



A survey of the pediatric surgery program directors: optimizing resident research to make pediatric surgery training more efficient



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ABSTRACT

Purpose: Resident Research (RR) has been a presumed requirement for pediatric surgery fellowship candidates. We hypothesized that: 1) pediatric surgery leaders would no longer feel that RR was necessary for fellowship candidates, 2) the type of study performed would not impact a program's opinion of candidates, and 3) the timing of RR could be altered for those interested in a research career. **Methods:** An anonymous survey was sent to pediatric surgery fellowship program directors (PDs). Sixty-three percent responded, and answers were compared via Chi square analysis with $p < 0.05$ being significant. **Results:** Respondents did not agree that RR was critical for pediatric surgery fellowship candidates. Seventy-five percent had no preference between one or two years of research ($p = 0.0005$), 79% placed no heavier weight on basic or clinical research ($p < 0.0001$), and 76% had no preference between scientific research or humanitarian efforts ($p = 0.0003$). Sixty-three percent felt that surgeon scientists would be better prepared for extramural funding if RR was performed at the end of training ($p = 0.04$). **Conclusion:** Dedicated research time during general surgery may not be necessary. Pediatric surgery candidates who partake in RR are not penalized for their choice of study. Increasing efficiency of training is important in today's era of medical training.

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For decades the successful academic surgeon was touted as a “triple threat”. He or she had an active clinical practice, a robust research adventure, and was seen among students and fellow faculty members as a great educator. As medical diagnostics and patient care have become more complex though, a new paradigm of medicine has emerged, and the “triple threat” is becoming exceedingly rare. This new model of medicine recognizes that “no physician can be a competent triple threat; that few clinicians will also be investigators; that no single clinician can know everything even in his or her own specialty; and that effective care requires collaborative, multidisciplinary teams” [1]. American medical education must therefore reform to meet the demands of a changing health care system [2].

Most physicians would likely agree that surgical training is one of the longest and most challenging of the medical specialties, especially if a subspecialty is pursued. Some pediatric surgery residents spend up to ten years in training: five years in general surgery, two to three years in research, and two years in pediatric surgery fellowship. The most important requirement in becoming a competent pediatric surgeon is exposure to and participation in a high volume of clinical cases [3]. Participating in research during training may play a role in shaping a resident's career path [4], but may not be suitable for the majority of candidates.

Changing paradigms in work hour restrictions have limited resident and patient interactions [5], thereby causing some to question whether residency training should actually be lengthened. Additionally, future reductions in health care reimbursements will likely translate into lower support for graduate medical education (GME). These factors will mandate that residents train more efficiently to achieve competency, while simultaneously eliminating unnecessary years of training. Medicare and Medicaid currently support teaching hospitals by providing up to \$9.8 billion dollars toward their GME [6]. In spite of this large budget, teaching hospitals are struggling financially due to rapid changes in technology, decreased reimbursements, and increased uncompensated care [6]. Current models of training exhibit wasted time and inefficiency [7,8]. Intensification of the essential aspects of training and a reduction in overall training time would allow teaching hospitals to save money. Shorter training would also allow graduates to enter the job market sooner and initiate repayment of medical school debts, which in the pediatric surgical population averages \$220,000 [9].

Many other surgical subspecialties are decreasing the length of the general surgery component of training and are forming integrative programs for their specialty. Examples include programs in cardiac surgery [10], vascular surgery [11], and plastic surgery [12]. Pediatric surgery has yet to initiate an integrative training program, most likely due to the fact that pediatric surgery is a true general surgery experience, and many leaders in the field may feel that a strong general surgery background is still essential. In order to limit the number of unnecessary years in training for pediatric surgery, the only other time period that could be adjusted is the time that the aspiring pediatric surgery fellow

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spends pursuing research or an advanced degree during residency. Many candidates feel that they must perform research in order to be competitive for a pediatric surgery fellowship. Certainly those who wish to pursue basic or clinical research may pursue additional research training, but dedicated time away from clinical training for research may no longer be the most efficient means of training the majority of pediatric surgeons.

A survey of the pediatric surgery fellowship program directors (PDs) was therefore undertaken to determine the need for ongoing research training for those general surgery candidates aspiring to enter pediatric surgery. We hypothesized that: 1) leaders in pediatric surgery would no longer feel that resident research was necessary for acceptance into a pediatric surgery fellowship, 2) the type of study performed during the research fellowship would not impact a program's opinion of candidates, and 3) the timing of resident research could be altered for those interested in a career as a surgeon scientist.

1. Methods

An anonymous 24 element questionnaire (shown in Appendix) was sent to all Pediatric surgery fellowship program and assistant program directors (PDs) regarding their opinions on general surgery resident research practices and how these practices affect pediatric surgeons, their training, and their careers. Seventy-five directors and assistant directors were identified and invited to partake in the survey of which 47 responded (63% response). Question responses were analyzed and compared by Chi-square analysis. Data is reported as a percentage of the total respondents. A p value less than 0.05 was considered statistically significant.

2. Results

2.1. General surgery resident research

Most general surgery programs did not mandate any formal time away from clinical training to pursue resident research. Seventy-seven percent of respondents noted that the general surgery programs affiliated with their pediatric surgery fellowship mandated no time off from clinical training for research ($p < 0.0001$) (Fig. 1). Eighty-one percent of respondents noted that their general surgery residents were not required to obtain advanced degrees while partaking in research ($p < 0.0001$).

Most general surgery residents chose to perform research at their home institution rather than seeking a research fellowship elsewhere. Seventy-two percent of respondents noted that less than 25% of their general surgery residents sought research fellowships outside of their home institutions ($p < 0.0001$). Surprisingly, half of respondents noted that their general surgery program automatically paid the salaries of residents in the research lab, thereby eliminating the need for external salary support for the resident.

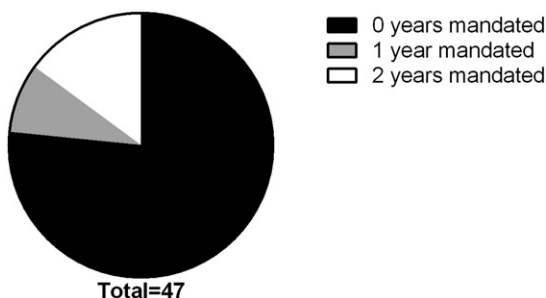


Fig. 1. General surgery resident research requirements.

2.2. Characteristics of pediatric surgery training programs and graduating fellows

The 47 respondents noted that an average of 23.0 +/- 3.2 fellows have graduated from their programs since their inception (range 1 to 86 total fellows). Of the programs noted, 51% had graduated less than 5 fellows who went on to achieve funding for basic science research, 17% graduated between 6 and 10 graduates who achieved basic science funding, and 30% of programs graduated more than 10 fellows who went on to achieve basic science research support ($p = 0.02$). Sixty-six percent of responding program directors participated in and were funded in some form of basic or clinical research ($p = 0.02$).

2.3. Program director opinions on necessity and quality of resident research

Respondents did not agree that resident research was critical for the development of future pediatric surgeons ($p = 0.81$) (Fig. 2A), nor could they agree that research should be mandated for all candidates who wished to pursue pediatric surgery ($p = 0.14$) (Fig. 2B). PDs were asked: "In the current era of medical training, how strongly do you feel that a period of protected research is still critical to the development of the pediatric surgeon?" PDs were asked to rank this question from 1–5 with 1 correlating to "not critical at all" and 5 correlating to "extremely critical". Surprisingly, the answers were quite varied across all scores and there was no significant difference between groups. They did agree with overwhelming majority (94%, $p < 0.0001$) that although research is not required by the American Board of Surgery to obtain a pediatric surgery fellowship position, that there is a perception of an "unsaid requirement" to pursue a period of protected academic research in order to be competitive for the match.

Seventy-five percent of PDs had no preference if a candidate pursued one or two years of research ($p = 0.0005$) (Fig. 3A), 79% placed no heavier weight on basic science or clinical research ($p < 0.0001$) (Fig. 3B), and 76% had no preference between traditional scientific research versus the pursuit of an advanced degree or humanitarian efforts ($p = 0.0003$) (Fig. 3c). Although the majority of PDs would look unfavorably upon a candidate who went straight through residency training and did not pursue a period of protected study, this was not statistically significant (62% vs. 38%, $p = 0.07$).

Publications were still weighed heavily in terms of a candidate's competitiveness in the match process. Forty-seven percent of

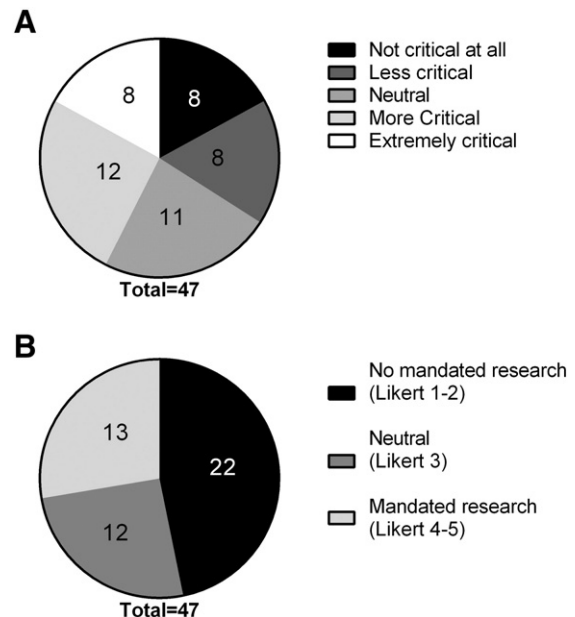


Fig. 2. Program director opinions of necessity of resident research.

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