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Innovation or rebranding, acute care surgery diffusion will continue

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ABSTRACT

Background: Patterns of adoption of acute care surgery (ACS) as a strategy for emergency general surgery (EGS) care are unknown.

Methods: We conducted a qualitative study comprising face-to-face interviews with senior surgeons responsible for ACS at 18 teaching hospitals chosen to ensure diversity of opinions and practice environment (three practice types [community, public or charity, and university] in each of six geographic regions [Mid-Atlantic, Midwest, New England, Northeast, South, and West]). Interviews were recorded, transcribed, and analyzed using NVivo (QSR International, Melbourne, Australia). We applied the methods of investigator triangulation using an inductive approach to develop a final taxonomy of codes organized by themes related to respondents' views on the future of ACS as a strategy for EGS. We applied our findings to a conceptual model on diffusion of innovation.

Results: We found a paradox between ACS viewed as a health care delivery innovation *versus* a rebranding of comprehensive general surgery. Optimism for the future of ACS because of increased desirability for trauma and critical care careers as well as improved EGS outcomes was tempered by fear over lack of continuity, poor institutional resources, and uncertainty regarding financial viability. Our analysis suggests that the implementation of ACS, whether a true health care delivery innovation or an innovative rebranding, fits into the Rogers' diffusion of innovation theory.

Conclusions: Despite concerns over resource allocation and the definition of the specialty, from the perspective of senior surgeons deeply entrenched in executing this care delivery model, ACS represents the new face of general surgery that will likely continue to diffuse from these early adopters.

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1. Introduction

In 2003, the Institute of Medicine stated that the nation's hospitals were at breaking point because of emergency Department (ED) overcrowding and lack of specialists, surgeons included, for emergency care [1]. Acute care surgery (ACS) was envisioned soon after to bring together the resources of modern trauma centers with the most qualified surgeons to care for patients with injuries and nontrauma surgical emergencies (NTSEs). Reorganization of the specialty of trauma/critical care into ACS was intended to increase access to care for patients with NTSEs and at the same time

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increasing the attractiveness of careers in trauma and general surgery, which had seen dramatic drops in resident interest [2–6]. Since the first white paper endorsing ACS appeared in 2005 [7], many hospitals have adopted it. Reports from these hospitals suggest that ~70% of patients with NTSEs require an operation, often during the night [8,9]. Nearly one-third of these patients have complex diseases or physiology requiring critical care [9–11]. Centers that have implemented ACS have reported improved outcomes (e.g., shorter lengths of stay and time to the operating room) [11–16]. Despite these promising reports, ~30% of hospitals still report difficulty providing 24 × 7 emergency general surgery (EGS) coverage, with 7% reporting no EGS coverage [17,18].

As with all new specialties, the role and sustainability of ACS in the landscape of surgery is uncertain. We undertook this qualitative study to better understand the benefits and drawbacks of ACS and to determine what senior surgeons see for the future of this new specialty. We apply our findings to a conceptual model on the Rogers' diffusion of innovation theory [19–21].

2. Materials and methods

This was a qualitative study consisting of semistructured face-to-face interviews with senior surgeons working at hospitals that had implemented ACS. Details of our study design and analytic methods have been described elsewhere [22]. In brief, a purposive sampling method was used such that three practice types (community, public/charity, and university) would be studied in six geographic regions (Mid-Atlantic, Midwest, New England, Northeast, South, and West) to ensure diversity of opinion across 18 face-to-face interviews. Interview questions addressed a range of topics concerning the origins, structures, processes, and future of ACS (see Supplementary data). Interviews were recorded using audio, transcribed, then analyzed with investigator triangulation using an inductive approach with NVivo 10.0 (QSR International, Melbourne, Australia). The analyses resulted in a final taxonomy of codes organized by themes. This study was deemed exempt by the University of Massachusetts Institutional Review Board and agreement on a date and time of an in-person interview was accepted in lieu of written consent. The results presented here focus on themes (presented in italics) that emerged in our analyses related to the future and sustainability of ACS.

3. Results

3.1. *Respondents*

Of 18 respondents, there were 14 current section or division chiefs for trauma surgery and EGS or both, two department chairs, and two senior surgeons. All represented teaching hospitals; 17 represented level one trauma centers. Interviews took 19–84 min.

3.2. *The origins of ACS*

Respondents reported that ACS had existed in some form before its formalization by leaders representing the American Association for the Surgery of Trauma and the Eastern Association for the Surgery of Trauma [7]. Most (16/18) felt that creation of ACS was partially driven by the need to *revitalize the field of trauma*, stating ACS addressed "threats to trauma surgery," which was becoming "more nonoperative" in a "declining trauma era." Eleven mentioned improving operative volume, citing "an opportunity to do more surgery" and "keep their skills up" as primary reasons for adopting ACS. However, six saw ACS as a *rebranding of general surgery*, stating "it's the new moniker" for "what the general surgeon used to do" or referring to when "they decided to name it [general surgery] something…" "…for marketing purposes." Another force behind the inception of ACS was the need to provide care for *general surgery patients left behind* (6/18), and one respondent said, "we recognize that the surgical patient has been abandoned in the emergency department."

When asked when their institution officially adopted ACS, 10 respondents felt that ACS was the *new face of an old practice*. Two respondents said that they had been doing ACS for 30–40 and 27 y, respectively. Five respondents said that they were practicing ACS even before the nomenclature was formalized in 2005, stating, "I am doing what I've always done" or "we've done this forever." Six respondents reported that they had "started calling it ACS" even before 2005, whereas 12 reported ≤8 y from the time of formal adoption of ACS.

3.3. *The future of ACS*

Most respondents (12/18) were *optimistic* (Table 1), stating that ACS "definitely" had a sound future, using terms like "flourish," "thrive," and "grow." However, there was some *uncertainty*, with three respondents stating that the ACS model had "some issues to work out" but would likely do well, whereas another three were "not sure," saying that the future of ACS was "unclear."

Reasons for optimism regarding the future of ACS fell into three predominant themes (Table 2). ACS provides *better care for emergency surgery patients* (17/18), attributable to their experience with clinical urgency (12/18), critical care expertise (12/18), 24 × 7 "in-house" presence (6/18), experience with damage control (2/18), and resources already available to trauma centers (2/18). ACS provides *lifestyle benefits* (15/18), both for acute care surgeons (11/18)—who would have predictable schedules—and elective surgeons (15/18)—who would be freed from the burden of unplanned surgical cases. However, five respondents expressed concern that the lifestyle and workload of ACS may hinder people from entering the field. Still, *attracting residents to trauma* (5/18) *and general surgery* (2/18) were sources of optimism for the future of ACS, with 11 reporting an increase in resident interest in this "exciting," "challenging," and "fun" specialty. However, one participant expressed concern that "young people don't want to take night call any more."

Despite overall optimism, three themes emerged regarding issues threatening the future of ACS (Table 3). Eight respondents cited *poor continuity of care* and patients not