



PROS PEARLS

PROS Child Abuse Reporting Experience Study (CARES)

To Report or Not Report: Examination of the Initial Primary Care Management of Suspicious Childhood Injuries

- The CARES study team undertook this effort to examine the validity of primary health care providers' (PHCPs) assessment of childhood injuries for possible physical abuse. This effort was a sub-study of the larger CARES study, a prospective observational study to determine how frequently PHCPs reported suspected physical child abuse, the levels of suspicion associated with reporting, and what factors influenced reporting to child protective services (CPS).
- To assess the accuracy of the PHCPs decisions regarding suspicion and reporting to CPS, the team developed two proxy measures: 1) comparison with expert case review and 2) the PHCP's own post hoc judgment 6 months after the index visit. The sample included 111 injury visits, stratified by level of abuse. The sample comprised of 36 cases that were suspicious for abuse/no report; 37 cases that were suspicious and reported; and 38 cases that were not suspicious/not reported.
- Five independent child abuse experts were asked to review 97 case vignettes. The vignettes were constructed using data provided by the PHCPs describing the injury at the index visit and any additional information gathered during interviews with the PHCPs 6 weeks post index visit. The vignettes were presented to the experts on-line in a standardized format. Experts used an internet polling system to rate each case for 1) the likelihood of abuse and 2) whether the case should be reported to CPS.
- Phone interviews were conducted with 110 PHCPs 6-months post index visit. PHCPs were asked if any additional information had become available and, if reported, what was the disposition of the case. PHCPs were asked to reflect on their original assessment of the injury and their reporting decision.
- PHCPs and experts agreed about the suspicion of abuse in 81% of the cases. However, PHCPs did not report 21% of injuries that the experts would have reported. At the 6 month interviews, 70% of the PHCPs with a reported case had received feedback from CPS. Of the non-reported cases, most PHCPs said that in retrospect they would not change their original decision.
- Although PHCPs and experts generally agreed, the experts would have reported more frequently. When making a reporting decision, PHCPs have been shown to consider such factors as: their prior experience with CPS; the potential for benefit/harm to the child stemming from a report and the potential loss of patient to follow-up. These results point to an opportunity to enhance PHCP training and management decisions around child physical abuse.

These were among the findings from the AAP's practice-based research network - Pediatric Research in Office Settings (PROS) and National Medical Association's pediatric practice-based research network, NMAPEDSNET. Funding for the Child Abuse Reporting Experience Study (CARES) was received from the Agency for Healthcare Research and Quality (grant R01 HS010746), the Maternal and Child Health Bureau (grant R40 MC 00107), and the American Academy of Pediatrics.

The following article based on study results appeared in *Academic Pediatrics*:

Sege R, Flaherty E, Jones R, Price L, Harris D, Slora E, Abney D, Wasserman R. To report or not report: Examination of the initial primary care management of suspicious childhood injuries. *Academic Pediatrics*. 2011;(11):460-466.

To Report or Not to Report: Examination of the Initial Primary

Care Management of Suspicious Childhood Injuries

Robert Sege, MD, PhD; Emalee Flaherty, MD; Rise Jones, PhD; Lori Lyn Price, MA; Donna Harris, MA; Eric Slora, PhD; Dianna Abney, MD; Richard Wasserman, MD, MPH and

the Child Abuse Recognition and Experience Study (CARES) Study Team

From the Boston University School of Medicine and Boston Medical Center, Boston, Mass (Dr Sege); Department of Pediatrics, Children's

Memorial Hospital and Northwestern University's Feinberg School of Medicine, Chicago, Ill (Dr Flaherty); Evaluation Solutions, Chicago, Ill

(Dr Jones); Biostatistics Research Center, Tufts Medical Center, Boston, Mass (Ms Price); Pediatric Research in Office Settings (PROS),

Department of Research, American Academy of Pediatrics, Elk Grove Village, Ill (Ms Harris and Drs Slora and Wasserman); Cambridge

Pediatrics, Waldorf, Md (Dr Abney); and University of Vermont College of Medicine, Burlington, Vt (Dr Wasserman)

The authors have no conflicts of interest to disclose.

Address correspondence to: Robert Sege, MD, PhD, Boston Medical Center ACC5N-20, 850 Harrison Avenue, Boston, Massachusetts

02118 (e-mail: rsege@bu.edu).

Received for publication March 10, 2011; accepted August 19, 2011.

ABSTRACT

OBJECTIVE: This study examined the validity of primary health care providers' (PHCPs) assessment of suspicion that an injury was caused by child abuse and their decision to report suspected child abuse to child protective services (CPS).

METHODS: By using a subsample of injuries drawn from the 15,003 childhood injuries evaluated in the Child Abuse Recognition and Evaluation Study, PHCPs completed telephone interviews concerning a stratified sample (no suspicion of abuse; suspicious but not reported; and suspicious of abuse and reported) of 111 injury visits. Two techniques were used to validate the PHCPs' initial decision: expert review and provider retrospective self-assessment. Five child abuse experts reviewed clinical vignettes created by using data prospectively collected by PHCPs about the patient encounter. The PHCPs' opinions 6 weeks and 6 months after the injury-related visits were elicited and analyzed.

RESULTS: PHCPs and experts agreed about the suspicion of abuse in 81% of the cases of physical injury. PHCPs did not report 21% of injuries that experts would have reported. Compared with expert reviewers, PHCPs had a 68% sensitivity and 96% specificity in reporting child abuse. A PHCP's decision to report suspected child abuse to CPS did not reduce the frequency of primary care follow-up in the 6 months after the index visit. PHCPs received information from their state CPS in 70% of the reported cases.

CONCLUSIONS: Child abuse experts and PHCPs are in general agreement concerning the assessment of suspected child physical abuse, although experts would have reported suspected abuse to CPS more frequently than the PHCPs. Future training should focus on clear guidance for better recognition of injuries that are suspicious for child abuse and state laws that mandate reporting.

KEYWORDS: child abuse; child physical abuse; child welfare; diagnosis; medical errors; pediatrics; primary care

ACADEMIC PEDIATRICS 2011;11:460-466

WHAT'S NEW

Previous research has shown that primary care health care providers (PCHPs) may fail to identify that an injury was caused by child abuse. Even when they suspect child abuse, they may not report their suspicions of abuse to child protective services (CPS). This is the first study to examine the validity of their decision to suspect child abuse as the etiology of an injury and their decision to report a suspicious injury to CPS. This study found that PCHPs reported one-third fewer cases than the expert case reviewers would have recommended. Patients did not appear to be lost to follow-up after CPS reports by their PCHPs.

IDENTIFYING THAT A particular injury was caused by child abuse can be difficult. Typically, only the responsible person and child witness the injurious event, and the child may be preverbal or afraid to describe the abuse. The physical abuse of a child may be suspected after a careful history and physical examination, when the clinician determines that the injury is not consistent with the history provided, or when the constellation of injuries is highly suspicious for maltreatment.¹ All states have laws that mandate physicians and other health care workers to report to child protective services (CPS) all children in whom there is reasonable suspicion that they were abused or neglected.²

Delay in diagnosis and reporting of suspected child physical abuse leaves the child vulnerable to experience further abuse and contributes to significant mortality and morbidity. Jenny et al³ found that 28% of children experienced further abuse, 9% died, and 41% suffered a medical complication when their diagnosis of abusive head trauma was initially missed by a physician and intervention delayed. At the same time, unnecessary reports to CPS may cause family disruption and stress.

The Child Abuse Recognition and Evaluation Study (CARES) was a large, national, prospective study examining decision-making by primary health care providers

ACADEMIC PEDIATRICS Volume 11, Number 6

Copyright © 2011 by Academic Pediatric Association 460 November–December 2011

(PHCPs).⁴ From 2002 to 2005, PHCPs from the American Academy of Pediatrics Research in Office Settings (PROS) network and the National Medical Association Pediatric Research Network (NMAPedsNet) were recruited to participate. Each participating provider collected complete information regarding 40 consecutive children seen in their practice for either an injury or for any other reason in which an incidental note of an injury was made.^{4,5} CARES providers gave brief descriptions of the injuries, their level of suspicion that an injury was caused by abuse, and whether they had reported (yes or no) suspected child abuse to CPS. The study found that 27% of PHCPs did not report injuries to CPS that they themselves believed “likely” or “very likely” caused by child abuse.⁴ This study result demonstrated the 2 distinct phases in the care of children with injuries suspicious for child abuse: assessment of injury for suspicion of abuse and the decision

concerning reporting of these suspicions to state CPS agencies.

In examining these and similar results, we believe it would be helpful to know the accuracy of the PCHPs' decisions regarding suspecting and reporting child physical abuse. There is no single injury, explanation, or laboratory test that determines that an injury is caused by abuse.

Likewise, reasonable suspicion of maltreatment is a legal construct and purposely left open to interpretation. This report describes the results of 2 proxy measures developed to examine the validity of the PHCPs assessment and decision-making regarding suspicious injuries: 1) comparison with expert case review, and 2) the practitioner's own post hoc judgment 6 months after the index visit.

METHODS

OVERVIEW

The 434 PHCPs who completed the CARES study provided information about themselves and their previous experience evaluating child abuse and then collected prospective information about 15,003 injury-related visits.⁴ Most of the PHCPs were physicians (88%) and white (89%), and most were women (56%). They practiced in 41 states, and 46% of the practices were suburban. At the time of the patient visit, participants recorded the child's age, gender, type of injury, child and family risk factors, their own level of suspicion that an injury was caused by abuse (5-point Likert scale), and whether they had reported suspected abuse to CPS ("yes" or "no" response) on an Injury Encounter Card. In the study we report here, we collected further detailed information from a sample of participating clinicians to assess the decision-making process.

SUBSAMPLE

A sample of 110 PHCPs completed telephone interviews concerning 111 injury visits. Stratification was used to ensure an even distribution of cases by level of suspicion and reporting decisions: 36 injuries suspicious for abuse/no report; 37 injuries suspicious and reported; and 38 injuries no suspicion/no report. The latter no suspicion/no report cases were composed of the next sequential data entry that was matched by age and gender to a previous suspicious case. [Table 14](#) provides a comparison of the patients included in the qualitative subsample in this report and the patients in the CARES study sample. Although the sampling scheme was designed to interview PHCPs only once, one PHCP was interviewed twice; only the first such interview was considered for the expert vignettes described in the section "Case Vignettes."

TELEPHONE INTERVIEWS

Structured interviews of the selected PHCPs were conducted at approximately 6 weeks and 6 months after the injury visit. During the initial interview at 6 weeks after the visit, the PHCPs were asked to describe the child's injury, the history provided, any tests performed and the results of those tests, other factors that influenced their suspicion or lack of suspicion that the injury was caused

by abuse, their knowledge of the family, any concerns that they had about the family, and any new information available since the index visit.

At the 6-month interviews, PHCPs were asked about any medical evaluations of the patient since the last interview; any additional information about the patients' injuries; any knowledge about patient and family outcomes; and any contact and interactions with individuals and/or organizations.

If the PHCP had reported suspected abuse to CPS, they were asked whether they had been contacted by CPS and/or law enforcement and if they knew the outcome of any investigation. When available, the final CPS disposition was also noted. Finally, the PHCPs were also asked to reflect on their original assessment of the likelihood of child abuse and their prior reporting.

Table 1. Characteristics of Cases Used to Create Vignettes for Expert Review Compared With Entire CARES Sample
CARES Sample Qualitative Subsample

	No Suspicion	Any Suspicion	No Suspicion	Any Suspicion
n	13 088	1685 31	61	

Male gender, n (%)	7421 (56)	991 (58)	17 (54)	36 (59)
--------------------	-----------	----------	---------	---------

Median age	8.00	3.00	4	3
------------	------	------	---	---

White race, n (%)	11,354 (87)	1,326 (79)	29 (93)	55 (90)
-------------------	-------------	------------	---------	---------

The demographic characteristics of the cases studied in this report (subsample) are compared with those of the entire CARES sample.

CARES was a national prospective study of children with a physical injury noted at the time of a primary care visit.⁴ "No suspicion" cases

were those in which the PHCP responded "very unlikely" to the query, "How likely do you think it was that this injury was caused by abuse?"

recorded at the time of the visit.

ACADEMIC PEDIATRICS PRIMARY CARE DIAGNOSIS OF PHYSICAL ABUSE 461

VALIDATION MODEL

Validation of the initial assessment of the cause of injury and reporting decisions included two primary elements: independent expert case review, and PHCP self-assessment at six months following the index visit.

INDEPENDENT EXPERT CASE REVIEW

Independent expert assessments were provided by 5 child abuse experts who reviewed 97 clinical vignettes for the purpose of validation. Experts were recruited from the Ray E. Helfer Society, the honorary association of national physician leaders in child abuse. Each selected expert had a background in primary care and had agreed to provide opinions by using the limited case information available. The experts live in different states and in regions (South, East, Midwest, and West)

Case vignettes.—Following the a priori study protocol, 97 vignettes were constructed with the use of the data provided by the PHCP on the Injury Encounter Forms and in the interviews from cases in the subsample. Of the 110 interviews, a random sample of 25 of the 38 no suspicion, no report interviews were used to create vignettes, whereas all of the suspicious for abuse/no report (n = ¼ 36) and suspicious and reported (n = ¼ 37) interviews were included. A standard format was used for each vignette (Fig. 1). Part A of each vignette was constructed from data entered on the original Injury Encounter Card and verbatim responses collected during the corresponding 6-week telephone surveys. Part B included PHCP responses to an open-ended query about other information that may

have influenced their decision. The vignettes did not include PHCPs' assessment of level of suspicion or reporting decision or any individually identifiable information.

Vignettes were presented in sets of approximately 25 vignettes by the use of an internet-based polling system. After reviewing Part A of each case, each expert answered questions concerning 1) the likelihood of abuse (by using the same 5-point Likert scale as the PHCPs) and 2) whether the cases should be reported to CPS (yes or no). Once these responses were recorded, the experts were then presented with the information in Part B and again asked their level of suspicion and whether the case should have been reported.

At the completion of each set of 25 vignettes, experts participated in a conference call to adjudicate those

This was a (*age*) year old (*ethnicity/racial*), (*male/female*) patient with (*public or private source of health care coverage*). This practitioner knows the patient (*not well to very well*). The patient was brought to the doctor's office because of (**text**). The history provided for the injury was (**text**). The practitioner noted (*indicated factors placing child at risk for abuse, e.g. injury not consistent with the history*). The practitioner knows (*family risk factors, e.g. prior involvement with CPS*).

The pertinent findings on physical exam included (**text**). The practitioner judged the injury severity to be (*very minor to very serious*).

The following laboratory or radiological studies were performed (**list of procedures and results**).

Based on the vignette above, please indicate if you feel that the Injury is compatible with history or child's level of development (yes, no)

What is your level of suspicion that this injury was caused by physical abuse?

- 1 Very unlikely
- 2 Unlikely
- 3 Possible
- 4 Likely
- 5 Very likely

Would you have reported this child to Child Protective Services because of suspected physical abuse? (yes, no)

Additional Information (when applicable)

In addition to the above data, the primary care practitioner stated that the following also influenced medical decision-making (**text taken from telephone interview**).

Please answer the following questions again, including this additional information in your decision-making:

What is your level of suspicion that this injury was caused by physical abuse?

- 1 Very unlikely
- 2 Unlikely
- 3 Possible
- 4 Likely
- 5 Very likely

Would you have reported this child to Child Protective Services because of suspected physical abuse? (yes, no)

Figure 1. Format for expert case review. Shown is the template used for expert review of cases. Information was taken from original reports

(italics) and from the subsequent telephone interviews (bold) and presented to the experts in a standardized format.

462 SEGE ET AL ACADEMIC PEDIATRICS

vignettes in which the expert reviewers had disagreed about reporting. The experts reached complete agreement regarding child abuse reporting in 92 of the 97 cases; these 92 cases were used for the subsequent analyses. Experts could not agree on the 5 cases because of a lack of sufficient detailed information with which to form an opinion; for example, one case involved a child with leg abrasions but the vignette as presented did not contain sufficient physical description or history for the experts to form an opinion. Analysis was determined by individual expert opinions regarding the likelihood of abuse and consensus opinions regarding reporting.

PHCP SELF-ASSESSMENT 6 MONTHS AFTER THE INDEX VISIT

The PHCPs' self-assessment of their original assessment of likelihood of abuse and reporting decision at the 6-week and 6-month interviews were analyzed. If the PHCP had reported suspected abuse to CPS, any contact by CPS and/or law enforcement, and knowledge of outcome was analyzed.

HUMAN STUDIES

CARESwas approved by the Institutional ReviewBoards of the American Academy of Pediatrics, each of the investigator sites, and 17 local IRBs for affiliated PHCPs.⁶

DATA ANALYSIS

Participating PCHPs completed 2 telephone interviews (one at 6 weeks and one at 6 months). Responses to the 6-week interview were used to develop the case vignettes. Responses to the 6-month interviews were used to record the participants' views of the consequences and implications of reporting decisions. Formal qualitative analysis of themes obtained from the interviews was not performed. The results of the comparison of the expert review with original PCHP decision are presented with descriptive statistics. KL Posner's test of interrater reliability was used for the comparisons of injury suspicion.⁷

RESULTS

INDEPENDENT EXPERT CASE REVIEW

ASSESSMENT OF INJURY CAUSATION

The opinions about level of suspicion for abuse of each of the 5 experts about the 92 cases (460 observations) were compared with the PHCPs' assessments (Table 2). Experts and PHCPs were within _1 point on the scale in 198 observations, indicating substantial agreement in 81% of observations (KL Posner $\frac{1}{4}$ 0.8865).

REPORTING DECISIONS

As shown in Table 3, the experts agreed with the PHCPs reporting decisions in 77 (84%) of the cases. The experts indicated that 2 of 29 reported cases should not have been reported. They indicated that 13 of 63 nonreported cases (21%) should have been reported, including 7 for which the PHCP did not have high suspicion of abuse. When expert review as a reference standard was used, we found that PHCP decision-making had a 68% sensitivity and 96% specificity in child abuse reporting.

PHCP NONREPORTED CASES THAT THE EXPERTS WOULD HAVE REPORTED

There were 14 cases in which the PHCP did not report an injury to CPS that the expert review panel would have reported. The likelihood of abuse, as assessed by the PHCP in these cases, was very unlikely (1 case), possible (6 cases), likely (1 case), and very likely (6 cases). Bruises were the most common injury type (8 of 14 cases). Three children had a black eye or a bruise under the eye, a 2-year-old patient had an unexplained ear bruise, and a 3-year-old patient presented with a bruise on the cheek. Two cases involved bruises to the buttocks, one from spanking and one from a fall in the bathroom. A 5-year-old patient had bruises on her legs.

Fractures were the second most common injury (4 of 14). Two children had femur fractures: a 9-year-old disabled girl and a 2-month-old infant. The other 2 children had tibial fractures. The expert consensus in several of these cases was that although the injuries may have been accidental, CPS investigation was warranted.

PHCP REPORT/EXPERT NO REPORT

One infant with a clavicle fracture, and a 5-year-old patient with a penile adhesion were reported by the PHCPs, although the expert reviewers would not have reported.

Table 2. Agreement Between Experts and PHCPs on Level of Suspicion

PHCP

Expert

1 2 3 4 5

1 54* 87 13 0 1

2 11 35* 10 4 0

3 4 23 41* 17 15

4 2 3 17 22* 11

5 7 19 21 22 21*

Expert reviewers and PHCPs each responded to the question "How likely do you think it was that this injury was caused by abuse?" on 5-point Likert-type scale: 1 ¼ very unlikely, 2 ¼ unlikely, 3 ¼ possible, 4 ¼ likely, and 5 ¼ very likely. The opinions of each of the five experts are classified according to the original providers' level of suspicion.

*Identical ratings for both PHCP and Expert ratings.

Table 3. Agreement Between CA* Experts and PHCPs on Reporting

PHCP vs. CA Expert Reporting Abuse

Number of Cases CA Expert NR CA Expert Report

PHCP NR 50 13

PHCP report 2 27

Expert reviewers responded to the query "Would you have reported this child to Child Protective Services because of suspected physical abuse? (yes, no)" Their consensus responses (N ¼ 92) were compared with the actual action taken by the participating PHCP at the time the child was seen in primary care.

*CA ¼ child abuse; PHCP ¼ primary health care provider; CA expert ¼ child abuse pediatrician; Report ¼ report filed with state child protective service; NR ¼ no report to state child protective service.

ACADEMIC PEDIATRICS PRIMARY CARE DIAGNOSIS OF PHYSICAL ABUSE 463

PHCP SELF-ASSESSMENT AND FOLLOW-UP 6 MONTHS

AFTER THE INDEX VISIT

SUSPICIOUS INJURIES REPORTED

At the time of the 6-month follow-up interviews, the majority of children who were reported to CPS (27/36, 75%) had been seen by the PHCP or in the PHCP's practice since the report had been made.

The PHCPs received information that confirmed their assessment of likely abuse in 11 cases. CPS confirmed that abuse had occurred in 3 cases. Three additional cases included one case in which the child was abused again during the follow-up period, another in which the courts had found abuse, and a third in which a father admitted abuse. Another case had been adjudicated in court, but the PHCP did not know the outcome. Although the CPS determination was not known, some action had been taken in 4 additional cases (1 child had been moved to a different foster home, and 3 families were in counseling). PHCPs had received no information about 11 of the 36 (31%) cases they reported to CPS. CPS was still investigating one case.

The remaining 14 cases were unfounded. In some cases, the PHCPs received confirmation that an investigation had been conducted and concluded that the injuries did not necessarily result from maltreatment: “said that it could have very well been an accident, since the staircase was sharp and steep .” In one case, the CPS investigation confirmed the PHCP’s intuition that the injury was accidental, “[I] didn’t want to miss an injury caused by child abuse. I think child protection ruled out any problems.” Several PHCPs said that CPS indicated some cases were unfounded because the injuries were not severe enough to constitute abuse. One PHCP was told that the injury “.does not meet the departmental requirement of severity for an investigation at this time.”

In some cases in which the alleged abuser was a daycare provider or babysitter, local CPS agencies determined that the reports were unfounded because the child was safe in the care of a parent. One letter from CPS to the PHCP indicated that nothing more needed to be done because the allegations were against the father, who was not the primary caretaker.

PHCPs reflected that in retrospect they could have improved their practice. They indicated that they should have asked more questions or taken more history, followed up sooner, involved a social worker, called CPS earlier, or ordered more tests. One PHCP indicated that maybe he/she should have contacted CPS to find out the report status.

SUSPICIOUS INJURIES NOT REPORTED

During the 6 months after the index visits, 66% of the children had been seen in their practice one or more times since the index visit. In some cases, the PHCP had developed some other plan for intervention rather than filing a report with the state CPS. Their management plans were not always successful. In one case, the PHCP’s recommendation that the child stay with a particular parent had not been followed. In several cases in which PHCP had planned to watch for further injuries, there had been no return visits to the PHCP in the 6 months after the index visit. Other cases turned out as planned: one child was sent to an urgent-care center, where a report was made to CPS. Genetics consultation confirmed that a child had osteogenesis imperfecta, corroborating the PHCPs decision not to report.

Most PHCPs said they would not have managed the case differently. Those few who indicated that they would have managed differently said they would have interviewed the child alone, talked with a father about discipline, obtained more history or additional studies, made a follow-up call, or asked social work to see the family.

DISCUSSION

Reporting suspected child physical abuse is a 2-step process: assessment of the likelihood of child physical abuse and the decision to report. Although child abuse experts and PHCPs generally agree concerning the assessment of suspected abuse, the experts recommended reporting to state CPS more frequently than children were

actually reported by the PHCPs. Reporting decisions remain quite complicated for both PHCPs and experts. This report indicates that PHCPs did not report 21% of the cases that the experts would have reported. The result that our panel of 5 experts could not agree among themselves concerning whether 5 of 97 cases (5%) should or should not be reported may reflect the constraints inherent in the type of review conducted in this study or may demonstrate the difficulty of decisionmaking. These data emphasize the complexity of decision making implied by the results of CARES; in that study, PHCPs did not report 27% of the injuries they themselves suspected were likely or very likely caused by child abuse.⁴ In addition to clinical factors, PHCPs cited their relationships with the families involved and their perceptions of expected outcomes of filing as reasons not to report.⁵ Bruises were the most common suspicious injuries that were not reported.⁴ These findings are not surprising because bruises are both a common childhood injury and the most common type of injury caused by child abuse.^{8,9} Unfortunately, physicians often fail to appreciate the significance of the bruising and fail to suspect child abuse, leaving children vulnerable to further injury.⁹ The majority of the children in this study with bruises that were suspicious but not reported had bruises on the face. The face is the most common site for bruises caused by child abuse.¹⁰ Bruises on the cheeks and ear are rarely caused by accidental trauma.^{9,11,12} Thus, despite strong evidence for chronic physical abuse among children who subsequently died from abuse-related injuries,^{3,13} this study demonstrates that primary care providers fail to report a substantial proportion of child physical abuse cases. Physicians and other health care workers are legally required to report cases if they have reasonable suspicion of child abuse. The authors of previous studies have demonstrated that there is great variability in how physicians interpret the meaning of reasonable suspicion.¹⁴ Our results suggest similar confusion was communicated 464 SEGE ET AL ACADEMIC PEDIATRICS by CPS workers to PCHPs. On the basis of PHCP interviews, it appears that responding CPS investigators were inconsistent in their management of child abuse reports. In some instances, CPS labeled as “unfounded” reports because of the low severity of injury, in contrast, to physician training that encourages reports whenever any adult caregiver is suspected of abusing a child, regardless of severity of the physical injury.¹ Other CPS workers misinterpreted state regulations as only applying to custodial parents, although all state laws require that abuse be reported whenever any adult caretaker is suspected of abusing the child.¹⁵ Thus, our results demonstrated inconsistency in both physician reporting and CPS actions. This report adds to previous research that shows that PHCPs are unlikely to report cases unless they expect that reporting to state CPS will benefit the child.¹⁶ The follow-up interviews document inadequate CPS feedback

after cases are reported; 6 months after the index visits, the PCPS had not communicated its determination in one-third of cases. Better communication between PHCPs and CPS may improve appropriate reporting, as reporters may misinterpret communication failures as lack of action.¹⁷ Although PCHPs may be concerned about loss of patients to follow-up, we found no difference in follow-up rates between reported cases (75% had a visit within 6 months) and suspicious cases that were not reported (66%). The results of expert case review reported here need to be interpreted cautiously. The observed differences may reflect the experts' broader experience evaluating child abuse, the case mix evaluated by experts that excludes many of the quotidian injuries that bring active children to medical attention, and their extensive experience collaborating with CPS. It may simply reflect the artificial circumstances of case review conducted with limited information, and strictly based on chart review rather than in-person encounters.

In summary, our findings highlight the reluctance of PCHPs to report cases of child physical abuse to state CPS. The decision not to report maltreated children may leave these children vulnerable to suffer continued maltreatment and more serious morbidity. These results replicate previous studies that have demonstrated that PHCPs often believe that reporting to CPS will not improve outcomes for the child.^{16,18,19} Nevertheless, the narrative results from our study demonstrate that many PHCPs were satisfied with the results of CPS investigations, regardless of the final case determination.

These results point to several opportunities for improvement in the training of physicians as well as the diagnosis and management of child physical abuse.^{19,20} To become more certain of their suspicions, PHCPs need better education about the recognition of injuries that are suspicious for child abuse, particularly bruises and fractures.

_ PHCPs should identify child abuse pediatric resources in their community they can access for guidance when needed.

_ PHCPs should be trained that they need only reasonable suspicion that an injury was caused by abuse, not certainty, to file mandated reports of suspected maltreatment. In many cases, further investigation may help to clarify the cause of the injury. PHCPs and CPS workers should work with shared definitions of cases that require reporting.

_ State regulations should direct CPS to provide the results of their investigations to mandated medical reporters.

ACKNOWLEDGMENT

This study was funded by the Agency for Healthcare Research and Quality (AHRQ) R01 HS010746, U.S. Health Resources and Services Administration Maternal and Child Health Bureau R40 MC 00107, and the American Academy of Pediatrics (AAP).

This is a report from the Pediatric Research in Office Settings (PROS) network and the National Medical Association Pediatric Research Network (NMAPedsNet). The participating pediatric practices who

agreed to be listed are shown by American Academy of Pediatrics Chapter; 45% of the participating practices either did not respond to a query about listing or asked not to be listed. The listing of participants' names does not imply their endorsement of the data and conclusions.

Alabama: Physicians to Children (Montgomery); Alaska: Anchorage Pediatric Group, LLC (Anchorage); Arizona: Mesa Pediatrics Professional Assoc. (Tempe), Orange Grove Pediatrics (Tucson); California-1: Rowe, Maisel, Heath and Harvey (Greenbrae), Shasta Community Health Center (Redding), Pediatric & Adolescent Medical Associates of the Pacific Coast, Inc. (Salinas); California-2: Practice of Bharati Ghosh, MD, FAAP, Inc. (Montclair), UCLA West Los Angeles Office (Los Angeles), Inland Empire (Riverside); California-4: Southern Orange County Ped Assoc. (Rancho Santa Margarita), Edinger Medical Group, Inc (Fountain Valley); Colorado: Cherry Creek Pediatrics (Denver), Rocky Mountain Youth Clinics (Thornton); Florida: Giangreco, Scarano & Taylor Pediatrics (Bradenton), Atlantic Coast Pediatrics (Merritt Island); Georgia: The Pediatric Center (Stone Mountain); Hawaii: Children's Medical Association Inc. (Aiea), Practice of Christine S. Hara, MD (Honolulu), Island Pediatrics (Hilo); Illinois: Fairview Pediatrics, LLC (Grayslake), Kidz Health (Chicago); Indiana: Jeffersonville Pediatrics (Jeffersonville); Kansas: Ashley Clinic (Chanute); Kentucky: Pediatric & Adolescent Medicine (Lexington), Practice of Carl E. Smith, MD, FAAP (Harlan); Maine: Maine Coast Pediatrics (Ellsworth), Kennebec Pediatrics (Augusta), InterMed Pediatrics (Portland); Maryland: Shady Side Medical Associates (Shady Side), Children's Medical Group, PA (Cumberland), Potomac Pediatrics (Rockville), Practice of Steven E. Caplan, MD (Baltimore); Massachusetts: Baystate Pediatric Group (Springfield), Jonathan A. Benjamin, MD, and Roger W. Spingarn, MD, LLC (Newton Center), Northampton Area Pediatrics, LLP (Northampton), Pediatric Associates of Norwood & Franklin, P.C. (Franklin), Holyoke Pediatric Associates (Holyoke), Tri-River Family Health Center (Uxbridge); Michigan: Kidz 1st Pediatrics (Rochester Hills), Orchard Pediatrics (West Bloomfield), Children's Health Care of Port Huron, PC (East China), Children's Hospital of Michigan (Detroit); Minnesota: Brainerd Medical Center, PA (Brainerd), South Lake Pediatrics (Eden Prairie); Missouri: Priority Care Pediatrics, LLC (Kansas City); North Carolina: Elizabeth Pediatrics (Charlotte), Eastover Pediatrics (Charlotte); North Dakota: Medical Arts Clinic-TMC (Minot), MeritCare Medical Group-Pediatrics (Fargo); New Hampshire: Dartmouth-Hitchcock Clinic (Keene), Exeter Pediatric Associates (Exeter); New Jersey: Chestnut Ridge Pediatric Associates (Woodcliff Lake), Delaware Valley Pediatric Associates, PA (Lawrenceville); New Mexico: Albuquerque Pediatric Associates, Ltd. (Albuquerque), University of New Mexico Hospital (Albuquerque); New York-1: Lewis Pediatrics (Rochester), Elmwood Pediatric Group (Rochester), Outer East Side Health Clinic (Buffalo), SUNY Upstate Medical University (Syracuse); New York-3: Saint Barnabas Hospital (Bronx); Ohio: Oxford Pediatrics & Adolescents (Oxford), Children's Choice Pediatrics (Stow), Pediatric Associates of Lancaster (Lancaster), Practice of John DiTraglia, MD (Portsmouth), South Dayton Pediatrics, Inc. (Dayton); Oklahoma: Norman Pediatric Associates (Norman), Practice of Patrice A. Aston, DO (Oklahoma City), Shawnee Medical Center Clinic (Shawnee),

ACADEMIC PEDIATRICS PRIMARY CARE DIAGNOSIS OF PHYSICAL ABUSE 465

Pennsylvania: Reading Pediatrics, Inc. (Wyomissing); Rhode Island: Rainbow Pediatrics (Providence), Practice of Marvin Wasser, MD (Cranston); South Carolina: Barnwell Pediatrics, PA (Barnwell), Palmetto Pediatrics & Adolescent Clinic, PA (Columbia), Tennessee: Plateau Pediatrics (Crossville); Texas: Practice of Sarah L. Helfand, MD (Dallas), Winnsboro Pediatrics (Winnsboro), Building Block Pediatrics (Pleasanton), Utah: University Health Care (Salt Lake City), Mountain View Pediatrics (Sandy), Utah Valley Pediatrics, LC (American Fork); Virginia: Pediatrics of Arlington, PLC. (Arlington), Alexandria Lake Ridge Pediatrics (Alexandria); Vermont: Saint Johnsbury Pediatrics (St Johnsbury), Hagan & Rinehart Pediatricians (South Burlington), Pediatric Medicine (South Burlington); Washington: Harbor Pediatrics (Gig Harbor); Wisconsin: Gunderson Lutheran Pediatrics (La Crosse), Beloit Clinic SC (Beloit); and Wyoming: Jackson Pediatrics, PC (Jackson).

NMAPedsNet Practices (listed here by state): Florida: Arlene E. Haywood, MD (Plantation); Maryland: Cambridge Pediatrics, LLC (Waldorf).

REFERENCES

1. Kellogg ND. American Academy of Pediatrics Committee on Child Abuse and Neglect. Evaluation of suspected child physical abuse. *Pediatrics*. 2007;119:1232–1241.
2. Myers JEB. *Legal Issues in Child Abuse and Neglect*. Newbury Park, Calif: Sage Publications; 1992.
3. Jenny C, Hymel KP, Ritzen A, Reinert SE, Hay TC. Analysis of missed cases of abusive head trauma. *JAMA*. 1999;281:621–626.
4. Flaherty EG, Sege RD, Griffith J, et al. From suspicion of physical child abuse to reporting: primary care clinician decision-making. *Pediatrics*. 2008;122:611–619.
5. 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;122:259–266.
6. Finch SA, Barkin SL, Wasserman EM, et al. Effects of local institutional review board review on participation in national practice-based research network studies. *Arch Pediatr Adolesc Med*. 2009;163:1130–1134.
7. Posner KL, Sampson PD, Caplan RA, Ward RJ, Cheney FW. Measuring interrater reliability among multiple raters: an example of methods for nominal data. *Stat Med*. 1990;9:1103–1115.
8. Sugar NF, Taylor JA, Feldman KW. Bruises in infants and toddlers: those who don't bruise rarely bruise. Puget Sound Pediatric Research Network. *Arch Pediatr Adolesc Med*. 1999;153:399–403.
9. McMahon P, Grossman W, Gaffney M, Stanitski C. Soft-tissue injury as an indication of child abuse. *J Bone Joint Surg Am*. 1995;77:1179–1183.
10. Cairns AM, Mok JYQ, Welbury RR. Injuries to the head, face, mouth and neck in physically abused children in a community setting. *Int J Paediatr Dent*. 2005;15:310–318.
11. McMahon P, Grossman W, Gaffney M, Stanitski C. Soft-tissue injury as an indication of child abuse. *J Bone Joint Surg Am*. 1995;77:1179–1183.
12. Maguire S, Mann MK, Sibert J, Kemp A. Are there patterns of bruising in childhood which are diagnostic or suggestive of abuse? A systematic review [see comment]. *Arch Dis Child*. 2005;90:182–186.
13. Kleinman PK, Marks SC Jr, Richmond JM, Blackbourne BD. Inflicted skeletal injury: a postmortem radiologic-histopathologic study in 31 infants. *AJR Am J Roentgenol*. 1995;165:647–650.
14. Levi BH, Brown G. Reasonable suspicion: a study of pennsylvania pediatricians regarding child abuse. *Pediatrics*. 2005;116:e5–e12.
15. 42 US code Chapter 67, Child Abuse Prevention and Treatment Act Reform. 2007.
16. Flaherty EG, Sege R, Binns HJ, Mattson CL, Christoffel KK. Health care providers' experience reporting child abuse in the primary care setting. Pediatric Practice Research Group. *Arch Pediatr Adolesc Med*. 2000;154:489–493.
17. Flaherty EG, Sege RD, Hurley TP, Baker A. Strategies for saving and improving children's lives. *Pediatrics*. 2008;(122 Suppl 1):S18–S20.
18. Flaherty EG, Sege R, Price LL, Christoffel KK, Norton DP, O'Connor KG. Pediatrician characteristics associated with child abuse identification and reporting: results from a national survey of pediatricians. *Child Maltreat*. 2006;11:361–369.
19. McCarthy C. Doing the right thing: a primary care pediatrician's perspective on child abuse reporting. *Pediatrics*. 2008;122(Suppl 1):S21–S24.
20. Bailey E. Child abuse and neglect: a system that still needs pediatric leadership. *Pediatrics*. 2008;122:654–655.