

# Pediatric Fellows: Perspectives on Training and Future Scope of Practice

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## ABSTRACT

**OBJECTIVE.** Training for pediatric residents who intend to pursue fellowship differs little from training for residents who intend to practice general pediatrics. It is unknown how well residents who intend to pursue subspecialty training believe that residency prepares them for subspecialty fellowships or future careers. To characterize the strengths and weaknesses of residency training and the factors influencing subspecialty choice from the perspective of subspecialty fellows, we conducted a survey of current fellows on these issues.

**METHODS.** A random sample of 1000 physicians who were entering their second or third year of fellowship in the United States in 2007 received a structured questionnaire by mail. The survey focused on decision-making in selection of residency and fellowship programs, strength of residency training in preparation for fellowship, and plans for future practice.

**RESULTS.** The overall response rate was 81%. A majority of the fellows would not have shortened their general pediatrics residency before fellowship if given the option (64% [ $n = 482$ ]). However, more than half (52% [ $n = 390$ ]) of the fellows would have chosen a 2-year fellowship without research or scholarly activity over the current 3-year structure. Few current fellows believed they could have used any additional training in the areas of patient safety, coordination of care for children with complex illnesses, or patient communication.

**CONCLUSIONS.** The finding that a large proportion of fellows would opt for shortened subspecialty training should prompt discussion and debate within the profession regarding the skills necessary for a pediatric subspecialist. Patient safety, physician-parent communication, and care coordination are emphasized primarily through informal training during residency. Although most clinicians believe themselves to be adequately prepared, research has identified gaps in clinician skills and understanding of these issues of great importance to patients and their families. *Pediatrics* 2009; 123:S31–S37

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### Key Words

fellows, subspecialists, training, career choice, residency

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**W**ITH RARE EXCEPTIONS, pediatric subspecialists complete 3 years of fellowship training after pediatric residency. Training for residents who intend to pursue fellowship differs little from training for residents who intend to practice general pediatrics. Requirements for rotations, experiences, and competencies are similar for all residents, as prescribed by the Accreditation Council for Graduate Medical Education (ACGME). To the extent that differences exist, they would be principally in selection of subspecialty electives or, perhaps, in the type of patients seen in a continuity clinic. It is unknown how well residents who intend to pursue subspecialty training believe that residency prepares them for subspecialty fellowships or future careers.

To characterize the strengths and weaknesses of residency training and the factors that influence subspecialty choice from the perspective of subspecialty fellows, we conducted a survey of current fellows on these issues.

## METHODS

### Sample

The American Board of Pediatrics maintains a database of all physicians who are currently in subspecialty training within the field of pediatrics. We selected a random sample of 1000 physicians who were entering their second or third year of fellowship in the United States in 2007.

### Survey Instrument

In collaboration with the American Board of Pediatrics Research Advisory Committee, we developed a structured questionnaire to be administered by mail. The survey contained 13 items and was designed to be completed in 10

**TABLE 1** Respondent Demographics (*N* = 755)

Demographic	% ( <i>n</i> )
Female	57 (431)
International medical graduate	26 (194)
Fellowship area	
Neonatal-perinatal medicine	23 (170)
Pediatric cardiology	11 (86)
Pediatric emergency medicine	11 (86)
Pediatric hematology-oncology	10 (77)
Pediatric critical care medicine	10 (73)
Pediatric endocrinology	9 (68)
Pediatric gastroenterology	9 (66)
Pediatric infectious diseases	5 (39)
Pediatric pulmonology	4 (30)
Pediatric nephrology	3 (23)
Adolescent medicine	3 (19)
Pediatric rheumatology	2 (18)

minutes or less. The survey focused on decision-making in selection of residency and fellowship programs, strength of residency training in preparation for fellowship, and plans for future practice. The questionnaire was a composite of fixed-choice and Likert-scale questions.

#### Questionnaire Administration

The first mailing of questionnaires was sent via priority mail to the 1000 fellows in the sample in August 2007. The survey packet contained a personalized cover letter, the instrument, a business reply mail envelope, and a \$5 bill as an incentive to complete the questionnaire. Two additional mailings were sent to nonrespondents in September and October 2007. The second and third mailings were sent via first-class mail and contained a personalized cover letter, the instrument, and a business reply mail envelope.

#### Data Analysis

Frequency distributions were calculated for all survey items. Next,  $\chi^2$  statistics were used to compare responses according to gender. Comparisons were also made between fellows in the neonatal-perinatal and critical care subspecialties and respondents in other subspecialties.

The study was approved by the University of Michigan Medical School Institutional Review Board.

## RESULTS

#### Response Rate

Of the initial 1000 survey packets mailed, 55 were returned as undeliverable by the postal service and 763 physicians returned the survey; this yielded an overall response rate of 81%.

The response rates of second-year (83% [*n* = 388]) and third-year (79% [*n* = 375]) fellows were similar.

Eight respondents were ineligible because they were no longer enrolled in a fellowship program. Thus, the final sample for analysis was 755. Because not every pediatrician responded to every question, the total number for each question may differ slightly.

**TABLE 2** Most Important Factors in Selection of Residency and Fellowship Programs

	Overall ( <i>N</i> = 755), % ( <i>n</i> )	Female ( <i>N</i> = 431), % ( <i>n</i> )	Male ( <i>N</i> = 324), % ( <i>n</i> )
The 2 most important factors in selection of residency program			
Location	66 (495)	69 (299) <sup>a</sup>	60 (196) <sup>a</sup>
Subspecialty expertise/training opportunities	39 (291)	34 (145) <sup>a</sup>	45 (146) <sup>a</sup>
Lifestyle/call schedule/family-friendly/overall fit	35 (267)	35 (152)	35 (115)
Prestige of program	27 (203)	25 (109)	29 (94)
Patient population	16 (119)	18 (78) <sup>a</sup>	13 (41) <sup>a</sup>
Potential employment for spouse/partner	10 (73)	11 (47)	8 (26)
Program flexibility	6 (49)	6 (27)	7 (22)
The 2 most important factors in selection of fellowship program			
Subspecialty expertise/training opportunities	63 (478)	63 (272)	64 (206)
Location	48 (360)	50 (213)	46 (147)
Prestige of program	36 (271)	33 (141) <sup>a</sup>	40 (130) <sup>a</sup>
Lifestyle/call schedule/family-friendly/overall fit	25 (186)	26 (110)	24 (76)
Potential employment for spouse or partner	11 (86)	13 (54)	10 (32)
Patient population	11 (83)	13 (54)	9 (29)
Program flexibility	5 (36)	4 (18)	6 (18)

<sup>a</sup> *P* ≤ .05.

#### Respondent Characteristics

More than half (57% [*n* = 431]) of the respondents were female, and 26% (*n* = 194) were international medical school graduates. Twenty-three percent (*n* = 170) of the respondents were enrolled in neonatal-perinatal fellowships, and 10% (*n* = 70) were enrolled in critical care medicine fellowships (Table 1).

#### Residency and Fellowship Program Selection

When asked to indicate the 2 most important factors in selection of their specific residency program, the largest proportion (66% [*n* = 495]) of fellows identified program location, and more than one third (39% [*n* = 291]) reported subspecialty expertise or training opportunities at the program site. Table 2 provides additional details on the factors that influenced residency program selection. Women were more likely than men to indicate that location (69% vs 60%; *P* = .011) and patient population (18% vs 13%; *P* = .0422) were the most important factors, whereas men were more likely to select subspecialty expertise or training opportunities at the program (45% vs 34%; *P* = .0014).

When asked to indicate the 2 most important factors in selection of their specific fellowship program, the largest proportion (63% [*n* = 478]) of fellows reported subspecialty expertise or training opportunities at the program. Almost half (48% [*n* = 360]) of the fellows identified location to be 1 of the 2 most important factors in selecting their fellowship program. Men were more

**TABLE 3 Point in Training That Fellows Decided on Subspecialty Training and Area (N = 755)**

	Overall (N = 755), % (n)	Neonatal and Critical Care (N = 243), % (n)	All Other Subspecialties (N = 512), % (n)	Female (N = 431), % (n)	Male (N = 324), % (n)
Point in training decided to pursue subspecialty training					
Before residency	43 (321)	35 (86) <sup>a</sup>	46 (235) <sup>a</sup>	40 (170) <sup>a</sup>	47 (151) <sup>a</sup>
First year of residency	24 (183)	25 (62) <sup>a</sup>	24 (121) <sup>a</sup>	23 (98) <sup>a</sup>	26 (85) <sup>a</sup>
Second year of residency	24 (184)	27 (65) <sup>a</sup>	23 (119) <sup>a</sup>	27 (118) <sup>a</sup>	20 (66) <sup>a</sup>
Third year of residency	8 (58)	12 (28) <sup>a</sup>	6 (30) <sup>a</sup>	9 (38) <sup>a</sup>	6 (20) <sup>a</sup>
After residency	1 (6)	1 (2) <sup>a</sup>	1 (4) <sup>a</sup>	1 (6) <sup>a</sup>	0 (0) <sup>a</sup>
Unsure	0 (3)	0 (0) <sup>a</sup>	0 (3) <sup>a</sup>	0 (1) <sup>a</sup>	1 (2) <sup>a</sup>
Point in training decided on specific subspecialty area					
Before residency	21 (159)	14 (35) <sup>a</sup>	24 (124) <sup>a</sup>	21 (89) <sup>a</sup>	22 (70) <sup>a</sup>
First year of residency	24 (178)	22 (54) <sup>a</sup>	24 (124) <sup>a</sup>	20 (86) <sup>a</sup>	28 (92) <sup>a</sup>
Second year of residency	40 (304)	43 (105) <sup>a</sup>	39 (199) <sup>a</sup>	44 (188) <sup>a</sup>	36 (116) <sup>a</sup>
Third year of residency	14 (104)	19 (45) <sup>a</sup>	12 (59) <sup>a</sup>	14 (60) <sup>a</sup>	13 (44) <sup>a</sup>
After residency	1 (9)	2 (4) <sup>a</sup>	1 (5) <sup>a</sup>	1 (7) <sup>a</sup>	1 (2) <sup>a</sup>

<sup>a</sup>P ≤ .05.

likely than women (40% vs 33%;  $P = .0349$ ) to select program prestige (Table 2).

Almost half (43% [ $n = 321$ ]) of the fellows made the decision to pursue subspecialty training before residency, whereas approximately half made the decision during their first 2 years of residency (Table 3). Fellows pursuing subspecialty training in areas other than neonatal and critical care were more likely than their peers (46% vs 35%;  $P = .0179$ ) to report deciding to pursue subspecialty training before residency. Male fellows were more likely to report that they decided to pursue subspecialty training before residency (47% vs 40%;  $P = .0171$ ), whereas female fellows were more likely to decide during their second year of residency (27% vs 20%;  $P = .0171$ ).

The largest proportion (40% [ $n = 304$ ]) of fellows reported that they decided on their specific subspecialty area in their second year of residency (Table 3). Neonatal and critical care fellows were less likely than other subspecialty fellows (14% vs 24%;  $P = .0046$ ) to decide on a specific subspecialty area before residency.

### Adequacy of Residency Training

A majority of the fellows considered their residency training in most subspecialty areas or topics to be adequate preparation for their fellowship (Table 4). However, results for some subspecialty areas were inconsistent. For example, more than one third of the fellows reported that they do not use the training they received in sports medicine (39% [ $n = 298$ ]), whereas 26% ( $n = 195$ ) reported that they could have used additional training in this area. Similar results were seen for physical rehabilitation, with 39% ( $n = 287$ ) reporting that they did not use the training they received during residency and 23% ( $n = 169$ ) believing that they could have used additional training in this field. Approximately one third of the fellows reported that they could have used additional training in ophthalmology (39% [ $n = 285$ ]), dermatology (38% [ $n = 283$ ]), allergy or immunology

(32% [ $n = 241$ ]), genetics (32% [ $n = 241$ ]), and rheumatology (31% [ $n = 226$ ]).

Neonatal and critical care fellows were more likely than fellows in other specialties to report that they could have used additional training in cardiology (39% vs 22%;  $P < .0001$ ) and neonatology (10% vs 2%;  $P < .0001$ ). Fellows in other subspecialties were more likely to report that they could have used more training in mental health (32% vs 22%;  $P < .0001$ ), sports medicine (30% vs 19%;  $P < .0001$ ), and oral health (34% vs 26%;  $P < .0001$ ).

In nonspecialty areas of training, few fellows believed that they could have used any additional training in patient safety (10%), coordination of care for complex illnesses (15%), or patient communication (5%). Table 4 provides additional details on adequacy of residency training.

### Flexibility in Residency Training

Half ( $n = 380$ ) of the respondents reported that their residency program provided some training flexibility in terms of subspecialty electives, and one third ( $n = 248$ ) reported flexibility in choice of subspecialty electives and access to specific patient populations.

Fellows were asked to report what they would have done differently if given 6 to 12 months of additional flexibility in their 3-year residency program. More than 40% reported that they would have added additional outpatient subspecialty care (43% [ $n = 320$ ]) and additional inpatient general or subspecialty care (41% [ $n = 304$ ]). Neonatal and critical care fellows were more likely than fellows in other subspecialties to report that they would have spent additional time in the NICU (34% vs 2%;  $P < .0001$ ) and the PICU (33% vs 20%;  $P < .0001$ ). Other subspecialty fellows were more likely to report that they would have added additional outpatient subspecialty care (52% vs 22%;  $P < .0001$ ) and outpatient general care (15% vs 6%;  $P = .0002$ ) (Table 5).

**TABLE 4 Adequacy of Residency Training in Preparation for Current Practice (N = 755)**

	Overall (N = 755), % (n)	Neonatal and Critical Care (N = 243), % (n)	All Other Subspecialties (N = 512), % (n)
Allergy/immunology			
Do not use training	12 (87)	18 (42) <sup>a</sup>	9 (45) <sup>a</sup>
Training was adequate for my needs	56 (415)	52 (126) <sup>a</sup>	58 (289) <sup>a</sup>
Could have used additional training	32 (241)	30 (73) <sup>a</sup>	33 (168) <sup>a</sup>
Cardiology			
Do not use training	3 (19)	1 (2) <sup>a</sup>	3 (17) <sup>a</sup>
Training was adequate for my needs	70 (522)	60 (143) <sup>a</sup>	75 (379) <sup>a</sup>
Could have used additional training	27 (203)	39 (95) <sup>a</sup>	22 (108) <sup>a</sup>
Endocrinology			
Do not use training	2 (19)	2 (4)	3 (15)
Training was adequate for my needs	78 (579)	77 (185)	78 (394)
Could have used additional training	20 (146)	21 (52)	19 (94)
Genetics			
Do not use training	7 (51)	3 (8) <sup>a</sup>	9 (43) <sup>a</sup>
Training was adequate for my needs	61 (450)	60 (144) <sup>a</sup>	61 (306) <sup>a</sup>
Could have used additional training	32 (241)	37 (89) <sup>a</sup>	30 (152) <sup>a</sup>
Nephrology			
Do not use training	3 (23)	2 (4) <sup>a</sup>	4 (19) <sup>a</sup>
Training was adequate for my needs	75 (558)	71 (172) <sup>a</sup>	77 (386) <sup>a</sup>
Could have used additional training	22 (161)	27 (65) <sup>a</sup>	19 (96) <sup>a</sup>
Rheumatology			
Do not use training	16 (119)	31 (74) <sup>a</sup>	9 (45) <sup>a</sup>
Training was adequate for my needs	53 (396)	40 (95) <sup>a</sup>	60 (301) <sup>a</sup>
Could have used additional training	31 (226)	29 (71) <sup>a</sup>	31 (155) <sup>a</sup>
Mental Health			
Do not use training	23 (171)	41 (98) <sup>a</sup>	14 (73) <sup>a</sup>
Training was adequate for my needs	48 (360)	37 (90) <sup>a</sup>	54 (270) <sup>a</sup>
Could have used additional training	29 (212)	22 (53) <sup>a</sup>	32 (159) <sup>a</sup>
Dermatology			
Do not use training	11 (82)	10 (23)	12 (59)
Training was adequate for my needs	51 (377)	48 (116)	52 (261)
Could have used additional training	38 (283)	42 (101)	36 (182)
Ophthalmology			
Do not use training	20 (151)	18 (44)	21 (107)
Training was adequate for my needs	41 (306)	47 (112)	39 (194)
Could have used additional training	39 (285)	35 (85)	40 (200)
Sports medicine			
Do not use training	40 (298)	59 (143) <sup>a</sup>	31 (155) <sup>a</sup>
Training was adequate for my needs	34 (248)	22 (52) <sup>a</sup>	39 (196) <sup>a</sup>
Could have used additional training	26 (195)	19 (46) <sup>a</sup>	30 (149) <sup>a</sup>
Radiology			
Do not use training	2 (18)	3 (7)	2 (11)
Training was adequate for my needs	77 (567)	80 (192)	75 (375)
Could have used additional training	21 (156)	17 (42)	23 (114)
Physical rehabilitation			
Do not use training	39 (287)	44 (106)	36 (181)
Training was adequate for my needs	38 (282)	35 (84)	40 (198)
Could have used additional training	23 (169)	21 (51)	24 (118)
Patient safety			
Do not use training	11 (85)	13 (31) <sup>a</sup>	11 (54) <sup>a</sup>
Training was adequate for my needs	79 (584)	72 (173) <sup>a</sup>	82 (411) <sup>a</sup>
Could have used additional training	10 (72)	15 (36) <sup>a</sup>	7 (36) <sup>a</sup>
Coordination of care for complex illnesses			
Do not use training	4 (30)	5 (12)	4 (18)
Training was adequate for my needs	81 (600)	78 (188)	82 (412)
Could have used additional training	15 (113)	17 (41)	14 (72)
Patient communication			
Do not use training	2 (16)	3 (8) <sup>a</sup>	1 (8) <sup>a</sup>
Training was adequate for my needs	93 (687)	88 (211) <sup>a</sup>	95 (476) <sup>a</sup>
Could have used additional training	5 (39)	9 (21) <sup>a</sup>	4 (18) <sup>a</sup>
Oral health			
Do not use training	24 (180)	40 (97) <sup>a</sup>	17 (83) <sup>a</sup>
Training was adequate for my needs	44 (328)	34 (81) <sup>a</sup>	49 (247) <sup>a</sup>
Could have used additional training	32 (235)	26 (62) <sup>a</sup>	34 (173) <sup>a</sup>

<sup>a</sup> P ≤ .05.

**TABLE 5** Given 6–12 Months Additional Flexibility in Residency Program, How Fellows Would Spend Time

	Overall (N = 750), % (n)	Neonatal and Critical Care (N = 243), % (n)	All Other Specialties (N = 507), % (n)
Additional outpatient subspecialty care	43 (320)	22 (54) <sup>a</sup>	52 (266) <sup>a</sup>
Additional inpatient general or subspecialty care	41 (304)	45 (110)	38 (194)
Additional time in PICU	24 (180)	33 (80) <sup>a</sup>	20 (100) <sup>a</sup>
Nothing different	13 (99)	12 (30)	14 (69)
Additional time in NICU	12 (91)	34 (83) <sup>a</sup>	2 (8) <sup>a</sup>
Additional outpatient general care	12 (92)	6 (14) <sup>a</sup>	15 (78) <sup>a</sup>
Don't know	5 (36)	4 (9)	5 (27)

<sup>a</sup>  $P \leq .05$ .

### Factors That Influence the Decision to Pursue Fellowship Training

When asked to indicate the 2 most important factors in their decisions to become subspecialists, fellows most commonly selected interest in a specific disease or organ system (67% [ $n = 506$ ]) and interest in a specific patient population (43% [ $n = 324$ ]). Neonatal and critical care fellows were more likely than other fellows to cite interest in a specific patient population (70% vs 30%;  $P < .0001$ ) and earning potential (34% vs 14%;  $P < .0001$ ) as the most important factors in becoming a subspecialist. Other subspecialty fellows were more likely to report interest in a specific disease or organ system (78% vs 45%;  $P < .0001$ ) and structured hours or lifestyle (30% vs 20%;  $P = .0026$ ) as the primary reasons they became subspecialists. Male fellows were more likely than female fellows (27% vs 15%;  $P < .0001$ ) to report earning potential as 1 of the 2 most important factors in their decision to become a subspecialist (Table 6).

A majority (64% [ $n = 482$ ]) of the fellows would not have shortened their general pediatrics residency before fellowship if given the option. However, more than half (52% [ $n = 390$ ]) of the fellows would have chosen a 2-year fellowship without research or scholarly activity over the current 3-year structure. Male fellows were slightly more likely to prefer the current structure (43% vs 35%;  $P = .0290$ ) (Table 7).

**TABLE 6** The 2 Most Important Factors in Decision to Become a Subspecialist

	Overall (N = 754), % (n)	Neonatal and Critical Care (N = 243), % (n)	All Other Subspecialties (N = 511), % (n)	Female (N = 430), % (n)	Male (N = 324), % (n)
Interest in specific disease or organ system	67 (506)	45 (109) <sup>a</sup>	78 (397) <sup>a</sup>	68 (292)	66 (214)
Interest in specific patient population	43 (324)	70 (169) <sup>a</sup>	30 (155) <sup>a</sup>	46 (199) <sup>a</sup>	39 (125) <sup>a</sup>
Research/academic environment	32 (243)	22 (53) <sup>a</sup>	37 (190) <sup>a</sup>	30 (131)	35 (112)
Structured hours/lifestyle	27 (202)	20 (48) <sup>a</sup>	30 (154) <sup>a</sup>	29 (124)	24 (78)
Earning potential	20 (152)	34 (82) <sup>a</sup>	14 (70) <sup>a</sup>	15 (65) <sup>a</sup>	27 (87) <sup>a</sup>
Loan repayment	1 (9)	2 (5)	1 (4)	1 (6)	1 (3)
Location	1 (5)	0 (1)	1 (4)	1 (4)	0 (1)

<sup>a</sup>  $P \leq .05$ .

**TABLE 7** Perspectives on Scope of Training and Importance of General Pediatrics Board Certification

	Overall (N = 755), % (n)	Female (N = 431), % (n)	Male (N = 324), % (n)
Would have shortened general pediatrics residency before fellowship			
Yes	30 (228)	27 (118)	34 (110)
No	64 (482)	67 (286)	60 (196)
Unsure	6 (44)	6 (26)	6 (18)
Would have chosen 2-year fellowship without research			
Yes	52 (390)	54 (232) <sup>a</sup>	49 (158) <sup>a</sup>
No	38 (291)	35 (150) <sup>a</sup>	43 (141) <sup>a</sup>
Unsure	10 (74)	11 (49) <sup>a</sup>	8 (25) <sup>a</sup>
Important to maintain general pediatrics board certification throughout career			
Yes	63 (475)	67 (290) <sup>a</sup>	57 (185) <sup>a</sup>
No	20 (155)	16 (68) <sup>a</sup>	27 (87) <sup>a</sup>
Unsure	17 (125)	17 (73) <sup>a</sup>	16 (52) <sup>a</sup>

<sup>a</sup>  $P \leq .05$ .

### Future Career Plans

Almost three quarters (72% [ $n = 544$ ]) of the fellows had no plans to practice general pediatrics in the future, whereas 12% ( $n = 88$ ) planned to practice some general pediatrics and some subspecialty care, and a similar number (16% [ $n = 121$ ]) of them were unsure.

As future subspecialists, a majority (63% [ $n = 475$ ]) of respondents felt that it is important to maintain their board certification in general pediatrics throughout their career. Female fellows were more likely than male fellows (67% vs 57%;  $P = .0008$ ) to believe that it is important to maintain general pediatrics board certification.

### DISCUSSION

One of the most important findings from our study was that few current fellows believed that they could have used any additional training in the areas of patient safety, coordination of care for children with complex

illnesses, or patient communication. These 3 areas represent domains in which recognized deficiencies have been observed in clinical practice.<sup>1-6</sup>

Patient safety, coordination of care, and patient communication are among the Accreditation Council for Graduate Medical Education's general competencies.<sup>7</sup> These are overarching topics in the field of medicine that, ideally, are part of every clinical experience in residency. However, these practical aspects of medicine may not be addressed directly in the curriculum.<sup>8</sup>

Walsh et al<sup>9</sup> found that patient safety training in pediatric residency programs is most frequently performed on an informal basis. Although most fellows in our study were comfortable with the patient safety training that they received, research has shown that residents are also uncomfortable disclosing medical errors, which is an important component of patient safety.<sup>10-13</sup>

Pediatric subspecialists are most likely to care for children with complex illnesses and to need greater skills and training in coordination of care and patient communication than others in the profession. Recent research has revealed that there is no standard definition for care coordination.<sup>14</sup> Thus, although only 15% of the fellows reported that they could have used additional training in coordination of care for complex illnesses, the proportion could potentially be higher because of differences in interpretation as well as differences in perspective as to the role of physicians in this process.

Furthermore, although only 5% of the fellows reported that they could have used additional training in patient communication, the issue remains important from the perspective of patients.<sup>15</sup> Research has identified specific gaps in clinician-parent communication both overall<sup>16</sup> and specifically in technical areas such as genetic testing.<sup>17,18</sup>

These findings are inconsistent with most fellows' responses to our survey. Previous work has demonstrated that physicians often have limited ability to accurately self-assess their own knowledge and actions, and those who believe that they are best prepared may be the ones with the greatest shortcomings.<sup>19</sup> In addition, the organizational culture and norms in hospitals, as well as across health care systems, may limit the ability of physicians and other staff to accurately assess and correct organizational deficiencies.<sup>20,21</sup> Thus, our findings should not be interpreted to indicate that additional emphasis in these areas is not needed in pediatric residency training.

Fellows were consistent in the selection of program location and subspecialty expertise or training as the 2 factors most frequently identified to be of greatest importance in both residency and fellowship program choice. The fact that location is of high importance has implications for some subspecialty training programs and may indicate an immutable factor for some in filling open positions.

The timing of the decision to pursue fellowship training is of great importance. Currently, many fellowships require residents to apply during their second year of residency. Anecdotal reports have indicated that some residents do not feel prepared to make fellowship deci-

sions at that time. Our results indicate that almost half of fellows (43%) made the decision to pursue fellowship training before residency, and another 24% decided in their first year. However, only 45% of residents had decided on their specific subspecialty focus by their first year of residency. Thus, the majority decide just before the deadline for application. It is unknown if a later application cycle would affect the rates of subspecialty training or the specific subspecialties that are selected.

There was wide variation in the perceptions of residents regarding the adequacy of their residency training to prepare them for fellowship. One of the more striking differences was seen with regard to training in physical medicine and rehabilitation, with 39% reporting that they did not use the training from residency and 23% believing that they could have used more. Although some of this variation could be a result of the differences between residency programs, it may also reflect the different needs of the different subspecialties. Such findings indicate that a "one-size-fits-all" approach to residency training does not uniformly meet the needs of all subspecialty fellows, a point highlighted by our finding that both neonatology and critical care fellows, compared with all other fellows, had different perspectives on the value of many aspects of their residency training.

Despite the perceptions by some fellows that certain aspects of their residency were not relevant to their current training, only 30% reported that they would have shortened their residency training if given the option. Although this is an important proportion, it is unknown how many would have actually pursued this option if it was available. More striking was the finding that 52% of the respondents would have selected a 2-year fellowship without research training if it were offered. The 3-year fellowship, which includes 1 year of research training, was institutionalized in pediatrics over 20 years ago.<sup>22</sup> The length of training is a distinction between subspecialty training in pediatrics and many internal medicine subspecialties<sup>23,24</sup> and may have had implications for the pediatrics workforce.<sup>25</sup> A better strategy for communicating the rationale for both the extra year of training and its expected impact on the future career of a subspecialist seems to be warranted.

## CONCLUSIONS

Fellows represent the future of the subspecialty workforce. A better understanding of their motivations and perspectives on residency training can provide important information to future subspecialists and to pediatrics residency programs. The finding that a large proportion of fellows would opt for shortened subspecialty training should prompt discussion and debate within the profession regarding the skills necessary for a pediatric subspecialist.

Patient safety, physician-parent communication, and care coordination are emphasized primarily through informal training during residency. Although most clinicians believe themselves to be adequately prepared, research has identified gaps in clinician skills and understanding of these issues of great importance to patients and their families.

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