

PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Child Abuse Training and Knowledge: A National Survey of Emergency Medicine, Family Medicine, and Pediatric Residents and Program Directors

Suzanne P. Starling, Kurt W. Heisler, James F. Paulson and Eren Youmans

Pediatrics 2009;123:e595-e602; originally published online Mar 9, 2009;

DOI: 10.1542/peds.2008-2938

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://www.pediatrics.org/cgi/content/full/123/4/e595>

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2009 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



Child Abuse Training and Knowledge: A National Survey of Emergency Medicine, Family Medicine, and Pediatric Residents and Program Directors

Suzanne P. Starling, MD^{a,b}, Kurt W. Heisler, MS, MPH^{a,b}, James F. Paulson, PhD^a, Eren Youmans, MPH^a

^aEastern Virginia Medical School, Virginia; ^bChildren's Hospital of The King's Daughters, Norfolk, Virginia

The authors have indicated they have no financial relationships relevant to this article to disclose.

What's Known on This Subject

Both practicing pediatricians and residents report discomfort with child abuse evaluations. Medical training in child abuse is inadequate in the United States. Studies have addressed comfort and training but have not directly assessed child abuse knowledge.

What This Study Adds

This study assessed child abuse knowledge, training, and comfort levels of physicians. It also is the first to compare the training and knowledge among the 3 specialties most likely to encounter abused children first: pediatrics, emergency medicine, and family medicine.

ABSTRACT

OBJECTIVE. The objective of this study was to determine the level of knowledge, comfort, and training related to the medical management of child abuse among pediatric, emergency medicine, and family medicine residents.

METHODS. Surveys were administered to program directors and third-year residents at 67 residency programs. The resident survey included a 24-item quiz to assess knowledge regarding the medical management of physical and sexual child abuse. Sites were solicited from members of a network of child abuse physicians practicing at institutions with residency programs.

RESULTS. Analyzable surveys were received from 53 program directors and 462 residents. Compared with emergency medicine and family medicine programs, pediatric programs were significantly larger and more likely to have a medical provider specializing in child abuse pediatrics, have faculty primarily responsible for child abuse training, use a written curriculum for child abuse training, and offer an elective rotation in child abuse. Exposure to child abuse training and abused patients was highest for pediatric residents and lowest for family medicine residents. Comfort with managing child abuse cases was lowest among family medicine residents. On the knowledge quiz, pediatric residents significantly outperformed emergency medicine and family medicine residents. Residents with high knowledge scores were significantly more likely to come from larger programs and programs that had a center, provider, or interdisciplinary team that specialized in child abuse pediatrics; had a physician on faculty responsible for child abuse training; used a written curriculum for child abuse training; and had a required rotation in child abuse pediatrics.

CONCLUSIONS. By analyzing the relationship between program characteristics and residents' child abuse knowledge, we found that pediatric programs provide far more training and resources for child abuse education than emergency medicine and family medicine programs. As leaders, pediatricians must establish the importance of this topic in the pediatric education of residents of all specialties. *Pediatrics* 2009;123:e595–e602

www.pediatrics.org/cgi/doi/10.1542/peds.2008-2938

doi:10.1542/peds.2008-2938

Points of view or opinions in this document are those of the authors and do not necessarily represent the official position or policies of the US Department of Justice.

Key Words

child abuse, resident education/training, emergency physicians, family physicians

Abbreviations

EM—emergency medicine
FM—family medicine
CAP—child abuse pediatrics
HLM—hierarchical linear modeling
ACGME—Accreditation Council for Graduate Medical Education

Accepted for publication Dec 19, 2008

Address correspondence to Suzanne P. Starling, Children's Hospital of The King's Daughters, Child Abuse Program, 935 Redgate Ave, Norfolk, VA 23507. E-mail: suzanne.starling@chkd.org

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275). Copyright © 2009 by the American Academy of Pediatrics

PHYSICIANS ARE IMPORTANT resources in the diagnosis and treatment of abused children.¹ All physicians in United States legally are required to report suspected abuse and often are called on by courts as expert witnesses. Most important, physicians often are the first professionals to encounter a child who may have been abused or neglected.²

Many physicians, however, have no formal specialized training in child abuse. These nonspecialists have shown patterns of underreporting, overreporting, and misdiagnosing maltreatment,³⁻⁷ a pattern that many practitioners and researchers attribute to inadequate training during residency.⁸⁻¹⁰ Our 2006 pilot study that assessed the training and knowledge of residents revealed significant deficits in training and knowledge,¹¹ but the study was limited to residents in 2 medical schools. To find out whether these deficits existed at the national level, we surveyed a nationally representative sample of program directors and third-year pediatric, emergency medicine (EM), and family medicine (FM) residents in 67 US residency programs. For each specialty, our objectives were to (1) document the amount and

type of child abuse training provided, (2) measure residents' comfort and knowledge related to the medical management of child abuse, and (3) examine the relationship between 1 and 2.

METHODS

The study was approved by the Eastern Virginia Medical School institutional review board and the institutional review boards at the participating sites. Participation was voluntary and anonymous. All data collection occurred during the spring of 2006.

Participants

Sites were solicited from the Ray E. Helfer Society, a network of 224 physicians (primarily pediatricians) who specialize in child abuse. Principal investigators at each site were required to have access to third-year residents in at least 1 of the 3 specialties. Of the 42 principal investigators who expressed interest, 24 (representing 24 institutions, 67 residency programs, and 939 third-year residents) secured institutional review board approval. Contacts at the 67 participating programs were mailed a program director survey, a packet of resident surveys, and a study protocol. Program director surveys were distributed to program directors with instructions for the person "responsible for or most knowledgeable about the residency program's child abuse training" to complete it. Program contacts administered the resident surveys to all third-year residents in the program. In most cases, residents completed their survey in a proctored environment; however, residents were permitted to complete the survey without assistance on their own time and return it anonymously to the program contact. Surveys were coded with a program identification to track return rates and allow comparison of program director-level data with resident-level data. Completed surveys were mailed to Eastern Virginia Medical School investigators for data entry, management, and analysis.

Surveys

We used 2 surveys to collect data. Both were developed by the lead author (Dr Starling) with consultation from national child abuse pediatrics (CAP) experts.

The program director survey collected data on program and training characteristics, including size, university and military affiliation, and urban/suburban/rural setting. Training characteristics included presence of a center, provider, or interdisciplinary team that specializes in child abuse; presence of a physician faculty member primarily responsible for child abuse training; use of a written curriculum for child abuse training; and presence of a required or elective rotation in child abuse.

The resident survey collected data on residents' demographics, child abuse training and patient experience during residency, satisfaction with training, comfort with 7 aspects of managing child abuse cases, and knowledge of child abuse assessment and treatment. We calculated a "total training experience" and "total patient experience" score for each resident. The training score (0–12) is the sum of residents' answers to 3 questions

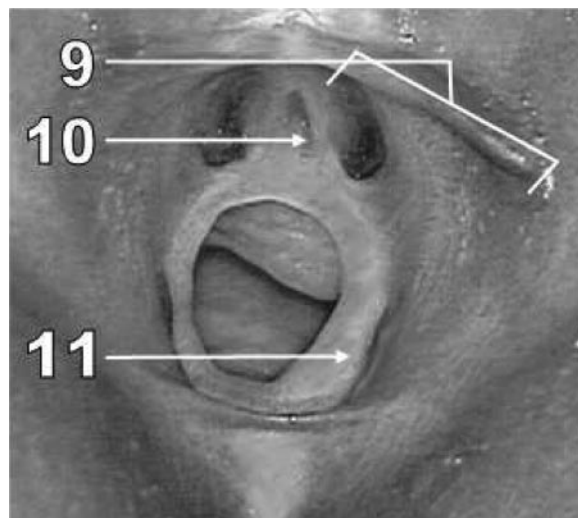


FIGURE 1

Genitalia of a prepubertal girl. Correct answers are as follows: 9 = labia minora, 10 = urethral meatus, 11 = hymen. The correct answer to the diagnostic interpretation question: "No evidence of current or healed genital trauma, but sexual abuse cannot be ruled out."

regarding hours that they received of didactic instruction, clinical teaching, and clinical experiences in child abuse (0 = none, 1 = 1–3 hours, 2 = 4–6 hours, 3 = 7–9 hours, and 4 = >9 hours). The patient score (0–10) is the sum of residents' answers to questions regarding the number of physical and sexual abuse patients seen (0 = none, 1 = 1–3 patients, 2 = 4–6 patients, 3 = 7–9 patients, 4 = 10–12 patients, and 5 = >12 patients).

Questions regarding comfort were rated on a 6-point Likert scale (1 = strongly disagree to 6 = strongly agree) and scored by using the mean. We calculated 7 individual comfort scores (1 for each item), 1 "overall medical comfort" score (composite of 4 items; Cronbach's $\alpha = .84$), and 1 "overall investigative comfort score" (composite of 3 items; Cronbach's $\alpha = .75$).

We used a 24-question quiz to assess knowledge of the evaluation of child abuse and neglect. Four questions required the resident to label and make a diagnostic interpretation of 3 anatomic structures from a black and white photograph of female genitalia (Fig 1). Eight of the knowledge questions were clinical vignettes (see Appendix for examples). The knowledge questions were dichotomously coded as correct or incorrect, yielding an overall score (0%–100%) based on the percentage correct of all items. An initial version of this survey was piloted in 2006 and refined on the basis of item analysis.¹¹

Data Analysis

Categorical variables were described using frequencies and percentages; continuous variables were described using means and SEs (or medians and ranges for non-normally distributed data). The χ^2 statistic was used to assess differences in program characteristics by specialty. To account for clustering within residency programs, we used hierarchical linear modeling (HLM) to assess differ-

TABLE 1 Characteristics of Programs and Their Child Abuse Training, by Specialty

Program and Child Abuse Training Characteristic	Specialty			χ^2	P
	EM (n = 11)	FM (n = 21)	Pediatrics (n = 21)		
Region, n (%)				—	—
West	1 (9)	8 (38)	3 (14)		
Midwest	6 (54)	6 (29)	10 (48)		
Northeast	1 (9)	1 (5)	2 (10)		
South	3 (27)	6 (29)	6 (29)		
No. of first- to fourth-year residents, median (range)	30 (20–56)	24 (12–44)	68 (17–150)	23.780	<.001 ^a
University affiliation(s), n (%)	9 (82)	19 (91)	19 (91)	0.6500	.720
Military affiliation(s), n (%)	0 (0)	1 (5)	1 (5)	—	—
Residency program setting, n (%)				—	—
Suburban	3 (27)	7 (35)	3 (14)		
Urban	8 (73)	12 (60)	17 (81)		
Rural	0 (0)	1 (5)	1 (5)		
Center that specializes in child abuse, n (%)	10 (91) _b	7 (35) _c	19 (91) _b	17.880	<.001 ^a
Medical provider who specializes in child abuse, n (%)	9 (90) _b	8 (38) _c	21 (100) _b	22.250	<.001 ^a
Interdisciplinary team for suspected cases of child abuse, n (%)	10 (91) _{b,c}	11 (55) _b	21 (100) _c	14.280	.001 ^a
Physician on faculty primarily responsible for child abuse training, n (%)	7 (64) _{b,c}	8 (38) _b	20 (95) _c	15.320	<.001 ^a
Use a written curriculum for child abuse training, n (%)	1 (9) _b	4 (20) _b	14 (70) _c	15.450	<.001 ^a
Required rotation in child abuse, n (%)	0 (0)	1 (5)	10 (48)	—	—
Elective rotation in child abuse, n (%)	2 (18) _b	8 (38) _b	18 (86) _c	16.240	<.001 ^a

— indicates that analysis could not be performed because of small cell counts. Most items were preceded with, "Does your residency program have a." Percentages in the same row with different subscripts differ significantly by at least $P < .05$. Significance testing for all pairwise comparisons used Holm's Sequential Bonferroni method to control for type I error.

^a Significant at the given P value.

ences in residents' characteristics by program (as reported by program directors). All HLM model results are reported for robust SEs. Across models, *N* varies slightly with missing data patterns. SPSS 16 (SPSS, Inc, Chicago, IL) was used for univariate and multivariate analyses, and HLM 6.02 was used for HLM analyses.¹²

RESULTS

Program Director Surveys

We received program director surveys from 53 (79%) of 67 programs. This provided program-level data on 11 EM, 21 FM, and 21 pediatric programs. Program directors (76%) were the primary respondent; remaining respondents included associate directors and child protection team members. Program and training characteristics by specialty are shown in Table 1. Compared with EM and FM programs, pediatric programs were significantly larger and more likely to have a medical provider who specializes in child abuse, have physician faculty primarily responsible for child abuse training, use a written curriculum for child abuse training, and offer an elective rotation in child abuse.

Resident Surveys

We received 462 analyzable surveys from 48 programs: 55 EM residents (9 programs), 104 FM residents (17 programs), and 303 pediatric residents (22 programs). We excluded 17 surveys from 4 programs with <30% return rates. Demographic characteristics of residents by specialty are shown in Table 2. Sixty percent of the residents were female, and 72% were white.

Using the 2005–2006 graduate medical education data from the American Medical Association¹³ to deter-

mine whether the sample was representative of all residents in the United States, we found our sample to be similar in gender and race to the national population for all specialties. Our sample of pediatric residents was more white than the general population (73% vs 52%).

Child Abuse Training During Residency

Compared with EM and FM residents, pediatric residents reported receiving more hours of didactic instruction, clinical teaching, and clinical experiences (Fig 2) and seeing more abused patients (Fig 3). The total training experience score was significantly higher ($P < .001$) for pediatric residents (mean: 8.20; SE: 0.17) than for EM (mean: 5.0; SE: 0.28) and FM (mean: 4.7; SE: 0.30) residents. The total patient experience score was significantly higher ($P < .001$) for pediatric (mean: 6.0; SE: 0.14) and EM (mean: 4.6; SE: 0.40) residents than for FM (mean: 2.8; SE: 0.24) residents.

TABLE 2 Demographic Characteristics of Residents, by Specialty

Characteristic	Specialty		
	EM (n = 55)	FM (n = 104)	Pediatrics (n = 303)
Gender (n = 462), n (%)			
Female	17 (31)	53 (51)	208 (69)
Male	38 (69)	51 (49)	95 (31)
Race (n = 356), n (%)			
Asian	3 (8)	17 (21)	36 (15)
Black	2 (5)	8 (10)	10 (4)
White	33 (85)	52 (63)	171 (73)
Other	1 (3)	5 (6)	18 (8)

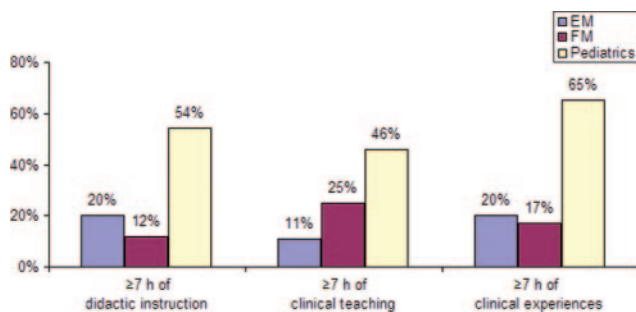


FIGURE 2 Hours of child abuse training received since residency began. To facilitate interpretation, the initial response options for each learning method (none, 1–3, 4–6, 7–9, >9) were converted to dichotomous responses (<7 hours vs ≥7 hours) on the basis of a median split of the data. Didactic instruction: class lectures, grand rounds, clinical conference, etc; clinical teaching: teaching that occurs in the clinic, emergency departments, or other medical settings; clinical experiences: direct, hands-on clinical or patient care activities.

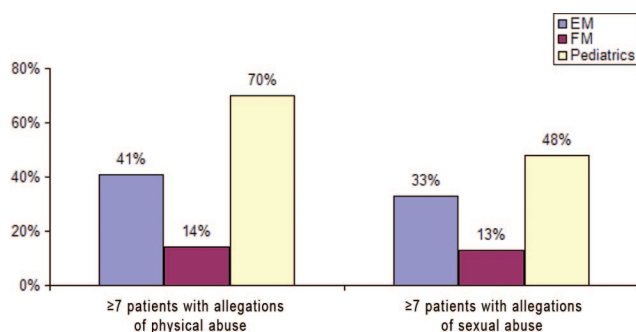


FIGURE 3 Number of child abuse patients examined or observed since residency began. To facilitate interpretation, the initial response options for patient exposure (none, 1–3, 4–6, 7–9, >9) were converted to dichotomous responses (<7 patients vs ≥7 patients) on the basis of a median split of the data.

Comfort With Medical Management of Child Abuse

Table 3 shows mean comfort scores for 7 medical and investigative tasks that physicians may need to evaluate child abuse. FM residents reported significantly less com-

TABLE 4 Resident-Level Factors Related to Residents' Knowledge Scores

Resident Characteristics and Experiences	β (SE)	P
Gender	—	NS
Total training experience	.82 (.19)	<.001
Total patient experience	.68 (.22)	.003
Overall comfort with performing and interpreting abuse examinations	—	NS
Overall comfort with investigative responsibilities	1.74 (.63)	.007

Coefficients represent the increase in knowledge scores expected for every 1-unit increase in the predictor. For example, for every 1-unit increase in total training experience, the model predicts a .82-point increase in knowledge score. NS indicates not significant.

fort than pediatric residents for all 7 items and significantly less comfort than EM residents for 4 of the items.

After controlling for total training experience, overall medical comfort was positively correlated with total patient experience ($r = 0.28$, $P < .001$). Residents reported significantly more comfort with performing and interpreting physical abuse examinations (mean: 4.26; SE: 0.05) than sexual abuse examinations (mean: 3.77; SE: 0.06; $P < .001$).

Medical Knowledge of Child Abuse

Table 4 shows the relationship between characteristics reported by residents and residents' performance on the knowledge quiz. Residents who reported more training experiences, patient experiences, and comfort with investigative responsibilities performed significantly better on the knowledge quiz.

Table 5 shows the relationship between program-level characteristics (reported by program directors) and residents' performance on the knowledge quiz. Knowledge scores for pediatric residents were significantly higher than EM ($P = .005$) and FM ($P < .001$) residents. FM residents performed significantly worse than both pediatric ($P < .001$) and EM residents ($P = .002$). Residents with high knowledge scores were significantly more likely to come from larger programs, which had a center, a provider, or an interdisciplinary team special-

TABLE 3 Mean (SE) Scores of Comfort With Medical and Investigative Aspects of Child Abuse, by Specialty

	Comfort		
	EM	FM	Pediatrics
Overall medical comfort ^a	4.10 (0.10) _c	3.40 (0.11) _d	4.20 (0.05) _c
I am comfortable performing a medical examination on a child suspected to have been physically abused.	4.70 (0.12) _c	3.60 (0.14) _d	4.70 (0.06) _c
I am comfortable interpreting a medical examination on a child suspected to have been physically abused.	4.40 (0.12) _c	3.60 (0.12) _d	4.20 (0.06) _c
I am comfortable performing a medical examination on a child suspected to have been sexually abused.	3.70 (0.18)	3.20 (0.13) _c	4.10 (0.07) _d
I am comfortable interpreting a medical examination on a child suspected to have been sexually abused.	3.70 (0.16)	3.20 (0.12) _c	3.80 (0.06) _d
Overall investigative comfort ^b	4.30 (0.11) _c	3.70 (0.11) _d	4.40 (0.05) _c
I am comfortable interviewing the parent of a child regarding suspected physical or sexual abuse.	3.80 (0.17)	3.40 (0.13) _c	4.10 (0.07) _d
I am comfortable speaking to child protective services and law enforcement regarding medical findings in my patients.	4.80 (0.13) _c	4.00 (0.14) _d	4.60 (0.07) _c
I know which circumstances require a report to child protective services and which do not.	4.30 (0.14) _c	3.90 (0.12) _d	4.50 (0.06) _c

Items were rated on a Likert scale from 1 (strongly disagree) to 6 (strongly agree) with higher numbers indicating greater comfort. Means in the same row with different subscripts differ significantly by at least $P < .05$.

^a Composite score for all 4 items related to comfort with examinations (Cronbach's $\alpha = .84$).

^b Composite score for all 3 items related to investigative aspects (Cronbach's $\alpha = .75$).

TABLE 5 Program-Level Factors Related to Residents' Knowledge Scores

Factor	β (SE)	P
Program characteristic (continuous)		
No. of first- to fourth-year residents in program	.12	.008
Program characteristic (categorical)	Mean (SE)	
Specialty		
EM	67.7 (1.5)	.005
Pediatrics	73.2 (1.8)	
EM	67.7 (1.5)	.002
FM	58.3 (2.8)	
FM	58.3 (2.8)	<.001
Pediatrics	73.2 (1.8)	
University affiliation	—	NS
Military affiliation ^a	—	—
Residency program setting	—	NS
Center that specializes in child abuse		
No	61.2 (3.6)	.070
Yes	68.5 (3.9)	
Medical provider who specializes in child abuse		
No	58.6 (3.4)	.009
Yes	69.1 (3.7)	
Interdisciplinary team for suspected cases of child abuse		
No	58.7 (3.2)	.018
Yes	67.9 (3.6)	
Physician on faculty primarily responsible for child abuse training		
No	61.5 (2.9)	.017
Yes	69.7 (3.2)	
Use a written curriculum for child abuse training		
No	63.7 (1.8)	.004
Yes	72.2 (2.7)	
Required rotation in child abuse		
No	64.6 (1.9)	.002
Yes	72.7 (2.3)	
Elective rotation in child abuse	—	NS

Coefficients represent the increase in knowledge scores expected for every 1-unit increase in the predictor. For example, for every 1-unit increase in number of residents in program, the model predicts a .12-point increase in knowledge score. The total *N* for specialty was 36; the total *N* for all other predictors was 32. NS indicates not significant.

^a Only 2 programs had a military affiliation, so the analysis could not be run.

izing in child abuse; a physician on faculty responsible for child abuse training; used a written curriculum for child abuse training; and had a required rotation in child abuse.

Correct diagnosis of the colposcopic genital examination (Fig 1) varied significantly by specialty. Pediatric (68%) residents were significantly more likely to diagnose the examination correctly than were EM (58%) and FM (33%) residents ($P < .05$). Eighty-seven percent of residents correctly labeled the hymen, 57% correctly labeled the urethra, and 30% correctly labeled the labia minora. Overall, 19% residents correctly labeled all 3 structures of the genitalia (pediatrics: 22%; FM: 12%; EM: 11%).

DISCUSSION

We found pediatric residents to be more knowledgeable, more comfortable, and better trained in child abuse than their EM and FM colleagues. FM residents reported the least amount of knowledge, comfort, and training. By

analyzing the relationship between program characteristics and residents' child abuse knowledge, we found that pediatric programs provide far more training and resources for child abuse education than do EM and FM programs.

Training and Knowledge by Specialty

Although pediatric programs provided the most training, the knowledge quiz still challenged many pediatric residents, whose average score was 73%. Thirty-two percent of these residents misdiagnosed a normal colposcopic examination. Similar deficits have been observed in other studies of pediatric residents. Dubow et al¹⁴ surveyed 139 pediatric chief residents and found that 50% considered their training in sexual abuse inadequate. Narayan et al¹⁵ reported that 61% of pediatric residency programs prepared residents well to examine children with abuse complaints.

Although many patients present to the emergency department with child abuse-related issues,¹⁶ very few studies have assessed EM residents' training in abuse. None of the EM programs in our study had a required rotation in child abuse, and 2 offered an elective rotation. Only 20% of EM residents reported receiving at least 7 hours of didactic training during their years of residency, and 11% reported at least 7 hours of clinical teaching (Fig 1). The limited time that EM residents spend in didactic lectures regarding abuse is disproportionate to the number of patients that they evaluate: 41% of EM residents reported evaluating at least 7 physically abused patients and 33% reported examining at least 7 sexually abused patients during their residency (Fig 2). Knowledge does not necessarily equate with comfort. Although EM residents were significantly less knowledgeable about child abuse than their pediatric colleagues, they reported being more comfortable in interpreting examination findings and in speaking with authorities about abuse (Table 2).

FM programs provided the least amount of child abuse training and had the fewest resources available for residents. FM programs were significantly less likely to have a center, a medical provider, or an interdisciplinary team specializing in child abuse. One of 21 FM program directors reported a required rotation in abuse; FM residents reported seeing the fewest number of patients with allegations of child abuse. Overall, the child abuse training of FM residents is the most in need of improvement. The limited training and resources provided to FM residents likely explains their lack of knowledge and comfort relative to other residents.

Predictors of Residents' Child Abuse Knowledge and Comfort

By collecting data directly from both program directors and residents, we were able to examine the relationship between program characteristics and residents' outcomes without relying solely on residents' self-report. As seen in Table 5, having any 1 of the 6 program training characteristics (with the exception of an elective rotation in CAP) significantly predicted residents' performance on the child abuse knowledge quiz. In addition, residents

who reported more training experience and more patient exposure performed significantly better on the quiz (Table 4). Even after controlling for exposure to formal teaching, the more abused patients the residents evaluated, the more they were likely to report comfort with sexual abuse and physical abuse examinations. Ward et al¹⁷ also found a relationship between the number of abuse cases seen and pediatric residents' perceived competency "in the evaluation and management of child abuse cases." This supports the unique contribution that patient experience can provide over more formal, didactic methods.

Sexual Abuse Knowledge and Comfort

Physicians' opinions regarding genital examination findings have been shown to influence the outcomes of child protective services investigations¹⁸ and are presented as expert medical testimony to judges and juries.¹⁹ Thus, a test of residents' knowledge of genitalia was an important feature in our survey. The identification of genital structures by all residents was poor. Only 19% of the residents in this study correctly identified all 3 structures indicated on the genital photograph. Many residents, including 67% of all FM residents, incorrectly diagnosed a normal genital examination (Fig 1). Concern regarding the lack of knowledge of female genitalia among medical professionals is not new.^{3,14,20,21} In the survey by Dubow et al, 71% of chief residents correctly identified the hymen from a black and white photograph of normal female genitalia. Evidence also suggests that the problems identified by this and other studies exist in the post-residency clinical setting. Makoroff et al⁵ found that 70% of the female genital examinations diagnosed by pediatric EM physicians as abnormal were subsequently diagnosed as normal by child abuse-trained physicians who reexamined the findings.

Our survey also revealed concerns about residents' comfort with sexual abuse cases. Residents reported significantly less comfort with performing and interpreting sexual abuse examinations compared with physical abuse examinations. A similar finding has been seen among medical professionals with more advanced training, including pediatric emergency medicine fellows²² and practicing pediatricians.²³ Although the inherent sensitivity surrounding sexual topics explains some of this discomfort,²³ it may also be related to inadequate knowledge of genital anatomy and examination techniques, both of which can be addressed in training.

Limitations

Characteristics of our sample may limit the generalization of the findings. Because we recruited sites through a network of pediatric child abuse physicians, the study sites were more likely to have a practicing child abuse specialist or similar resources. Residents in these facilities may be better trained and more knowledgeable than the general population of residents, and our data may overestimate how well trained residents are in abuse. In

addition, the EM programs had a low return rate and limited representation, so the results for EM may not extend to the larger population of EM residents. The residents who completed the survey in a nonproctored environment could have obtained assistance on the knowledge quiz, but this is unlikely. In our previous study that used a similar survey and sample,²⁴ there was no difference in tests scores for proctored versus non-proctored quizzes.²⁴

One issue not addressed in this study is actual performance, including mandated reporting, related to the medical management of child abuse. Although knowledge and comfort likely correspond to performance, the latter is affected by many other factors that are beyond the scope of this survey.^{25,26}

Standards for Child Abuse Medical Education

There is no national US standard governing the amount and content of child abuse training in pediatric residencies. Although the Accreditation Council for Graduate Medical Education (ACGME)²⁷ requires pediatric residents to learn about child physical and sexual abuse in their emergency and acute illness experience, many programs do not offer a child abuse rotation as a separate educational experience.¹⁵ The July 1, 2007, ACGME Program Requirements for Graduate Medical Education in Pediatrics does not list CAP among the subspecialty rotations that meet subspecialty training requirements.²⁷ In the future, if CAP becomes 1 of the rotations that a resident can use to fulfill the subspecialty training requirement, housestaff may elect more CAP rotations. In addition, as the ACGME accredits fellowship training programs in CAP, standardized training in fellowships should translate into improved training for residents in all specialties. Although FM and EM residents will not have subspecialty certification in their field, the improvement of child abuse pediatric consultative services should increase the number of training opportunities for these residents.

Ultimately, residents should receive enough training to ensure that they can accurately identify and report abuse when it is suspected. Our study suggests that current levels of training are not meeting this critical goal. Many programs should begin the process of implementing child abuse curricula. One resource is the published core content for residency training in child abuse.²⁸ There also is a need for a national child abuse curriculum that can be adapted to any training site. In addition, programs that cannot provide adequate exposure to child abuse patients on site should establish clinical training opportunities at nearby child abuse programs or facilities with higher child abuse case loads so that residents without the benefit of an on-site child abuse rotation can get at least minimal exposure to abused patients.

CONCLUSIONS

Research indicates that residents and practicing physicians are not well trained in managing child abuse cases. EM residencies must provide more formal training on

identification, reporting, and referring abused patients to specialists. Family physicians must become more comfortable with treating these patients. As leaders, pediatricians must establish the importance of this topic in the pediatric education of residents of all specialties. The well-being of children depends on a well-trained and knowledgeable force of physicians who can identify, treat, and ultimately prevent child abuse.

APPENDIX

Sample Physical Abuse Vignette

Which injury is most likely to be completely explained by the history of a seated 18-month-old falling off a chair onto a linoleum floor?

- Bruises located on the abdomen
- Diffuse subdural hematoma
- Linear parietal skull fracture
- Diffuse retinal hemorrhages
- Spiral femur fracture

Answer: C

Sample Sexual Abuse Vignette

A 9-year-old girl presents to the emergency department with allegations that she was assaulted by her uncle approximately 1 month ago. On examination, she has absence of hymenal tissue in the posterior rim that extends to the base of the hymen. You confirm this with knee-chest position. This finding is

- A normal finding
- A nonspecific finding
- An abnormal finding
- Evidence of a congenital variant of hymen

Answer: C

ACKNOWLEDGMENTS

This research was supported in part by a grant from the Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, US Department of Justice (2004-DD-BX-1350).

We thank all of the residents who participated in this study, as well as the lead investigators at each institution: Michelle Amaya, Elaine Cabinum-Foeller, Matt Cox, Jack Coyne, Ann DiMaio, Angelo Giardino, Judy Guinn, Karen Hansen, Nancy Kellogg, Lori Legano, Dan Leonhardt, Michele Lorand, Kathi Makaroff, Maria McColgan, Vincent Palusci, Robert Paschall, Sarah Passmore, Philip Scribano, Sara Sinal, Andrew Sirotnak, Karen St Claire, Linda Thompson, and Kate Yapuncich.

REFERENCES

- Kempe CH, Silverman FN, Steele BF, Droegemueller W, Silver HK. The battered-child syndrome. *JAMA*. 1962;181:17-24
- American Academy of Pediatrics Division of Health Policy Research. Periodic Survey of Fellows #55, Executive Summary: Pediatricians Views on the Treatment and Prevention of Violent Injuries to Children; 2004. Available at: www.aap.org/research/periodicsurvey/ps55aexs.htm. Accessed March 29, 2005
- Brayden R, Altemeier W 3rd, Yeager T, Muram D. Interpretations of colposcopic photographs: evidence for competence in assessing sexual abuse? *Child Abuse Negl*. 1991;15(1-2):69-76
- Flaherty E, Sege R, Binns HJ, Mattson CL, Christoffel KK. Health care providers experience reporting child abuse in the primary care setting. *Arch Pediatr Adolesc Med*. 2000;154(5):489-493
- Makoroff KL, Brauley JL, Brandner AM, Myers PA, Shapiro RA. Genital examinations for alleged sexual abuse of prepubertal girls: findings by pediatric emergency medicine physicians compared with child abuse trained physicians. *Child Abuse Negl*. 2002;26(12):1235-1242
- Saulsbury FT, Campbell RE. Evaluation of child abuse reporting by physicians. *Am J Dis Child*. 1985;139(4):393-395
- Trokel M, Waddimba A, Griffith J, Sege R. Variation in the diagnosis of child abuse in severely injured infants [published correction appears in *Pediatrics*. 2006;118(3):1324]. *Pediatrics*. 2006;117(3):722-728
- Olsen ME, Kalbfleisch JH. Sexual abuse knowledge base among residents in family practice, obstetrics/gynecology, and pediatrics. *J Pediatr Adolesc Gynecol*. 2001;14(2):89-94
- Woolf A, Taylor L, Melnicoe L, et al. What residents know about child abuse: implications of a survey of knowledge and attitudes. *Am J Dis Child*. 1988;142(6):668-672
- Christian CW. Professional education in child abuse and neglect. *Pediatrics*. 2008;122(suppl 1):S13-S17
- Heisler KW, Starling SP, Edwards H, Paulson JF. Child abuse training, comfort, and knowledge among emergency medicine, family medicine and pediatric residents. *Medical Education Online*. 2006;11. Available at: www.med-ed-online.org
- Raudenbush SW, Bryk AS, Cheong YF, Congdon RC. HLM 6: Hierarchical Linear and Nonlinear Modeling. SSI Scientific Software; Newbury Park, CA: 2004
- Brotherton SE, Etzel SI. Graduate medical education, 2005-2006. *JAMA*. 2006;296(9):1154-1169
- Dubow SR, Giardino AP, Christian CW, Johnson CF. Do pediatric chief residents recognize details of prepubertal female genital anatomy? A national survey. *Child Abuse Negl*. 2005;29(2):195-205
- Narayan AP, Socolar RR, St Claire K. Pediatric residency training in child abuse and neglect in the United States. *Pediatrics*. 2006;117(6):2215-2221
- Hyden PW, Gallagher TA. Child abuse intervention in the emergency room. *Pediatr Clin North Am*. 1992;39(5):1053-1081
- Ward MG, Bennett S, Plint AC, King WJ, Jabbour M, Gaboury I. Child protection: a neglected area of pediatric residency training. *Child Abuse Negl*. 2004;28(10):1113-1122
- Haskett ME, et al. Substantiation of sexual abuse allegations: factors involved in the decision-making process. *J Child Sex Abuse*. 1995;4(2):19-47
- De Jong AR, Rose M. Frequency and significance of physical evidence in legally proven cases of child sexual abuse. *Pediatrics*. 1989;84(6):1022-1026
- Ladson S, Johnson CF, Doty RE. Do physicians recognize sexual abuse? *Am J Dis Child*. 1987;141(4):411-415
- Lentsch KA, Johnson CF. Do physicians have adequate knowledge of child sexual abuse? The results of two surveys of practicing physicians, 1986 and 1996. *Child Maltreat*. 2000;5(1):72-78
- Biehler JL, Apolo J, Burton L. Views of pediatric emergency fellows and fellowship directors concerning training experiences in child abuse and neglect. *Pediatr Emerg Care*. 1996;12(5):365-369
- Leder MR, Emans SJ, Hafner JP, Rappaport LA. Addressing sexual abuse in the primary care setting. *Pediatrics*. 1999;104(2 pt 1):270-275
- Heisler KW, Starling S, Edwards H, Paulson J. Child abuse

- training, comfort, and knowledge among emergency medicine, family medicine, and pediatric residents. *Medical Education Online*. 2006;11:1–10
25. Jones R, Flaherty EG, Binns HJ, et al. Clinicians' description of factors influencing their reporting of suspected child abuse: report of the child abuse reporting experience study research group. *Pediatrics*. 2008;122(2):259–266
 26. Trowbridge MJ, Sege RD, Olson L, O'Connor K, Flaherty E, Spivak H. Intentional injury management and prevention in pediatric practice: results from 1998 and 2003 American Academy of Pediatrics Periodic Surveys. *Pediatrics*. 2005;116(4):996–1000
 27. ACGME. ACGME Program Requirements for Graduate Medical Education in Pediatrics 2007. Available at: www.acgme.org/acWebsite/downloads/RRC_progReq/320pediatrics07012007.pdf. Accessed April 17, 2008
 28. Starling SP, Boos S. Core content for residency training in child abuse and neglect. *Child Maltreat*. 2003;8(4):242–247

Child Abuse Training and Knowledge: A National Survey of Emergency Medicine, Family Medicine, and Pediatric Residents and Program Directors

Suzanne P. Starling, Kurt W. Heisler, James F. Paulson and Eren Youmans

Pediatrics 2009;123:e595-e602; originally published online Mar 9, 2009;

DOI: 10.1542/peds.2008-2938

Updated Information & Services	including high-resolution figures, can be found at: http://www.pediatrics.org/cgi/content/full/123/4/e595
References	This article cites 24 articles, 14 of which you can access for free at: http://www.pediatrics.org/cgi/content/full/123/4/e595#BIBL
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): Office Practice http://www.pediatrics.org/cgi/collection/office_practice
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.pediatrics.org/misc/Permissions.shtml
Reprints	Information about ordering reprints can be found online: http://www.pediatrics.org/misc/reprints.shtml

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

