The Perioperative Surgical Home as a Future Perioperative Practice Model

Zeev N. Kain, MD, MBA,* Shermeen Vakharia, MD, MBA,* Leslie Garson, MD,* Scott Engwall, MD, MBA,* Ran Schwarzkopf, MD,† Ranjan Gupta, MD,† and Maxime Cannesson, MD, PhD*

HEALTH CARE IN THE UNITED STATES: WHAT’S THE UNDERLYING PROBLEM?

Health care has been a subject of national debate in the United States for the past decade, as we are facing a crisis in both the quality and the cost of delivered care. Why are health care costs in the United States so high, yet key quality indicators are lagging? The answer is complex and multifactorial, but perioperative care is one major example of the dilemma of high cost, low quality, and thus marginal value of health care in the United States. Indeed, it is generally accepted that our current perioperative system is plagued with high costs, complications, longer than necessary lengths of stay, excess readmissions, and financial incentives to perform surgery.1-5

The Perioperative Surgical Home (PSH)3,7 is a practice model that has been proposed as one of the potential solutions to our fragmented and costly perioperative system. The PSH is defined by the American Society of Anesthesiologists as “a patient-centered and physician-led multidisciplinary and team-based system of coordinated care that guides the patient throughout the entire surgical experience”.3,5,7 The overall goal of the PSH is to provide improved clinical outcomes and better perioperative service at lower cost. The purpose of this The Open Mind is to detail how the PSH model will achieve these goals and how the specialty of anesthesiology may benefit from this practice model.

THE SALIENT ELEMENTS OF PERIOPERATIVE SURGICAL HOME

Conceptually, the PSH model aims to reduce variability in perioperative care given that variability increases the likelihood for errors and complications. One way in which this variability can be reduced is through assuring continuity of care and treating the entire perioperative episode of care as one continuum rather than discrete preoperative, intraoperative, postoperative, and postdischarge episodes. This can be achieved by having one team headed by anesthesiologists, to manage all aspects of this continuum from the time that the patient and the surgeon make the decision for surgery until 30 days after discharge. During this perioperative episode, the goal of the PSH is to ensure that best evidence/best practices are applied in a consistent and standardized way to every patient undergoing surgery. When best evidence/best practice does not exist or is not clear, the PSH team should develop an agreement for standardization of a particular practice that will be applied to all patients. In this situation, local systems and policies are highly important in decision making. At each step of this continuum from the decision to undergo surgery until 30 days after surgery, patients will be informed, educated, and involved in the decision making and treatment planning. By applying these concepts, anesthesiologists have a unique opportunity to improve outcomes, decrease length of stay and other metrics, and improve patient satisfaction.

Figure 1 underlines the major differences between the current and the future perioperative care under a PSH model. Briefly, in the PSH model, patient-centered care and shared decision making would replace our current physician-centered care. This model considers patient’s preferences and values in all health care decisions, which in other settings has been associated with better outcomes, decreased utilization of expensive tests and procedures, and decreased postencounter discomfort.9 Expectation management, early discharge planning, standardized protocol-driven health and risk assessment, optimization of underlying medical conditions and perioperative standardized anesthetic/nursing/surgical protocols, and fluid management strategies are all determined in advance through the PSH pathway. Similarly, multimodal analgesia, postoperative targeted recovery plan, early ambulation, nutrition management, rescue from complications, and smooth transition of care to an appropriate discharge setting are all also part of a PSH pathway. Importantly, the aim of the PSH is not to replace the surgeon’s role in the postoperative period but rather to assure adherence to mutually agreed on recovery protocols and manage any medical issue that arises during the episode of care.

RATIONALISTIC DATA TO SUPPORT THE EFFECTIVENESS OF PERIOPERATIVE SURGICAL HOME

Currently, there is a paucity of data regarding the effectiveness of this new model. We can, however, draw from the
literature on enhanced recovery after surgery (ERAS) and from our own experience at University of California (UC) Irvine Health and other institutions. ERAS is a perioperative clinical protocol model that includes implementation of 20 items such as standardized management of perioperative pain, nausea and vomiting, and goal-directed fluid administration (Table 1). This model has been shown to be effective and to result in improved patient satisfaction and postoperative outcomes, reduced length of stay, and reduced risk of hospital-acquired infections. A fully developed PSH will have many of the elements of ERAS, but will involve coordination of all aspects of perioperative care rather than just implementation of the specific items that are part of ERAS (Table 1). The PSH model also calls for adaptation to the local environment rather than strict implementation of the predefined ERAS items. It is also important to note that perioperative process standardization and clinical care pathways within the surgical context have been used in the past both in Great Britain and the United States. These pathways have been shown to improve clinical care and reduce complications. Unfortunately, these pathways have not achieved high levels of acceptance in the United States and have not been widely adopted.

Since the concept of PSH was conceived, different versions of the model have been implemented in other institutions in the United States such as University of Alabama at Birmingham Health System. At UC Irvine Health, a PSH for primary joint replacement surgery (hip and knee) was implemented with the support of the Chairs of Orthopedics and Anesthesiology and Perioperative Care and the Chief Operating Officer of the hospital. Multidisciplinary teams consisting of anesthesiologists, surgeons, nurses,
Pharmacists, physical therapists, case managers, social workers, and information technology experts meet weekly during the implementation phase. All team leaders underwent training in LEAN Six Sigma methodology, and value stream maps for all the perioperative processes were developed with evidence-based protocols used to standardize clinical care pathways. We have adopted the use of LEAN Six Sigma as a cornerstone for our PSH implementation because the perioperative process is very amenable to these processes. LEAN originated with Toyota, which revolutionized the car industry using rigorous standardization in their production lines. Conceptually, the perioperative environment could be paralleled to a car production line and standardization of all perioperative procedures could result in an error-free, high-quality process.

Patient education, shared decision making, goal-oriented personal recovery pathway with a diary, and performance benchmarks were incorporated at every phase. The regional/acute pain team followed the patients on a daily basis and a “surgical home call system” was established to ensure continuity of care. A nurse navigator/case manager working with the PSH team ensured smooth transitions of care between home, hospital, and postdischarge facility.

In April 2013, with the support of a UC Center for Health Quality and Innovation award, UC Irvine began the first phase of the Urological PSH, focusing on nephrectomy and cystectomy, bringing the PSH teams together, and building the clinical pathways. The success of the Joint Replacement PSH has led to enthusiasm in the institution, and the plan for 2014 is to include all elective inpatients and outpatients who undergoing surgery in newly developed PSH models.

**OPERATIONAL BARRIERS TO THE DEVELOPMENT AND WIDESPREAD IMPLEMENTATION OF A PERIOPERATIVE SURGICAL HOME**

The implementation of a PSH at UC Irvine was not without challenges. Our first attempt to convince a group of general surgeons to take part in such a model 3 years ago was met with skepticism and resistance. In 2012, with the endorsement of the Chair of Orthopedic Surgery, we recruited a new orthopedic surgeon who understood the potential benefits that PSH could offer as he started his practice. Eighteen months later, after the robust results of the PSH focused on the joint replacement service line, the hospital administrators and the surgeons are convinced of the effectiveness of this model and are now supporting it with appropriate resources.

Looking to the future, one of our challenges is the management of patients in the postoperative period. Our current model of care for the postoperative period is based on our acute pain team. However, this model will not be sustainable once patient volume increases substantially. We are now moving to a model in which a designated anesthesiologist will supervise designated nurse practitioners who will manage the coordination of care and adherence to protocols of these patients.

When moving to a PSH model, one needs to differentiate between the skills needed to build such a program and the skills needed to maintain it. For the development phase, anesthesiologists need to be skilled in team building, change management techniques, LEAN, and Six Sigma methodology. Although most anesthesiologists are not necessarily experts in these areas, most hospitals have resources that anesthesiologist PSH champions can access. We also suggest that in the future our residency programs should focus on these change management and performance improvement skills and indeed currently all our CA-1 residents undergo a 2-day training course in LEAN Sigma that is taught by instructors from the Center for Innovation of Johns Hopkins.

Once a PSH program with multiple service lines is developed, the actual staffing of the program will be challenging as well. Most anesthesiologists think of themselves as perioperative clinicians. However, their skillsets in the postoperative management of complex surgical patients may be limited. We suggest that if the PSH is to be widely used, our residency training programs must include more training in perioperative medicine, with particular emphasis on postoperative care.

Finally, one can accept the conceptual model of the PSH but still raise the question of the suitability of anesthesiologists to be the leaders. We believe anesthesiologists are uniquely qualified because of their involvement in all aspects of the preoperative, intraoperative, and postoperative periods. Furthermore, anesthesiologists are typically “system-thinkers” as demonstrated by the improvement we have made in patient safety. Surgeons are typically not interested in the medical management of their patients and are currently not involved in their preoperative optimization. It is our opinion that while hospitalists are interested in getting involved in the management of the PSH, they lack the fundamental understanding of perioperative physiology that results from the surgical experience and thus are not ideally positioned to deliver optimal postoperative care.

**FISCAL BARRIERS TO THE DEVELOPMENT AND WIDESPREAD IMPLEMENTATION OF A PERIOPERATIVE SURGICAL HOME**

Current financial constraints present a major barrier to a PSH model because the “extra services” provided by anesthesiologists cannot be reimbursed within the existing payment system. However, looking at the future state of medical payments, we suggest that we might be moving away from the fee-for-service system toward a “bundle payment” system, where anesthesiologists will no longer be paid based on time units but rather based on their “overall value” to the surgical episode. Under this new payment system, anesthesiologists will need to demonstrate value beyond just the operating rooms to maintain their current reimbursement level. One way for anesthesiologists to demonstrate their value is to move up in the value chain and become the leaders of the PSH model in their institutions.

Even in the current fee-for-service model, anesthesiologists could be compensated for their role in PSH just like family practitioners get reimbursed for their role in “patient-centered medical home.” The Centers for Medicare and Medicaid Services has now recognized the concept of patient-centered medical home, which it defines as “a primary care model that aims to improve patient outcomes by adopting a patient-centered rather than
disease-centered approach”. Such compensation would offset the costs associated with the implementation and maintenance of a PSH. Finally, once hospital administrators realize the savings achieved from improved outcomes with the PSH model, they may be motivated to compensate anesthesiologists for their role as leaders of the PSH. When one communicates with the hospital leadership, it may be worthwhile to indicate that the National Health Service in Great Britain estimates that ERAS generates a net savings of over $630 million every year. If PSH in the United States is as successful as the ERAS program in the United Kingdom, savings in the millions of dollars will be realized by hospitals. We do appreciate that at an early stage of implementation anesthesia departments may need to absorb the costs of setting up and maintaining a PSH model until hospitals and third party payers recognize its value. In our opinion, if anesthesiologists do not adopt the PSH model because of these initial set-up costs, bundle payments would become a reality with anesthesiologists locked into the operating rooms with intraoperative anesthesia provision becoming a commodity. We see the PSH as a way for anesthesiologists to move beyond the operating rooms and the traditional conflict with health care extenders to play a critical role in the changing environment.

CONCLUSIONS AND THE FUTURE OF PERIOPERATIVE SURGICAL HOME

Despite the current lack of definitive evidence that implementation of a PSH program leads to better clinical outcomes, better service to our patients, and reduced costs, the successes and validation of the ERAS program in Europe and results at the University of Alabama at Birmingham and at UC Irvine Health, and elsewhere in the United States, give cause for optimism. Clearly, significant research needs to be conducted to validate the assertions made in this review. The American Society of Anesthesiologists has recognized the need for such supportive data and has approved a budget of over $1 million to run a multihospital collaborative that will implement the PSH model and collect detailed outcome and process data. Only with such initiatives and the use of rigorous research methodology (Comparative Effectiveness Research), we will be able to examine whether the PSH is a valid perioperative care delivery model. Given the UC Irvine Health experience, we believe the PSH offers a very bright future for the field of anesthesia.

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Name: Shermeen Vakharia, MD, MBA.

Contribution: This author helped write the manuscript.

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Name: Leslie Garson, MD.

Contribution: This author helped write the manuscript.

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Name: Ran Schwarzkopf, MD.

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Name: Ranjan Gupta, MD.

Affiliation: Department of Orthopedic Surgery, University of California Irvine, Irvine, California.

Contribution: This author helped write the manuscript.

Attestation: Ranjan Gupta approved the final manuscript.

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Name: Maxime Cannesson, MD, PhD.

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