**The Other Children**

*A Survey of Child Abuse Physicians on the Medical Evaluation of Children Living With a Physically Abused Child*

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**Objective:** To explore the practice and attitudes of child abuse physicians regarding the evaluation of “contact children” identified in the home of a physically abused index child.

**Design:** A self-administered survey.

**Setting:** E-mail and postal mailings from May 10 through September 30, 2005.

**Participants:** Physicians in the United States recognized as experts in child abuse medicine based on membership in the Helfer Society.

**Main Outcome Measures:** Descriptive measures of recommended medical evaluations of contact children in 3 clinical settings, estimates of association between these recommendations, and respondent experiences.

**Results:** There was a 61% (93/153) response rate. Respondents uniformly endorsed medical evaluation for contact children, although there was substantial variability in the extent of evaluation recommended. Recommended diagnostic testing varied by age of contact child and by type of abuse in the index child. Recommendations were influenced by anecdotal recall of abused contact children “missed” during the initial evaluation of another child in the household. Of our 93 respondents, 37 (40%) reported routine disagreement with child protection workers about the need for medical evaluation of contact children.

**Conclusions:** Child abuse physicians perceive that findings of abuse in contact children are sufficiently frequent to warrant medical examination of most contact children, but there is no consensus on the extent of evaluation needed for contact children. A better understanding of risk of abuse in contact children and improved collaboration between physicians and child protection workers are needed to improve evidence-based care of this high-risk population.

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In 2004, more than 2 per 1000 US children were documented as experiencing physical abuse.1 Many of these children were living with siblings, stepsiblings, cousins, and other children. In a medical model for communicable disease, these household children would be identified as at-risk contacts and would receive medical care for exposure to pertussis or meningococcus. In the field of child abuse, however, there are little data describing (1) the risk of abuse for “contact children” living in a physically abusive household, (2) the role of the medical evaluation in assessing this risk, or (3) the extent of medical evaluation needed to detect abusive injury in these children.

Public concern for these contact children of abuse has earned national media attention in recent months.2,3 Contrary to popular theories that families tend to scapegoat a single child,4-7 experience suggests that all children identified in a violent home are at a high risk of experiencing abuse. Limited observations drawn from several case series5-12 describe reports of suspected abuse in 30% to 60% of siblings of abused children over the years following an initial report of abuse in the home. A larger review7 documented concern for abuse in siblings in 175 (56%) of 310 British families in which a single child was reported as being abused. Unfortunately, none of these studies provides descriptions of the pattern or timing of abuse found in contact children. We do not know how often contact children have findings of abuse coincident with the recognition of physical abuse in an index child, and cannot say whether a medical evaluation is likely to reveal abusive injury not already suspected by the child protection worker.

We recently evaluated 2 children for abusive injuries in the days and months following recognition of physical abuse in another child in their households. In each

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METHODS

STUDY DESIGN

We surveyed members of the Helfer Society (http://helfersociety.org/), an honorary society of physicians elected for leadership in diagnosis, treatment, and research related to child abuse and neglect. We distributed surveys through the Helfer Society membership list on May 2005. Eligible nonresponders subsequently received surveys via US mail and personal e-mail accounts through September 30, 2005. Our administrative assistant received completed surveys and removed all identifying information before responses were entered into a database for analysis. The Helfer Society received a donation of $2 for each completed survey. The study was approved by the institutional review board of the University of Pittsburgh.

RESULTS

SURVEY RESPONDENTS

We received 93 completed surveys from 153 eligible members, for a response rate of 61%. Respondents did not differ from nonrespondents by sex or geographic region. Of the respondents, 49 (53%) spent more than half of their professional time in child abuse clinical practice; 42 (45%) evaluated at least 1 case of physical abuse per week. Most respondents reported routine participation in multidisciplinary team meetings with community child protection teams (Table). Of the respondents, 48 (52%) recalled a contact child who experienced abuse that the respondent attributed to incomplete evaluation at the time of the index report. Given the lack of evidence regarding the medical evaluation of children living in the home of a physically abused child, we decided to explore practices and attitudes of other child abuse physicians in the evaluation of these children.

We designed a survey instrument to elicit perceptions of child abuse physicians regarding risk of abuse in contact children and to gather recommendations of child abuse physicians regarding appropriate medical evaluation of these children. We hypothesized that respondents would recommend medical evaluations of contact children and that the extent of the recommended evaluation would relate to the age of the contact child and to the severity of abuse in the index child. We conducted analyses to determine whether there was expert consensus regarding the evaluation of contact children and to highlight areas in the care of contact children that may require future investigation.

PARTICIPANTS

We chose to survey members of the Helfer Society because we wanted to describe the practice and perceptions of physicians who had substantial experience in the field of child abuse medicine. Helfer Society officers provided us with access to the 175 members for the study. We excluded non-US members (n=12), members with ties to the Children's Hospital of Pittsburgh (n=3), and pathologists not directly involved in clinical care (n=7).

The survey was designed to elicit perceptions, experiences, and medical recommendations of respondents in relation to risk of abuse in children identified in the home of a child diagnosed as being physically abused. Eight items surveyed perceptions and experiences of participants regarding abuse in contact children using yes, no, or unknown or 5-point Likert scale response options. Three case scenarios presented choices for the evaluation of index and contact children of varying ages and abuse exposures. The survey was designed by one of us (K.A.C.) with assistance from a measurements expert at the University of Pittsburgh. Two of us (D.L.B. and R.P.B.) and 6 others in child abuse medicine (not members of the Helfer Society) graded the instrument for clarity and relevance. We examined these responses and revised and retested the instrument before distribution.

STATISTICAL ANALYSIS

We calculated frequencies to describe the perceptions and experiences of respondents and the medical evaluations recommended for case scenarios. To account for ordinal response data, we examined associations between perceptions and experiences using Spearman rank correlation and Wilcoxon rank sum statistics. We compared medical recommendations for contact children of different ages and abuse exposures using Fisher exact test statistics. Significance was defined as P<.05. All analyses were conducted using Stata statistics software, version 9.0 (StataCorp LP, College Station, Tex).

Need for Medical Evaluations in Contact Children

All respondents believed that physicians diagnosing physical abuse in an index child should make recommenda-
tions regarding the need for medical evaluations of other children in the home. Respondents rated severity of injury to the index child, age of the contact child, and history of prior abuse in the home as the most important factors in determining the need for medical evaluation of contact children. Most respondents (73 [78%]) believed that contact children occasionally had findings of physical abuse on examination (Figure 1).

**Frequency of Medical Evaluations in Contact Children**

Although respondents favored medical evaluations for contact children, there was wide variability in the frequency that experts reported seeing contact children in practice. Of the respondents, 3 (3%) indicated that contact children were “almost never” seen for medical evaluations; the remainder reported that contacts were “occasionally” (32 [34%]), “often” (31 [33%]), or “almost always” (26 [28%]) seen (Figure 1). One respondent (1%) was unsure of the frequency of contact evaluations. Respondents participating in multidisciplinary team meetings with child protective service (CPS) workers reported a higher frequency of medical evaluations among contact children compared with respondents who were not multidisciplinary team meeting participants (Wilcoxon rank sum test, P=.049).

**Agreement With CPS Workers**

Of our respondents, 37 (40%) reported disagreement with CPS workers on indications for medical evaluation of contact children in at least half of all abuse cases. There was a positive correlation between the frequency of contact evaluation and the frequency of agreement with CPS workers (Spearman ρ=0.74, P<.005). Multidisciplinary team participation did not influence agreement with CPS workers (Wilcoxon rank sum test, P=.90).

**MEDICAL EVALUATIONS OF CONTACT CHILDREN**

Three case scenarios were used to elicit medical recommendations for the evaluation of contact children. Each scenario involved a family composed of a mother, a father, 1-month-old twins, a 19-month-old boy, and a 12-year-old girl. In each case, a different child was identified as the index child. Participants were asked about their
recommended evaluations for each contact child (Figure 2).

**Inflicted Traumatic Brain Injury Scenario**

In this scenario, one of the 1-month-old twins presents with scalp bruising. The twin has a subdural hemorrhage and is diagnosed as having inflicted traumatic brain injury (ITBI). All contacts are well, with unremarkable “foster placement evaluations” in the emergency department. Of the respondents, 93 (100%) recommended further medical evaluation of the twin and toddler; 84 (90%) recommended further evaluation of the 12-year-old girl. Respondents believed that the younger siblings should be seen by a child abuse physician; most believed that the adolescent could be seen by a primary care physician. Of the respondents, 78 (84%) recommended imaging for possible ITBI in the twin; 85 respondents (91%) and 70 respondents (75%) recommended imaging for skeletal injury in the twin and toddler, respectively.

**Battering Scenario**

In this scenario, the 19-month-old boy presents with facial bruising. The boy has extensive bruising and adult bite marks, and he is diagnosed as being physically abused. All contacts are healthy according to CPS workers. Almost all respondents (90-93 [97%-100%]) recommended medical evaluation of the contacts. Recommendations for brain and skeletal imaging of the twins were made by 46 (49%) and 67 (72%) of the respondents, respectively. Write-in recommendations for forensic interviews (8 [9%] respondents) and counseling referrals (2 [2%] respondents) were made for the adolescent contact child.

**Discipline Scenario**

In this scenario, the 12-year-old girl presents with bruises. She has patterned skin injuries and discloses “whippings.” She is diagnosed as being physically abused. All contacts are well according to CPS workers. Respondents recommended medical evaluation of the infant and toddler siblings, but fewer indicated a preference for a child abuse physician evaluation over a primary care physician evaluation. Brain imaging for the twins was recommended by 29 (31%) of the respondents, while skeletal surveys were recommended by 56 (60%) of the respondents.
Influence of Index Case on Recommended Evaluation

While respondents consistently supported medical evaluations for contact infants, the recommended diagnostic evaluation varied according to characteristics of the index case (Figure 3). Of the respondents, 78 (84%) believed that neuroimaging was indicated for the infant contact of a twin with ITBI but only 29 (31%) would seek neuroimaging for the infant contact of a physically abused adolescent (P < .001). Similarly, skeletal surveys were recommended by 85 respondents (91%) in the case of ITBI in a twin but only by 56 respondents (60%) if living with an abused adolescent (P < .001).

Influence of Recall of “Missed Abuse” in a Contact Child on Recommended Evaluation

Participants reporting recall of a case of missed abuse in a contact child were significantly more likely to recommend computed tomography of the head (Fisher exact test, P = .02). These respondents also favored skeletal surveys in toddler contacts compared with respondents who did not recall a case of missed abuse (Fisher exact test, P = .09).

To our knowledge, this is the first study to address the medical evaluation of children sharing a home with a physically abused child. The results support our initial hypotheses on the perceived need for medical evaluations of abuse and the extent of diagnostic evaluations recommended for contact children. Respondents believed that contact children should undergo medical evaluations following a report of physical abuse of an index child in the home. Respondents recommended more extensive diagnostic evaluations for younger contacts and for contacts of more severely injured index children.

Except in the ITBI scenario, no clear pattern of recommendations for the medical evaluation of contact children emerged from our study results. We observed wide variability in recommended diagnostic evaluations even among this small and expert respondent set. The consistency in recommendations for skeletal and neurologic imaging of the twin of an infant with ITBI was expected and supported by a small but intuitive set of literature on the increased risk of abuse among twin contacts reflect a valid concern for missed opportunities to diagnose inflicted injuries.16-18 Hesitation to recommend imaging in asymptomatic children demonstrates recognition of long-term health risks and short-term economic costs associated with such evaluations. Without improved understanding of the probabilities of abusive injury in contact children, it is difficult to know whether diagnostic imaging for occult injury is “worth” the associated short- and long-term costs. We conclude that there is no consensus on the diagnostic evaluations needed to evaluate possible abuse in contact children. Our study supports the need for further research on risks and patterns of abuse in this high-risk population.

The decision to seek medical evaluation for abuse in contact children generally falls to local CPS workers, so it is not surprising that the rate of medical evaluations for contacts varies between respondents. More concerning is the frequency with which child abuse physicians disagree with local CPS workers on the need for medical evaluations of contact children. Frustration with CPS has been recognized as a barrier to appropriate reporting of suspected child maltreatment by general pediatrics.19-21 It is disheartening to find that even experts working with multidisciplinary teams report frequent disagreement. As child abuse medicine grows as a discipline, efforts to create and sustain ties between medical and social service teams are needed to improve care of children evaluated for abuse.

The interpretation of our results must be made in the context of study limitations. We chose a limited sample to define expert practice in this area. The experiences and practices of these physicians may not reflect general pediatric practice. Similarly, we did not attempt to survey social work colleagues in this study. Understanding the experiences and practices of CPS workers would contribute to the interdisciplinary cooperation we believe is necessary in this field. Future studies should consider the experiences and attitudes of a wider range of respondents toward risk of abuse in contact children. As with all surveys, there is the potential for response bias. Non-
respondents may have less concern and frustration than respondents on issues related to the risk of abuse among contact children. Given the variability of our responses, however, there is no reason to suspect that a clear consensus recommendation for the evaluation of contact children would have emerged with a higher response rate. Finally, survey responses are subject to misinterpretation and recall bias. We are involved in a retrospective review of medical evaluations of contact children seen at our institution to address this concern.

Child abuse physicians perceive that contact children are at risk of abuse and that medical evaluation for abuse is warranted in these children, but there is no consensus on the extent of these evaluations. Practice seems to be influenced by recall of individual cases of contact children missed during the initial evaluation of a physically abused index child. Although our study finds that experts may recommend medical examinations and diagnostic imaging in asymptomatic contact children, there is, to our knowledge, no evidence that such evaluations impact the risk of future abuse among contact children. This study is a first step in understanding the role of physicians in the evaluation of children living in an abusive home. Further research is needed to provide an evidence base to guide the multidisciplinary care of this at-risk population.

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REFERENCES