Graduating Pediatric Resident Reports on Procedural Training and Preparation

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Abstract

Objective: To determine pediatric resident training and preparation for 14 Accreditation Council for Graduate Medical Education (ACGME)-required procedures.

Methods: We included a national, random sample of 1000 graduating pediatric residents in 2015. For each of the ACGME-required procedures, residents were asked if they received training, successfully completed the procedure at least once, were comfortable performing the procedure unsupervised, and desired more training. To examine relationships among these 4 measures of training, we conducted logistic regression models and receiver operating characteristics curves. We used chi-square to examine whether desiring more training varied according to program size or career goal.

Results: Response rate was 55% (550 of 1000). More than half of the residents received training in each procedure (56.4%–99.3% across procedures) and had successfully completed them at least once (59.8%–99.6%). However, 91.3% desired more training in at least 1 procedure, and 30.0% would like more training in more than half of the procedures (≥8). Relationships were found between the 4 training measures, with some relationships stronger than others. Residents with primary care goals were more likely than those with subspecialty or hospital practice goals to desire more training in abscess incision and drainage and temporary splinting of fractures ($P < .05$). Residents in large programs were more likely than those in smaller programs to desire more training in bladder catheterization, peripheral intravenous catheter placement, and venipuncture ($P < .05$).

Conclusions: Although pediatric residents are overall well prepared to perform ACGME-required procedures, exceptions exist. Considering the role of program size and resident career goal might help when optimizing and individualizing resident procedural training and preparation.

Keywords: procedural training; residents

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What's New

While pediatric residents are overall well prepared to perform Accreditation Council for Graduate Medical Education–required procedures, exceptions exist. Considering the role of program size and resident career goal may help when optimizing and individualizing resident procedural training and preparation.

DEVELOPING THE ABILITY to perform common pediatric procedures without supervision is an important goal of pediatric residency. In keeping with this, the Accreditation Council for Graduate Medical Education (ACGME) program requirements for pediatrics specifies a number of procedures that graduates should learn to perform by the end of training.[1] The scope of these program requirements has been narrowed considerably from previous iterations of the ACGME program requirements in pediatrics to better reflect procedures general pediatricians use in practice to care for their patients. However, there remains debate about the fit of some of the procedures within the scope of general pediatrics.[2,3] Furthermore, little is known about how prepared pediatric residents perceive themselves to be in performing these required procedures without supervision and whether they desire more training for them.

The purpose of this study was to examine resident-perceived preparedness in ACGME-required procedures and determine if procedural training and preparation varies according to residency program size and career goal. Further understanding the current state of procedural training and preparation is important for fulfilling ACGME requirements as well as ensuring safe and appropriate procedural care by residency graduates.

Methods

We analyzed data from the American Academy of Pediatrics (AAP) 2015 Annual Survey of Graduating Residents.[4] The sample was randomly selected from an AAP database that includes all US pediatric residents. Residents who were not in their third year of a categorical pediatric residency and those from combined programs were excluded from the sampling frame, leaving 2943 eligible residents graduating in 2015. A random sample of 1100

residents was drawn from this population. Random sampling was accomplished using the randomization procedure from IBM SPSS Statistics, version 22 (IBM Corp, Armonk, NY).

After review of the questions on procedures by a small sample of residents aimed at addressing question understanding, a pilot version of the survey was sent to 100 of the selected residents in March 2015, and the survey was revised on the basis of responses (n = 32). The final survey was fielded to the national sample of 1000 third-year graduating pediatric residents, between May and August of 2015. Requests alternated between mail and e-mail until the resident responded or a total of 8 requests were made. E-mails included a link to the online survey, and mailed surveys included a postage-paid return envelope. A $2.00 incentive was included in the initial mailing. This survey was considered exempt by the AAP institutional review board.

Survey Content

The Annual Survey of Graduating Residents has been sent to graduates each year since 1997 and includes core questions on residents' demographic characteristics, training experiences, and career intentions.[4] The 2015 survey also included questions focused on training and self-perceived competency for the 14 ACGME-required procedures. These questions were on the basis of ACGME Program Requirements for Graduate Medical Education in Pediatrics; Revised Common Program Requirements, effective July 1, 2015.[5]

Resident Characteristics

Residents were also asked about their gender, medical school location, residency program class size (dichotomized on the basis of previous research: small, <10 residents; medium, 10–19 residents; large, ≥20 residents),[6] program primary setting, and career goal (primary care practice, hospitalist, subspecialty, primary as well as subspecialty practice, not entering clinical practice).

Training

For each of the ACGME-required procedures, residents were asked: 1) have you had formal training, 2) have you successfully completed the procedure at least once, 3) are you comfortable performing the procedure unsupervised, and 4) do you wish you had more training? Response options included "yes" and "no."

Analyses

Data on gender, age, and program size for respondents and nonrespondents were available in the AAP database from which the sample was drawn. To assess potential response bias, we used chi-square and *t* tests to compare these variables for respondents and nonrespondents.

As described previously, residents answered 4 questions about their training and experiences (receipt of training, successful completion, comfort unsupervised, and desire for more training) for each of the 14 procedures. To examine relationships among these 4 measures, we conducted several logistic regression models. We examined the following relationships for each procedure: receipt of training and successful completion, receipt of training and comfort unsupervised, successful completion and comfort unsupervised, received training and does not desire more training, successful completion and does not desire more training, and comfort unsupervised and does not desire more training. We report area under the receiver operating characteristics (ROC) curve for each test. We did not examine relationships for procedures with too high of prevalence (eg, 99% received training).

We used chi-square tests to examine the relationship between desire more training and program class size as well as career goal.

The number of cases in each statistical analysis varied slightly because of missing values for specific questions.

Results

The overall response rate was 55.0% (n = 550). Respondent age (mean, 31.1 years) was slightly less than nonrespondent age (mean, 31.6 years; $P < .01$), but no gender or program size difference was found among the respondents and nonrespondents ($P = .67$ and $P = .10$, respectively). Residents were included in the analyses if they answered at least 1 of the questions on training and experiences with procedures (n = 545).

Resident characteristics are presented in Table 1.

Overall Training and Experiences

More than half of residents received training in all of the procedures (56.4%–99.3%) and had successfully completed them at least once (59.8%–99.6%; Table 2). However, less than half of residents were comfortable reducing dislocations (38.2%) and splinting fractures (48.2%) without supervision, and just over half were

Table 1. Characteristics of Graduating Pediatric Residents (N = 545)

Characteristic	%
Gender	
Female (n = 393)	72.1
Male (n = 152)	27.9
Medical school location	
United States (n = 452)	83.1
International (n = 92)	16.9
Residency program class size	
Large: ≥20 residents (n = 272)	50.4
Medium: 10–19 residents (n = 201)	37.2
Small: <10 residents (n = 67)	12.4
Residency program primary setting	
Free-standing children's hospital (n = 302)	57.1
Pediatric hospital within adult institution (n = 183)	34.6
Community hospital (n = 37)	7.0
Other (n = 7)	1.3
Career goal	
Subspecialty practice (n = 248)	48.8
Primary care practice (n = 206)	40.6
Hospitalist (n = 54)	10.6