

## Moving Toward a Cardiovascular Perioperative Enhancement Team



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**B**Y 2020, AN ESTIMATED 19.3% of the US gross domestic product will be devoted to healthcare, with approximately 50% of Americans predicted to have 1 chronic disease and nearly 25% to have multiple diseases.<sup>1</sup> The economic consequences of these demographic shifts are astounding. Putting this into perspective, if 5% of the estimated 27% of US adults 40 to 64 years old who have high low-density lipoprotein cholesterol levels were eligible for a PCSK9 inhibitor, for example, annual insurance premiums would increase by \$124 for every person in the insurance pool.<sup>2</sup> These pragmatic realities simply are incongruent with other macroeconomic tensions in society and culture. The number of Americans 65 years or older is projected to reach 55 million by 2020 and 72 million by 2030. The projected Medicare spending deficit (Parts A, B, and D) is expected to be \$542 billion in 2025, which is a growth rate of 123% between now and 2025.<sup>3</sup> Simply stated, if nothing is done to bend this curve, healthcare will be unsustainable. Within the ecosystem of healthcare, surgical care, in particular, accounts for half of hospital admission expenses, with the rate expected to increase as the population ages. However, the majority of this spending comes from a smaller and smaller proportion of the population. For example, it is estimated that 32% of the US population 65 years or older undergo surgery in the year before their death. This fact, combined with the knowledge that the average cost of a surgical complication is approximately \$12,000 per event,<sup>4</sup> should cause both alarm and motivation to search for opportunity to help contain rising healthcare costs. The opportunities for anesthesiologists to alter this cost trajectory and add value to the healthcare system are significant.

### PATIENT-CENTERED MEDICAL HOME

The concept of a medical home or patient-centered medical home (PCMH) was first proposed by the American Academy of Pediatrics and later adapted by the American Academy of Family Physicians. In 2006, the American Academy of Family Physicians launched the first National Demonstration Project to test a model of the PCMH in a diverse national sample of 36 family practices.<sup>5</sup> Since then, the PCMH has continued to evolve as an institution in primary care to meet the goals of the triple aim, notably introduced by Don Berwick and the International Health Institute in 2008. The triple aim in healthcare has the following stated goals: improve the individual experience of care, improve the health of populations, and reduce per capita costs of care.<sup>6</sup> The PCMH model involves a team of care providers including physicians, advanced practice

nurses, physician assistants, nurses, pharmacists, nutritionists, social workers, educators, and care coordinators. The medical home model actively supports patients in learning to manage their own care and recognizes families as core members of the care team. The PCMH coordinates care across the broader healthcare system, including specialty care, hospital care, and home healthcare, particularly during transitions between sites of care. Quality improvement activities such as evidence-based medicine, clinical decision-support tools, and performance measurements with data capture are essential elements of the model.<sup>7,8</sup>

The medical home concept has continued to evolve in primary care. The original promise of cost savings from population healthcare within the PCMH model is being re-evaluated. It is now understood that the administrative overhead required to care for the largest (ie, healthiest) cohort of a population far exceeds the expected reduction in healthcare spending for that population segment (Milliman analysis of 2011 commercial claims data). Therefore, it appears that the asymptomatic early chronic disease cohort most likely is served best by a traditional medical home model, whereas the opportunity for the greatest cost savings impact may lie within the management of the most complex episodes for the sickest patients. In this latter cohort, early adaptation of multidiscipline, specialty-driven, best-practice care design offers the greatest opportunity for value enhancement within the ecosystem of population management.

### PERIOPERATIVE SURGICAL HOME

The perioperative surgical home (PSH) has been proposed by the American Society of Anesthesiologists as a care model,<sup>9-13</sup> in large part to parallel the logic and namesake of the PCMH model developed in the primary care practice setting. Since the concept of PSH was proposed, different versions of the model have been implemented, and varying degrees of acceptance and/or resistance have been realized. The

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American College of Surgery and the American Society of Anesthesiologists are working together on a joint “Statement on Team-Based Surgical Care,”<sup>14</sup> which proposes to reduce variability in perioperative care and thereby decrease the likelihood for errors and complications and ensure that best evidence/best practices are applied in a consistent and standardized way to every patient undergoing surgery. Ideally, perioperative care should be focused on consistent, efficient, safe, high-quality, patient-centered medical care, with ultimate goals of timely access and full recovery. It is recognized that any approach should be based on what best meets the needs of the individual patient, the institution, and healthcare practitioners providing care and should apply the following principles<sup>9-14</sup>:

- Patient involvement, education, and engagement with aligned expectations
- Risk stratification, risk reduction, and care optimization of patients before surgery
- Standardized adherence to safety standards
- Evidence-based care and process to reduce variability and perioperative complications
- Effective coordination of perioperative care among all involved healthcare providers

#### ENHANCED RECOVERY

The concept of fast-track accelerated recovery or enhanced recovery after surgery in colorectal surgery was pioneered in the late 1990s by Henrik Kehlet in Denmark.<sup>15</sup> Subsequently, the application of enhanced recovery after surgery or enhanced recovery protocols (ERPs) has expanded to other surgical subspecialties and slowly has been embraced throughout the world. Successful implementation of ERPs portend decreased hospital length of stay and decreased postoperative complications. All require collaboration among surgery, anesthesia, and perioperative nursing to provide optimal perioperative care. There are now evidence-based guidelines for ERPs in many surgical specialties. The spread and adoption of ERPs have been rapid, and some centers in the United Kingdom now have ERPs in all major elective surgical specialties and emergency orthopedic and abdominal surgery.<sup>16-20</sup> Anesthesiologists play a vital role in facilitating recovery because some of the key elements of ERPs, such as preoperative assessment, perioperative fluid management, and optimal analgesia, are carried out routinely by anesthesiologists.

In the United States, Tim Miller<sup>21</sup> in 2010 was the first to demonstrate that implementation of an ERP in patients undergoing colorectal surgery led to a decreased hospital length of stay and incidence of postoperative complications, confirming the findings first reported in earlier European studies.<sup>15-20</sup> The protocol included several specifically defined clinical practices, including reduced preoperative fasting, preoperative carbohydrate loading 2 or 3 hours before surgery, goal-directed fluid therapy, and multimodal and regional analgesia.

#### PERIOPERATIVE ENHANCEMENT TEAM

After early successes with colorectal enhanced recovery and with interest to develop a more comprehensive perioperative best-practice-care redesign team, the Duke Anesthesia

Surgical Home (DASH) was introduced by the Department of Anesthesiology in early 2012. Widespread acceptance of DASH, however, met challenges primarily because of name backlash and associated confusion about the program intentions. It was perceived by some to challenge well-established existing competencies, roles, and/or responsibilities. This confusion was believed to mirror general pushback by many against the PSH namesake and concept. The decision, therefore, quickly was made to abandon the DASH brand and program. To emphasize the importance of a collaboration principle that recognized and respected all provider contribution, Perioperative Enhancement Team (POET) was launched in July 2013 by the Department of Anesthesiology. Since then, POET, under anesthesiology directorship, has grown with active participation from widespread institutional key stakeholders, including general surgery, orthopedic surgery, gynecologic surgery, cardiothoracic surgery, neurosurgery, neurology, hematology, endocrinology, gerontology, pathology, hospital medicine, and hospital administration. The guiding principles of POET are to enhance the value proposition of perioperative care through a multidiscipline care re-engineering process.

The POET initiative was seeded by the Department of Anesthesiology to enhance the value proposition of perioperative care through a disciplined and rigorous care re-engineering process. The collective competencies of a core team bring together strategy, operations, tactics, finance, work flow design and planning, project management, electronic medical record (EMR) integration, and data development and tracking. The core team has expanded to include faculty and staff members from surgery, medicine, neurology, nursing, and hospital social workers. All skills sets are brought together to invite cognitive discourse, challenge old ways of doing things, and redesign new clinical care processes in a formulaic approach.

The POET process follows a discipline methodology and begins with generative discussion with Socratic challenges to all questions and solutions and an expectation for a supportive business case rationalization to implement care design change. Once the clinical outcome improvement and financial return analysis is completed and judged to be compelling, multidisciplinary leaders are engaged to help redesign work streams with the assistance of an assigned clinical lead and project manager to facilitate operational changes. At the same time, clinical metrics are developed and informatics resources are leveraged to enable continuous data tracking (Table 1). POET addresses all perspectives of the perioperative pathway, from initial risk stratification, risk reduction, and care optimization of

**Table 1. The POET Process**

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- Generative discussion: vision/content expertise/Socratic approach
  - Best practice research
  - Institutional performance services research
  - Business case/business model/financial analysis
  - Project management: implementation of strategy
  - Electronic medical record/information technology integration
  - Tactical organization: work flow and work study analysis
  - Patient and provider education
  - Operations/execution/soft launch
  - Outcomes research/clinical field development and data mart tracking
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