

BRIEF REPORT

Patient Safety Training in Pediatric Emergency Medicine: A National Survey of Program Directors

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Abstract

Objectives: The Accreditation Council for Graduate Medical Education requires training in patient safety and medical errors but does not provide specification for content or methods. Pediatric emergency medicine (EM) fellowship directors were surveyed to characterize current training of pediatric EM fellows in patient safety and to determine the need for additional training.

Methods : From June 2013 to August 2013, pediatric EM fellowship directors were surveyed via e-mail.

Results : Of the 71 eligible survey respondents, 57 (80.3%) completed surveys. A formal curriculum was present in 24.6% of programs, with a median of 6 hours (range = 1 to 18 hours) dedicated to the curriculum. One program evaluated the efficacy of the curriculum. Nearly 91% of respondents without formal programs identified lack of local faculty expertise or interest as the primary barrier to implementing patient safety curricula. Of programs without formal curricula, 93.6% included at least one component of patient safety training in their fellowship programs. The majority of respondents would implement a standardized patient safety curriculum for pediatric EM if one was available.

Conclusions: Despite the importance of patient safety training and requirements to train pediatric EM fellows in patient safety and medical errors, there is a lack of formal curriculum and local faculty expertise. The majority of programs have introduced components of patient safety training and desire a standardized curriculum.

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The Institute of Medicine's landmark patient safety report *To Err Is Human* noted that "high error rates with serious consequences are most likely to occur in emergency departments."¹ The field of pediatric emergency medicine (EM) is particularly vulnerable to these potential patient safety hazards given the wide variations in age and weight of patients and dosing ranges of medications.^{2,3} Medical errors can result in adverse outcomes for patients and significant emotional and legal consequences for the physician.⁴ Thus, the Accreditation Council for Graduate Medical Education requires training in patient safety and medical errors as part of the core content for pediatric EM fellowship programs.⁵

Despite the obvious need for patient safety training in pediatric EM fellowships, there are numerous clinical

and educational demands that compete for time, making implementation potentially challenging. We surveyed pediatric EM fellowship program directors to characterize training in patient safety nationally. We sought to obtain teaching and assessment methods, barriers to implementation, perceived importance, and need for particular areas of patient safety training.

METHODS

Study Design and Population

Pediatric EM fellowship program directors in the United States were surveyed via e-mail between June 2013 and August 2013 using Qualtrics survey software (Qualtrics, Provo, UT). E-mail addresses of program directors were provided by the American Academy of Pediatrics

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(AAP) Section on Emergency Medicine. This study was determined to be exempt from informed consent requirements by the institutional review board at the lead author's institution. Consent was assumed by participation.

Survey Content and Administration

The survey was developed by the Task Force on Education of the AAP Committee on Quality Transformation. After the objective of the survey was defined as a needs assessment of pediatric EM fellowship patient safety training, a literature review was performed and four experts in patient safety were queried to identify patient safety concepts used in medical education. Next, five pediatric emergency physicians with expertise in medical education were asked to define a formal curriculum and identify teaching methodologies used in medical education. These components were then formulated into the survey instrument with the aid of an expert in survey methodology. We sought to ensure content validity with the above process and process response validity by pretesting the instrument with the above experts, two associate pediatric EM fellowship program directors, and four EM residency program directors, for both content and clarity. A few items were clarified and a patient safety concept was added (the effect of medical errors on providers) based on feedback. Four of the original pretesters tested the instrument after changes were incorporated.

The 15-item instrument contained questions on program demographics as well as questions focused on three domains: current patient safety training, barriers to curriculum implementation, and perceived need for training in particular areas of patient safety. Survey content is available in Data Supplement S1 (available as supporting information in the online version of this paper). Program directors were queried regarding specific patient safety training activities that their fellows currently perform. These included the existence of a formal patient safety curriculum or other educational activities directed at learning skills relevant to patient safety (e.g., patient handoffs, participation in root-cause analysis, simulation). A formal curriculum was defined for respondents as preplanned learning experiences designed to meet educational goals. Respondents who indicated that they had formal patient safety curricula were queried regarding details of their educational programs, including hours dedicated to patient safety, topics covered, and methods used to teach and evaluate the program. Respondents who indicated that they lacked formal patient safety curricula were asked about perceived barriers to implementing patient safety curricula, aspects of patient safety training that are currently included in their education, and topics and skills that they believe would be important to include in a patient safety curriculum.

Data Analysis

Survey responses were described by using percentages for categorical variables, means and standard deviations (SDs) for normally distributed continuous data, and medians and ranges for nonnormally distributed continuous and discrete variables. Chi-square tests and Fish-

er's exact tests (for small cell counts) were used to examine which fellowship characteristics were associated with having a formal patient safety curriculum. All analyses were performed using SPSS 20.0 for Windows. P-values less than 0.05 were considered statistically significant. The family-wise type I error rate was not adjusted.

RESULTS

Of the 71 accredited pediatric EM fellowship programs invited to participate in the survey, 57 (80.3%) programs responded. Of the programs for which responses were received, 40 (70.2%) programs were based in pediatric emergency departments, whereas 17 (29.8%) were based in mixed-age EDs. The median number of fellows in each program was 7 (range = one to 18).

Patient Safety Curriculum

Fourteen (24.6%) programs reported having formal patient safety curricula, compared to 43 (75.4%) programs reporting that they did not have formal patient safety curricula. Fellowship programs in general EDs were more likely than pediatrics-based programs to have formal patient safety curricula (47.1% vs. 15.4%, $p = 0.019$; odds ratio = 5.0, 95% CI = 1.4 to 18.3). The presence of a formal curriculum was not influenced by program size (size ≥ 8 fellows, $p = 0.73$).

Of programs with formal curricula, program directors reported that fellows spend a median of 6 hours during their fellowship on the curriculum (range = one to 18). Didactic sessions were the most commonly used teaching format, and case-based learning was the most commonly used methodology. Human factors, systems pressures, identification and reporting of errors, and team communication were the topics most frequently included. Only one program (7.1%) with a formal curriculum had assessed its efficacy.

Of programs without formal curricula, 93.6% had at least one component of patient safety training in their fellowship programs. For most programs, this was teamwork and communication training (92.9%). Frequently omitted topics were epidemiology of medical errors, contributing human factors, and effect of errors on physicians. Table 1 lists the areas of patient safety that program directors believe should be included in a patient safety curriculum.

Barriers to Patient Safety Implementation and Future Directions

Program directors cited lack of faculty expertise or interest as the primary barrier to having a formal curriculum (90.5%). Competing curricular demands (52.4%) and a lack of resources (42.9%) were also identified as important barriers. If a standardized patient safety curriculum was available, 80.7% of program directors stated that they would definitely or very likely implement this curriculum.

DISCUSSION

Our findings demonstrate that although few pediatric EM fellowship programs have formal patient safety

Table 1
Patient Safety Training Topics Program Directors Want Included in a Patient Safety Curriculum

Topic	<i>n</i>	%
Reporting errors and near misses	37	88.1
Disclosure of medical errors	37	88.1
System factors	34	81.0
Communication	34	81.0
Root-cause analysis	34	81.0
Team training	34	81.0
Human factors	33	78.6
Impact of errors on health care team	33	78.6
Handoffs	33	78.6
Simulation	33	78.6
Epidemiology of medical errors	28	66.7
<i>N</i> = 43.		

curricula, the majority of programs have begun to incorporate activities designed to teach aspects of patient safety. We had an 80% response rate, reflecting the vast majority of pediatric EM fellowship programs, likely making the findings generalizable to all pediatric EM programs. The failure to formalize these components into a curriculum that includes underlying patient safety principles is largely due to the lack of local faculty expertise and interest. As a result, most program directors desire a standardized pediatric EM patient safety curriculum.

Our findings are supported by other studies demonstrating that medical training programs are slow to integrate patient safety education. While it is encouraging that the majority of pediatric EM programs have incorporated aspects of patient safety training, this indolent and fragmented approach typically focuses on skill acquisition, without teaching underlying principles.⁶⁻⁸ This approach can make it difficult for learners to apply this knowledge to real-life scenarios.

This national needs assessment identified lack of local expertise as the major barrier that led to this fragmented approach to teaching patient safety. Lack of faculty patient safety expertise has also been identified across the continuum of medical training, leading to a variety of efforts to counteract this deficiency, such as the creation of national faculty development programs. One example is the recently described Quality and Safety Educators Academy, an intensive 3-day experience for medical educators.⁶ These larger efforts are designed to resolve local barriers by educating patient safety champions who can then develop educational programs for their own institutions. This excellent strategy unfortunately still requires faculty to be interested, motivated, and supported. Another option is to use comprehensive, standardized curricula developed by groups such as the National Patient Safety Foundation. Unfortunately, the applicability to pediatric EM providers is limited given the failure to address the unique pediatric EM patient safety issues.

Due to the lack of patient safety curricula designed for pediatric emergency physicians, it may be necessary to create a standardized curriculum specifically for pediatric emergency physicians. Despite the lack of

applicable patient safety curricula for pediatric emergency physicians, there are considerable patient safety efforts occurring nationally in pediatric EM such as identification of factors important in creating a culture of safety and the creation of an infrastructure for national safety event reporting.^{9,10} Lessons can be learned from these efforts and existing patient safety curricula in the fields of pediatrics and EM to create a comprehensive curriculum. It is worth noting that almost half of the fellowships based in EM departments had formal curricula, which may reflect more widespread expertise in patient safety within EM departments.

Given that the majority of programs have components of patient safety education, the ideal curriculum would offer modules that programs can use to supplement their existing instruction. Instead of the fragmented teaching of skills, this would allow existing experiences to be woven together in a coherent curriculum by adding supplementary learning activities that provide the general principles of patient safety. A standardized curriculum that incorporated asynchronous learning would also minimize the time effect of incorporating patient safety education into pediatric EM fellowships, addressing one of the major barriers cited. Further study is needed to determine the efficacy of patient safety training programs and to determine the best methods to teach these concepts.

LIMITATIONS

The primary limitation of the study was that we only included pediatric EM fellowship program directors in this needs assessment. Because the majority of physicians caring for children in EDs nationally are not pediatric EM fellowship trained, these physicians would ideally be included in pediatric EM patient safety efforts. In addition, the survey instrument was not validated.

CONCLUSIONS

This national needs assessment highlights the need for the creation of a standardized patient safety curriculum for pediatric emergency medicine fellows. The data obtained from pediatric emergency medicine fellowship program directors provide insight into the current state of patient safety training in fellowship programs and will be used as a foundation to build a formal curriculum.

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Supporting Information

The following supporting information is available in the online version of this paper:

Data Supplement S1. Safety curriculum needs assessment.