

Acute Care Surgery: A Fifteen-Year Update

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Citation: Collins J, Britt R, Burgess J, Martyak M, Britt LD (2021) Acute Care Surgery: A Fifteen-Year Update. J Trauma Acute Care Vol.6 No.S2:001.

Abstract

After the initial proposal of the Acute Care Surgery model, the specialty has continued to evolve. Not surprisingly, emergency general surgery has become the most expansive component of the specialty of Acute Care Surgery (ACS). Trauma has been, as predicted, supplanted as this ACS specialty continues to evolve. Despite this, trauma remains a pivotal and cornerstone component of Acute Care Surgery. There has been increased documentation that the ACS specialty has increasing appeal, with more surgical residents choosing to pursue a career in ACS. This emerging specialty is not monolithic. Based on the needs, workforce and resources of an institution, the "Acute Care Surgery" model encompasses several versions, including emergency general surgery being designated as the "ACS" model.

Keywords: Trauma; Acute care; Surgery; Work force

Received: March 23, 2021; **Accepted:** April 06, 2021; **Published:** April 13, 2021

Introduction

The ACS service has marshaled the resources needed to provide nonscheduled acute care in a more efficient manner, with several beneficial by-products of this reorganization [1,2]. All patients receive more timely care. With a dedicated team free of other responsibilities, the new emergency consult is no longer relegated to later, nor is the care of the patient interrupted, as one attends to a patient with a more urgent crisis. This benefit has been especially reaped by the surgical staff, whose elective schedules proceed relatively unencumbered without the burden of the emergency evaluations. Patients seen by the ACS service who are more germane to a specialty surgeon are referred to that specialist.

Literature Review

While there are three main pillars of support for ACS, some degree of modification results from specific institutional demands and resources. The tri-disciplinary specialty has evolved, with added dimensions. One of these dimensions is surgical rescue (**Figure 1**) popularized by Dr. Andrew Peitzman et al. and his University of Pittsburgh Acute Care Surgery Team [3].

Peitzman, et al. reported on a potential expanded role for the ACS specialty [3]. He and co-authors opined that a critical service provided by their acute care surgeons is one of "surgical rescue". In a landmark article by Ghaferi, et al. in Medical Care, the authors underscore the advantages of establishing strategies that focus on timely recognition and management of in hospital complications once they occur [4]. Better outcomes, although not

perfect, were seen at high-volume centers, where surgical rescue was initiated most expeditiously.

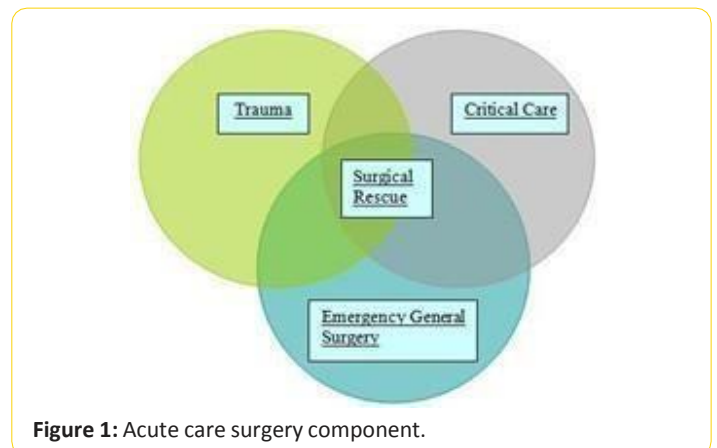


Figure 1: Acute care surgery component.

From one of the best databases in the world, the American College of Surgeons National Surgical Quality Improvement Program (NSQIP), it was determined that there existed over a 10% failure-to-rescue rate in the surgical population (American College of Surgeons National Surgical Quality Improvement Program, 2013). Twenty percent of patients with the greatest risk for developing postoperative complications account for approximately 90% of failure-to-rescue cases. Complications of medical or surgical care are one of the most frequent hospital-based diagnoses, exceeding even cholecystitis, intestinal obstruction, and appendicitis. Acute Care Surgery, undoubtedly, offers the specialty expertise needed to provide the hospital surgical rescues required to

optimally address these complications. Early intervention by a high-performance surgical team provides the best opportunity to reduce failure-to-rescue rates. In many settings, the high-performance specialist in charge of that surgical team will be the Acute Care surgeon. There are some advocates for adding elective surgery as a fifth pillar to the Acute Care Surgery model. While not all hospitals follow this model, such an approach adds to the continuity of care for those patients managed initially nonoperatively for complicated appendicitis, acute cholecystitis, acute diverticulitis, reducible hernias or patients who need ostomy reversal. These types of elective surgery would be appropriate for the acute care surgeon to perform, depending on the practice model of the institution.

Two key questions that arise today regarding curriculum are the following: 1. Does there need to be a revised curriculum and an update on expected case volume for Acute Care Surgery? 2. Should there be a more realistic database requirement? The answer to both questions is affirmative. There is currently no uniform and established ACS curriculum for general surgery specialty training, which is problematic if the general surgeon is expected to address this workforce need. When the model of core general surgery training is revised, the Acute Care Surgery specialty must be a key component of the curriculum. Currently, there is not a universally adopted training model for both fellowship and core general surgery residency.

Adopting a sound business plan to ensure financial viability is essential, with no long-term success without such a plan. The overarching concern is whether the current business model is, indeed, sustainable or a failed model. Some hospital administrations deem the Acute Care Surgery business model to be a failure. While the debate is on-going regarding the best model to sustain financial viability for an Acute Care Surgery service, the decision will undoubtedly not be based on the clinical revenues generated. Establishing a best business model would incorporate hospital subsidies, along with efforts to achieve meaningful revision of the Relative Value Units (RVUs). There is a consensus that a sound business plan to ensure financial viability has not been endorsed as a “best practice.”

Most importantly, the true measure of the value of this specialty will be the demonstration of improved outcomes. Healthcare disparities are at the top of the list of the key underlying trends affecting optimal healthcare (Table 1). They have transcended every medical/surgical specialty, with associated severe adverse outcomes- particularly in the area of acute surgical care.

Factors affecting optimal health care	
1. Healthcare disparities in the population	5. Advances in genetics screening
2. Aging of the population	6. Changes in health services delivery systems
3. Increasing rates of utilization	7. Efforts to weed out unnecessary or marginally beneficial services
4. Economic growth of the nation/ End-of-life issues	8. Cost containment efforts

Table 1: Key underlying trends affecting optimal healthcare.

The overarching question remains: What is the actual impact of this innovation (new specialty) on clinical outcomes? Any in-depth analysis would point to the need for implementing comparative effectiveness research (Figure 2) to answer this question. The checklist item that lists “establishing outcome metrics” would have to be scored as “in progress”.

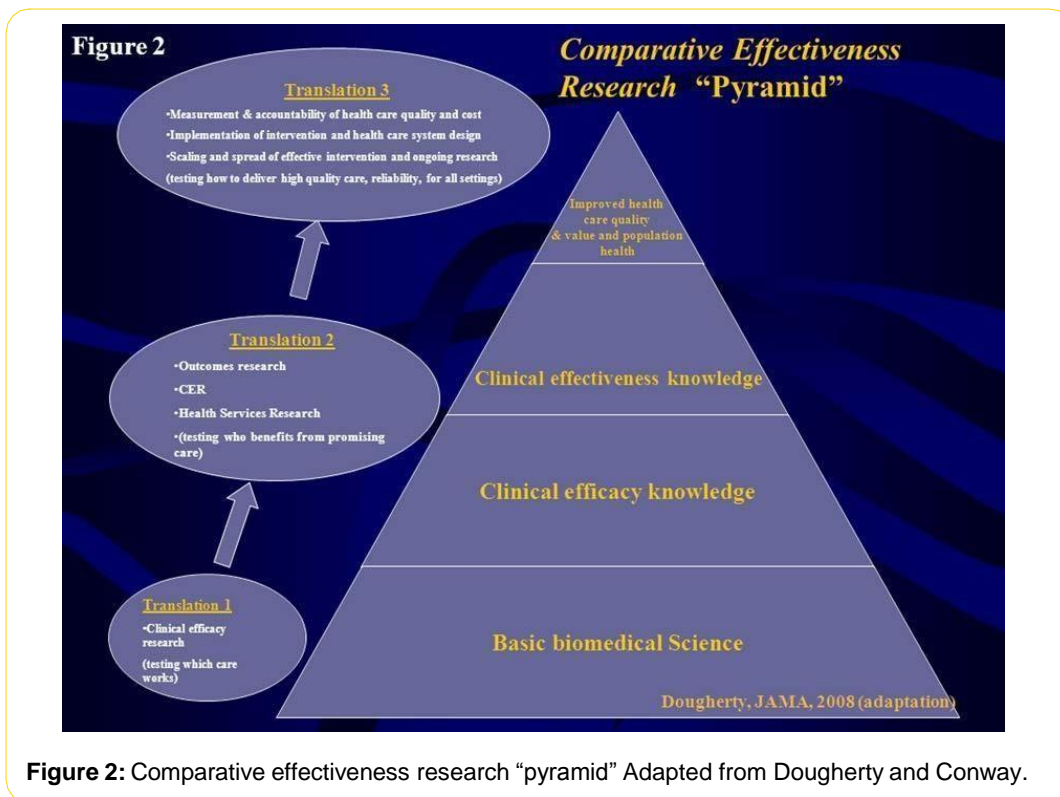
With respect to publishing, there have been some isolated reports and single-institution studies demonstrating disease-specific improved outcomes with the implementation of an Acute Care Surgery service. However, there have also been reports that have not shown a significant difference in outcomes [2]. Looking specifically at the impact this designated service has on biliary disease at the tertiary medical centre at Eastern Virginia Medical Center, Dr. R. Britt and co-authors documented significant improvement in providing timely care for biliary disease, especially in patients with acute cholecystitis, with no significant difference in operations performed or patient outcomes [5]. Publications have been initially sparse. As Acute Care Surgery services mature and the patient population expand, there will undoubtedly be more robust and multi-institutional studies documenting the efficiency and favourable outcomes of using the Acute Care Surgery model.

There are likely additional steps that need to be taken for the Acute Care Surgery specialty to meet its full potential are outlined in Table 2 [6].

S.NO.	Essentials for acute care surgery
1	The requisite outcome research to demonstrate the substantive benefits of the specialty?
2	The establishment of a national database/registry for research
3	Credible branding (such will occur if 1 and 2 are adequately addressed)
4	The creation (or adoption) of a process for formal recognition: possible ABMS board certification
5	Ongoing expansion and growth (including addressing workforce needs and compensation models)

Table 2: Acute care surgery: Continued evolution—What are the essentials.

True to Dr. Halsted’s words that “Every important hospital should have on its resident staff of surgeons at least one that is well trained and able to deal with any emergency”, the acute care surgeon has filled this void [7]. Never has this ideal better exemplified than during this past year’s COVID-19 pandemic crisis. The trained acute care surgeon has been able to effectively transition into multiple roles, whether that be caring for COVID-19 patients or staffing the medical and surgical ICUs so that our medical intensivist colleagues could focus their manpower on the surge of critically ill COVID-19 patients overflowing their ICUs[8].



Conclusion

The specialty of acute care surgery is unique in that, while it is a relatively young specialty in name and structure, it is a specialty as old as the discipline of surgery itself. While acute care surgery, its practice model, training paradigm and role in the greater field of surgery, will continue to mature, there is no doubt that the discipline has cemented itself as a pivotal part of healthcare in America.

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