

# Outcome Data Needed: Interpreting Variation in the Medical Evaluation of Child Physical Abuse

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Since 1991, the American Academy of Pediatrics has maintained that the skeletal survey is mandatory in the evaluation of physical abuse for children younger than 2 years of age.<sup>1</sup> Since 1995, the American College of Radiology has strongly recommended the skeletal survey in the evaluation of abuse.<sup>2</sup> Clinical research affirms the utility of skeletal surveys in identification of occult fractures in 10% to 30% of young children evaluated for physical abuse, a yield higher than many evaluations undertaken in the assessment of febrile infants or closed head injury in children.<sup>3,4</sup> *UpToDate* summarizes decades of clinical research and practice guidelines with the statement, "Concern for physical abuse in children younger than 24 months of age is an absolute indication for obtaining a skeletal survey."<sup>5</sup> In this edition of *Pediatrics*, however, researchers from the Children's Hospital of Philadelphia report that US physicians fail to obtain skeletal surveys, or any other radiologic evaluation for occult fracture, in almost half of children younger than 2 years of age diagnosed with physical abuse.<sup>6</sup>

In a thoughtfully constructed analysis, Woods et al<sup>6</sup> use administrative data from US hospitals to describe variation in occult fracture evaluation in children younger than 2 years of age diagnosed with physical abuse between 2009 and 2012. Results indicate that just 52% of children received the recommended evaluation, with rates ranging from 0% to 100% in hospitals diagnosing at least 5 children with physical abuse

during the study time frame. The authors describe comparable variation in occult fracture evaluation for infants with femur fractures or traumatic brain injuries not associated with motor vehicle crashes (2 clinical presentations often associated with physical abuse). In this setting, however, absence of occult fracture evaluation can reflect a range of clinical circumstances, an obvious accidental mechanism, a lack of awareness of the recommendation for occult fracture evaluation, or a failure to recognize the potential for abuse based on these injuries. It is the variation in occult fracture evaluation for young children who are diagnosed with physical abuse that is more difficult to understand.

Physician adherence to clinical practice guidelines is a challenge that is hardly unique to child abuse. Understanding the reasons for nonadherence with a given guideline, however, can be difficult.<sup>7</sup> It seems unlikely that the wide variation in occult fracture evaluation after a diagnosis of physical abuse reflects simple lack of physician knowledge. In contrast to many other clinical guidelines, the recommendation is appealing in its simplicity, easily accessible through common clinical reference tools, and essentially unchanged over decades. There are no competing recommendations to consider, no symptom scores to tally, and few technological barriers to implementation. In a child diagnosed with abuse, cognitive bias against the diagnosis has already been overcome, and parents present have already been

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offended by the medical opinion rendered.<sup>8–10</sup> Why then do physicians so often fail to request skeletal surveys in young children diagnosed with physical abuse?

Physicians follow clinical practice guidelines when performance of that guideline supports a desired outcome.<sup>7</sup> The physician evaluating a 4-month-old infant with a simple skull fracture and tiny adjacent subdural hemorrhage requests a skeletal survey because it supports diagnostic differentiation between accidental and abusive head injury.<sup>11,12</sup> In contrast, the physician caring for a 4-month-old with facial bruising, multiple rib fractures, and a diffuse subdural hemorrhage reaches for practice guidelines that support diagnostic and therapeutic decision-making to preserve life, reduce disability, and improve health.<sup>13–15</sup> In this context, a practice guideline mandating a skeletal survey lacks relevance. Although study after study suggests that this skeletal survey may describe an unhappy collection of classic metaphyseal lesions and healing rib fractures, not a single study suggests that this skeletal survey will contribute to immediate health or long-term well-being in this child. No study reveals how often occult fractures require surgical intervention, and no study reveals how often occult fractures provide the critical evidence to assure a child's protection by caregivers, caseworkers, judges, or juries.

Pediatricians involved in the multidisciplinary response to child abuse need to better understand how our clinical practices contribute to the health and well-being of children in our clinics, emergency departments, and hospital wards. We must understand how skeletal survey findings (or lack of findings) contribute to protection of the 4-month-old with abusive head trauma, just as we must understand how colonoscopy findings (or lack of

findings) contribute to the well-being of the 9-year-old who has disclosed sexual abuse. Unfortunately, current systems of child protection ask pediatricians to perform and disclose medical interventions without the return of outcome data needed to evaluate the effectiveness of these interventions. In other settings, these authors are actively engaged in changing these current systems through ground-breaking legislation and policy papers.<sup>16,17</sup> Only through this kind of innovative collaboration will we begin to understand whether a rate of 52% is too high, too low, or exactly right for occult fracture evaluation in young children diagnosed with physical abuse.

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**A TOUGH RACKET:** *As I write this, Wimbledon (the tennis tournament played at the All England Club in Wimbledon, London) is about to begin. Tournament organizers recently announced that the purse or amount of prize money to be awarded had been increased, and that winners of each of the singles titles will now pocket \$2,975,000. That seems a great deal of money for a sporting event, although not as much as the \$325 million dollar contract a baseball player recently signed. Unlike baseball players, however, tennis players need to pay their travel costs, housing expenses, coach's salary, and expenses while traveling.*

*As reported in The New York Times (Tennis: June 6, 2015), players need to make a lot of money – approximately \$160,000 each year – just to break even financially. Only about 12% of the 2000 active players make that much money. While the most prestigious tour events (such as Wimbledon) have large purses, only the top 100 or so players get into those tournaments. Even first round losers at each of the four most prestigious events will take home almost \$130,000. However, the less prestigious events – and particularly the tournaments on the Challenger Tour – offer much less money. Early losers will be hard pressed to meet their expenses. One study demonstrated that the average take home pay was approximately \$13,000 (among the almost 5,000 men who won prize money playing tennis in 2013, but were not in the top 1% of all earners). The guaranteed minimum salary for any player in Major League Baseball – and there are 750 on the 25 person rosters – this year is approximately \$500,000.*

*While I will be interested in watching to see if Roger Federer or Serena Williams can win another Wimbledon title, the more interesting matches will be played in the early rounds, as many of those players are playing not so much for glory, but economic survival.*

*Noted by WVR, MD*

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