Why the Perioperative Surgical Home Makes Sense for Veterans Affairs Health Care

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The Perioperative Surgical Home supported by the American Society of Anesthesiologists is a patient-centered, physician anesthesiologist-led, multidisciplinary team-based practice model that coordinates surgical patient care throughout the continuum from the decision to pursue surgery through convalescence.[1,2] Surgical care is complex. Achieving the "Triple Aim" (improving patient experience, improving population health, and reducing health care costs)[3,4] requires an integrator such as the Perioperative Surgical Home.[5] Although the Perioperative Surgical Home has been implemented in academic settings[2,6,7] and within the Kaiser system,[8] there is no single ideal Perioperative Surgical Home model. The model that works at one facility will be created within the infrastructure of local resources, personnel, and politics[5] and may not work at another facility. The purpose of this The Open Mind article is to examine the applicability of the Perioperative Surgical Home model to the Veterans Affairs (VA) health care system.

OVERVIEW OF THE VA HEALTH CARE SYSTEM AND THE NATIONAL ANESTHESIA SERVICE

The VA is the largest networked health care system in the United States. At present, there are approximately 9 million veterans enrolled in VA health care.[9] Six million veteran patients are seen in the VA's 151 medical centers and 820 outpatient clinics each year.[10] Historically, the quality of care delivered in the VA has been rated highly, outperforming Medicare on 12 of the 13 quality of care indicators[11] and matching or surpassing non-VA surgical programs in morbidity and mortality.[12–14]

Since 1994, the VA has had a physician-led National Anesthesia Service based within VA's Central Office Specialty Care Services in Washington, DC. The Director is a board-certified physician anesthesiologist appointed by the Central Office. The Deputy Director is a certified registered nurse anesthetist. The National Anesthesia Service maintains its own national handbook,[15] which describes the structure and procedures that are to be used for the practice of anesthesiology, including moderate and deep sedation and emergency airway management, within the VA Health care system. The National Anesthesia Service governs the practice of all anesthesia professionals (anesthesiologists, certified registered nurse anesthetists, and anesthesiologist assistants) located at 135 facilities. All but 4 of these sites employ at least 1 physician anesthesiologist. With this number of VA facilities staffed by physician anesthesiologists, there is potential for widespread implementation of the Perioperative Surgical Home. Recent events[10,16] have called into question the value of the VA health care system, and now is the time to refocus its mission and promote innovation.

VA HEALTH CARE'S HISTORY OF INNOVATION

VA health care has a history of embracing innovation and promoting change. Under the leadership and vision of Dr. Ken Kizer in 1994, the VA focused on 3 core missions: (1) providing medical care for veterans to improve health and functionality; (2) training health care professionals; and (3) conducting research to improve veteran care.[17] The ensuing transformation took form as 5 major strategies (Table 1) that were nearly completed by 1999.[17] Integral to these change strategies was the rollout of a national electronic health record (EHR) in <3 years.[17]

THE PERIOPERATIVE SURGICAL HOME IN THE VA SYSTEM

The Perioperative Surgical Home represents an opportunity to showcase the integral role of the physician anesthesiologist within the VA. The Perioperative Surgical Home model is patient-centered and based on high-level coordination among all providers involved in perioperative care. An established and analogous model already established in the VA system is the patient-centered medical home.[18] The VA's emphasis on primary care is likely responsible for the wide and rapid dissemination and implementation of the medical home in 2010, which has led to greater patient satisfaction, lower staff burnout, improved clinical quality outcome measures, and lower rates of emergency department visits.[18] When evaluated 2 years after implementation, the VA's medical home program had not yet demonstrated cost savings.[19] Similar results have been reported by a multipayer private sector medical home pilot evaluated at 3

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Table 1. Change Strategies for Transforming the Veterans Affairs (VA) Health Care System (Adapted from Kizer and Dudley)[17]

Change Strategy 1: Create an accountable management structure and management control system
- Reorganization of individual facilities into a veterans integrated service network model; each network became the basic operating unit and typically consisted of multiple hospitals, outpatient clinics, extended care facilities, domiciliaries for homeless veterans, and counseling centers.
- Institution of a new performance management system with standardized metrics and annual performance contracts for leadership that aligned VA's mission and vision with measureable strategic goals.
- Decentralization of operational decision making from the central office in Washington, DC, to the individual network.

Change Strategy 2: Integrate and coordinate services
- Development and promotion of universal primary care.
- Reformed VA health benefits to cover appropriate medical care in any setting (inpatient or outpatient) and emphasize care of the whole patient.
- Merged 52 individual VA hospitals into 25 multicampus facilities.
- Establishment of hundreds of community-based outpatient clinics.
- Creation of a national formulary of prescription drugs, nonprescription medicines, and medical supplies.

Change Strategy 3: Improve the quality of care
- Institution of a clinical performance management system to track adherence to established best practices for common preventable conditions and chronic diseases (the prevention index and chronic disease care index, respectively).
- Promotion of shared knowledge through the VA Lessons Learned Project accessible through the VA intranet.
- Establishment of the National Surgical Quality Improvement Project which was later adopted by the American College of Surgeons.
- Creation of the VA National Center for Patient Safety.

Change Strategy 4: Align system finances with desired outcomes
- Development of veterans equitable resource allocation system, a global fee-based (bundled payment) system designed to allocate funds to the regional level for facility distribution with payments dependent on number of veterans enrolled, complexity of care, cost of labor and resources, amount of educational and research activity performed, geography, and other factors.
- Diversification of the funding base to allow collection and retention of insurance payments at the facility level.

Change Strategy 5: Modernize information management
- Implementation of a national electronic health record: the computerized patient record system/Veterans Health Information Systems and Technology Architecture.

years[20]; however, 2 years may be too soon to detect a difference, given the major change in health care delivery. The clinical success of the VA medical home sets a strong precedent for initiating the Perioperative Surgical Home within VA. Evaluation of the cost-effectiveness of the Perioperative Surgical Home may likewise require a longer time period. A learning collaborative of more than 40 hospitals currently is testing the feasibility of implementing the Perioperative Surgical Home on a large scale.[a] The VA Palo Alto is participating with its affiliate, Stanford University.

The Perioperative Surgical Home, when properly implemented, requires patient engagement before the surgical experience and assures that best available, evidence-based practices are applied at each step of the perioperative process. This practice includes adaptation of the perioperative management to the individual patient, with smooth transitions of care under the overall direction of a physician anesthesiologist.[1] The Perioperative Surgical Home is based on the establishment of patient-centered clinical pathways and reduction of systems-based variability. These clinical pathways should be "hard-wired" within the organization through information technology in the form of anesthesia information management systems and EHRs. Optimization of the patient before surgery (e.g., coordinating with primary care to identify proper candidates for knee replacement before initial surgeon referral, and timing the referral based on the patient's overall health status), rather than simply providing "clearance" after the patient is already scheduled for surgery, is critical to this innovative health care model.

[a]American Society of Anesthesiologists launches national Perioperative Surgical Home learning collaborative. https://www.asahq.org/newsroom/news-releases/2014/07/psh-learning-collab. Accessed March 12, 2015.

A perceived barrier to widespread rollout of the Perioperative Surgical Home is the current predominance of the fee-for-service model,[21] which applies to private as well as academic institutions. Under a fee-for-service system, payments to each provider are based on his/her work performed. This creates tension between providers such as surgeons, hospitalists, and anesthesiologists within the context of the Perioperative Surgical Home because they may find themselves competing for the same reimbursement. The VA has had a bundled payment system in place since the 1990s.[17] Health care in the United States seems to be moving in this direction. In a bundled payment system, physicians are not reimbursed for individual services but rather for their role in the overall delivery of health care. The practice of medicine (and anesthesiology specifically) is evolving to a system in which most physicians are hired on salary. Currently, VA physicians are salaried employees or contracted through an academic affiliate or private agency. VA physician workload is measured and tracked by the use of relative value units to assess productivity. The VA's mature EHR facilitates capture of physician workload, consistent documentation, and integration of clinical pathways through computerized order entry. Measurable VA physician work includes patient encounters that typically do not generate payments in the private sector (e.g., preoperative consultation, postanesthesia visits, or outpatient telephone follow-up). Although this work does not translate into direct financial incentives to an individual VA anesthesiologist, an increase in workload and productivity does justify additional hires and expansion of services. Because cost savings generally benefit the hospital and not the anesthesiology group directly,[22] it is reasonable to negotiate with the hospital to provide an initial investment in physician staff. At the VA Palo Alto, 3 additional anesthesiologists

were hired as part of the recruitment package for the new Service Chief in 2010 that facilitated our implementing a Perioperative Surgical Home model.

THE PERIOPERATIVE SURGICAL HOME AT VA PALO ALTO

The clinical aspects of the Perioperative Surgical Home at the VA Palo Alto were implemented in 2 phases. First, we established a regional anesthesiology and acute pain medicine (RAAPM) team with a dedicated physician anesthesiologist assigned per day with no operating room clinical duties in August 2010.[22] The RAAPM team also includes a fellow and nurse practitioner. This team ensures timely performance of perioperative regional anesthesia and jointly manages total joint arthroplasty and spine surgery patients on the wards. Our RAAPM team is covered 24 hours a day, including nights and weekends, to address acute pain issues related to new and established patients. Patients with chronic pain, current opioid use, or other risk factors for high postoperative pain are evaluated routinely by the RAAPM team to develop individualized multimodal analgesic plans.[23] In addition to pain management, on the day of surgery, the RAAPM team initiates the fall-reduction protocol for lower-extremity total joint arthroplasty patients. This protocol begins with educating the patient and family members regarding the risks related to inpatient falls.[24] To facilitate regular interdisciplinary communication and identify potential system improvements, the RAAPM team rounds once a week on all total joint patients together with the orthopedic surgeons, physician assistants, nurse practitioners, residents, hospitalists, social worker, case manager, bedside nurse, and physical therapist when available.

Although the concept of RAAPM is not novel, it is an essential element of the Perioperative Surgical Home models at both VA Palo Alto and University of California at Irvine for the following reasons: it is generally accepted that anesthesiologists have expertise in perioperative pain medicine[23]; RAAPM sets a precedent for anesthesiologists functioning out of the operating room[22]; and there are successful practice models for RAAPM that generate new charges and result in additional payments that may help offset the investment cost of starting a Perioperative Surgical Home.[25]

The second phase of the Perioperative Surgical Home-VA Palo Alto was implemented in November 2010 and involved creation of a new Perioperative Surgical Home consult program. In this program, an anesthesiologist not assigned to an operating room provides routine postoperative follow-up and acute care consultation on all inpatients who received anesthesia the previous day. As with the RAAPM team, this new Perioperative Surgical Home consult program was tied to development of new EHR templates and back-end coding to ensure proper workload capture for each patient encounter. The consultant functioned separately from our existing anesthesiology preoperative evaluation clinic staffed by 2 nurse practitioners and an anesthesiology resident under the direction of an attending anesthesiologist. With this program, the total number of patient encounters by VA Palo Alto anesthesiologists outside the operating room has increased from <6000 in fiscal year 2010 (preoperative evaluation and pain clinic only) to >16,000 in fiscal year 2014 (with the addition of the RAAPM and Perioperative Surgical Home consultant).

Implementation of a Perioperative Surgical Home at the VA Palo Alto has been a vehicle for initiating clinical practice changes in a collaborative fashion with surgery. For example, the Perioperative Surgical Home anesthesiologist ensures that the many elements of enhanced recovery programs are performed. A locally developed database generates a daily Perioperative Surgical Home "rounds list" in addition to dashboards for tracking cases and outcomes. To date, we have collected information for more than 4000 patients who have received anesthetics at VA Palo Alto and have initiated a number of quality and research projects related to advancing clinical care. Future plans include expansion of anesthesiology joint management to other surgical specialties, a multidisciplinary spine care program, and extension of our pain Perioperative Surgical Home model to more advanced preoperative evaluation and long-term postoperative follow-up to aid the transition back to primary care.

In summary, the VA health care system has a history of innovation. The VA is well positioned to achieve the Triple Aim in the perioperative setting by adopting the Perioperative Surgical Home as the integrator. For many reasons, the VA may be the ideal system for widespread implementation and testing of the Perioperative Surgical Home.

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REFERENCES

1. 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
2. Vetter TR, Goeddel LA, Boudreaux AM, Hunt TR, Jones KA, Pittet JF. The Perioperative Surgical Home: how can it make the case so everyone wins? BMC Anesthesiol 2013;13:6

3. Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. Health Aff (Millwood) 2008;27:759–69
4. Stiefel M, Nolan K. Measuring the triple aim: a call for action. Popul Health Manag 2013;16:219–20
5. 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
6. Garson L, Schwarzkopf R, Vakharia S, Alexander B, Stead S, Cannesson M, Kain Z. Implementation of a total joint replacement-focused perioperative surgical home: a management case report. Anesth Analg 2014;118:1081–9
7. 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 (Lond) 2014;3:6
8. Qiu C, Nguyen VT, Morkos A, Ko AT, Qiu JY, Heyman CD, Cabrera JM, Trivedi NS, LaPlace D. Comprehensive, Patient-Centered Total Care of Patients with Total Knee Arthroplasty: The Practice and Outcome of the Perioperative Surgical Home (Perioperative Surgical Home). American Society of Anesthesiologists Annual Meeting. New Orleans, LA, 2014
9. Weeks WB, Auerbach D. A VA exit strategy. N Engl J Med 2014;371:789–91
10. Chokshi DA. Improving health care for veterans—a watershed moment for the VA. N Engl J Med 2014;371:297–9
11. Jha AK, Perlin JB, Kizer KW, Dudley RA. Effect of the transformation of the Veterans Affairs Health Care System on the quality of care. N Engl J Med 2003;348:2218–27
12. Choi JC, Bakaeen FG, Huh J, Dao TK, LeMaire SA, Coselli JS, Chu D. Outcomes of coronary surgery at a Veterans Affairs hospital versus other hospitals. J Surg Res 2009;156:150–4
13. Grover FL, Shroyer AL, Hammermeister K, Edwards FH, Ferguson TB Jr, Dziuban SW Jr, Cleveland JC Jr, Clark RE, McDonald G. A decade's experience with quality improvement in cardiac surgery using the Veterans Affairs and Society of Thoracic Surgeons national databases. Ann Surg 2001;234:464–72
14. Matula SR, Trivedi AN, Miake-Lye I, Glassman PA, Shekelle P, Asch S. Comparisons of quality of surgical care between the US Department of Veterans Affairs and the private sector. J Am Coll Surg 2010;211:823–32
15. Department of Veteran Affairs. Anesthesia Service, VHA Handbook 1123, Washington, DC: Department of Veteran Affairs, 2007
16. Bakaeen FG, Blaustein A, Kibbe MR. Health care at the VA: recommendations for change. JAMA 2014;312:481–2
17. Kizer KW, Dudley RA. Extreme makeover: transformation of the veterans health care system. Annu Rev Public Health 2009;30:313–39
18. Nelson KM, Helfrich C, Sun H, Hebert PL, Liu CF, Dolan E, Taylor L, Wong E, Maynard C, Hernandez SE, Sanders W, Randall I, Curtis I, Schectman G, Stark R, Fihn SD. Implementation of the patient-centered medical home in the Veterans Health Administration: associations with patient satisfaction, quality of care, staff burnout, and hospital and emergency department use. JAMA Intern Med 2014;174:1350–8
19. Hebert PL, Liu CF, Wong ES, Hernandez SE, Batten A, Lo S, Lemon JM, Conrad DA, Grembowski D, Nelson K, Fihn SD. Patient-centered medical home initiative produced modest economic results for Veterans Health Administration, 2010-12. Health Aff (Millwood) 2014;33:980–7
20. Friedberg MW, Schneider EC, Rosenthal MB, Volpp KG, Werner RM. Association between participation in a multipayer medical home intervention and changes in quality, utilization, and costs of care. JAMA 2014;311:815–25
21. Butterworth JF IV, Green JA. The anesthesiologist-directed perioperative surgical home: a great idea that will succeed only if it is embraced by hospital administrators and surgeons. Anesth Analg 2014;118: 896–7
22. Mariano ER. Making it work: setting up a regional anesthesia program that provides value. Anesthesiol Clin 2008;26:681–92
23. Mariano ER, Miller B, Salinas FV. The expanding role of multimodal analgesia in acute perioperative pain management. Adv Anesth 2013; 31: 119–136
24. Kim TE, Mariano ER. Developing a multidisciplinary fall reduction program for lower-extremity joint arthroplasty patients. Anesthesiol Clin 2014;32:853–64
25. Kim TW, Mariano ER. Updated guide to billing for regional anesthesia (United States). Int Anesthesiol Clin 2011;49:84–93