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Danielle K. B. Boal
Alvin H. Felman
Richard D. Krugman

Controversial aspects of child abuse: a roundtable discussion

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D. K. B. Boal
Milton S. Hershey Medical Center,
College of Medicine, P. O. Box 850,
Hershey, PA 17033, USA

A. H. Felman
Tampa, Florida, USA

R. D. Krugman
University of Colorado School of Medicine,
Colorado, USA

Dr. Danielle Boal: Over 50 years ago, Dr. Caffey raised the possibility of "intentional ill treatment" of infants by caregivers. Since that time there has been a tremendous volume of literature published, in both the scientific and lay press, including non-fiction best sellers like *A Child Called It* and *The Lost Boy*. Numerous committees, multidisciplinary teams, and government task forces have been convened to deal with child abuse and neglect, but the incidence continues to increase. Three million cases/year are reported, one million substantiated, but fewer than half of the children that die as a result of abuse come to the attention of the Child Protective Services (CPS) before death. Additional resources to prevent child abuse and neglect have not been forthcoming. A recent report from the National Institutes of Health documents the amount of money/year/new case diagnosed for 14 commonly diagnosed pediatric diseases: HIV received the greatest research support with $ 6346.15 for each new case per year, continuing downward through "sudden infant death syndrome" (4th) at $ 318.84, to sickle cell disease (13th) at $ 24.14, with confirmed child abuse (14th) receiving only $ 3.33 for each new case diagnosed per year [1].

"Neglect and abuse" remain a difficult and emotionally charged topic. Occurring behind closed doors, it is unobserved and confessions are rare. There are myriad presentations, and abuse and neglect may mimic other disease processes. While there is significant morbidity and mortality, the diagnosis and treatment are intertwined with legal issues of parental rights and family preservation. As we learned from Dr. Richman, last year's SPR Neuhauser lecturer, our current system of CPS is overwhelmed, underfunded, and understaffed [2].

Since we, as pediatric radiologists, are often the first to question the possibility of abuse, and thus instigate the investigative process, I believe it is appropriate that we have this roundtable discussion today. Our involvement usually comes after the fact, and few of us understand what happens to the child and the family once they enter the CPS investigation. As physicians cognizant of the devastating effects of abuse, it is incumbent upon all of us to understand the pathways, process, and hardships involved.

At this time I would like to introduce the members of the roundtable.

Dr. Alvin Felman is an emeritus member of the Society for Pediatric Radiology (SPR). He was a practicing pediatrician for 10 years before entering pediatric radiology, and he has maintained an active involvement with the American Academy of Pediatrics. His professional life has been confined for the most part to Florida, most recently at the University of South Florida in Tampa. Dr. Felman has over 50 publications including books and book chapters, and has been actively involved with legal issues surrounding child abuse and in particular the hardships brought to bear on families wrongly accused.

Dr. Richard Krugman is Professor of Pediatrics and Dean of the School of Medicine at the University of Colorado. He is a world-renowned expert in child abuse and neglect and health policy. He has served as director of the C. Henry Kempe National Center for Prevention and Treatment of Child Abuse and Neglect in Denver; he is the editor-in-chief of *Child Abuse and Neglect*, the

international journal, and has served as chair of the US Advisory Board on Child Abuse and Neglect for the Department of Health and Human Services. His honors, awards, and accomplishments are too numerous to mention. Along with the late Ray Helfer and Henry Kempe, he is the author of *The Battered Child*, now in its fifth edition. This afternoon Dr. Krugman has the difficult task of taking us behind the scenes, from the hotline call to the full investigation.

Finally, by way of introduction I am a practicing general pediatric radiologist at the Hershey Medical Center in Pennsylvania with interest and experience in the diagnosis of physical child abuse. I will devote my period of time to practical aspects concerning the role of the pediatric radiologist and several controversial imaging issues.

We will have time at the end for audience participation in what should prove to be a lively discussion.

Richard D. Krugman, MD: I want to talk a little about what goes on behind the scenes in the child protection system in this country, but I am not going to talk necessarily about what happens at the county level. I do want to make this talk a policy overview as we hit the millennium nearly 40 years after Kempe's "battered child syndrome" and more than a half-century after John Caffey.

I am going to briefly talk about child protection for the millennium and ask the question: will it be better? I want to review some of the problems that we have had, some of the reasons for why we are where we are, suggest some possible outcomes, and see by the end of this if there are some practical things that each of you can do in your own communities.

First, let me go back a decade. A decade ago there was a child abuse and child protection crisis in many different states and nationally. We had child protective agencies criticized for not protecting children. *The Atlanta Constitution*, the *Miami Herald*, and several other newspapers in the United States ran four- to five-day Pulitzer Prize-winning series of articles pointing out that anywhere from 25–50% of the children who died of abuse in that particular area had "open cases" with child protective services. These studies clearly indicated that the child protection system was not, in fact, protecting children, and the articles bitterly criticized agencies for not doing their job. At the same time groups such as VOCAL (Victims Of Child Abuse Laws) and a number of other individuals bitterly complained that child protective service agencies were too intrusive, children were being pulled from families who loved them, and families were being falsely accused. They got the attention of politicians. In 1988 Congress did what it always does when it gets conflicting views: it formed a committee. That committee happened to be called the US Advisory Board on Child Abuse and Neglect. I had the opportunity to spend 4 years with it, serving as its chair for the first 2 1/2 years. In June 1990, having held a year of hearings and reviewing all the information available at the time, we announced to 14 networks and other news entities that child abuse and neglect in the United States and the child protection service was in such a serious state that we thought it was a national emergency. We called on Congress and the Department of Health and Human Services to do something about the problem. Four additional reports were issued in 1991, 1992, 1993, and 1995 and each of those reports delineated specific recommendations that Congress and the Department of Health and Human Services could focus on in order to respond to this emergency. The outcome of that particular effort was that in 1996 the Clinton administration and Congress abolished the committee. Furthermore, over the last few years this administration has buried its only agency that focused on child abuse, The National Center on Child Abuse and Neglect. It downgraded it two levels in the federal bureaucracy, reduced its staff from 20 to 4, calling it now the Office on Child Abuse and Neglect. This so-called child friendly administration has basically ignored the problem. I anticipated that in 1993, when President Clinton was elected, and resigned from the board at that time because I felt that this administration would do nothing in the area of abuse and neglect. To be fair, that was not totally true. There was actually one individual in the Clinton administration who cared very much about abused and neglected children. That was Janet Reno, Attorney General of the United States. Unfortunately, if you leave the task of responding to a problem like abuse and neglect to the justice system, you get only a criminal justice response. Donna Shalala's Department of Health and Human Services has contributed substantially to our crisis by neglecting the issue completely. Meanwhile, in the 5 years since this committee has been abolished, children continue to be abused. The child protection system is an oxymoron. We still have daily newspaper articles alerting us that child abuse exists, and we should be doing something about it.

Where are we now in the year 2000? Many children are still dying in foster care. CPS is still viewed as intrusive. CPS and the courts are overloaded with cases. All you need to do is walk down to your local family court some day and see the number of cases that are being dealt with in any city of medium size or greater. It is more than any system can handle. There are variable approaches county by county. There are in fact over 3,000 different approaches to child protection in the United States depending on what county you live in, although some big states like New York and Illinois centralize their child protection system, which is a bit of an anachronism when you consider the population of those states. So that in Illinois, for example, all the reports go to Springfield even though the Chicago area is huge. Colorado, on the other hand, with a small population,

has 64 counties and 64 different approaches to the problem of abuse and neglect. In the Denver metropolitan area we get cases from seven different metropolitan area counties, and many of us may need to testify in seven different court systems. If a family really gets savvy about it, they know that they can move from the "No-Tell Motel" on the south side of Colfax Avenue in Aurora to the "Bugs Bunny Motel" on the north side Colfax. By doing so, they move from Arapahoe to Adams County and their cases may be handled in a completely different way. If we continue to tolerate these county-by-county approaches, we will not make much progress. There are no published outcomes for the juvenile court, criminal court, or child protection systems. Without outcome data, it is hard to know how we are going to do a better job, much less know how we are doing. So from my perspective, the emergency of 1990 is still with us.

We have no consistent federal effort in research and development. Danielle showed you the amount of dollars that NIH has allocated per case to this effort is $3.33. There are no training grants; there is no systematic research effort by either the NIH or NIMH. The individuals who have led the NIMH programs on abuse have either left or were replaced this past year. Our present administration, as I mentioned before, has decimated the program. Our media focus on case after horrible case is disaster oriented. Leila Costin, who wrote a book called *The Politics of Child Abuse,* describes 40-year cycles of interest in abuse and neglect beginning in 1880 with the development of societies for the prevention of cruelty to children after the Mary Ellen case, the child in New York who was found by a home visitor. This cycle ended in the 1920s, leaving 40 years until Kempe and others came forward with the description in 1961 of the "battered child syndrome". Caffey's work was done before that, obviously, but the real momentum followed Kempe's work. His paper in 1962 began another 40-year effort. Judging by what I see going on nationally, we are getting very interested in looking at the problems of spousal abuse, domestic violence, and elder abuse, and our interest in child abuse appears to be waning. This is occurring, ironically, just at the time where we could be making real progress in preventing and treating child abuse. We do a much better job as a country of identifying problems and bringing people's attention to them than we do in solving problems and trying to take the next step to make things better.

Having said that, I think it is important to recognize that there are child protective service agencies and systems throughout this country that are doing a good job. We just never hear about them. We hear only about the disasters or the mistakes. These anecdotes get strung together and form what I have called "undescended testimonial evidence." Table 1 presents data from a study we did several years ago for the state of Iowa [3]. We have now studied three state child protective service systems and Iowa's was clearly the best. We conducted, in essence, the first customer service satisfaction survey of individuals who had been reported to the state of Iowa for abusing their children, asking them, "What was the experience like for you?" The fact is 74% of 172 individuals said the experience was a positive one. Their service was either excellent or good; 26% said that it was poor to fair. When we asked them a year after the report and intervention by the Iowa child protective services, "Is your family today better or worse than it was prior to you being reported?", 72% said their family was better off. I can tell you that buried within the 26% who said it was worse were individuals who on a 1–10 scale (with 1 good and 10 bad) circled 10. Furthermore, if the Likert scale had been from 1–10,000, they would have circled 10,000. They were livid and there was no way that individuals who felt that their life was worse would ever believe that this system had done anything good for them.

Table 1 Client evaluation of quality and impact of child protection services

Rating of services received (n = 171)		
	n	%
Excellent	65	38.0
Good	61	35.7
Fair	26	15.2
Poor	19	11.1
Changes in client family life (n = 143)		
	n	%
Better	103	72.0
Worse	40	28.0

(From [3], see Table 3)

I need to say a few words about prevention of abuse because the fact is from a policy perspective we now know and have the technology to be able to prevent much of the physical abuse and neglect of children. Parent education is what the child protection system uses. There are no data to confirm that parent education is helpful. There are fewer data to suggest that by taking children in junior high and high school and have them carry around eggs or do other sorts of things to help them learn how fragile babies are there is any long-term effect. These programs are probably not harmful in the curriculum but they have not been studied to show that they are effective. Most child protective service systems in the country enroll clients with substantiated cases in 8–12 weeks of educational programs. For most people, that is the sum total of the treatment and intervention that a family will be provided.

On the other hand, we do know that home visiting, particularly the public nurse home visiting as studied by David Olds, previously at Rochester and now with us in Colorado, can in fact prevent abuse [4]. These

data come from his work. He now has 15-year follow-up data on children and families who were enrolled in a randomized controlled trial of public health nurse home visiting [5]. Abuse rates over a 15-year period were seven times higher in the comparison group than the nurse-visited group. The public health nurses were with these high-risk mothers for the last two trimesters of pregnancy and for the first 2 years of the child's life. They then stopped the home visiting but the effect persisted for an additional 13–15 years. There are enormous savings if you look at the cost effectiveness of this approach. I don't have the time to go through all Olds's data, but in addition to the reduction in child abuse and neglect, over the 15-year study period there was a reduction in the AFDC costs, in alcohol use, and in the arrest rates of both the mothers and the adolescent children. There was improvement in health behaviors and a reduction in the number of children born to the mothers, who also had a higher employment rate. When you look at where the savings come from, more than 50 % of these savings come from a reduction in welfare costs for mothers who were visited. There is a 20 % reduction in cost to the criminal justice system, and a 1 % reduction in Medicaid costs as a result of fewer ER visits. In addition, the mothers actually being employed and paying taxes generate 23 % of the savings. The first study followed 400 rural, Caucasian children in Elmira, New York. It has been replicated in over 1,000 children in Memphis, Tennessee with an urban African-American population. Although the data lag 3–5 years behind the Elmira study, they are the same.

There is no question that public health nurse home visitation can in fact prevent physical abuse and neglect and a substantial number of other issues for the families we care for in our health system. It is also clear that we need some type of public effort in order to make this happen. Ironically, most of Olds's support is now coming from the Department of Justice, which views home visitation as a crime prevention effort. He has been funded to replicate these findings in 20 different communities around the country under the auspices of the Department of Justice – not Health and Human Services.

So we are left with really no cohesive child protection policy in this country. The US Advisory Board on Child Abuse and Neglect has pointed out a decade ago that we have no child protection policy in this country. In fact, it is rare to hear any elected public official even discuss child protection policy. I have never heard a president, governor, mayor, or any elected official answer the question "What is your child protection policy?" Then again, I have never heard a reporter or anyone else ask. On the other hand, I have heard them decry the disaster of the week or the bad case of the month. Without a cohesive policy, how should we behave? Are there approaches to child protection that could work? Harold Richmond suggested one at your meeting last year [2]. That lecture actually follows pretty much what our advisory board suggested in 1993 in its report called "Neighbors Helping Neighbors: A Community-Based Approach to the Prevention of Abuse and Neglect" [6]. In Belgium and the Netherlands they have a "confidential doctor" system. The child protection system in those countries is health based. When a report comes in to the hotline, the phone rings in the pediatric clinic of the hospital. The clerk there takes down the same information that the clerk takes in our social services departments and then calls and notifies the family that has been reported that they have a 4:30 appointment at the confidential doctor center. Eighty-eight percent of the families turn up for that appointment. The other 12 % are reminded by the police that they missed their 4:30 appointment and they make a 5:30 appointment. In that clinic are psychologists, social workers, physicians, and others who evaluate the situation and determine what services the family needs in order to keep abuse from happening (if it is happening). They only use the civil or criminal court system when they are dealing with cases in which that help is required. My view is that this approach is worth studying in this country. Although they have been dealing with child protection this way for 26 years, they too have not published outcome data. No one seems to be interested in publishing any outcome data. They do not have mandatory reporting. They deal with the cases that come to their attention; it is clearly a different approach. At a time where we are not particularly successful or happy with our own system, we may want to try things like this.

Others have suggested different approaches. The late Ray Helfer proposed a public safety model [7]. Testing these various approaches may be worthwhile. No policy change can occur in the vacuum of silence that we currently have in this country. Let me just pose a few questions for you to think about the next time you are home and are talking with your city council or mayor or whoever it is who holds the policy reins in your community. You can just ask the question, "What is your child protection policy?" Just so it is clear, what I mean by that is, "What do we really want to do about the problem of physical and sexual abuse in children?" Is it adequate to just say we have to make sure that we criminally prosecute all those who violate our laws? Now please understand that I am not opposed to the criminal prosecution of those who break our laws. It is just that as the only policy that seems to be funded and in place in our country, it leaves a huge number of families and a huge number of children in a position where they are not being helped. Physical abuse and our approach to it is clearly different from sexual abuse. We tolerate an enormous amount of physical misuse of children without invoking criminal sanction and we have a zero tolerance for the sexual misuse of children without invoking criminal sanction. Again, I

am not suggesting which is right or wrong, I am only suggesting that to give the same agencies the responsibility for dealing with all of this makes it difficult for them to know what they are doing. Should we be dealing with intra-familial and extra-familial abuse the same way? Why do we have both CPS and law enforcement investigating cases when there aren't enough resources available for treatment? That kind of approach in an emergency is not unreasonable. But should we adopt or at least test a confidential doctor approach in this country? It seems to me we could have multiple state efforts under a federal demonstration project and appropriate waivers from justice department and from federal law to let us create a 10-year experimental program to try and deal with abuse in a different way.

Now, why do I think that health approaches might work and that the health system needs to get engaged in this problem? First of all, some studies indicate that there may be a genetic or neuroscientific basis to some forms of abuse and neglect in animal models. Suppose abuse and neglect turned out to be similar to alcoholism. Some of us are old enough to remember when alcoholism was dealt with by putting "drunks" in the county jail. Later, as we realized what the health and genetic effects were, we changed that approach. The July 26, 1996 cover of the journal *Cell* shows two groups of mice [8]. In the first is a mother mouse with eight babies latched on to her, nursing. Prior to her delivery of these babies, she made a nest and when the babies wandered off during the first 24 h or so, she would retrieve them, and crouch over them to keep them warm. The second cage has a mother who did not make a nest prior to her delivery. She has eight babies who wandered off. She never retrieved them, never crouched over them, and they are all dead. The only difference between these two mothers is the absence of the immediate early gene *fosB* in the non-nurturing mother. This gene acts in the pre-optic area of the hypothalamus, a very basic part of the brain. I am not suggesting that we extrapolate inappropriately from a knockout mouse to humans, but I am suggesting that this study is at least suggestive that those really interested in abuse and neglect ought to take a neuroscientist and geneticist to lunch and sit down and have a very long lunch at that. I have seen mothers like that mouse and I think some of us who work in the neglect area have as well. There are mothers who cannot recognize the cues of their infants, who don't have the ability to understand what a baby's cues for hunger are. A mother will look at a baby sucking on its fists, and while everyone in the room would say, "That baby is hungry," this mother will say. "It's not hungry, it is angry, leave it alone, it is just fine." I think this is not necessarily just a learned behavior, but there may be some genetic basis to it as well.

So let me close this Continuing Medical Education program with a post-test question. If you are designing a strategy that would most help the United States develop a child abuse and neglect prevention policy, would you: (a) socialize medical services, (b) medicalize social services, (c) criminalize the civil courts, or (d) civilize the criminal courts? The answer to this is (b), in case you didn't know. The civil courts are already criminalized. That is a major problem in this country. It has become very adversarial in family court with expert witnesses and attorneys on all sides fighting over whether a baby who has massive subdural hemorrhage, retinal hemorrhage, and multiple fractures should be returned to a family or not. Civilizing the criminal justice system is probably not feasible either. I am not prepared to even comment on socializing medical services. In my view, we have a health system that needs to take over child protection, maybe put it in foster care for a decade or two while we sort out what we really need to do. The reasons I believe we should take over child protection are: first, in contrast to CPS, the health system has a commitment for the long term. It may or may not surprise you to know that most child protection service agencies destroy the records on all their cases within 6–12 months after the case is closed. This makes follow-up and research on outcomes a little difficult. Juvenile court systems also don't keep the records after a certain amount of time or if they do, they seal them so you can't study them. We in the health system retain our records for life. Second, we have a culture of peer review and learning from mistakes that doesn't exist in a system that is primarily legal or social services based. Third, we also have a history of multidisciplinary approaches to difficult issues and, fourth, we have Sutton's law. You all know Sutton's law. Willie Sutton was asked, "Why do you rob banks?" He said, "That is where the money is." As I look at the health care system, there is a lot of money in it. Our health care system provided two individuals who have been heads of two small insurance companies in Denver $ 30 million when they sold their company. All those dollars were the premiums paid by individuals for health care that they didn't receive. That is my idea of family support – it should just support more than two families. I believe that any health system that has this kind of money can in fact provide home visitation as a basic health benefit, and should be able to provide treatment for abused families as well.

In conclusion, the present crisis in the CPS health system in the United States will only be resolved when we begin thinking of abuse and neglect as a personal health problem rather than a legal and social issue. For that to happen, it will require all of us in the health system to begin advocating politically with those who really hold the reins of this problem, our elected officials, legislators, governors, mayors, and others and tell them that to completely ignore this problem, as all but Janet Reno has done in this administration, is unacceptable.

And, if we are going to make any progress for children, we are going to have to take that $ 3.33 the government spends per child and increase it dramatically. We will need to mount a significant research and training infrastructure, fund prevention, and revamp our investigation and treatment services.

I leave with this quote from Albert Camus, who said: "Perhaps we cannot prevent this world from being a world in which children are tortured, but we can reduce the number of tortured children. And if you believers cannot help us, who else in the world can?" Thank you.

A.H. Felman, MD: My experience in child abuse stems from 10 years in private practice of pediatrics, including 2 years in the military, 23 years as a pediatric radiologist at the University of Florida, and 2 years at the University of South Florida. After retiring from active practice in 1994, I spent a year attending law classes at Stetson Law School and Hillsborough Community College. I trained and served as a Guardian ad Litem and began to get referrals from attorneys who were involved in malpractice and child abuse. It is the latter experience that I wish to share. In the past 5 years, I have consulted on about 30 cases in which parents have been accused of abuse or similar charges. Most were in civil court, but some in criminal, and one case, military.

Dr. Krugman has outlined the problems within the child protective system, making my job easier. I have long suspected that the problems that I have encountered in the Florida system are in fact representative of the country as a whole. The first case that I want to present is that of a 6-month-old child who was taken to a local hospital because of some type of "episode." In the ER, a spinal tap was performed and reported as having blood present. In the hospital, CT and MRI studies of the head were carried out. The MRI was reported as showing evidence of enlarged subarachnoid spaces and small subdural hematomas. The parents were accused of shaking the baby and a shelter hearing was carried out. They were told they could keep the baby in their home with 24-h supervision. They arranged for their parents to travel from the East to fulfill the court order.

I was asked to help them in their defense against charges of abuse. My evaluation of the MRI concluded that the child had a form of infantile craniomegaly of infancy with possibly several very small subdural hematomas. The chief of neuroradiology at the University of South Florida, Department of Radiology concurred and so testified in court. My review of the literature disclosed examples of the association of hematomas with this entity in textbooks by Barkovich and Cohen [9, 10]. The association of subdural collections with benign enlargement of the subarachnoid space is a well-known and reported entity, and as an isolated finding cannot be considered as indicative or diagnostic of abuse (M. A. Radowski, personal communication). Evaluation of the blood in the spinal fluid revealed that it was clearly from a traumatic tap.

At the court hearings of this case the prosecuting attorneys repeatedly asked for continuances, but finally a hearing was held. A radiologist from the Children's Hospital testified that this was a shaken baby and the pediatrician from the child protection team agreed. They were not dissuaded from their opinions by the evidence we presented. The prosecution sent these films to a consultant of their own choosing who concurred with our opinion that there was no radiographic evidence of abuse. They refused to disclose this information, in clear violation of the law, and continued to pursue the case. Eventually, they were forced to reveal the report from their consultant and the case against the parents was dropped. This cost the parents their life savings of $ 25,000 and 6 months of unbelievable agony and heartache.

It was apparent to me from this case, as well as others, that many of the people prosecuting these cases are not interested in the truth and that there are physicians who will support the efforts to convict innocent parents despite lack of compelling evidence for abuse. In court, I presented the testimony of prosecution physician witnesses that was in direct opposition to the literature that they sited dealing with the probability of injury due to falls from different heights. In addition, I have seen child protection workers alter the language of x-ray reports to help with cases.

There has developed in Florida, in recent years, a contest between those who want to restrict the ability of the agencies to detect and punish abusers on the one side, and those who want stronger laws, on the other. A recent law was passed permitting the spanking of children, clearly a violation of their civil rights and legalizing violence toward children, while at the same time the same legislature is trying to reduce the level of violence [11]. A law has been passed giving the authorities permission to remove any child from the home without a court order and with no impending harm – clearly a violation of constitutional safeguards against invasion of our homes by the government [12].

In my opinion, some physicians have abandoned their responsibility in the prevention of abuse and the adjudication of cases that are suspect. On the original child protection committee formed by Dr. Kempe, six of the nine members were physicians. Our Child Protection Team had one physician, 1 day a week. Detectives and police, without physician consultation, are now given the responsibility of evaluating the initial medical condition of children suspected of having been abused.

At the 1999 SPR meeting, Dr. Richman in the Neuhauser lecture suggested that there were too many families brought into the system and charged with neglect who were merely poor [2]. This, in his opinion, has resulted in massive numbers of cases that have overburdened

the system and at the same time deprived many families of the help they really need. Many of these cases have also worked their way into the criminal courts and people are going to jail in large numbers for problems that have in the past been considered civil matters.

As physicians, we need to be alert to the fact that our opinions expressed in radiographic reports may be taken to indicate abuse when they are merely suggesting some additional work-up. In view of the potential for criminal charges, radiologists must be cognizant of the importance of their reports, making sure that they are carefully worded, accurate, and not misinterpreted. The stakes are too high for equivocal readings.

The SPR should offer to help the court acquire expert witnesses for defendants who are unable to find or afford their own. In addition, the SPR should investigate the accuracy of the imaging findings and whether reports are being changed to obtain convictions.

In conclusion, my experience in a small number of cases in and around Florida is in keeping with Dr. Krugman's assessment that there are significant problems in the way we select, evaluate, and dispose of cases of alleged child abuse in this country. There seems to be no problem getting alleged victims into this system, but once there, we as physicians and protection workers should put as much effort into proving the lack of abuse as we do into proving its presence. We must shoulder this responsibility rather that shifting it onto the courts to decide, except in only the most difficult cases and then only when they involve termination of parental rights, homicide, etc. I do not expect that many, or possibly anyone, in the society will believe or accept what I have said. This is because you have not had the same experiences as I over the past 5 years. I do not expect you to believe me, but if you go back to your own communities and begin looking at the way your cases are handled and follow up on your reports, you might learn what I have learned. If there is no problem, then so much the better. But if you discover that some of the things that I have talked about are in fact transpiring then you are obligated, in my opinion, to take action.

When I worked with the great radiologist, the late Dr. John Kirkpatrick, he would often admonish us to strive for accuracy in the way we phrase our reports. He was fond of producing a page from Lewis Carroll's *Alice Through the Looking Glass* and quote from Humpty Dumpty about the meaning of words. I have titled this talk, "Child Abuse, Through the Looking Glass, and What I Have Found There." When I was in your position, I lectured as you do about the radiographic findings of child abuse. I often quoted Fred Silverman's Rigler lecture from the 1970s, but once I retired from practice and began working in the courts, I learned that there is another side to this issue [13]. I have found gross abuses in the system after looking at it from the other side of the looking glass. If you do as I suggest and take a look from the vantage point that I have suggested, you might be surprised at what you discover.

Danielle K.B. Boal, MD: Briefly, I would like to share with you my experience as a pediatric radiologist who deals with child abuse, offer a few practical suggestions, and touch upon several controversial imaging issues. While our role by necessity is multifaceted, first and foremost we are diagnosticians. When a child presents with an injury, it is necessary to consider whether the explanation offered for that injury is plausible, and if the developmental level of the child is consistent with that history. We must be familiar with the findings and the mimics of physical abuse, and whether certain findings should be considered pathognomonic of abuse. The role of a diagnostician ultimately leads to subsequent involvement as a consultant, expert, and advocate for children. Several of our colleagues in this audience are well-known scientists and researchers in the field of child abuse.

If you are willing to become involved, your workload will increase. Most of us review cases of suspected abuse on our own time on top of our usual workload, but there will, nonetheless, be a significant impact on your colleagues, in addition to the added work of managing case files and databases. If you provide an opinion, and particularly if you agree to testify, you may be exposing yourself to the possibility of criticism or ridicule. This is certainly uncommon but it does happen. On one occasion I received threats from the father of a child thought to be abused.

My involvement began in 1987 when I reviewed, quite by accident, a case of suspected abuse. As a result of that review I was asked to testify. One thing leads to the next, and as a result of that testimony, I was asked to join the Medical Legal Advisory Board, recently formed by the Attorney General for the State of Pennsylvania. This is a group of professionals including pediatricians, forensic pathologists, law enforcement, district attorneys, social workers, coroners, and others who meet five times a year to review difficult cases and address legislative issues. From that first case in 1987 to the present, I have now reviewed over 920 cases. This has led to my testimony in 32 trials and 16 hearings. Similar to the quote from the movie *Field of Dreams*, "If you build it they will come," the need for the interest and expertise of pediatric radiologists is there and will be utilized.

Unlike Dr. Felman, I have worked primarily with law enforcement, although I have reviewed cases for defendants wrongly accused of suspected abuse. For those not familiar with the process, when you receive a case, it is necessary to review *all of the imaging studies* and most of the medical records. Frequently, you are supplied with the police interviews and I have found these to be helpful on many occasions. You must then submit

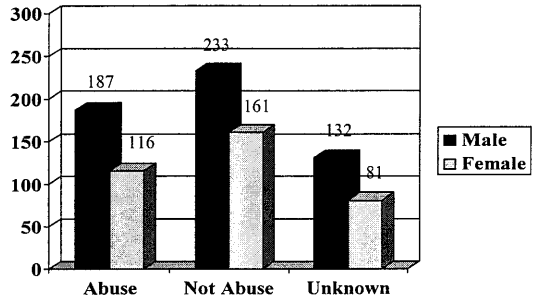

Fig. 1 Population distribution, number of cases (*male*, *female*) in each of three categories (*abuse*, *not abuse*, and *unknown*) in database

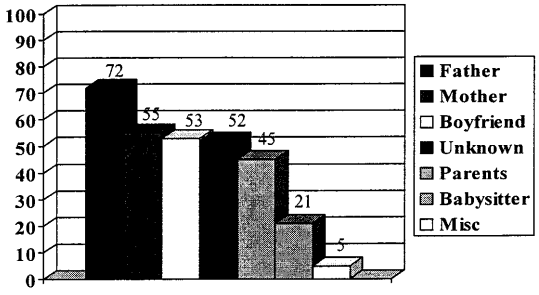

Fig. 2 Relationship of perpetrator to abuse victim for all cases of abuse

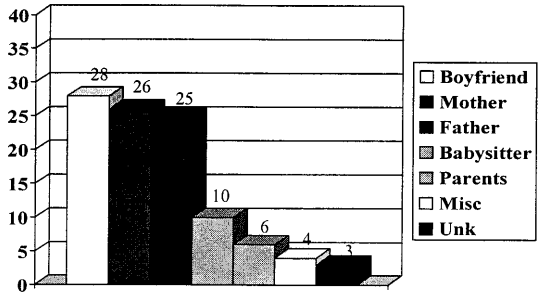

Fig. 3 Relationship of perpetrator to abuse victim when child died as a result of abuse

a detailed letter of your findings and opinion, and that is just the beginning. You will receive phone calls from child protective services, law enforcement, attorneys, and occasionally families. Scheduled hearings and trials are notoriously unreliable, often continued on numerous occasions, wreaking havoc with your schedule. Finally, there are large volumes of imaging studies and records, which led us to develop a computerized database.

As our case volume grew, it became obvious that we needed a computerized database to store and update information, as well as retrieve information for future research. Data on each case include demographics, history, perpetrator, detailed imaging evaluation and findings, pathology, legal and CPS outcome. As of January 2000, information on 910 cases, 552 males and 358 females, has been entered into the database. All patients are assigned to one of three categories – *abuse*, *not abuse* or *unknown* – based on information from multiple sources (Fig. 1).

In our 303 cases of definite abuse, the father was most commonly the perpetrator (72), followed by the mother (55) and her boyfriend (53) (Fig. 2). In the 102 cases where the child died as a result of abuse, the mother's boyfriend (28) was most commonly identified as the perpetrator followed by the mother (26), the father (25) ,and the babysitter in 10 cases (Fig. 3).

The cases in our database come from one of two sources, the PA coroners and referral cases, which include patients hospitalized at Hershey, as well as cases from most of the 67 counties within the state and several from out of state. Coroner cases, which are comprised primarily of sudden unexplained infant deaths, slightly outnumber referral, and not surprisingly, only 15 % of those turn out to be abused infants (usually but not always suspected prior to the autopsy). In contrast, 50 % of the cases in the referral population were abused children.

The major indicators that we use for physical abuse are fractures, CNS injury, retinal hemorrhages, and abdominal pelvic trauma. In this group of 910 children, 311, or approximately one third, had no positive imaging findings of physical abuse and 24 of those children were abused, 14 of them fatally. What I will next discuss deals with the remaining 600 children who had positive imaging findings.

It is possible, with the database, to look at fractures in the broadest sense, or in some detail with regards to fracture type, age, and location. Regarding the specificity of fractures in general, 379 children had a total of 2,416 fractures. Within this group is a subset of cases *with only fractures* and no other organ system injury such as CNS, retinal hemorrhage, abdominal, or pelvic injury: 146 children with 746 fractures. These two groups are then divided into our three categories of *abuse*, *not abuse*, and *unknown* in the same fashion (Fig. 4). Some conclusions may be drawn:

1. The number of fractures is much higher in our abuse population; 2,025 fractures or close to 85 % of the total number of fractures occurred in the abuse category.
2. Fractures alone are not particularly specific for abuse. The total number of patients with *fractures only* was similar for the three groups but did comprise a much greater percentage of the *unknown* and *not abuse* populations.
3. Finally, in abused patients with fractures, the number of fractures per patient was significantly higher,

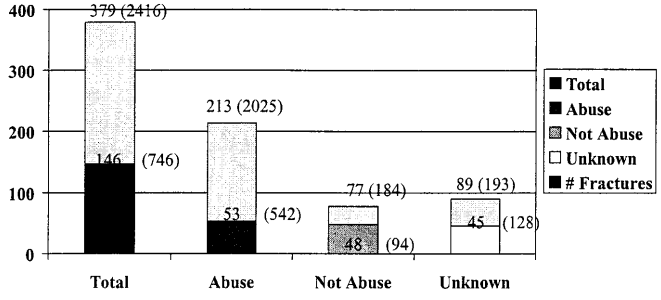

Fig. 4 Number of children with fractures, with and without other injury. Total number is subdivided into abuse, not abuse and unknown groups (*numbers in parentheses* are actual number of fractures)

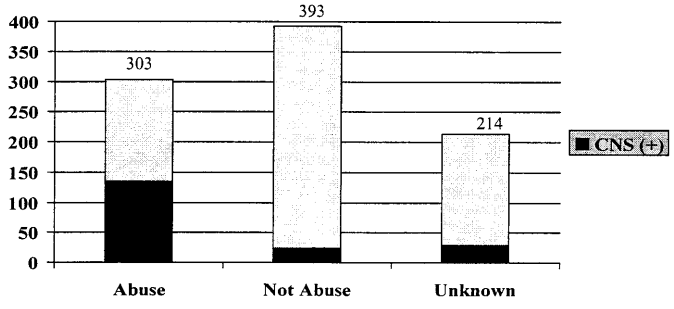

Fig. 5 Incidence of CNS injury, documented by CT, MR, or autopsy, for each of the three groups (*abuse*, *not abuse*, *unknown*)

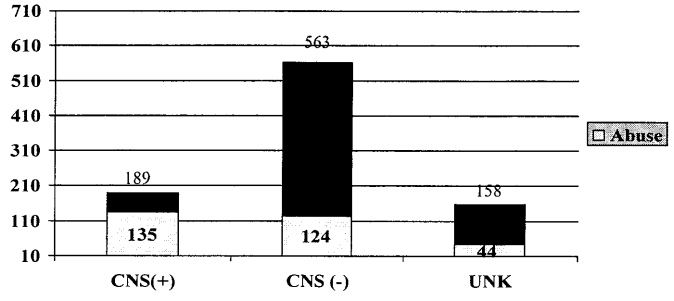

Fig. 6 Incidence of abuse in children with CNS injury, those without CNS injury, and unknown as to presence or absence of CNS injury

greater than 10 fractures per patient as compared to the *not abuse* and *unknown* groups.

In looking at the incidence of CNS injury in our three patient populations, it should come as no surprise that CNS injury occurred more frequently in children that were abused: 45% had CNS injury (Fig. 5). It is important to realize that each case has its unique set of circumstances and imaging findings so it is often hard to make generalizations concerning an individual imaging finding. Having said that, is there any predictive value to the presence or absence of CNS injury? In 158 patients, evaluation was incomplete and the presence or absence of CNS injury was unknown. Of the 910 patients, 189 had either imaging or autopsy documentation of CNS injury and 135 (>70%) of those 189 patients were abused (Fig. 6). If retinal hemorrhage is present in addition to CNS injury, as it was in 104 of the 189 patients, then close to 90% of that group turned out to be abused. Finally, of those 104 patients with CNS injury and retinal hemorrhage, 66 also had fractures. All 66 of those patients were abused.

As pediatric radiologists we must not become complacent. While we have learned a great deal through the work of others, we must continue to challenge current assumptions of fact and dogma. Do certain findings, whether type, location, or association have greater prognostic significance, occur more commonly with abuse, or with true accidental injury?

Not long ago, skull fractures crossing the suture line, involving more than one bone, were thought to have a high specificity for abuse. We now know that this is frequently not the case. What has been labeled by some as a bucket handle skull fracture occurs with a single blow to the head, resulting in two fracture lines radiating forward from a single impact site, most often into the left and the right parietal bones, occasionally the occiput.

Beware the spiral or oblique fracture, particularly if it is solitary. For some, particularly the Child Protective Services, this fracture is synonymous with abuse. It is thought to occur when an infant is grabbed or shaken, using the extremity as a handle. However, spiral fractures do occur in a child that is ambulatory, and we now know that they may occur accidentally in younger infants. One mechanism was graphically illustrated when a 5-month-old infant was videotaped lying prone, the extended upper extremity unable to adduct as the baby was rolled from the prone to the supine position [14]. What's most important to consider, when presented with a spiral fracture, is the explanation offered and the developmental level of the child, in addition to the age of the fracture at presentation, and whether or not there are other injuries.

There is excellent scientific evidence that posterior rib fractures at the costovertebral junction have a high specificity for abuse; there is no argument. However, I was surprised to find, at least in our patient population, that the majority of identified rib fractures in abuse were other than costovertebral junction in location. When we record presence or absence of rib fractures, we note the specific rib involved, the location of each fracture on that rib arc (many ribs have more than one fracture), along with an estimate as to the age of that fracture. Rib fractures occurred in all three of our patient populations. There were a total of 1,608 rib frac-

Table 2 Location of fracture on rib arc within the three groups (abuse, not abuse, unknown)

	Abuse (141)	Not abuse (22)	Unknown (22)
CVJ	479 (33%)	23 (36%)	22 (27%)
Post	257	10	22
Lateral	301	17	3
Ant	251	14	22
CCJ	175	0	12
Total	1,463	64	81

tures, and the majority, 1,463 rib fractures in 141 patients were in the abuse population.

Dividing the rib arc into costovertebral junction, posterior, lateral, anterior, and costochondral junction, we tallied up the number of fractures for each of these five sites (Table 2).

- Comparing individual sites, costovertebral junction rib fractures at 479 outnumber each other individual site.
- But if one looks at the costovertebral junction (CVJ) site as compared to all other sites on the rib arc, the CVJ site represents only 33% of the total number of rib fractures in our *abuse* population.
- Interestingly, fractures of the costovertebral junction represented a slightly greater percentage in those children *not abused* at 36% and somewhat less in the *unknown* group at 27%.

Well-publicized controversies include the issue of temporary brittle bone disease. This was proposed as a variant of osteogenesis imperfecta by Paterson in 1989 [15]. He identified a group of young infants thought to have diminished bone strength, possibly on the basis of a temporary deficiency of a metalloenzyme such as copper. This has since been refuted in the literature by several authors. Paterson has offered no scientific proof and by his own admission in a British court of law, he conceded that he had included unequivocally founded cases of abuse in his group of patients with temporary brittle bone disease. There are still researchers who accept this concept. However, the features of the disease, as described by Miller in the US literature, overlap what most experts in the field of abuse would conclude as possible proof of abuse, including: (1) caregivers deny any wrong doing, (2) there is no episode of trauma to explain the fractures, and (3) there is no bruising and radiographs reveal normal bones [16]. I will leave you to draw your own conclusions.

Finally, the recent "nanny" case in Boston, the death of Matthew Eppen, has polarized the medical and legal communities. Some have applauded the outcome of the trial. But, well over 60 recognized experts in the field of child abuse unanimously rejected the hypothesis put forward by the defense [17]. In response, Cyril Wecht, a well-known forensic pathologist, believes "that the diagnosis of shaken baby syndrome is made much too frequently, too zealously, and dramatically pursued by forensic pathologists and clinicians. It has developed a scientifically attractive appeal that has lured law enforcement officers and prosecutors into its web" [18]. Undoubtedly a bit of hyperbole, nonetheless, I hope and believe most physicians testifying in abuse cases do so based on medical evidence and clinical experience, not because they are "zealots."

Let us consider several controversial issues previously addressed by Krous and Byard pertaining to shaken baby and shaken impact [19]. First, the importance of whether or not there can be a lucid interval after a devastating injury to the brain is important, both with regard to the timing of the injury as well as understanding the pathophysiology of the traumatic event. With the exception of epidural hematomas in older children, which are a rare event with abuse, well-documented research has shown that a lucid interval does not occur. Whether or not the injury is accidental or non-accidental, an infant that is a victim of severe closed head injury does not act normally, take a bottle, interact with the caregiver, and then become moribund. Second, can rebleeding into a chronic subdural hematoma mimic shaken baby syndrome and cause death? Rebleeding within a chronic subdural hematoma does occur, often after minor or no known trauma, but it is venocapillary in origin and occurs at low pressure. It does not cause cerebral edema, mass effect, or rapid clinical deterioration. Therefore, it should not be confused with a hyperacute subdural hematoma. A hyperacute subdural is an acute mixed density subdural hemorrhage, which is the result of active hemorrhage and is composed of clotted and unclotted blood resulting in a mixed attenuation. There is always associated edema and mass effect. Finally, must there be impact? In 1987 Duhaime and colleagues published research using doll models with extrapolations in single force parameters, concluding that impact was necessary to generate sufficient force to cause death and severe injury [20]. This has since been refuted in the literature by several authors [21–25].

Shaking an infant is a violent act. Unfortunately confessions are rare. The few that have been published need no comment: "Shaking so hard it would look like the head would fall off"; "I shook, and I shook, and I shook, until he was no more." There is no need to debate the issue of impact versus non-impact shaken injury. Blows to the head with or without skull fracture are frequent. The critical question is whether or not the head injury is inflicted or accidental. Lacking a history of high-impact motor vehicle injury or a fall from a significant height, the clinical, radiologic, and pathologic features are specific. However, the sequence of events is usually unknown. The baby may be shaken alone;

shaken and impacted; shaken, choked, and impacted. The outcome for each, often fatal.

Personally, I find the questions that I am asked each day perhaps more troubling, because there is often no answer.

"How much force. ..?"
"How far the fall. ..?"
"How hard the squeeze. ..?"
"Could the 2-year-old brother have done it. ..?"
"Wouldn't the doctor notice, wouldn't family members notice. ..?"
"Would the baby act normally the day before, 6 h before, 2 h before?"

In closing, just as Dr. Felman stressed, we must be ever vigilant and cautious when making the assumption that there has been abuse. Mistakes still occur. As an example, recently a 4-month-old Amish baby girl was brought moribund from her home with retinal hemorrhages, a hyperacute subdural and an intracerebral hemorrhage. The clinicians caring for the child briefly before death, as well as the forensic pathologist, assumed this to be abuse. Her seven brothers were removed from the home, and the family was emotionally and financially devastated before it was finally determined that this child, born at home, died as a result of late hemorrhagic disease of the newborn due to vitamin K deficiency.

Dr. Richard Krugman once said, "The more we learn, the less we know with reasonable medical certainty." In Pennsylvania we also have a saying, "I get too soon old and too late smart."

In closing, I would like to thank my co-panelists and now invite members of the audience to voice their ideas and questions.

(*The following is a transcript of the audio tape recording of audience comments following the presentation.*)

Thomas Tintera Esq. (Oregon Prosecutor): It seems to me that the basis for any criminal prosecution comes from you, the physician. We are not medical doctors; we have to rely on your medical opinion. In a grand jury proceeding, citizens are picked at random and we use your medical testimony. It is a very serious thing to charge someone with child abuse and the foundation of any criminal prosecution is your medical opinion that abuse occurred. We cannot supply that. We don't have the training and expertise. So we look to you for that opinion. I will make myself available if anyone has any questions from the prosecutor's standpoint.

Dr. Felman: As a prosecutor, what would you say is your batting average at the end of the year with respect to convictions? What would be a good batting average?

Atty Tintera: I consider that question adversarial, and I cannot respond. My goal as a prosecutor is to seek justice. It is very different than the defense goal. A defense goal is to acquit the client with a not guilty verdict. So our ethical obligations are very different. I don't keep a batting average. I don't keep a win/loss record. My job has been to protect the children because they are alone and they need protection and if I have a medical team that is giving me an opinion that this is child abuse, then that case will be prosecuted, most likely indicted, and we will resolve the case.

Dr. Felman: Can I answer that. I don't want to be hostile but I have a son, a defense lawyer, and I asked him about a 33 % batting average. He said that was outrageous. That means, I assume, that for every 100 people that you agree to prosecute, only 1/3 are found guilty. That's about what it is with these cases. He said no prosecutor could keep his job if he had a 33 % batting average. Now the question is: How small do you make the holes in the net? How many people do you bring into this system and ring them out until you let them go free? The law says, as I understand it, that it is better to let 100 guilty people go free than to convict one innocent person. The child protection system has taken that and turned it on its ear. They have said it is better to prosecute 100 innocent people than to let one guilty person go free. That is why I ask you your batting average because that is what it comes down to. How many people are they tearing apart, how many families are they ruining in order to get to that one family?

Atty Tintera: From my standpoint, it is not us vs. them, but I know within the legal field there is that tendency depending on which side you are on, the prosecution or the defense. As far as I am concerned, if people are found not guilty, there is a very different burden of proof but I don't look at it as batting average. I come back down to the foundation of medical testimony. If a medical doctor comes to me and says, "Based on my training and experience this is child abuse because of 'A, B, C, and D'", we will go forward on the case, present it to a grand jury, and see what we have. The trial jury later on determines guilt or innocence. The defense on the other hand may have as many doctors as they want to support their position. In our system the jury will hear both opinions.

Dr. Krugman: First of all I think there is a lot of resistance here. Let me say having been trained and having engaged with prosecutors for 20 years, I have absolutely no doubt that their goal is to protect children. The problem is, and Henry Kempe recognized this 40 years ago, you cannot use the criminal justice system to protect children. It is stunningly inefficient. It is inefficient because of the constitution and because we do not want to risk putting innocent people in jail. My problem is that we have activated and left the criminal justice system as the only system trying to function. The system that is actually supposed to protect children is the family court system. For a variety of reasons, which I think has a lot to do with our inability to have a

public conversation about what we really want to do about sexual abuse in this country, the civil family court system has over the last 15 years become stunningly criminal. It is a system where you have the same kinds of expert witnesses brought in to argue with each other, not over whether or not a child should be protected, but whether the parents are to be charged. So that system has failed. The mental health system in this country is legally consumed with the institutionally mentally ill and isn't available to provide treatment. The public health system in this country is now fee-for-service home health care and no longer doing maternal/child health support. The only system that is thriving is the criminal justice system. By the way, it is thriving because the public elects it and it is doing what the public wants it to do. If we have a problem with that, we have got to build up the other systems so that the criminal justice system will see fewer cases. We must work on the front end of prevention, providing adequate treatment and support services to families before the report. We need to make it as easy for families to pick up the phone and get help before they abuse their children, as it is for us to pick up the phone and report them. Until we do that, this kind of haggling over what the role of criminal prosecution is, deals with the extreme tip of the iceberg, when most of us are trying to deal with children.

Dr. Tom Slovis (Children's Hospital, Detroit): I agree with you, Dr. Krugman. I think that one of our roles as pediatric health care providers is to be advocates and push for the reform you talked about. I have got to go back to a more practical level when you and I were growing up with the Kempe system. We were always told that if we found something suspicious, we had to have it investigated by our social workers and work with them. As radiology and pediatric radiology fellows we were told that when we see certain fractures we consider pathognomonic or at least very suspicious, we had to report that and have it investigated. As I hear this discussion today, I am left thinking, "Well, if I do that, the other side of the system investigating is incompetent, can't do a good job." What am I supposed to do? As far as I am concerned I am still trying to protect the child, and I may not be doing that despite my best intentions.

Dr. Krugman: My answer to that is personal and advocating civil disobedience. We still have mandatory reporting laws in this country that we need to deal with. When I say we have a policy vacuum in this country, what I mean is that we are not getting the key people who put us in this situation to have the kind of thoughtful conversation and fund the appropriate studies. How do you develop systems that can actually protect children in the year 2000 in a way that will give us the data so that by 2005 or 2010 we can maybe use the system? At the moment we need to do what we are doing. What I keep suggesting to the juvenile courts and to our child protective service agencies is they publish their data as to outcomes every year. I ask the social service departments what happened to these 100 children that I saw in 1990. They say I can't tell you, it is confidential. I say, that's fine, don't tell me what happened to each one, just tell me how many of the 100 are alive. They won't tell me that. If we don't have this kind of outcome data we will never fix the problem.

Dr. Felman: How many people here would have gone to court and charged someone $ 25,000 for the first case I presented, expanded subarachnoid space, a couple of small hematomas, and the bloody spinal fluid that was due to traumatic tap? Will you speak to that, somebody? Is that the kind of stuff we are doing? The chairman of that x-ray department agreed with me that this was not a case of shaken baby syndrome. Why didn't he go to his radiologist and say, "No, you can't continue to testify to this"? What about that patient with an x-ray report "possible" or "seen with " that came out "pathognomonic"? Where is the prosecutor that looks at that and says, "Wait a minute. You want me to go into court with an affidavit that says this is pathognomonic? The radiologist didn't say pathognomonic." No, the prosecutors are in this with the others and they will do anything, in my opinion, change whatever they can when they shouldn't, even cook up evidence. They are supposed to bring the truth.

Micheal Slovis Esq. (Lawyer, Illinois): I thought I was the only lawyer in this audience. I think the argument is misplaced. First of all, I want to explain the system. There is the criminal justice system and there is a civil system. The criminal justice system puts the parents in jail. The civil system is what you are talking about with the family. That is where you take the children away and put them in supervised situations. The argument should not be directed at the prosecutor. It should be directed at the physicians who wrote those reports. The prosecutor has to take the reports of physicians and look for what is in the best interest of the child. How can you get up there and say it is the prosecutor's fault? What did you say before? If you let an innocent person get charged that is unfair? In this situation you are not looking at the parents. First as a prosecutor you look at the children. I have been in those situations where a child has been returned to a parent and the child ends up dead. You have to look at what is in the best interest of the child. Trained physicians are going to tell you two different things. It is up to the judge to weigh those factors.

Dr. Krugman: I don't know whether any neurologic societies actually have a child abuse committee. My experience has been that it isn't a part of societies. I think one of Al's points is probably correct. Professional societies need to regulate this. I watched a case that went to trial, and a couple of neurosurgeons gave testimony that I couldn't believe. Now what will happen to those neu-

rosurgeons? Probably not much. What will happen to radiologists and others who testify on either side of the case if that information is inappropriate? I think there are ways that people can bring these cases to their societal bodies. But I worry again about our focus being on a very, very small part of the system with hundreds of thousands of children being unprotected and getting no treatment while we sort of dance on the criminal justice system.

Dr. Bernadette Koch (Cincinnati Children's Hospital): As a pediatric neuroradiologist, I do not review cases too often for hire, but I have been asked on multiple occasions to look at cases given to me to see if this is a case of abuse or not. We all have to remember very importantly that yes, in fact subarachnoid spaces that are enlarged in children might be more apt to develop subdural hematomas with minimal trauma, but it is our duty to say to the child protection service, "You at least have to investigate." We are not saying you have to take the child out of the home, but I think you have to at least say that this does happen only on rare occasions. It isn't that we see this all the time, no problem. This is a potential child abuse case that needs to be looked into further. The same for those "corner" fractures. At a really high-volume institution, we see a lot of corner fractures. Even those who see multiple cases like the radiologists I work with, who do child abuse cases, even they sometimes have problems. Is it a Keats normal variant, or is it a fracture? So for the person out there in the general community who doesn't see that many cases, it isn't always so easy to tell. If there is a suspicion, we have to raise the possibility with the child protection service to at least to investigate and see if there is anything else to support it.

Dr. Felman: Let me ask you a question. Let's say you have reported that case as possible child abuse. Now, do you think that once they are told there are no retinal hemorrhages, no other injuries, the child is conscious, and the parents are perfectly fine, the father works at the post office and the mother stays home. .. When do you stop prosecuting these people? Is it worth 6 months of their life so you can say well maybe it is what Dr. R. said?

Dr. Koch: But I don't think that is our job.

Dr. Felman: Whose job is it?

Dr. Koch: It's as a group that it is our job along with the child protective service agency. I don't think that case was so clear-cut and dried. Why would the child protection agency take that to court if they had the same feeling you did about the parents? I suspect there was something else about this.

Dr. Felman: They say they don't care about appearance. They say good parents abuse children anyway.

Dr. Koch: No, no, no. At least not in my institution; I know you can't add a gut feeling but if you talk to the parents you can get an idea. A lot of times they will come in and there is a high suspicion because of the family.

Dr. Felman: They brought their child to a hospital.

Dr. Koch: In our hospital, there are plenty of parents where we may raise this question. The child protection service comes back and says there are no retinal hemorrhages, there's no other evidence of trauma, we don't suspect this family. Everything seems kosher. I think there are more of those cases that don't go to trial that no one is giving anyone credit for.

Dr. Krugman: Isn't this like asking general pediatricians who have seen dozens to hundreds of 4-month-olds with 39-degree fevers, "How many of you are willing to refrain from doing a spinal tap in a particular 4-month old with a 39-degree fever?"

Dr. Felman: This is not an issue of a spinal tap.

Dr. Boal: I think most of us have a thoughtful, careful, and practical approach to the question of whether or not abuse has occurred.

Dr. Krugman: I think we are "assessing" cases rather than using words like "investigating." The fact is, when a child comes into the hospital, we need additional information. I remember very clearly a little child with bruises down her back who, I was told, fell down the stairs on her back. Those bruises were consistent with that, until a public health nurse pointed out to me 2 weeks later when she didn't come back for an ear check, that there were no stairs in the trailer. So how do we find out since it isn't socially acceptable to bring children to us and say, "You know I am really losing it with this kid and I already hit it and I am afraid I am going to kill it, help me." How do we in fact not respond to that if that is not acceptable? They are coming, they are saying the child has fever, fell down the stairs, and they are still not getting help.

Dr. Felman: The system is so punitive that people don't ever want to come. They won't ever bring their children because they are afraid they are going to lose their family.

Dr. Carmen Talarico (Carolinas Med Ctr, Charlotte): I for the first time in 15 years was on the defense side to get custody back for parents who had lost their child because of mistreatment and suspected abuse. We were successful in doing that. It took 5 months and about $ 40,000 to get their child back. The problem seems to be the three or four cases I have seen in the past couple of years that have resulted from pediatric patients being forced by their insurance companies to be seen by a radiologist who would read the films and report suspected abuse. The child is then referred to an adult orthopedic surgeon who is unfamiliar with the pathognomonic findings and what is and what is not a common injury. They call the child protective service people, and based on these two inexperienced physicians that insurance companies have forced them to use, parents were denied custody. This is the case I dealt with. It is very frustrating.

Dr. Krugman: While all of us have large series of anecdotes, none of us really knows what the denominator

is, or worse, how many children aren't ever getting treatment who are being mistreated.

Dr. George Kassner (Brooklyn, NY): Some of the points raised by the last few speakers have reinforced my perceptions. I have frequently testified for the defense in cases of alleged child abuse. I have found well-done studies in peer-reviewed journals that I have used to refute what I consider unwarranted medical testimony about the specificity of certain injuries for child abuse. For example, there are published data that show that linear parietal skull fractures are the rule when infant cadavers are dropped from a height of less than 3 feet onto a variety of surfaces; that the great majority of epidural hemorrhages in infants are not inflicted injuries; that the great majority of humeral shaft fractures in toddlers are accidental; and that a normal toddler who falls while running can sustain a femoral shaft fracture. For several years, I have participated in a tax-supported program in New York City that provides expert medical testimony for the defense in family court and criminal court. Before this program was instituted, there was no way for indigent respondents and defendants to counter expert medical testimony that such and such an injury is pathognomic for abuse. Before I agree to testify for the defense, I carefully review the entire record, including the social service and police reports, as well as the testimony of the prosecution's medical expert(s). If I conclude that the only "evidence" to support the allegation of abuse is the injury itself, and that there might be a plausible alternative explanation, I will do my best to convince the judge or jury that the charge of child abuse is unwarranted.

Dr. Krugman: To me, California has an interesting approach. That is, the court impounds 400 experts who work for the judge. There are no experts for the attorneys. I am not using the word defense here because it is not criminal. In the family court, the goal is to try to protect the child and rejoin the family and to support the family. So they use their experts to help the judge.

Dr. Felman: I came here today to tell you the other side of this problem. You do not believe it, I know you don't and I don't expect you to. But you have not been where I have been. If you had, you would believe. All I am asking you to do is to think about it, question it, go back to your areas, see what is going on. Find out what you are really doing. I hope my message gets across. I am not trying to attack radiologists. Just see the other side of the fence.

Dr. Boal: To conclude, we as pediatric radiologists must recognize that by the time we see a case of suspected abuse it is already too late. Our role in this societal issue, in the past and the present, has been to correctly recognize physical abuse, protect the victim, and often to punish the perpetrator. Likewise, we must correctly recognize true accidental injury and medical conditions that mimic physical abuse so we can preserve the family and avoid the heartache and hardship when erroneous accusations are made. What we must do in the future, all of us, is identify and attack the risk factors, be it poverty, drugs, ignorance or isolation. We must do this as individuals, physicians, and members of the Society for Pediatric Radiology. We must work closely with other disciplines, coordinating our efforts, learning how to communicate and support each other. It must be a community and a global effort.

Thank you again, my co-panelists and members of the audience, for making this afternoon session both informative and thought provoking.

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