their colleagues, some are considered more skilled and adept than others. These are the same individuals typically asked to provide anesthetic care to a loved one undergoing major surgery, assist in performing difficult technical procedures, or give advice during perplexing intraoperative emergencies. Thus, anesthesiologists implicitly acknowledge that variation in skill exists within the specialty. This perception is also confirmed by some limited research. For example, while consultant anesthesiologists are generally better than novice trainees in managing simulated intraoperative emergencies,^{1,2} or performing epidural catheter insertions,³ performance among even experienced consultants is not uniform. Within the context of the emerging link between perioperative clinical decision making and subsequent outcomes,⁴ variation in anesthetic management performance could translate into differing patient outcomes, especially during complex high-risk procedures such as cardiac surgery. Early suggestions of this link between individual anesthesia provider and patients' outcomes was seen in the article by Slogoff and Keats⁵ in 1985 examining the association between myocardial ischemia and myocardial infarction during coronary artery bypass graft (CABG) surgery. Specifically, rates of tachycardia, ischemia, and infarction were significantly higher among patients managed by one specific anesthesiologist, infamously designated as anesthesiologist 7.

From the *Department of Anesthesia, Toronto General Hospital and University of Toronto, Toronto, Ontario, Canada; †Li Ka Shing Knowledge Institute of St. Michael's Hospital, Toronto, Ontario, Canada; ‡Institute for Clinical Evaluative Sciences, Toronto, Ontario, Canada; and §Institute of Health Policy Management and Evaluation, University of Toronto, Toronto, Ontario, Canada.

Accepted for publication November 20, 2014.

Funding: Dr. Wijeyesundera is supported by a Clinician Scientist Award from the Canadian Institutes of Health Research. Dr. Beattie is supported by the R. Fraser Elliot Chair in Cardiac Anesthesia. Dr. Wijeyesundera and Dr. Beattie are supported by Merit Awards from the Department of Anesthesia, University of Toronto.

The authors declare no conflicts of interest.

Reprints will not be available from the authors.

Address correspondence to W. Scott Beattie, MD, PhD, FRCPC, Department of Anesthesia and Pain Management, University Health Network, 200 Elizabeth St., Toronto, Ontario, Canada M5G 2C4. Address e-mail to scott.beattie@uhn.ca.

Copyright © 2015 International Anesthesia Research Society

DOI: 10.1213/ANE.0000000000000600

In this issue of *Anesthesia & Analgesia*, Glance and colleagues⁶ use the population-based New York State Cardiac Surgery Reporting System clinical registry to better quantify the impact of varying anesthesiologist performance on patient outcomes. They determined the association between the individual anesthesiologist and patients' outcomes after isolated CABG surgery, while controlling for differences in hospital quality and patient case mix. The results are striking. Patients managed by high-performance anesthesiologists experienced rates of postoperative death or major complications that were 45% lower than rates among patients managed by low-performance anesthesiologists (1.82% vs 3.33%). Because there was only minimal correlation between the surgeon's and the anesthesiologist's performance for any given procedure, these findings were not explained by some anesthesiologists preferentially working with better surgeons.

These are potentially very controversial findings, which may be viewed by some as opening the proverbial Pandora's box. We would disagree with such an interpretation and instead congratulate the authors on undertaking a much-needed study. Readers should consider several important issues when interpreting these important findings.

First, these results are, in many respects, not surprising. Much as population-based databases have allowed us to quantitatively confirm a widely held suspicion that hospital care is riskier on weekends versus weekdays,^{7,8} Glance and colleagues⁶ have essentially confirmed an implicit understanding among many anesthesiologists. Second, while some might view the demonstration of important variation in outcomes across anesthesiologists as potentially detrimental to the specialty, we would argue the opposite. Indeed, if this study instead found that outcomes were very similar across different anesthesiologists, such results may suggest that anesthesia care has little impact on perioperative outcomes or that excellence in anesthesia management can be almost entirely achieved through standardized training. By comparison, most clinicians would readily admit that operating room performance varies across surgeons and that these differences are important determinants of patients' outcomes. Like surgery, the practice of anesthesiology requires technical excellence and rapid clinical judgment in critical situations, both of which can be improved through an individual anesthesiologist's training, experience, and insight. Thus, this present study should be viewed as showing that, much like the individual surgeon performing a procedure, the individual anesthesiologist matters. Stated otherwise, better performing anesthesiologists can

deliver superior perioperative care that translates into better postoperative outcomes.

Third, while Glance and colleagues⁶ have identified important variations in outcomes across individual anesthesiologists, we would argue that these findings do not necessarily mean that variation should be eliminated altogether. As long as individual ability remains an important determinant of anesthetic management, some excellent practitioners will have superior outcomes compared with those of their peers. The goal of measuring variation should be to identify low-performing anesthesiologists whose outcomes might be improved to exceed a consensus-based minimum benchmark. Finally, these findings are only the first step toward using the ever-increasing amount of available perioperative data to improve clinical practice and outcomes. The key question that must now be answered is what factors explain this variation in outcomes across anesthesiologists. An obvious physician characteristic to consider is procedure volume, namely, the number of relevant procedures performed annually by each cardiac anesthesiologist. There already exists an extensive surgical literature showing the potential link between surgeons' procedure volume and patient outcomes, especially for technically demanding procedures such as cardiac surgery.⁹ The evidence generally continues to show that optimal outcomes after CABG surgery are most consistently achieved when a high-volume surgeon performs the procedure in a high-volume hospital.^{10,11} It is critical that future research determine whether such a volume-outcome relationship exists for anesthesia care during complex high-risk procedures, especially because very low-volume providers appear to be very common among cardiac anesthesiologists. Glance and colleagues⁶ found that 63% of anesthesiologists who managed isolated CABG procedures in New York State performed <50 cases per year. Notably, all these low-volume providers were excluded from their study. Importantly, this variation in outcomes could be leveraged to better identify perioperative practices associated with superior outcomes. Specifically, increasing evidence points to considerable variation in perioperative practice that is largely unrelated to patients' underlying risks.^{12,13} The presence of concomitant variation in outcomes presents an opportunity to perform "natural experiments."¹⁴ Perioperative practices that vary between low-performance and high-performance anesthesiologists (e.g., hemodynamic management strategies, transfusion triggers, nature of team interaction) may serve as potentially modifiable factors for improving the outcomes of low-performance anesthesiologists.

Overall, Glance and colleagues⁶ have made a vital contribution toward improving perioperative care by cardiac anesthesiologists. While objectively measuring one's own outcomes can be a difficult and uncomfortable exercise, it is a necessary prerequisite to improve those same outcomes. Furthermore, looking beyond narrow self-interest to ask difficult questions that could improve patients' care is a key component of medical professionalism.¹⁵ Thus, research

such as this, while potentially controversial, reaffirms that anesthesiology remains a vital medical profession. ■■

DISCLOSURES

Name: Duminda N. Wijeyesundera, MD, PhD.

Contribution: This author helped write the manuscript.

Attestation: Duminda N. Wijeyesundera approved the final manuscript.

Name: W. Scott Beattie, MD, PhD, FRCPC.

Contribution: This author helped write the manuscript.

Attestation: W. Scott Beattie approved the final manuscript.

This manuscript was handled by: Charles W. Hogue, Jr, MD.

REFERENCES

- DeAnda A, Gaba DM. Role of experience in the response to simulated critical incidents. *Anesth Analg* 1991;72:308–15
- Murray DJ, Boulet JR, Avidan M, Kras JF, Henrichs B, Woodhouse J, Evers AS. Performance of residents and anesthesiologists in a simulation-based skill assessment. *Anesthesiology* 2007;107:705–13
- Hayter MA, Friedman Z, Katznelson R, Hanlon JG, Borges B, Naik VN. Effect of sleep deprivation on labour epidural catheter placement. *Br J Anaesth* 2010;104:619–27
- Walsh M, Devereaux PJ, Garg AX, Kurz A, Turan A, Rodseth RN, Cywinski J, Thabane L, Sessler DI. Relationship between intraoperative mean arterial pressure and clinical outcomes after noncardiac surgery: toward an empirical definition of hypotension. *Anesthesiology* 2013;119:507–15
- Slogoff S, Keats AS. Does perioperative myocardial ischemia lead to postoperative myocardial infarction? *Anesthesiology* 1985;62:107–14
- Glance LG, Kellermann AL, Hannan EL, Fleisher LA, Eaton MP, Dutton RP, Lustik SJ, Li Y, Dick AW. The impact of anesthesiologists on coronary artery bypass graft surgery outcomes. *Anesth Analg* 2015;120:526–33
- Bell CM, Redelmeier DA. Mortality among patients admitted to hospitals on weekends as compared with weekdays. *N Engl J Med* 2001;345:663–8
- McIsaac DI, Bryson GL, van Walraven C. Elective, major noncardiac surgery on the weekend: a population-based cohort study of 30-day mortality. *Med Care* 2014;52:557–64
- Birkmeyer JD, Stukel TA, Siewers AE, Goodney PP, Wennberg DE, Lucas FL. Surgeon volume and operative mortality in the United States. *N Engl J Med* 2003;349:2117–27
- Hannan EL, Wu C, Ryan TJ, Bennett E, Culliford AT, Gold JP, Hartman A, Isom OW, Jones RH, McNeil B, Rose EA, Subramanian VA. Do hospitals and surgeons with higher coronary artery bypass graft surgery volumes still have lower risk-adjusted mortality rates? *Circulation* 2003;108:795–801
- Hillis LD, Smith PK, Anderson JL, Bittl JA, Bridges CR, Byrne JG, Cigarroa JE, Disesa VJ, Hiratzka LF, Hutter AMJ, Jessen ME, Keeley EC, Lahey SJ, Lange RA, London MJ, Mack MJ, Patel MR, Puskas JD, Sabik JF, Selnes O, Shahian DM, Trost JC, Winniford MD. 2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery. A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2011;58:e123–210
- Thilen SR, Treggiari MM, Lange JM, Lowy E, Weaver EM, Wijeyesundera DN. Preoperative consultations for Medicare patients undergoing cataract surgery. *JAMA Intern Med* 2014;174:380–8
- Wijeyesundera DN, Austin PC, Beattie WS, Hux JE, Laupacis A. Variation in the practice of preoperative medical consultation for major elective noncardiac surgery: a population-based study. *Anesthesiology* 2012;116:25–34
- Kheterpal S. Random clinical decisions: identifying variation in perioperative care. *Anesthesiology* 2012;116:3–5
- Medical professionalism in the new millennium: a physician charter. *Ann Intern Med* 2002;136:243–6