



Optimization of care for the pediatric surgical patient: Why now?



Marjorie J. Arca, MD^{a,b,*}, Adam B. Goldin, MD^c, Keith T. Oldham, MD^{a,b}

^a Division of Pediatric Surgery, Medical College of Wisconsin, Milwaukee, WI

^b Children's Hospital of Wisconsin, Milwaukee, WI

^c Division of Pediatric Surgery, Seattle Children's Hospital, Seattle, WA

ARTICLE INFO

Keywords:
Optimization
Regionalization
Children
Infant
Surgery
Outcomes

ABSTRACT

In 2015, the American College of Surgeons (ACS) has begun to verify hospitals and ambulatory centers which meet consensus based optimal resource standards as “Children’s Surgical Centers.” The intent is to identify children-specific resources available within an institution and using a stratification system similar to the ACS Trauma Program match these to the needs of infants and children with surgical problems. This review briefly summarizes the history, supporting data and processes which drove this initiative.

© 2015 Elsevier Inc. All rights reserved.

Introduction

Public expectations, increased governmental involvement, economic reality, and other market forces have together, driven a demand for improvement in the population level in recent years. The American College of Surgeons and the Children’s Hospitals Association supported formation of the Task Force for Children’s Surgical Care¹ in April 2012. The Task Force was led by members of the American Pediatric Surgical Association but consisted of a diverse ad hoc group of leaders in the disciplines relevant to children’s surgery. Their charge was to determine how to optimize the delivery of surgical care for infants and children in this evolving environment. The vision which evolved was to create systems of care which matched individual patient needs to institutions which have optimal resources to manage their specific surgical illness or injury.

Ultimately, the Task Force crafted recommendations defining resource standards for pediatric patients undergoing surgery. One of the most crucial points of these recommendations is a proposal for a system of stratification for children’s surgical centers based on these available resources: basic (Level III), advanced (Level II), or comprehensive (Level I). A key part of this initiative is a verification program conducted by the ACS that requires site visits to institutions to ensure that the requisite resources are available. Further, a mandatory component of the verification process is the collection of clinical outcomes data that will serve as the basis for ongoing quality improvement work. For Level I and Level II centers, participation in the American College of Surgeons National

Surgical Quality Improvement Project-Pediatric (NSQIP-P), with risk-adjusted benchmarking is required. The vision of the Task Force and the ACS leadership is to prospectively match the needs of every individual infant or child undergoing surgical care with an institution that has optimal resources to provide appropriate pre-operative, intraoperative, postoperative, and long-term care for the patient, thereby providing efficient and effective care.

Background

The past two decades have witnessed increasing subspecialization in medical and surgical care, both for adult and children’s providers. To provide complex surgical care for children, additional pediatric specialty training has become an expectation or requirement in general and thoracic surgery, cardiovascular surgery, neurosurgery, otolaryngology, orthopedic surgery, plastic and reconstructive surgery, and urology. Similarly, physicians with subspecialty training in pediatric anesthesiology, radiology, pathology, and medical disciplines such as critical care, emergency medicine, cardiology, gastroenterology, nephrology, pulmonology, rehabilitation and psychiatry are trained and qualified to recognize and deal with the physiologic processes unique to infants and children. In the United States, these unique educational programs are recognized by the ACGME and the specialized knowledge and skills and certified by the various Boards of the ABMS. Elsewhere in the world, similar specialized training and certifications have been developed. Often, these surgical and medical specialists for infants and children are brought together within an institution, such as a children’s hospital or care system, to facilitate and provide both specialized medical/surgical care and appropriate emotional support for children and their families.

* Correspondence to: 999 North 92nd St, C320, Milwaukee, WI 53221.
E-mail address: marca@chw.org (M.J. Arca).

The literature offers many examples of improved clinical outcomes associated with high volume and specialized care environments. For instance, anesthesiologists who have obtained specialized training in pediatric anesthesia and continue to provide care on a consistent basis for this patient population provide the safest care for infant and children.^{2–7} Pediatric radiologists who deal with children regularly are more apt to consider the physiologic consequences of their diagnostic and therapeutic actions, and pediatric hospitalists may incorporate their unique understanding of psychological ramifications for routine procedures like venipuncture. Pediatric surgeons have championed less aggressive (organ-sparing) and safer management protocols such as splenic preservation after blunt trauma and ovarian conservation for torsion. Improved outcomes have been noted in pediatric centers experienced in caring for children with intussusception where care by pediatric specialists is correlated with a increased success of radiologic reduction and decreased rate of intestinal resection.⁸ Trauma patients younger than 12 years who received care at adult trauma centers with added pediatric qualifications had a 20% lower risk of mortality compared to trauma centers without recognized pediatric qualification.⁹ Despite these findings, more than 45% of general and thoracic inpatient children's surgery, including newborns, is provided in general hospitals.^{10,11}

In 2011, Evans and van Woerden examined the published literature to assess whether clinical outcomes in children (defined as patients younger than 20 years) who required appendectomies and pyloromyotomies were correlated with the level of surgical training of the surgeon (general versus pediatric), surgeons with different annual volumes, or different hospital types.¹² They included 17 articles in their review. For appendicitis, the outcomes selected were misdiagnosis, length of hospital stay, and readmission rates. Their review did not show conclusive differences between general or pediatric surgeons or general versus pediatric hospitals with regard to misdiagnosis of appendicitis or length of stay. The authors did note a higher readmission rate for post-appendectomy patients at general hospitals compared to pediatric hospitals. The same authors found that pyloromyotomy outcomes are better in the hands of surgeons who perform this procedure on a regular basis.¹³ Recent work by McAteer et al.¹³ shows significantly improved postoperative outcomes at a population level for patients ≤ 5 years undergoing appendectomy or pyloromyotomy at urban specialty hospitals relative to rural hospitals. Interestingly, a Cochrane systematic review was undertaken to define the correlation between surgeon experience, hospital volume, and specialty designation on outcomes in pediatric surgery. This group concluded that current literature lacks consistent definitions, exposures and risk stratification. They did, however, note that hospital-level characteristics correlate with improved outcomes in less common, more complex procedures such as diaphragmatic hernia repairs, while surgeon-level factors correlate with more common, less resource-demanding procedures (such as appendectomy and pyloromyotomy) and procedures that are more commonly performed in the adult population (cholecystectomy and thyroidectomy). One particular patient population, that identified as “medically complex,” benefits significantly from multidisciplinary care within specialized pediatric hospital systems that have policies and procedures already in place specific to these complex patients, ensuring that these children and their families have the resources they require during their hospitalization.^{14,15}

Realistically, changes in general surgical training and the development of advanced techniques in pediatric surgery have altered the comfort level of general surgeons regarding contemporary children's surgical care. Within general surgery residencies, there is a decreasing pediatric surgery experience. Many contributing factors include the burgeoning number of pediatric surgery training programs, duty hour restrictions, and competing demands

on the time of a general surgical trainee.¹⁶ These limitations in pediatric exposure during training are not confined to surgeons, but also include anesthesiologists, intensivists, emergency physicians and hospitalists. A cohort study in Washington State showed that between 1987 and 2009, there was meaningful shift of patients from general hospitals into pediatric hospitals; for pyloromyotomies (from 57% to 99% in pediatric hospitals), appendectomies in patients under 18 years (from 17% to 32% in pediatric hospitals), and for appendectomies in patients < 5 years (37.5% to 51.5% in pediatric hospitals) [13]. This study noted that patients with pyloromyotomies performed in pediatric centers have a significantly lower risk of complications, both surgeon and anesthesiologist-related, compared to general hospitals. Similarly, children younger than 5 years with appendectomy have fewer complications in pediatric centers compared to adult centers.¹⁷

The current state of children's surgical care was reviewed by Salazar et al. who analyzed 173 hospitals in 55 regions and found 18 (10.4%) centers were poor performance outliers with regard to Perioperative mortality when compared to the largest volume pediatric center within the region.¹⁸ The discrepancies in outcomes are more marked in the patient population less than one year of age; 37 hospitals were poor outliers for this cohort.

Surgeon attitudes

The 914 members American Pediatric Surgery Association were sent an anonymous online survey to assess attitudes toward regionalization of pediatric surgical care.¹⁹ Overall, 39% completed the survey. Of these, 63.4% favored formal regionalization. Surgeons who favored with regionalization tended to be from institutions with a pediatric surgery training program and worked primarily at a free-standing children's hospital.

Task Force recommendations

In the 1960s and 1970s, it became clear that substantial preventable death and disability occurred nationwide after traumatic injuries. This led to the development of trauma resource standards. Different resource levels (Level I, II, III, and IV) were defined. Annual patient volume thresholds were established. These levels and related resources became recognized as de facto national standards and were applied to both adult and pediatric facilities. A related ACS verification program was developed. Currently, verification of whether a center has the optimal resources to care for certain types of trauma patients is done by the American College of Surgeons on a 3-year recurring basis. The publication, “Resources for the Optimal Care of Injured Patient,”²⁰ defines and periodically updates resource standards that are required for the optimal care of a trauma patient. This is linked to the severity of a patient's injuries, and hospital stratification level. In addition, the program outlines the indications and means for prompt and safe transfers of injured patients to institutions with the appropriate capabilities. This nationwide program has established the highest standards of care for trauma patients. Of note, certain states now formally designate centers based on these standards and principles. Although nearly 50 million Americans live over one hour away from a high-level trauma center, adoption of these standards in trauma care has demonstrably improved mortality outcomes. Adults with similar serious injuries have a survival advantage of 20–25% if care is provided in an appropriate level trauma center.²¹

With this experience now well recognized, the children's surgical community has developed this new system analogous to the national trauma surgical standards and verification program. Caring for a child with surgical needs requires specific resources that not all hospitals possess. These include specialized physicians,

Download English Version:

<https://daneshyari.com/en/article/4176364>

Download Persian Version:

<https://daneshyari.com/article/4176364>

[Daneshyari.com](https://daneshyari.com)