

Graduate Medical Education in Trauma/Critical Care and Acute Care Surgery

Defining Goals for a New Workforce

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KEYWORDS

- Trauma • Emergency surgery • Critical care • Graduate medical education
- Acute care surgery • Fellowship

KEY POINTS

- Advances in surgical technology have resulted in ever more technically complex operations for acutely ill patients.
- Superspecialization has led to diminishing numbers of surgeons qualified in emergency general surgery.
- Demand for emergency general surgery services is higher than ever, and increasing.
- A new specialty in general surgery has been developed to meet the public health need and enhance training: Acute Care Surgery.

INTRODUCTION

In the evolving field of general surgery, change has been constant. Technical advances such as minimally invasive surgery, an aging patient population, and an ever expanding demand to respond to urgent surgical conditions has catalyzed change in the definition of general surgery. General surgery has traditionally included a significant component of emergency surgery over a wide variety of anatomic sites, in response to traumatic injury and nontraumatic causes (eg, peptic ulcer disease, cancer, infections), which naturally included critical care medicine in the perioperative setting. With the growing trend toward specialization, surgical training has evolved in

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response to demands from within and without the discipline of surgery to provide efficient, effective training in ever more complex and urgent surgical problems. This review demonstrates how general surgery has changed to meet these new needs, which has led to the new specialty of acute care surgery (ACS).

CHANGES IN SURGICAL NEED

Surgical practice is in constant flux. With the development of new techniques and technologies, the modern surgeon is constantly improving his or her repertoire of skills. The surgical resident in training must master an ever expanding set of learning objectives. By way of example, the advancement of laparoscopic techniques for cholecystectomy has led to a decline in the number of open cholecystectomies while increasing the total number of cholecystectomies performed.¹ Furthermore, common bile duct (CBD) explorations, once common, are now exceedingly rare with the wide availability of endoscopic retrograde cholangiopancreatography for the management of CBD stones. The newer and often better technology has nearly supplanted many of the open approaches to common surgical conditions, such as the management of biliary disease, morbid obesity, and gastric reflux.

To maintain a viable practice, surgeons have had to learn the new techniques and were often rewarded with more cases once they had mastered the new approach. In trauma surgery there have been analogous examples, including the widespread adoption of damage-control surgery,² hypotensive resuscitation,³ damage-control resuscitation,⁴ advanced hemostatic dressings,⁵ and video-assisted surgery for chest injury.⁶ The practice of trauma and ACS continues to evolve, leading to more effective care and improved outcomes, while at the same time demanding that practicing surgeons and trainees acquire and maintain an ever increasing and ever more technical body of knowledge.

Even as technical advances are changing surgical practice, the surgical patients are changing as well. With modern, effective, and less invasive treatments, patients are living longer and better with chronic diseases⁷ but are now subject to diseases of survivorship. These patients can present with traditional surgical problems, which are harder to diagnose and manage because of the multiple comorbidities. For example, cystic fibrosis, a once fatal disease in childhood, is now a disease that complicates surgery in adults. Adults with cystic fibrosis are known to have a higher incidence of gastrointestinal tract malignancy.⁸ Thus, a higher index of suspicion for cancer is indicated in the setting of acute digestive complaints in these patients. Furthermore, with the aging of the American population, there is an ever expanding pool of baby boomers in need of urgent and emergent surgical care. The patients seen by the trauma and acute care surgeons of today have significant active medical issues that greatly affect their surgical management.

While the need for emergency surgical care is changing, the demand for skilled surgeons to service that need is higher than ever. With advancing surgical technology and the expanding knowledge base required in all surgical disciplines, fellowship training and subspecialization is becoming the norm among United States surgical residents,⁹ leading to a deficit of skilled providers in general surgery. As many subspecialty surgeons are unwilling to practice outside of their area of focus, there is a growing gap in coverage for emergency surgical care.¹⁰

NEW MANDATES IN SURGICAL TRAINING

Parallel to the advances in technology in surgical treatment, there has been significant advancement in surgical training. For much of the last century, surgical training had

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