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# General surgery resident rotations in surgical critical care, trauma, and burns: what is optimal for residency training?



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## Abstract

**BACKGROUND:** There are no specific Accreditation Council for Graduate Medical Education General Surgery Residency Program Requirements for rotations in surgical critical care (SCC), trauma, and burn. We sought to determine the experience of general surgery residents in SCC, trauma, and burn rotations.

**METHODS:** Data analysis of surgical rotations of American Board of Surgery general surgery resident applicants (n = 7,299) for the last 8 years (2006 to 2013, inclusive) was performed through electronic applications to the American Board of Surgery Qualifying Examination. Duration (months) spent in SCC, trauma, and burn rotations, and postgraduate year (PGY) level were examined.

**RESULTS:** The total months in SCC, trauma and burn rotations was mean 10.2 and median 10.0 (SD 3.9 months), representing approximately 16.7% (10 of 60 months) of a general surgery resident's training. However, there was great variability (range 0 to 29 months). SCC rotation duration was mean 3.1 and median 3.0 months (SD 2, min to max: 0 to 15), trauma rotation duration was mean 6.3 and median 6.0 months (SD 3.5, min to max: 0 to 24), and burn rotation duration was mean 0.8 and median 1.0 months (SD 1.0, min to max: 0 to 6). Of the total mean 10.2 months duration, the longest exposure was 2 months as PGY-1, 3.4 months as PGY-2, 1.9 months as PGY-3, 2.2 months as PGY-4 and 1.1 months as PGY-5. PGY-5 residents spent a mean of 1 month in SCC, trauma, and burn rotations. PGY-4/5 residents spent the majority of this total time in trauma rotations, whereas junior residents (PGY-1 to 3) in SCC and trauma rotations.

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**CONCLUSIONS:** There is significant variability in total duration of SCC, trauma, and burn rotations and PGY level in US general surgery residency programs, which may result in significant variability in the fund of knowledge and clinical experience of the trainee completing general surgery residency training. As acute care surgery programs have begun to integrate emergency general surgery with SCC, trauma, and burn rotations, it is an ideal time to determine the optimal curriculum and duration of these important rotations for general surgery residency training.

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The Trauma, Burns and Critical Care Board of the American Board of Surgery has been concerned that our current resident training paradigm in General Surgery potentially provides inadequate experience and clinical rotations in surgical critical care (SCC), trauma, and burns which is necessary for optimal care of our surgical patients.<sup>1-3</sup> There is also considerable concern that graduating residents are not adequately prepared for independent surgical practice.<sup>4</sup>

Since the Accreditation Council for Graduate Medical Education (ACGME) mandated a significant reduction in resident work hours, physician manpower in more labor-intensive units (such as intensive care units) has transitioned to advanced practice providers to provide patient care and procedures.<sup>5-8</sup> Increased utilization of advanced practice providers may have a negative impact on surgical resident education and experience in SCC.<sup>9</sup> The current ACGME General Surgery Residency Program Requirements<sup>10</sup> are quite vague with regard to the optimal time required in SCC, trauma, and burn rotations during general surgery residency (Table 1). National efforts to reform general surgery residency education have been ongoing, but a critical analysis of the specific general surgery residency rotation requirements in SCC, trauma, and burns has not yet been addressed.

We sought to determine the experience of general surgery residents in SCC, trauma, and burns during their general surgery residency training and examined the duration of

rotations in these areas and the specific postgraduate year (PGY)-level when they occurred for general surgery residents.

## Methods

We analyzed de-identified data of the surgical rotations of applicants to the American Board of Surgery (ABS) Qualifying Examination (QE) over an 8-year period, from 2006 to 2013, inclusive. General surgery resident rotation data submitted through electronic applications were examined. We determined the number of months spent in SCC, trauma, and burn rotations and at what PGY level for general surgery residents using candidate rotation lists and analyzed by the ABS psychometrician (T.W.B.).

Data from the ABS electronic applications were self-reported. Residents indicated the beginning/end and location (hospital) of the rotation, and chose a rotation description from a drop-down menu included on the ABS QE application form. The instructions on the ABS QE application form are: "You must list chronologically all rotations and activities from the beginning of residency, including all time away from training (including time taken for vacation, interviews, medical leave, visa issues, and early departures for fellowships). Each rotation must be listed separately by clinical activity, not grouped together as a yearly total."

There were 3 rotations of interest included on the ABS QE application: (1) SCC (logged as intensive care unit - surgical

**Table 1** ACGME program requirements for general surgery residency training

"IV.A.6.a).(2) The 60-month clinical program should be organized as follows: <sup>(Core)</sup>
IV.A.6.a).(2).(a) At least 54 months of the 60-month program must be spent on clinical assignments in surgery, with documented experience in emergency care and surgical critical care to enable residents to manage patients with severe and complex illnesses and with major injuries. <sup>(Core)</sup>
IV.A.6.a).(2).(b) 42 months of these 54 months must be spent on clinical assignments in the essential content areas of surgery. <sup>(Core)</sup>
IV.A.6.a).(2).(b).(i) The essential content areas are: the abdomen and its contents; the alimentary tract; skin, soft tissues, and breast; endocrine surgery; head and neck surgery; pediatric surgery; surgical critical care; surgical oncology; trauma and nonoperative trauma (burn experience that includes patient management may be counted toward nonoperative trauma); and the vascular system. <sup>(Core)</sup>
IV.A.6.a).(2).(c) A formal rotation in burn care, gynecology, neurological surgery, orthopedic surgery, cardiac surgery, and urology is not required. Clearly documented goals and objectives must be presented if these components are included as rotations. <sup>(Detail)</sup>
IV.A.6.a).(2).(c).(i) Knowledge of burn physiology and initial burn management is required. <sup>(Core)</sup>
No more than 12 months may be devoted to surgical discipline other than the principal components of surgery. <sup>(Core)</sup> "

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