

Future of Anesthesiology Is Perioperative Medicine

A Call for Action

Zeev N. Kain, M.D., M.B.A., Jane C. K. Fitch, M.D., Jeffrey R. Kirsch, M.D., Berend Mets, M.B., Ph.D., F.R.C.A., Ronald G. Pearl, M.D., Ph.D.

CURRENTLY, the American healthcare system is undergoing significant changes in response to healthcare reform legislation such as the Affordable Care Act of 2010, as well as market forces and the ongoing maturation of the American healthcare industry. This evolution is consistent with the changes that have occurred in other industries such as agriculture, travel, and aviation.

Over the past decades, anesthesiologists have continually expanded their focus from the operating rooms to postanesthesia care units, intensive care units, and pain medicine. In parallel to the expansion of the clinical footprint of our discipline, the core training curriculum of anesthesiology residency has changed significantly to now include many nonoperating room anesthesia rotations.¹ This development is not unique to the United States, and many other countries such as the United Kingdom, France, Germany, and Australia have developed strategies to increase the role of anesthesiologists in perioperative medicine.¹ In a recent editorial in the *British Journal of Anaesthesia* entitled *Anaesthesiology and Perioperative Medicine around the World: Different Names, Same Goals*, some of us argue that “regardless of what the model is called around the globe, we have to embrace our expanded role as perioperative physicians as our main value proposition.”²

A proposal raised at the 2014 annual meeting of the Society of Academic Anesthesiology Associations (SAAA) is the impetus for this editorial, which was written by Chairs of Anesthesiology Departments who also serve as members of the executive committee of SAAA. The SAAA annual meeting was attended by 498 representatives of 124 academic anesthesiology departments (including chairs, program



“[Our] chief aim [is] to present a proposal and rationale for changing the name of our specialty from ‘Anesthesiology’ to ‘Anesthesiology and Perioperative Medicine’ ...”

directors, and subspecialty fellowship directors who are the constituent members of this association). During a general session of the SAAA annual meeting, Dr. Kain, the first author of this editorial, proposed the motion to formally change the name of our specialty. There was healthy discussion on both sides of the issues, with active participation by department chairs, residency program directors, and fellowship program directors. After the discussion, an informal show of hands was overwhelmingly in favor of the proposal. After the meeting, a survey was sent to the SAAA general membership (N = 500) asking, “Do you approve or oppose a resolution to the American Society of Anesthesiologists (ASA) Board of Directors to change the name of our specialty to Anesthesiology and Perioperative Medicine (from Anesthesiology)?” There were a total of 189 responses (38%): 172 (91% of the respondents) were in favor and 17 opposed (9%). Although SAAA does represent the academic leadership of our specialty, any change in the name of our specialty will require consultation and approval by multiple stakeholders such as the American Society of Anesthesiologists (ASA), American Board of Anesthesiology and the Accreditation Council for Graduate Medical Education (ACGME). The chief aim of this editorial is to present a proposal and rationale for changing the name of our specialty from “Anesthesiology” to “Anesthesiology and Perioperative Medicine” and to advance the process of discussions among all these stakeholders.

Over the past few decades, the specialty of anesthesiology has expanded its practice from being largely confined to the operating room to include perioperative medical practice in acute pain medicine, postoperative and intensive care

Illustration: A. Johnson.

Accepted for publication February 22, 2015. Corrected on February 21, 2017. From the Department of Anesthesiology and Perioperative Care, University of California Irvine, Irvine, California (Z.N.K.); Department of Anesthesiology, The University of Oklahoma, Oklahoma City, Oklahoma (J.C.K.F.); Department of Anesthesiology and Perioperative Medicine, Oregon Health and Science University, Portland, Oregon (J.R.K.); Department of Anesthesiology, Pennsylvania State University, Hershey, Pennsylvania (B.M.); and Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University, Palo Alto, California (R.G.P.).

Copyright © 2015, the American Society of Anesthesiologists, Inc. Wolters Kluwer Health, Inc. All Rights Reserved. *Anesthesiology* 2015; 122:1192-5

Table 1. Proposed Competencies for the Perioperative Surgical Home

American College of Graduate Medical Education Competency	PSH-Specific Subcompetencies
Patient care	<p>EBM-based preoperative risk reduction and optimization strategies (e.g., β blocker, statin, anemia corrections; carbohydrate loading)</p> <p>Practices EBM intraoperative management (goal-directed therapy, glycemic control, normothermia)</p> <p>Practices EBM postoperative management and EBM enhanced recovery strategies (e.g., early mobilization, venous thromboembolism prophylaxis, wound and skin care, urinary catheter removal)</p> <p>Primary consultant in general medical issues that commonly present in surgical patient population</p>
Patient care (technical skills required)	<p>Electrocardiogram—advanced interpretation skills</p> <p>Surface ultrasound (ultrasound point of care)</p> <p>Pulmonary function tests including advanced interpretation skills</p> <p>Coronary artery stents management including perioperative management of anti-platelet therapy</p> <p>Cardiac pacemakers management including bedside interrogation</p> <p>Implantable cardioverter defibrillators management including bedside interrogation</p> <p>Insulin pumps management including rate adjustment</p> <p>Intrathecal pumps management including interrogation and refilling</p> <p>Thoracostomy tube placement</p>
Medical knowledge (management includes preoperative evaluation and risk reduction as well as postoperative management should the complication occur)	<p>Congestive heart failure</p> <p>Diabetes</p> <p>Pneumonia</p> <p>Sepsis</p> <p>Chronic obstructive pulmonary disease</p> <p>Acute kidney injury</p> <p>Urinary track infection</p> <p>Venous thrombus embolus</p> <p>Stroke</p> <p>Asthma</p> <p>Acute coronary syndrome</p> <p>Delirium</p> <p>Goal-directed therapy and blood management</p> <p>Deep vein thrombosis</p> <p>Acute renal failure</p> <p>Skin and wound breakdown</p> <p>Postoperative prevention/management falls</p> <p>Myocardial infarction</p> <p>Prevention of “failure to rescue”</p>
Practice-based learning and improvement	<p>Basic postoperative principles/need: Physical therapy, alternative pain techniques</p> <p>Ability to evaluate EBM application: Biases in clinical trials, validity, emphasis, and critical evaluation for practice</p> <p>Ability to improve own practice through continuous quality management tools:</p> <p>Practice assessment: dashboards, practice improvement plans</p> <p>Use of practice guidelines, parameters in own and relevant specialties (e.g., surgery care improvement process), in evaluating practice outcomes</p> <p>WHO Safe Surgery checklist implementation</p> <p>Understanding of practice model such as PSH, accountable care organization, and enhanced recovery after surgery</p> <p>Disruptive technology, change management</p> <p>Understands current payment models (e.g., bundled payments, acute care episode, gain sharing)</p>

(Continued)

Table 1. (Continued)

System-based practice	Systems approach to patient management—clinical pathway protocols Familiar with tools/principles for systems improvement in efficiency, cost reduction, quality: Lean, Six Sigma Basics of hospital organizations and finance (e.g., professional fee vs. technical fee) Principles of operating rooms management: block allocation, staffing plans, patient flow (value stream mapping) Principles of process flow and perioperative care coordination (value stream mapping) Transition of care (e.g., readmission, case management, discharge planning) Use of practice guidelines, parameters in own and relevant specialties Principles of patient safety (e.g., human factors, root cause analysis)
Communication and interpersonal skills	Patient-centered communication skills Understand change management. Conflict resolution. Familiar with organizational learning: Double loop vs. single loop. Understands the principals of strategic planning Task management, team working and situational awareness Use of information technology to enhance continuity of care across the episode of care (e.g., hand-offs, posthospitalization patient-centered medical home) Transition of care Acquire skills to supervise healthcare extenders throughout the entire perioperative continuum
Professionalism	Professional identity as a “perioperative medicine expert” Transparency of practice Focus on collaborative, trusting relationships with patients, other disciplines Patient-centered care within the context of the PSH (e.g., shared decision-making)

Developed by the American Society of Anesthesiologists subcommittee of Perioperative Surgical Home Education. Chair: Zeev N. Kain, M.D., M.B.A.; membership: Amr Abouleish, M.D., Cynthia Anderson, M.D., Beverly P. Chang, M.D., Shubjeet Kaur, M.D., Gary Stier, M.D., M.B.A., Rebecca S. Twersky, M.D., M.P.H., Thomas Vetter, M.D., M.P.H., Neal Cohen, M.D. (Liaison, Committee on Academic Anesthesiology), Linda Mason, M.D. (Liaison, Committee on Academic Anesthesiology).

EBM = evidence-based medicine; PSH = perioperative surgical home; WHO = World Health Organization.

unit care, chronic pain medicine, and sleep and palliative care medicine. In recognition of this expansion, currently, the American Board of Anesthesiology and ACGME certify graduates for fellowships in critical care, chronic pain, pediatric anesthesia, cardiothoracic anesthesia, obstetric anesthesia, palliative care, and sleep medicine, and will do so for regional anesthesia/acute pain medicine management by 2016. In parallel, the core requirements of anesthesiology residency training programs have changed to include approximately 20 months of nonoperating room rotations of a possible 48 months of training.

In recognition of the growing role of anesthesiologists outside the operating room, many academic anesthesiology departments have expanded their name to include other terms. In preparation for this editorial, we examined the names of all the anesthesiology departments that are members of the SAAA. Of a total of 136 programs, 24.3% now include one or more of the terms such as perioperative, pain, or critical care to reflect their growing emphasis on perioperative medicine.

The contemporary landscape of health care in general and the perioperative environment in particular has provided the discipline of anesthesiology an even stronger impetus to expand the name of our specialty to reflect the broadening of our involvement in perioperative medicine.

Jason Hwang, a coauthor of the best selling book *The Innovator's Prescription: A Disruptive Solution for Health Care*,³ recently articulated at the 2014 annual meeting of the ASA the need for the current perioperative care system to move from a “modular approach” in which there is a large degree of noneffective coordination to an “integrated approach” in which there is a high degree of coordination of care, which we believe can be best provided by anesthesiologists. In addition, the newly introduced Perioperative Surgical Home (PSH) model, which is aimed at enhancing clinical care while reducing cost, is built on a high degree of coordination of care across all members of the perioperative team.⁴⁻⁷ The PSH is a physician-led initiative, and many have argued that, because of our skill set and training, anesthesiologists are best suited to lead this innovative patient-centered healthcare model.⁴⁻⁷ The PSH model is gaining traction in the United States, and the ASA has recently launched a 43-hospital learning collaborative to further advance the model.

It is important to recognize that with the increase in the perioperative responsibilities of anesthesiologists, there has to be an accompanied enhancement in the training curriculum concurrent with renaming of the specialty as “Anesthesiology and Perioperative Medicine.” This is illustrated by a recent ASA taskforce that was commissioned to examine the

ACGME core competencies with respect to the PSH and the potential demands on future anesthesiologists. This ASA educational taskforce identified at least 57 elements in 7 domains that need to be enhanced or added to the traditional anesthesiology residency curriculum and training requirements (table 1). Although anesthesiologists are currently uniquely trained in preoperative and intraoperative medicine, the current anesthesia training curriculum does not sufficiently emphasize postoperative oversight of surgical patients outside the areas of pain medicine and intensive care medicine. Furthermore, most postoperative complications are medical in nature and include the management of diabetes mellitus, pulmonary embolism, delirium, cardiac events, stroke, and acute kidney and lung injury.⁸ Clearly, current anesthesiology residency curricula will need to be adjusted in these areas.

Possible changes in the structure of anesthesiology training that would be required to realize our enhanced role in perioperative medicine range from (1) increasing the number of out-of-operating room rotations while keeping the current length of the residency training duration (base year plus 3 yr) to (2) lengthening the residency training (base year plus 4 yr).

Although the option of not lengthening the residency training is appealing, it is not clear what current rotations could be eliminated to accommodate newly introduced perioperative rotations. Thus, the option of lengthening the residency could be considered because the additional 12 months will allow the introduction of new rotations and the expansion of the current curriculum to include skills in patient safety as well as quality management such as Six Sigma and Lean training.

Another option would be to offer two tracks within the existing residency programs with one traditional 4-yr track and one newly introduced 5-yr track that will focus the additional year on perioperative medicine. Trainees who plan on clinical fellowships might choose the 4-yr track followed by a clinical fellowship, whereas other trainees would choose the 5-yr track with increased experience in perioperative medicine. Clearly, wide ranging discussions with the multiple stakeholders mentioned previously (vide supra) would be required before such changes could be made.

In conclusion, the intent of this editorial is to foster a national discussion about adding the term “Perioperative Medicine” to the specialty name of Anesthesiology and augmenting current training programs. This discussion is consonant with developments that have occurred in other fields of

medicine. Thus, we submit that the specialty of “Anesthesiology” plan to rename itself to the specialty of “Anesthesiology and Perioperative Medicine” and do so with some speed.

Acknowledgments

Dr. Kain received support from the National Institutes of Health, Bethesda, Maryland.

Competing Interests

Dr. Kain is in the Advisory Board of Surgical Information Systems, Atlanta, Georgia, and in the Speakers Bureau for Merck (Kenilworth, New Jersey) (conflict of interest is for 36 months). All authors are members of the Executive Committee of the Society of Academic Anesthesiology Associations, Chicago, Illinois.

Correspondence

Address correspondence to Dr. Kain: zkain@uci.edu

References

1. ACGME program requirements for graduate medical education in Anesthesiology. http://www.acgme.org/acgmweb/Portals/0/PFAssets/ProgramRequirements/040_anesthesiology_07012014.pdf. Accessed November 18, 2014
2. Cannesson M, Ani F, Mythen MM, Kain ZN: Anaesthesiology and perioperative medicine around the world: Different names, same goals. *Br J Anaesth* 2015; 114:8–9
3. Christensen CM, Grossman JH, Hwang J: *The Innovator's Prescription: A Disruptive Solution for Health Care*. New York, McGraw-Hill Books, 2009
4. Garson L, Schwarzkopf R, Vakharia S, Brenton A, Stead S, Cannesson M, Kain ZN: Implementation of a total joint replacement-focused perioperative surgical home: A management case report. *Anesth Analg* 2014; 118:1081–9
5. Raphael DR, Cannesson M, Schwarzkopf R, Garson LM, Vakharia SB, Gupta R, Kain ZN: Total joint Perioperative Surgical Home: An observational financial review. *Perioper Med* 2014; 3:6
6. Kain ZN, Vakharia S, Garson L, Engwall S, Schwarzkopf R, Gupta R, Cannesson M: The perioperative surgical home as a future perioperative practice model. *Anesth Analg* 2014; 118:1126–30
7. Vetter TR, Boudreaux AM, Jones KA, Hunter JM Jr, Pittet JF: The perioperative surgical home: How anesthesiology can collaboratively achieve and leverage the triple aim in health care. *Anesth Analg* 2014; 118:1131–6
8. Schoenfeld AJ, Ochoa LM, Bader JO, Belmont PJ Jr: Risk factors for immediate postoperative complications and mortality following spine surgery: A study of 3475 patients from the National Surgical Quality Improvement Program. *J Bone Joint Surg Am* 2011; 93:1577–82