

COMMENTS

SHAKEN BABY SYNDROME: MEDICAL UNCERTAINTY CASTS DOUBT ON CONVICTIONS

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* J.D., University of Wisconsin Law School. I dedicate this Comment to Audrey Edmunds, who is currently serving an eighteen-year sentence for allegedly shaking a baby to death in 1995. I worked on her case with the Wisconsin Innocence Project, and her story inspired this Comment. I would like to thank Shelley Fite, Katie Mason, Keith Findley, and John Pray for their guidance. I would also like to thank all of the doctors and lawyers who took the time to speak with me, especially John Plunkett, Donna Kuchler, William Perloff, and Shaku Teas. Finally, thanks to Rhoda, Peter, Lesley, Rachel, Adam, David, and Owen for putting up with me through the research and writing of this Comment.

If murder cannot be proved, the conviction cannot be safe. In a criminal case, it is simply not enough to be able to establish even a high probability of guilt. Unless we are sure of guilt the dreadful possibility always remains that a mother, already brutally scarred by the unexplained death or deaths of her babies, may find herself in prison for life for killing them when she should not be there at all. In our community, and in any civilised community, that is abhorrent.¹

I. INTRODUCTION

On April 3, 2004, emergency personnel received a call that six-month-old Riley Owen Bilke was “red in the face and breathing heavily.”² Later that day, despite rescue efforts, he died from symptoms commonly associated with shaken baby syndrome (SBS).³ His father, Todd Dittberner, was charged with first-degree reckless homicide.⁴ The state’s medical experts testified that Riley suffered from the triad of symptoms that traditionally lead to a diagnosis of SBS—brain hemorrhaging, retinal hemorrhaging, and brain swelling.⁵ They suggested, as is typically assumed with SBS,⁶ that the baby was probably crying inconsolably, and that Dittberner became so frustrated that he shook the baby to death.⁷ They concluded that only SBS could have caused those symptoms.⁸

Dittberner, however, maintained that he did not shake his son.⁹ He said that, when he was burping his son, the child had a seizure,¹⁰ “stiffened up,” and slipped out of his arms.¹¹ He asserted that the child

1. R v. Cannings, [2004] EWCA (Crim) 1, ¶ 179, 2 Crim. App. 7 (H.L.) (appeal taken from Winchester).

2. Steve Sharp, *Dittberner Jury Is Selected*, WATERTOWN DAILY TIMES (Watertown, Wis.), June 21, 2005, at 1.

3. *Watertown Man Accused of Shaking to Death Son Is Found Not Guilty*, DULUTH NEWS TRIB., July 11, 2005 [hereinafter *Watertown Man Accused*].

4. *Id.*

5. Sharp, *supra* note 2.

6. See *When Babies Cry*, 70 TEX. B.J. 409, 409 (2007); Alan Mayor Sokobin, *Shaken Baby Syndrome: A Comparative Study: Anglo-American Law and Jewish Law—Legal, Moral, and Ethical Issues*, 29 U. TOL. L. REV. 513, 518 (1998).

7. Telephone Interview with Donna Kuchler, Todd Dittberner’s Defense Attorney (Jan. 5, 2006).

8. *Id.*

9. Steve Sharp, *Eye Expert Testifies for Dittberner*, WATERTOWN DAILY TIMES (Watertown, Wis.), June 30, 2005, at 1.

10. *Watertown Man Accused*, *supra* note 3.

11. Sharp, *supra* note 9.

fell on the floor and landed on the top of his head.¹² Dittberner was alone with the baby, except for a two-year-old child he was babysitting at the time.¹³ Upstairs neighbors—who claimed that they could hear everything in Dittberner’s apartment—stated that they heard neither the baby crying nor any yelling on the day of Riley’s death.¹⁴

Deborah Crawford was one of the first emergency workers to arrive on the scene.¹⁵ Testifying for the prosecution, she stated that Riley’s mother was upset, but that Dittberner was “emotionless.”¹⁶ She did not think that the baby could have sustained such injuries from a short fall, noting that “generally a baby doesn’t fall such a small amount and go unconscious.”¹⁷

In his defense, Dittberner presented several experts who stated that the type of injuries that Riley exhibited could have been caused by a combination of other factors.¹⁸ Horace Gardner, “one of the country’s foremost experts on the human eye,”¹⁹ testified that the baby would not have sustained the type of injuries that he found if the child had been shaken to death.²⁰ Although Riley had retinal hemorrhaging,²¹ Gardner explained that retinal injuries more commonly result from a lack of oxygen.²² He testified that he had not seen any cases of SBS in which the victim exhibited the particular type of retinal hemorrhages that Riley had,²³ and suggested that the injury could have come from an improper insertion of the breathing tube during the emergency treatment.²⁴ Apparently, the emergency personnel had serious difficulty trying to intubate the baby, depriving him of oxygen.²⁵

The defense also introduced the testimony of Patrick Barnes, a pediatric neuroradiologist and child-abuse expert.²⁶ He testified that Riley had a history of health problems, including bronchitis and

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12. *Id.*
 13. Telephone Interview with Donna Kuchler, *supra* note 7.
 14. *Id.*
 15. Sharp, *supra* note 2.
 16. *Id.*
 17. *Id.*
 18. Sharp, *supra* note 9.
 19. *Id.*
 20. *Id.*
 21. *Id.*
 22. *Id.*
 23. *Id.*
 24. *Id.*
 25. Telephone Interview with Donna Kuchler, *supra* note 2.
 26. *Id.*

pneumonia.²⁷ Barnes stressed that doctors should not accuse a parent or caregiver of child abuse until they have ruled out every other possibility.²⁸ Because the Dittberners had adopted Riley, doctors did not know all of his medical history, nor did they perform certain tests that might have helped determine Riley's cause of death.²⁹

Although Dittberner was ultimately acquitted,³⁰ his case exemplifies the difficulties with charges of child abuse based on allegations of SBS. Often these cases become a battle of experts in which the state's witnesses claim that the child must have died from being violently shaken, and the defense's (if the defense can retain them)³¹ provide alternative explanations for the symptoms.³² It may be difficult for the fact-finder when there is no corroborating evidence, and only medical testimony that the child suffered from the triad of SBS symptoms.³³ The jury, possibly confused due to the complicated nature of an SBS diagnosis,³⁴ might return a guilty verdict because of the nature of the crime—the tragic death or severe injury of a baby³⁵; on the other hand, the jury might acquit, wanting to believe that no one could intentionally harm an infant.³⁶ Dittberner was fortunate because his neighbors were able to testify in his favor and he had the support of some of the leading medical experts in the country.³⁷

SBS cases differ from other murder or injury cases both in that they are often based only on medical opinions about the triad, and that there may not have been a crime committed at all.³⁸ Thousands of Americans

27. *Id.* Daycare workers also testified that Riley had trouble with his lungs, and that they were concerned because he often struggled to breathe. Sharp, *supra* note 9.

28. Telephone Interview with Donna Kuchler, *supra* note 7.

29. *Id.*

30. *Watertown Man Accused*, *supra* note 3.

31. While retaining experts may be prohibitively expensive in some cases, another problem for defendants is that some doctors might be afraid to testify. One defense expert, John Plunkett—who has testified in more than 100 SBS cases—was charged with false swearing based on his testimony that the traditional triad of symptoms is not necessarily diagnostic of SBS. Mark Hansen, *Battle of the Expert*, A.B.A. J., Dec. 2005, at 52, 54.

32. See, e.g., *State v. Ostlund*, 416 N.W.2d 755, 760 (Minn. Ct. App. 1987).

33. See Richard Guillatt, *When the Bough Breaks*, GOOD WEEKEND, Nov. 20, 2004, at 18, 19.

34. See Joseph D. Hatina, Note, *Shaken Baby Syndrome: Who Are the True Experts?*, 46 CLEV. ST. L. REV. 557, 567 (1998).

35. See Guillatt, *supra* note 33.

36. See Charles A. Phipps, *Responding to Child Homicide: A Statutory Proposal*, 89 J. CRIM. L. & CRIMINOLOGY 535, 537 (1999).

37. See Sharp, *supra* note 9; Telephone Interview with Donna Kuchler, *supra* note 7.

38. See *R v. Cannings*, [2004] EWCA (Crim) 1, ¶ 7, 2 Crim. App. 7 (H.L.) (appeal taken from Winchester) (“In the vast majority of cases of murder, there is no

have been sent to prison over the last two decades on charges related to SBS,³⁹ and most are convicted only on the existence of the SBS triad of symptoms and the fact that they were with the baby when it became fatally ill.⁴⁰ The usual lack of additional eyewitnesses further complicates these cases.⁴¹

This Comment explores criminal charges based on SBS and the potential for wrongful convictions. Part II introduces the medical terminology, gives a brief legal history of cases involving SBS, and discusses the changing science behind the syndrome. Part III outlines the scope and role of medical experts in SBS trials. In particular, it compares the term “beyond a reasonable doubt” with “reasonable medical certainty,” and determines that the commonly used terms are not compatible. Finally, Part IV looks to the examination and management of SBS cases in other countries.

This Comment concludes that infant deaths can lead to the homicide convictions of innocent people. The medical community does not agree that subdural hemorrhaging and retinal hemorrhaging without evidence of an impact are necessarily indicative of shaking.⁴² The standard of “reasonable medical certainty” that medical experts often use at trial is not appropriate for SBS cases and can be extremely misleading. When medical experts cannot come to an agreement about SBS, a jury cannot understand the science well enough to make a reasonable decision.⁴³ Without corroborating evidence of child abuse, a defendant should not be convicted of any crime due to SBS based only on the existence of the triad of symptoms.

II. WHAT IS SHAKEN BABY SYNDROME?

The term SBS “evokes a powerful image of abuse.”⁴⁴ If doctors find certain symptoms in an infant that are characteristic of SBS, absent other

doubt that someone has caused or contributed to the death of the deceased in some way Unusually, but not uniquely, the primary and stark question in [this infant-death case] was whether either of these children was killed at all.”) Although *Cannings* was not an SBS case, it did involve infant deaths. *See id.* ¶ 9.

39. *See* Lee Scheier, *Shaken Baby Syndrome: A Search for Truth*, CHI. TRIB., June 12, 2005, Magazine, at 10, 12.

40. *See id.*

41. Matthew D. Ramsey, *A Nuts and Bolts Approach to Litigating the Shaken Baby or Shaken Impact Syndrome*, 188 MIL. L. REV. 1, 3 (2006).

42. *See infra* Part II.C.

43. *See* Clare Dyer, “Innocent Parents at Risk” in *Baby Death Cases Too Complex for Juries*, GUARDIAN (London), Nov. 7, 2005, at 15.

44. J.F. Geddes & J. Plunkett, Editorial, *The Evidence Base for Shaken Baby Syndrome*, 328 BMJ 719, 719 (2004).

explanations for the injuries, then the last adult with the child is usually charged with intentional abuse.⁴⁵ After the case of British nanny Louise Woodward—who was convicted of shaking and killing a nine-month-old child in her care⁴⁶—captured media attention in 1997, child-abuse convictions increasingly interested the public.⁴⁷ There were roughly 104 reported appellate cases dealing with SBS in the United States in 2006.⁴⁸

Today, SBS is a popular phrase in the media, hospitals, and courtrooms.⁴⁹ People commonly associate it with a frustrated reaction to a crying baby.⁵⁰ Men are more likely to be accused: fathers or step-fathers account for the highest number of suspected abusers, and boyfriends of the baby's mother are the next highest.⁵¹ A rising number of babysitters are also being charged.⁵² There are approximately 1,500 reported cases of SBS nationwide every year.⁵³ In fact, according to the National Center on Shaken Baby Syndrome, the problem may be underreported because there is usually no "external evidence of trauma."⁵⁴ The Center also estimated that 25 to 30 percent of shaken infants die from SBS-related injuries despite medical treatment.⁵⁵ Recent studies have indicated, however, that there may be other causes of the triad.⁵⁶

45. Genie Lyons, Comment & Note, *Shaken Baby Syndrome: A Questionable Scientific Syndrome and a Dangerous Legal Concept*, 2003 UTAH L. REV. 1109, 1110 (2003); see also Patrick D. Barnes, *Ethical Issues in Imaging Nonaccidental Injury: Child Abuse*, 13 TOPICS IN MAGNETIC RESONANCE IMAGING 85, 86 (2002).

46. Commonwealth v. Woodward, 694 N.E.2d 1277, 1281 (Mass. 1998).

47. See Phipps, *supra* note 36, at 536.

48. This figure is based on a March 5, 2007 LexisNexis search for "'shaken baby syndrome' OR 'shaken infant syndrome' OR 'shaken impact syndrome'" performed on federal and state cases reported within the previous year.

49. See R. Uscinski, *Shaken Baby Syndrome: Fundamental Questions*, 16 BRITISH J. NEUROSURGERY 217, 217 (2002).

50. See Sokobin, *supra* note 6, at 518; see also Michael Levenson, *Lawmakers Target Shaken Baby Syndrome*, BOSTON GLOBE, Oct. 27, 2005, at B1 ("It's not uncommon to feel extremely frustrated when you're trying to care for a crying baby, so much so that probably everybody has had the thought about shaking a baby But the important thing is that you don't carry out the act.").

51. See Levenson, *supra* note 50.

52. See Sokobin, *supra* note 6, at 518.

53. Levenson, *supra* note 50.

54. National Center on Shaken Baby Syndrome, <http://www.dontshake.com/> (last visited July 17, 2007).

55. *Id.*

56. See, e.g., Barnes, *supra* note 45, at 86; Mark Donohoe, *Evidence-Based Medicine and Shaken Baby Syndrome: Part I: Literature Review, 1966-1998*, 24 AM. J. FORENSIC MED. & PATHOLOGY 239, 240-41 (2003); Geddes & Plunkett, *supra* note 44, at 719; Lyons, *supra* note 45, at 1120-25.

A. Symptoms of Shaken Baby Syndrome: The Triad

In 1972, John Caffey first described SBS as “whiplash-shaking” of infants which he claimed resulted in bleeding in the brain and eyes without signs of impact to the head.⁵⁷ He later called this “whiplash shaken infant syndrome.”⁵⁸ Today, SBS is characterized by a triad of symptoms: subdural or subarachnoid hematomas, retinal hemorrhaging, and brain swelling.⁵⁹ A subdural hematoma is a collection of blood between the outermost membrane of the brain (the dura mater) and the middle layer (the arachnoid).⁶⁰ A subarachnoid hematoma refers to the bleeding between the arachnoid layer and the innermost membrane (the pia mater).⁶¹ Retinal hemorrhaging is bleeding in the retina of the eyes from a ruptured blood vessel.⁶² Any one of these symptoms in isolation could come from another cause, but some doctors believe that a combination of the three only results from SBS.⁶³ Sometimes these injuries are accompanied by skull fractures, or broken or bruised ribs or arms.⁶⁴

In reality, SBS is more of a legal term than a medical term.⁶⁵ According to the SBS theory, the offender usually holds the baby by the torso or shoulders (which accounts for any fractures or bruises) and violently shakes the child back and forth.⁶⁶ This movement of the baby’s head causes the veins connecting the brain to the skull to tear, leading to loss of oxygen to the brain and significant brain swelling⁶⁷—which may

57. See John Caffey, *On the Theory and Practice of Shaking Infants*, 124 AM. J. DISEASES & CHILDREN 161, 161, 169 (1972).

58. See John Caffey, *The Whiplash Shaken Infant Syndrome: Manual Shaking by the Extremities with Whiplash-Induced Intracranial and Intraocular Bleedings, Linked with Residual Permanent Brain Damage and Mental Retardation*, 54 PEDIATRICS 396, 396 (1974).

59. See, e.g., John Plunkett, *Shaken Baby Syndrome and the Death of Matthew Eappen*, 20 AM. J. FORENSIC MED. & PATHOLOGY 17, 17 (1999); Sam Lister, *Q & A: Shaken Baby Syndrome*, TIMES ONLINE, Feb. 14, 2006, <http://www.timesonline.co.uk/tol/news/uk/article546383.ece>; Letter from William H. Perloff to Troy Cross, Assistant District Attorney, Columbia County, Wis., at 3 (Jan. 9, 2005) (on file with the Wisconsin Law Review).

60. Lyons, *supra* note 45, at 1110.

61. *Id.*

62. Hatina, *supra* note 34, at 559 n.15.

63. *Id.*

64. Phipps, *supra* note 36, at 545.

65. See James Le Fanu, *Wrongful Diagnosis of Child Abuse—A Master Theory*, 98 J. ROYAL SOC’Y MED. 249, 251 (2005); Robert Tharp, *Shaken-Baby Theory Questioned*, DALLAS MORNING NEWS, Mar. 10, 2006, at 2B (referring to SBS as a “law enforcement theory”).

66. Phipps, *supra* note 36, at 543.

67. *Id.* at 544.

ultimately kill the baby.⁶⁸ A proper diagnosis requires an examination by many medical specialists, including a pathologist, a pediatrician, a neurologist, and an ophthalmologist.⁶⁹

B. Summary of Significant SBS Convictions

The earliest SBS convictions happened about twenty-five years ago,⁷⁰ and the number grows each year.⁷¹ The Woodward case was one of the most famous SBS cases, and the subject itself has been of growing interest to the media and society.⁷²

1. EARLIEST CASES

An early appellate case was *People v. Kailey*, in which the Supreme Court of Colorado affirmed Randy Steven Kailey's felony child-abuse conviction.⁷³ Kailey testified that, after picking up his four-month-old daughter from a babysitter and putting her to bed,⁷⁴ he woke up to find that she had vomited and was having trouble breathing.⁷⁵ Doctors found subdural hemorrhages, retinal hemorrhages, brain swelling, and bruises on her forehead and abdomen.⁷⁶ Four days later, surgery revealed that she had both an acute and a chronic subdural hematoma.⁷⁷ Two months earlier, the baby had been admitted to the hospital with a subdural hematoma, which the parents claimed came from her rolling off of the seat of the car or the couch.⁷⁸ At the trial, several doctors testified that the baby's injuries came from "either a blow to the head or whiplash shaken infant syndrome."⁷⁹ The defense unsuccessfully argued that the new injury was the result of a re-bleed from the earlier injury.⁸⁰

In another early appellate case, Janet Ostlund was convicted of second-degree murder for shaking her adopted daughter, Maria, who had

68. *See id.*

69. Hatina, *supra* note 34, at 570 n.109.

70. *See infra* Part II.B.1.

71. *See Lyons, supra* note 45, at 1112-13.

72. *See, e.g., Levenson, supra* note 50; Kieran Nicholson, *Toddler Shaken, Doctor Testifies*, DENVER POST, Sept. 8, 2000, at B2; Scheier, *supra* note 39.

73. 662 P.2d 168 (Colo. 1983).

74. *Id.* at 169.

75. *Id.*

76. *Id.*

77. *See id.* at 170. An acute hematoma is sudden, while a chronic hematoma can develop over a period of time. *See Lyons, supra* note 45, at 1110-11.

78. *Kailey*, 662 P.2d at 170.

79. *Id.*

80. *Id.*

a history of health problems at the time of adoption.⁸¹ Ostlund claimed that, while alone with Maria, she turned her back, heard a thump, and then saw Maria on the floor near the couch.⁸² The baby died from brain swelling, and there was subdural bleeding.⁸³ The state's theory, based on circumstantial evidence, was that "a violent shaking" caused Maria's injuries.⁸⁴ Each side presented six expert witnesses, who provided the primary evidence in the case.⁸⁵ Despite the minimal and circumstantial evidence against Ostlund,⁸⁶ she was convicted of second-degree murder and sentenced to 105 months in prison.⁸⁷

2. COMMONWEALTH V. WOODWARD

One of the most famous SBS cases was *Commonwealth v. Woodward*, in which Louise Woodward, a British nanny, was charged with murdering an eight-month-old boy.⁸⁸ A jury convicted Woodward of murder in the second degree, but the judge reduced the verdict to involuntary manslaughter and vacated her life sentence.⁸⁹ The judge concluded that Woodward did not act with malice—an element of second-degree murder.⁹⁰ Additionally, the judge acknowledged the possibility of another cause for the SBS-type symptoms: the child had a "pre-existing skull fracture and blood clot"⁹¹ and Woodward's rough handling of the child caused the blood clot to "re-bleed."⁹² Therefore, her actions were only "fatal because of [the child's] condition at the time."⁹³

81. *State v. Ostlund*, 416 N.W.2d 755, 757 (Minn. Ct. App. 1987).

82. *Id.*

83. *Id.*

84. *Id.* at 758.

85. *See id.* at 758-61. There were no witnesses to the incident, *id.* at 757, although several relatives testified that Ostlund had lightly shaken the child on previous occasions. *See id.* at 763.

86. The *Ostlund* court held that "[a] conviction may be based on circumstantial evidence and will be upheld if the reasonable inferences from such evidence are consistent only with the defendant's guilt and inconsistent with any rational hypothesis except that of guilt." *Id.* at 758 (citing *State v. Anderson*, 379 N.W.2d 70, 75 (Minn. 1986)).

87. *In re Welfare of M.D.O.*, 450 N.W.2d 655, 656 (Minn. Ct. App. 1990) (summarizing the *Ostlund* decision).

88. 694 N.E.2d 1277, 1281 (Mass. 1998); *see also* Phipps, *supra* note 36, at 536; Scheier, *supra* note 39, at 12.

89. *Woodward*, 694 N.E.2d at 1281.

90. *See* Phipps, *supra* note 36, at 537 (quoting *Commonwealth v. Woodward*, 7 Mass. L. Rep. 449, 452, No. Crim. 97-0433, 1997 WL 69114 at *6 (Super. Ct. 1997)).

91. *See Woodward*, 694 N.E.2d at 1287. Interestingly, the *Kailey* court had earlier rejected this theory. *See People v. Kailey*, 662 P.2d 168, 170 (Colo. 1983).

92. *Woodward*, 694 N.E.2d at 1287.

93. *Id.*

Eight years later, the case remained in the media spotlight, as lawmakers, doctors, and parents passed legislation to prevent SBS.⁹⁴

C. *The Changing Science*

Today, there is no consensus among medical professionals as to whether the symptoms that have traditionally been attributed to SBS are necessarily indicative of intentional shaking.⁹⁵ New studies cast doubt on the conclusion that subdural hematomas and retinal hemorrhages in babies are definitive signs of SBS.⁹⁶ Many doctors have rejected these traditional notions and are looking to other causes—including falls, earlier trauma, and preexisting medical conditions.⁹⁷ In addition, studies have suggested that, if a child sustains an injury, there can be a “lucid interval” between the injury and the time of death,⁹⁸ making it difficult for doctors to establish when the injury occurred. Therefore, without corroborating evidence, it is harder to determine who, if anyone, might have inflicted the injury.

1. OTHER CAUSES OF SBS SYMPTOMS

Studies have shown that findings of subdural hematomas and retinal hemorrhages are not always diagnostic of SBS.⁹⁹ A child may have preexisting disorders that can cause subdural hematomas,¹⁰⁰ including certain infections, clotting disorders, inherited disorders, coagulopathy (a

94. See MASS. GEN. LAWS ch. 111, § 24K (2006); see Levenson, *supra* note 50. This law aims to teach parents how to calm a crying baby without resorting to shaking. See *id.*

95. See, e.g., Donohoe, *supra* note 56, at 241; Lyons, *supra* note 45, at 1111-12; Scheier, *supra* note 39, at 12.

96. See, e.g., Eva Lai Wah Fung et al., *Unexplained Subdural Hematoma in Young Children: Is It Always Child Abuse?*, 44 PEDIATRICS INT’L 37, 37 (2002); Scheier, *supra* note 39, at 12; Lyons, *supra* note 45, at 1111.

97. Scheier, *supra* note 39, at 12.

98. See, e.g., Kristy B. Arbogast et al., *Initial Neurologic Presentation in Young Children Sustaining Inflicted and Unintentional Fatal Head Injuries*, 116 PEDIATRICS 180, 181 (2005); Scott Denton & Darinka Mileusnic, *Delayed Sudden Death in an Infant Following an Accidental Fall: A Report with Review in the Literature*, 24 AM. J. FORENSIC MED. & PATHOLOGY 371, 371 (2003); Mary G. Gilliland, *Interval Duration Between Injury and Severe Symptoms in Nonaccidental Head Trauma in Infants and Young Children*, 43 J. FORENSIC SCI. 723, 723 (1998).

99. See, e.g., Donohoe, *supra* note 56, at 241; Lyons, *supra* note 45, at 1111-12; Scheier, *supra* note 41, at 12.

100. See, e.g., Mark Donohoe, *Shaken Baby Syndrome (SBS) and Non-Accidental Injuries (NAI)*, Aug. 20, 2001, § 1.2.1, available at <http://www.whale.to/v/sbs.html> (giving a “framework for assessing assumptions and evidence” regarding SBS).

disease that affects the coagulation of blood), or re-bleeds of prior chronic hematomas.¹⁰¹ In addition, some studies have shown that short falls may cause acute subdural hematomas.¹⁰² Retinal hemorrhaging is another symptom that doctors often associate with SBS,¹⁰³ but it has been found in cases of accidental injury.¹⁰⁴ Subdural hematomas and retinal hemorrhages are considered primary injuries, which can then cause brain swelling.¹⁰⁵ Brain swelling “is not indicative of any specific telltale act, origin or cause” and a subdural hematoma can decrease oxygen to the brain which causes it to swell.¹⁰⁶ While doctors who believe in the traditional SBS theory agree that these symptoms alone may have other causes, they believe that the simultaneous existence of all three—without evidence of impact—is diagnostic of shaking.¹⁰⁷

Still, the possibility that other events may cause the SBS triad highlights the danger of relying solely on these symptoms to allege abuse.¹⁰⁸ This “raise[s] the possibility that virtually anyone could face years behind bars if, while in his or her care, a small child were to experience a devastating accident or the onset of an undetected illness whose symptoms resemble shaken baby syndrome’s.”¹⁰⁹ Thus, prosecutors should not charge crimes based on SBS without corroborating evidence.

In addition, biomechanical research is casting doubt on traditional SBS theories. One recent report studied the biomechanics of shaking an infant.¹¹⁰ The researchers concluded that the infant neck could not withstand the forces commonly associated with SBS without whiplash injury;¹¹¹ furthermore, they found that shaking an infant with a force below the level traditionally associated with SBS would cause severe cervical-spinal-cord or brain-stem injury.¹¹² The study suggested that

101. *See id.*; *see also* Lyons, *supra* note 45, at 1111.

102. *See* Barnes, *supra* note 45, at 86. *See generally* John Plunkett, *Fatal Pediatric Head Injuries Caused by Short-Distance Falls*, 22 AM. J. FORENSIC MED. & PATHOLOGY 1 (2001).

103. *See* Hatina, *supra* note 34, at 566.

104. P.E. Lantz et al., *Perimacular Retinal Folds from Childhood Head Trauma*, 328 BMJ 754, 756 (2004).

105. Ramsey, *supra* note 41, at 11.

106. *Id.* at 12.

107. *See, e.g.*, Letter from William H. Perloff to Troy Cross, *supra* note 59, at 3.

108. J.F. Geddes et al., *Dural Haemorrhage in Non-Traumatic Infant Deaths: Does It Explain the Bleeding in ‘Shaken Baby Syndrome’?*, 29 NEUROPATHOLOGY & APPLIED NEUROPATHOLOGY 14, 20 (2003).

109. Scheier, *supra* note 39, at 12.

110. Faris A. Bandak, *Shaken Baby Syndrome: A Biomechanics Analysis of Injury Mechanisms*, 151 FORENSIC SCI. INT’L 71, 72 (2005).

111. *Id.* at 78.

112. *Id.*

because most SBS cases do not involve spine injury, a finding of SBS-like symptoms without a corresponding cervical-spine or brain-stem injury (which is common in many SBS cases) would imply the possibility of other causes for the injury.¹¹³ Other studies have also suggested that short falls can cause the triad by measuring the acceleration of a head falling onto various surfaces from short distances.¹¹⁴

Courts are becoming aware of the new scientific research surrounding SBS. In *Commonwealth v. Davis*, a Kentucky circuit court acknowledged that the traditional SBS theory is under debate and is not a certain science.¹¹⁵ The court concluded that the theory is accepted in the clinical medical community, but not necessarily in the general scientific community.¹¹⁶ In other words, the physicians who treat the babies “routinely diagnose SBS” when they observe the triad, but “this diagnosis is based on inconclusive research conducted in the scientific research community.”¹¹⁷ This is problematic because it amounts to the physician making a legal conclusion and not a medical opinion supported by science.¹¹⁸

2. THE EXISTENCE OF LUCID INTERVALS

One can only identify the alleged perpetrator after determining when the injuries occurred. Magnetic resonance imaging is the most accurate method for determining the timing of injuries, but it can only provide a rough range of hours, at best.¹¹⁹ Furthermore, there is considerable controversy in the medical community as to whether a child can appear normal after sustaining subdural hematomas, retinal hemorrhaging, or massive brain swelling. Many doctors believe that a baby would not appear lucid after being shaken and would deteriorate rapidly after the injury.¹²⁰ Recent studies, however, have concluded that infants can have a “lucid interval” after suffering an injury that leads to

113. *Id.*

114. *See Scheier, supra* note 39, at 26.

115. No. 04-CR-205, at 21 (Greenup County Cir. Ct. Apr. 17, 2006).

116. *See id.* at 23.

117. *Id.* at 22.

118. *See id.* at 23.

119. Barnes, *supra* note 45, at 89.

120. Marcus B. Nashelsky & Jay D. Dix, *The Time Interval Between Lethal Infant Shaking and Onset of Symptoms: A Review of the Shaken Baby Syndrome Literature*, 16 AM. J. FORENSIC MED. & PATHOLOGY 154, 154 (1995) (reviewing medical literature that expresses this view and mentioning the lack of study into the length of the interval).

rapid deterioration.¹²¹ A 2005 study of children under four years of age suggested that, although it is rare, an infant or toddler can sustain a fatal head injury yet appear lucid to hospital staff before death.¹²² There was an overrepresentation of young children in this category: six of the children in the study¹²³ were lucid at admission, and five of those were less than two years old.¹²⁴ Four of the six lucid children “sustained a subdural hematoma as part of their head injury.”¹²⁵

One pathologist noted a case study in which a thirteen-month-old was “irritable, sleepy, and vomiting.”¹²⁶ The infant had difficulty breathing the next morning and doctors pronounced her brain dead that night.¹²⁷ Her autopsy showed subdural and retinal hemorrhages and brain swelling.¹²⁸ The symptoms from the severe brain injury were latent for several hours, and medical professionals did not notice anything particularly abnormal.¹²⁹

In 2000, an Illinois appellate court overturned an SBS conviction based on the timing of the infant’s injuries.¹³⁰ In that case, while babysitting a sickly five-month-old, Donna Gist—a caretaker hired so that the parents could sleep—went to the bathroom and returned to find that the infant was not breathing.¹³¹ The autopsy showed that he had the classic triad of symptoms and bruising, but the medical examiner testified that she could only determine that his injuries occurred within twenty-four hours of his death.¹³² An expert witness for the prosecution testified that the injuries were inflicted very close to the time of death because there was little brain swelling,¹³³ however, the defendant’s doctor testified that she believed the infant sustained brain injury well before the defendant arrived that night.¹³⁴

121. See, e.g., Arbogast et al., *supra* note 98, at 181; Denton & Mileusnic, *supra* note 98, at 374.

122. Arbogast et al., *supra* note 98, at 184.

123. The study included 314 children: 37 percent sustained inflicted injuries, 13 percent fell, and 49 percent were in motor-vehicle crashes. *Id.* at 181. Therefore, the study did not exclusively deal with SBS cases.

124. *Id.*

125. *Id.*

126. Robert W. Huntington, III, Letter to the Editor, *Symptoms Following Head Injury*, 23 AM. J. FORENSIC MED. & PATHOLOGY 105 (2002).

127. *Id.*

128. *Id.*

129. *Id.*

130. State v. Gist, No. 2-98-1103 (Ill. App. Ct. May 2, 2000).

131. *Id.* at 7.

132. See *id.* at 9-11.

133. *Id.* at 10-11.

134. *Id.* at 12-13.

Gist was convicted of first-degree murder and initially sentenced to life in prison, but the trial court reduced the sentence to fifty years.¹³⁵ The appellate court reversed her conviction because more than one person had the opportunity to cause the injuries that killed the child.¹³⁶

III. THE ROLE OF MEDICAL EXPERTS IN SBS TRIALS

“Beyond a reasonable doubt” and “reasonable medical certainty” are common phrases in criminal trials. The former refers to legal certainty in a conviction,¹³⁷ while the latter involves certainty in a medical diagnosis.¹³⁸ This difference has serious implications for SBS cases. Medical experts play an important role in these cases, but the testimony of these doctors often goes beyond the scope of medical experts in criminal trials.

A. *Legal Standard—Beyond a Reasonable Doubt*

“Beyond a reasonable doubt” is the constitutional burden of persuasion by which the prosecution must prove “all the essential elements of guilt.”¹³⁹ While it is understood to be the standard in criminal law, it is unclear exactly what is meant by “reasonable doubt.”¹⁴⁰ This standard exists to protect innocent people from being convicted of crimes.¹⁴¹ The Supreme Court of the United States held that

[t]he accused during a criminal prosecution has at stake interests of immense importance, both because of the possibility that he may lose his liberty upon conviction and because of the certainty that he would be stigmatized by the conviction. Accordingly, a society that values the good name and freedom of every individual should not condemn a man for

135. *Id.* at 14.

136. *Id.* at 15. In addition, the court noted that, even if it believed the doctor who placed the infliction of the injuries closer to the death, the state did not establish that the parents could not have committed the crime; they were only fourteen steps away. *Id.* at 17.

137. *In re Winship*, 397 U.S. 358, 361 (1970).

138. See Jeff L. Lewin, *The Genesis and Evolution of Legal Uncertainty about “Reasonable Medical Certainty,”* 57 MD. L. REV. 380, 382 (1998)

139. *In re Winship*, 397 U.S. at 361-62.

140. See Steve Sheppard, *The Metamorphoses of Reasonable Doubt: How Changes in the Burden of Proof Have Weakened the Presumption of Innocence*, 78 NOTRE DAME L. REV. 1165 (2003).

141. See *id.* at 1166.

commission of a crime when there is reasonable doubt about his guilt.¹⁴²

Massachusetts Supreme Judicial Court Chief Justice Lemuel Shaw once said in a jury instruction that the reasonable-doubt standard is far greater than the standard of “more likely than not,” and must convincingly establish the truth of the fact to a moral certainty.¹⁴³ Reasonable doubt was “the converse of the sum of both reasonable certainty and moral certainty,” and it was the doubt that a reasonable person would hold.¹⁴⁴ The juror did not need to specifically articulate the nature of the doubt to establish its reasonableness.¹⁴⁵ Courts, however, gradually began adopting jury instructions that required the juror to provide an articulated reason for the doubt.¹⁴⁶ In addition, courts slowly phased out the “moral certainty” language.¹⁴⁷ The ambiguity regarding moral certainty and the requirement of articulation dangerously shifted the standard for the jury by altering the presumption of innocence.¹⁴⁸

B. Reasonable Medical Certainty

While the jury must find guilt beyond a reasonable doubt, expert medical witnesses must base their opinions on a “reasonable medical certainty.”¹⁴⁹ Thus, during a physician’s testimony, attorneys often ask if the physician can identify the cause of an injury or death to a “reasonable medical certainty.”¹⁵⁰ Although this standard mostly applies to civil cases, doctors in criminal cases must also meet it.¹⁵¹ Unfortunately, the

142. *Winship*, 397 U.S. at 363-64.

143. *See Sheppard*, *supra* note 140, at 1200 (quoting *Commonwealth v. Webster*, 59 Mass. (5 Cush.) 295, 320 (1850)).

144. *Id.* at 1201.

145. *Id.*

146. *Id.* at 1210-11 (citing *State v. Jefferson*, 10 So. 199, 200 (La. 1891)).

147. *See Victor v. Nebraska*, 511 U.S. 1, 16-17 (1994) (“At the same time, however, we do not condone the use of the phrase [moral certainty]. As modern dictionary definitions of moral certainty attest, the common meaning of the phrase has changed since it was used in the *Webster* instruction, and it may continue to do so to the point that it conflicts with the *Winship* standard. Indeed, the definitions of reasonable doubt most widely used in the federal courts do not contain any reference to moral certainty.”); *see also Sheppard*, *supra* note 140, at 1222-23.

148. *See Sheppard*, *supra* note 140, at 1239-40 (“The defendant in the face of the modern reasonable-doubt instruction must convince the jury of his innocence.”).

149. *See Lewin*, *supra* note 138, at 382; *see also Addington v. Texas*, 441 U.S. 418, 430 (1979) (deeming this the appropriate standard). Courts and witnesses use the term “reasonable medical certainty” interchangeably with “reasonable degree of medical certainty.” *Id.*

150. *See Lewin*, *supra* note 138, at 418-20.

151. *See Barnes*, *supra* note 45, at 90.

meaning of this commonly used phrase is difficult to articulate.¹⁵² the “reasonable medical certainty” standard is probably not as high as the “beyond a reasonable doubt” standard,¹⁵³ which could be confusing in SBS cases.

Many lawyers assume that “reasonable medical certainty” is a medical term, but physicians only use it in litigation, and not in everyday practice.¹⁵⁴ Furthermore, physicians do not have one particular definition for the term¹⁵⁵: some consider it to be near the civil burden of proof of “more probable than not,”¹⁵⁶ while others consider it to be a “near absolute certainty,” closer to the higher criminal standard.¹⁵⁷

This confusion has led many physicians to apply their own understanding of the phrase to criminal cases. For example, in *Burke v. Town of Walpole*, the prosecution in a murder trial used a forensic odontologist who analyzed bite marks.¹⁵⁸ He used the phrase “reasonable degree of scientific certainty,” which he interpreted to be a “high degree of probability.”¹⁵⁹ He used those two terms interchangeably according to the “Bite-Mark Terminology Guidelines,” but clarified that he meant that there was “no reasonable or practical possibility that someone” other than the defendant made the bite mark.¹⁶⁰ In other words, the bite-mark guidelines equated “reasonable medical certainty” with a high standard similar to “beyond a reasonable doubt.”¹⁶¹ Despite the higher standard that the guidelines intended, the First Circuit Court of Appeals used a lower “probable cause” standard in that case.¹⁶²

152. See Lewin, *supra* note 138, at 398; Glenn E. Bradford, *Dissecting Missouri's Requirement of "Reasonable Medical Certainty,"* 57 J. MO. BAR 136, 142 (2001). Black's Law Dictionary defines “reasonable medical certainty” as “[i]n proving the cause of an injury, a standard requiring a showing that the injury was more likely than not caused by a particular stimulus, based on the general consensus of recognized medical thought.” BLACK'S LAW DICTIONARY 1294 (8th ed. 2004).

153. See Bradford, *supra* note 152, at 141.

154. Lewin, *supra* note 138, at 402; Bradford, *supra* note 152, at 137-38.

155. Lewin, *supra* note 138, at 402; Bradford, *supra* note 152, at 141 (“It apparently means whatever the testifying physician thinks it means.”).

156. Barnes, *supra* note 45, at 90 (“The testimony offered by the expert witness must be based upon a reasonable degree of medical or scientific certainty. That is, in the judgment of the expert witness, the causal relationship between an event and the outcome is probable, or more likely than not. The quality of the evidence, therefore, rises above speculation and conjecture and may be considered by the jury.”).

157. Lewin, *supra* note 138, at 402-03 & n.88.

158. 405 F.3d 66, 73 (1st Cir. 2005).

159. *Id.* at 90.

160. *Id.* at 90-91.

161. See *id.* at 91.

162. *Id.*; see also *Draper v. United States*, 358 U.S. 307, 313 (1959) (“Probable cause exists where ‘the facts and circumstances within [the arresting officers’] knowledge and of which they had reasonably trustworthy information [are] sufficient in themselves

Because the term is amorphous, medical experts have wide discretion in testifying about issues of probability.¹⁶³ To make matters worse, courts and attorneys have not come to a consensus on what the commonly used phrase means.¹⁶⁴ Therefore, not only are testifying doctors suggesting their own interpretations,¹⁶⁵ but the attorneys examining them and the judges and jurors interpreting the evidence may also have different understandings of the meaning of “reasonable medical certainty.”

Commentators have suggested that the term seeks to permit medical experts to give their opinions without an absolute certainty, so as not to impose on the fact-finder’s role.¹⁶⁶ The phrase has expanded beyond its original intention, and most states have incorporated it into both civil and criminal statutes.¹⁶⁷ Experts have even used the term “medical certainty” in DNA cases,¹⁶⁸ which is troubling. DNA testing does not provide a certain match to an individual, but instead gives “the statistical probability that a person picked randomly from the population would have a DNA profile identical to the DNA profile generated from the forensic sample.”¹⁶⁹ In *Howard v. State*, the Supreme Court of Mississippi noted that an expert testifying about DNA evidence must make this distinction clear.¹⁷⁰ The court questioned the validity of a bite-mark expert’s claim that the bite marks found on the victim matched the defendant to a “reasonable medical certainty,” when even DNA experts could not make such a claim.¹⁷¹

The lack of a stable definition has grave consequences because doctors commonly use the phrase when testifying in SBS cases.¹⁷² If they

to warrant a man of reasonable caution in the belief that’ an offense has been or is being committed.” (quoting *Carroll v. United States*, 267 U.S. 132, 162 (1925))).

163. Bradford, *supra* note 152, at 136.

164. Lewin, *supra* note 138, at 403-06.

165. *Id.* at 402.

166. Bradford, *supra* note 152, at 142.

167. Lewin, *supra* note 138, at 490-92.

168. See, e.g., *State v. Hunt*, 2004 WI App 68, ¶ 3, 271 Wis. 2d 818, 677 N.W.2d 732 (“A DNA test subsequently established to a high degree of medical certainty that Hunt was the father of the baby.”); *United States v. Hammer*, 404 F. Supp. 2d 676, 762 (M.D. Pa. 2005).

169. *Howard v. State*, 853 So. 2d 781, 803 (Miss. 2003).

170. *Id.*

171. *Id.* at 803-04 (“How can Dr. West testify outright that these marks were left by this individual; yet an expert testifying to DNA evidence (the most special and unique makeup of our bodies) is not allowed to testify that the blood is the defendant’s or the victim’s, but rather has to give a statistical probability regarding the likelihood that the blood is the defendant’s or victim’s? This makes no sense.”).

172. See, e.g., Letter from William H. Perloff to Troy Cross, *supra* note 59, at 3; *State v. Ostlund*, 416 N.W.2d 755, 758-59 (Minn. Ct. App. 1988).

are using it as the equivalent of the “more likely than not” standard (or the First Circuit’s even lower probable-cause standard), however, that should not be enough to sustain a conviction.¹⁷³ Even if these doctors equate the term with a higher standard, the questionable validity of the triad makes medical certainty a difficult standard to reach.¹⁷⁴ In an SBS case based only on medical testimony, such testimony should make it clear to the jury that there cannot be absolute certainty.

C. *Role of Doctors in SBS Cases*

The prosecution’s doctors usually testify that the child had the traditional triad of symptoms, and explicitly state that only SBS could have caused the injuries.¹⁷⁵ They also estimate a time range in which the injury occurred.¹⁷⁶ If a defendant attributes the baby’s injuries to an accidental fall,¹⁷⁷ the prosecution’s witness usually refutes that argument by stating that the triad of injuries could only come from a violent shaking.¹⁷⁸ Recent studies, however, suggest that short falls can cause SBS-like symptoms.¹⁷⁹ It is not appropriate for medical experts to guess what specifically occurred when the child was injured.

Sometimes, in estimating when the child sustained its injuries, doctors look to information other than medical findings.¹⁸⁰ For example, they may incorporate witness statements about the child’s condition before the injury,¹⁸¹ and may consider whether the alleged perpetrator

173. See Bradford, *supra* note 152, at 141.

174. See *supra* Part II.C.

175. See, e.g., *People v. Wong*, 619 N.E.2d 377, 380 (N.Y. 1993) (“An autopsy performed on the child revealed that he had died as a result of internal brain injuries, including ruptured blood vessels, that could only be attributed to ‘shaken baby syndrome.’”).

176. Telephone Interview with Patrick Turski, Neuroradiologist, Univ. of Wis.-Madison (Nov. 16, 2005); see Barnes, *supra* note 45, at 91.

177. See Sophia Kazmi, *Lawyer Says Caregiver Did Not Injure Baby Girl*, CONTRA COSTA TIMES (Walnut Creek, Cal.), Nov. 10, 2005 (“Doctors commonly hear an excuse for injuries, such as the baby fell from a bed or sofa.”); see also Sharp, *supra* note 9; Rachel McCormick, *Ex-Raider Charged with Child Abuse*, J. TIMES (Racine, Wis.), Oct. 15, 2005, at 13A; *Baby Sitter Rejects Plea Deal in Shaken Baby Case*, POST-CRESCENT (Appleton, Wis.), Dec. 2, 2005, at 1C.

178. See, e.g., Sharp, *supra* note 9; *State v. Ostlund*, 416 N.W.2d 755, 758 (1988) (“It is inconceivable that these injuries could have occurred from a fall off a couch.”).

179. See, e.g., Plunkett, *supra* note 102, at 10.

180. Letter from William H. Perloff to Troy Cross, *supra* note 59, at 3.

181. See, e.g., *id.* (referring to witness statements that the child was “playing normally” and then was later “described as abnormal,” and the defendant’s statements defendant that she “possibly” shook her son).

has a history of being abusive or experienced abuse as a child.¹⁸² In addition, in reporting their findings to the prosecutor, these experts may already know the prosecution's main suspect and may review police reports before making a final conclusion.¹⁸³ The potential bias that could result is similar to a psychologist's "examiner bias,"¹⁸⁴ which can occur in SBS cases when doctors examine information outside of the medical records and form a hypothesis about the perpetrator of the assumed abuse before reporting their findings.¹⁸⁵

Medical experts should be extremely careful in diagnosing SBS in criminal cases,¹⁸⁶ and should limit their examination to medical findings when making conclusions about the cause of death. This line is difficult to draw because doctors may need to extract information from the caregiver or the police to treat the child effectively. Such information, however, should not be used in forming expert opinions about the cause of the injuries.

It is particularly hard to obtain quality evidence in SBS cases.¹⁸⁷ According to critics of the traditional SBS theory, doctors may want to protect children, but they should not provide opinions that are not medically sound.¹⁸⁸ Experts need to be aware of other conditions that may mimic child abuse,¹⁸⁹ and they should rule out every other possibility before making any accusations.¹⁹⁰ The role of an expert is to assist the trier of fact in understanding the evidence;¹⁹¹ in SBS cases, their role should be to state their medical findings and allow the jury to

182. Interview with Norman Fost, Pediatrician, Univ. of Wis.-Madison, in Madison, Wis. (Nov. 1, 2005).

183. See, e.g., Letter from William H. Perloff to Troy Cross, *supra* note 59, at 1.

184. See Louis B. Schlesinger, *A Case Study Involving Competency to Stand Trial: Incompetent Defendant, Incompetent Examiner, or "Malingering by Proxy"?*, 9 PSYCHOL. PUB. POL'Y & L. 381, 385 (2003). Researchers found that clinical impressions among psychologists were influenced by various patient traits. See *id.* They then would ask specific questions to support their hypothesis. *Id.* It has also been noted that an examiner bias is common in forensic sciences. See *id.*; Peter J. Neufeld, *The (Near) Irrelevance of Daubert to Criminal Justice and Some Suggestions for Reform*, 95 AM. J. PUB. HEALTH S107, S111 (Supp. I 2005). An examiner might have been exposed to "irrelevant case information, increasing the likelihood of a false positive." *Id.*

185. See Letter from William H. Perloff to Troy Cross, *supra* note 59, at 1; see also Schlesinger, *supra* note 184, at 385 ("Here, the forensic psychologist finds in the defendant (nonexistent) signs, symptoms, or disorders that were initially suggested by the referring attorney. . . . The effect, which could be called 'malingering by proxy,' derives from the forceful opinions of the legal advocate, which can be quite contagious.").

186. See Geddes et al., *supra* note 108, at 20.

187. See Geddes & Plunkett, *supra* note 44, at 719-20.

188. See *id.*

189. See Barnes, *supra* note 45, at 91.

190. See *id.* at 91-92.

191. See FED. R. EVID. 702.

find the facts¹⁹²—particularly the identification of the alleged perpetrator and conclusions about whether a crime actually occurred.

By using the triad of symptoms to diagnose SBS, the “physician is diagnosing the legal conclusion that someone has battered [a] child without manifest signs of bruising, broken bones, or other evidence.”¹⁹³ Furthermore, the conclusions are circular: SBS is diagnosed based on the triad of symptoms because prior defendants have been convicted under an SBS theory when a child presents with the triad.¹⁹⁴

IV. LOOKING TO OTHER COUNTRIES FOR SOLUTIONS

Courts in other countries are also dealing with SBS cases and the emergence of conflicting science. For example, the courts in England have reexamined SBS convictions that were supported only by medical.¹⁹⁵ In *R v. Cannings*, the Court of Appeals Criminal Division—one of the highest courts in England—overturned Angela Cannings’s conviction of killing two of her children by smothering.¹⁹⁶ After reading expert reports, the court concluded “that a great deal about death in infancy, and its causes, remains as yet unknown and undiscovered.”¹⁹⁷ The Court held that, when there is conflicting medical testimony presented at trial, the jury cannot proceed without additional evidence.¹⁹⁸ Following this judgment, the Attorney General set up a group to review convictions in alleged SBS cases.¹⁹⁹ As a result, the committee considered 297 cases.²⁰⁰

The Court then heard four appeals together,²⁰¹ and found that “[t]he common thread running through each of these four appeals is a submission that since these convictions medical research has developed to the extent that there is now ‘fresh evidence’ which throws doubt on

192. See FED. R. EVID. 702 advisory committee’s note.

193. Commonwealth v. Davis, No. 04-CR-205, at 21 (Greenup County Cir. Ct. Apr. 17, 2006).

194. Le Fanu, *supra* note 65, at 251.

195. Sam Lister, *Q & A: Shaken Baby Syndrome*, TIMES ONLINE, Feb. 14, 2006, <http://www.timesonline.co.uk/tol/news/uk/article546383.ece>.

196. *R v. Cannings*, [2004] EWCA (Crim) 1, ¶¶ 2, 4, 2 Crim. App. 7 (H.L.) (appeal taken from Winchester).

197. *Id.* ¶ 22.

198. *Id.* ¶ 178.

199. *R v. Harris & Ors*, [2005] EWCA (Crim) 1980 ¶ 4 (Eng.); Lister, *supra* note 59.

200. Lister, *supra* note 59.

201. *Harris & Ors*, [2005] EWCA (Crim) 1980, at ¶ 1.

the safety of each conviction.”²⁰² In *R v. Harris*, the Court quashed Loraine Harris’s manslaughter conviction.²⁰³ Although the experts for the state asserted that he died from being shaken,²⁰⁴ the Court concluded that “the mere presence of the triad on its own cannot automatically or necessarily lead to a diagnosis of [SBS].”²⁰⁵ In *R v. Faulder*, Michael Faulder was convicted of causing grievous bodily harm to a seven-week-old boy.²⁰⁶ He claimed that he had accidentally dropped the baby.²⁰⁷ There were no retinal hemorrhages, but there were subdural hemorrhages and brain swelling.²⁰⁸ The infant made a full recovery,²⁰⁹ and the Crown ended up changing its case from arguing that Faulder shook the infant to arguing that he delivered multiple blows to its head.²¹⁰ The Court quashed the conviction in part because defense experts proposed alternative explanations for the injury.²¹¹

These appeals tested the reliability of expert evidence used in SBS cases, and “could lead to a rethink in the way such cases are treated.”²¹² The Court examined the triad, the degree of force necessary to cause SBS-like symptoms, and biomechanics involved with shaking infants,²¹³ and reiterated that changes in science “should not be kept from the Court.”²¹⁴ It went on to stress the obligations of expert witnesses, including that the expert “should never assume the role of an advocate.”²¹⁵ In the end, the Court noted that it depended on medical witnesses to provide information on the issues involved in these types of cases.²¹⁶ The *London Times* predicted that there would be demands in the future that courts analyze SBS cases individually on the evidence, and not on the questionable SBS triad.²¹⁷

The Court recognized that the triad should not always lead to a conclusion of SBS, and that courts should examine the facts on a case-

202. *Id.* ¶ 3. These four appeals constituted a test case regarding the reliability of medical evidence in SBS cases. Lister, *supra* note 59.

203. *Harris & Ors*, [2005] EWCA (Crim) 1980, at ¶ 153.

204. *Id.* ¶ 13.

205. *Id.* ¶ 152.

206. *Id.* ¶ 44.

207. *Id.* ¶ 45.

208. *Id.* ¶¶ 222-23.

209. *Id.* ¶ 44.

210. *Id.* ¶ 250.

211. *Id.* ¶ 266.

212. Lister, *supra* note 59.

213. *Harris & Ors*, [2005] EWCA (Crim) 1980, at ¶¶ 56-100.

214. *Id.* ¶ 270.

215. *Id.* ¶ 271.

216. *Id.* ¶ 275.

217. Lister, *supra* note 59.

by-case basis.²¹⁸ Graham Zellick, the chair of England's Criminal Cases Review Commission, has argued that the medical evidence is too complicated for juries in SBS cases, leading to the convictions of innocent people.²¹⁹ He has suggested that the judge hear the medical evidence away from the jury and then direct the jury on what to make of the evidence.²²⁰ This is similar to judicial direction of juries on the application of law.²²¹ SBS cases are unique in this regard because of the complexity of the science and the medical debate.²²²

The Supreme Court of Western Australia has also recognized the controversy surrounding the SBS triad and convictions without corroborating evidence.²²³ In one case, a baby exhibited the constellation of symptoms associated with SBS in addition to other injuries.²²⁴ The prosecution argued that the defendant had violently shaken the child to death.²²⁵ Professor John Hilton, an expert of pathology, testified for the defense that the proposition that only SBS can cause such injuries "is highly suspect in any individual case unless there is a reliable witness."²²⁶ The court interpreted this to mean that, without an eyewitness, evidence of external injuries such as bruising or a confession, a conclusion of SBS is "highly suspect."²²⁷ The trial judge held that he could not conclude beyond a reasonable doubt that the child had been shaken to death,²²⁸ and the appellate court agreed.²²⁹ There have been several other recent Australian cases in which suspected child abusers were acquitted.²³⁰

Canadian courts are also permitting changes in science to influence their decisions. In one case, a child died of brain injury in Ontario.²³¹ Although there was no immediate autopsy, Charles Smith, a pediatric pathologist, exhumed the body three weeks later, conducted an autopsy, and concluded that a twelve-year-old babysitter had killed the baby by

218. N. Stoodley, *Controversies in Non-Accidental Head Injury in Infants*, 79 BRIT. J. RADIOLOGY 550, 553 (2006).

219. Dyer, *supra* note 43.

220. *Id.*

221. *Id.*

222. *See id.*

223. R v. Court [2003] WASCA 308.

224. *Id.* ¶ 9.

225. *Id.* ¶ 11.

226. *Id.*

227. *Id.* ¶ 74.

228. *Id.* ¶ 46.

229. *Id.* ¶ 217.

230. Guilliatt, *supra* note 33, at 19-22.

231. Jane O'Hara, *The Babysitter Didn't Do It*, MACLEAN'S, May 14, 2001, at 62.

shaking it.²³² Smith, however, did not follow “basic procedures for arriving at his conclusion,”²³³ and also ignored a deep bruise on the forehead, which corroborated the babysitter’s claim of an accidental fall.²³⁴ At trial, Smith stated that the baby had to have been shaken to death because it could not have died from a short fall.²³⁵ The twelve-year-old was eventually acquitted,²³⁶ and the judge advised that Smith stay abreast of the current research on SBS, explaining that a doctor should always consider possibilities other than shaking.²³⁷

An independent team of experts is thoroughly examining forty homicides and suspicious deaths that Smith investigated at the Hospital for Sick Children since 1991.²³⁸ Until recently, Smith was a powerful medical expert in Ontario, who bragged about getting more convictions than other experts “against child killers.”²³⁹ He was a persuasive witness and was Ontario’s “top forensic expert on suspicious child deaths” for over a decade.²⁴⁰ Now, judges and medical authorities have criticized him for jumping to conclusions and for tardy reporting.²⁴¹ There is significant doubt about his conclusions in more than one thousand autopsies.²⁴²

Finally, researchers in Hong Kong and Japan are also taking a careful look at SBS cases.²⁴³ In Hong Kong, if there is suspicion of SBS—regionally referred to as nonaccidental injury—then pediatricians, social workers, police, schoolteachers, and other medical specialists hold a case conference to discuss the findings and decide whether the baby

232. *See id.*

233. *Id.* He did not obtain X-rays of the body, speak with the doctor who operated on the baby, or examine the tissue under a microscope before making a diagnosis. *Id.*

234. *Id.*

235. *Id.* He said “there is simply no doubt. There is only one conclusion I can come to.” *Id.*

236. *Id.* Her father sold his home and spent over \$150,000 for her defense, which brought in nine experts to refute Smith. *Id.*

237. *Id.*

238. Kirk Makin, *Ontario Orders Pathologist’s Work Reviewed*, GLOBE & MAIL (Can.), June 8, 2005, at A8.

239. Jane O’Hara, *Dead Wrong*, MACLEAN’S, May 14, 2001, at 54, 55.

240. *Id.*

241. Makin, *supra* note 238.

242. *See id.* O’Hara, *supra* note 231, at 57. Smith later left Ontario and found work in Saskatchewan, but when he applied for his license he did not disclose the Ontario investigation. *Pathologist Reprimanded by Sask. College*, CBC NEWS, Feb. 5, 2007, <http://www.cbc.ca/health/story/2007/02/05/smith-reprimand.html>. His Saskatchewan license was then revoked, and he has reapplied. *Id.*

243. *See* Fung et al., *supra* note 96, at 41.

was shaken.²⁴⁴ They also create a plan for its future welfare.²⁴⁵ In one such instance, a child showed acute subdural hematomas and retinal hemorrhages, which appeared to be caused by SBS.²⁴⁶ The family provided “good social support and the mother was mature and emotionally stable,” and did not seem suspicious.²⁴⁷ The members of the conference debated about whether falling onto a mattress could have produced such symptoms, and concluded that the cause was not SBS.²⁴⁸ If the mother had been a drug addict or a single parent, the conclusion might have been different.²⁴⁹ “[y]oung parents, unstable family situations, low socioeconomic status and disability of the child are well known risk factors for [SBS].”²⁵⁰

A Japanese study concluded that retinal hemorrhages and a subdural hematoma with no external signs of injury were usually attributed to accidental or trivial head injury, while subdural hemorrhages associated with signs of external trauma to the face or head were commonly found in child-abuse cases.²⁵¹ Additionally, subdural hematomas and retinal hemorrhages may develop from minor injuries or “casual shaking.”²⁵² According to some commentators, Hong Kong’s method of holding conferences²⁵³ in cases of unexplained subdural hematomas—even without a history of abuse—may “run the risk of damaging the lives of innocent families, in [an] attempt to prevent further injury to this or other children.”²⁵⁴

244. *Id.* at 40.

245. *Id.*

246. *Id.*

247. *Id.*

248. *Id.*

249. *See id.* at 40-41.

250. *Id.* at 41. This is obviously problematic because racial and class bias may influence a diagnosis. In the United States, courts may determine that certain defendants do not fit the “profile” for SBS cases. *See, e.g.,* *Smith v. Mitchell*, 437 F.3d 884, 889 (9th Cir. 2006) (“Grandmothers, especially those not serving as the primary care-takers, are not the typical perpetrators. . . . [T]here was no evidence of any precipitating event that might have caused the Petitioner to snap and assault her grandson. She was not trapped in a hopeless situation with a child she did not want or love. Nor was she forced to single-handedly care for a baby that had been crying all day and all night.”).

251. Fung et al., *supra* note 96, at 41.

252. *Id.*

253. Eva Lai Wah Fung stated that these case conferences were arranged because of “the western experience.” *Id.* She mentioned that western doctors who are concerned that child abuse is underdiagnosed question the Japanese study’s description of an “infantile acute subdural hematoma” that can be caused by minor head trauma. *Id.*

254. *Id.*

V. CONCLUSION

There is no doubt that child abuse exists and that the perpetrators must be charged with these crimes. Violent shaking may cause serious injury or death in infants, but the legal system should not convict people based exclusively on disputed medical evidence. If there is no corroborating evidence—such as an eyewitness testimony, a confession,²⁵⁵ a history of abuse, or external injuries—then such disputed medical evidence should not overcome a reasonable doubt.

There is growing debate in the medical community as to whether the triad may have other causes. Jennian Geddes has suggested that the triad should not be called SBS at all, but “infantile encephalopathy with subdural and retinal bleeding.”²⁵⁶ This alternative name accurately describes the medical condition, and does not imply that someone committed a violent act.²⁵⁷ SBS can invoke an emotional response because of the tragedy of an infant’s death.²⁵⁸ Once jurors hear the term “shaken baby syndrome” in the courtroom, they may be quick to jump to conclusions about the defendant.

Like Smith, experts for the prosecution in U.S. SBS cases likely consider themselves to be advocates for child victims. SBS cases illustrate the emotional controversy, because “child protection [is] a field in which emotion often threatens to overwhelm scientific objectivity.”²⁵⁹ One defense lawyer in Australia tried to retain medical experts for a trial and an ophthalmologist refused to help her, stating “I’m on the baby’s side.”²⁶⁰ Some doctors testify for the prosecution in many SBS cases, possibly pursuing their own agendas instead of basing their opinions solely on objective medical evidence.²⁶¹ Any such conclusions about how the baby received the injuries or who caused them could greatly prejudice the jury.

Experts should also be prohibited from looking at nonmedical documents. Rule 703 of the Federal Rules of Evidence states that an expert may base an opinion on facts or data available at or before the

255. Even a confession is disconcerting because many caregivers might admit to shaking the child when they were frantically trying to revive it after it was not breathing. Lyons, *supra* note 45, at 1129-30.

256. Geddes et al., *supra* note 108, at 20.

257. *See id.*

258. *See Ramsey, supra* note 41, at 2.

259. Guilliat, *supra* note 33, at 19.

260. *Id.*

261. Christopher M. Milroy, Editorial, *Medical Experts and the Criminal Courts*, 326 *BMJ* 294, 294 (2003) (“Concerns have been raised where an expert only ever appears for the prosecution or the defence and about experts who seem to be pursuing a sociopolitical agenda not based on objective evidence.”).

hearing.²⁶² The purpose of this rule is to broaden the basis for opinions,²⁶³ so keeping experts from considering police reports or stories from the caregiver might not be feasible.²⁶⁴ Doctors should not rely on such evidence, however, in making their conclusions.

Ultimately, doctors should not use the term “shaken baby syndrome” in courts at all, because it conjures up an image of abuse and violence and merely represents a legal conclusion that attempts to describe what happened to the baby. Experts cannot testify that the child died from SBS—or when it was shaken—with “reasonable medical certainty,” particularly when there is no consensus in the medical community. Instead, medical experts should only describe the baby’s symptoms and medical history, and clarify that a conclusion cannot be made to a “reasonable medical certainty.”

Recognizing that the triad is not necessarily diagnostic of SBS, the Court of Appeal of England wisely reexamined SBS cases in which there was no corroboration of the medical evidence.²⁶⁵ Charges of SBS must have corroboration because the triad of symptoms cannot meet the high standard of “beyond a reasonable doubt.” Courts in some other countries are realizing the risk of wrongful convictions and taking important steps to remedy the problem by examining other causes of the symptoms and requiring corroborating evidence.

Prosecutors, therefore, should not charge anyone with a crime based on SBS without corroborating evidence. The existence of the triad of symptoms alone is insufficient to support a conviction, and should not meet the “probable cause” standard.²⁶⁶ The public concern with infant deaths, however, may pressure prosecutors to continue charging in these cases.²⁶⁷

In addition, trial judges should dismiss cases that do not have corroborating evidence. Again, this is probably not feasible because of the tragedy involved and the public’s interest in holding people

262. FED. R. EVID. 703. The Advisory Committee notes to the rule emphasize that a physician may rely on data presented outside of the court, including “statements by patients and relatives, reports and opinions from nurses, technicians and other doctors, hospital records, and X-rays.” FED. R. EVID. 703 advisory committee’s note.

263. *Id.*

264. Certain instances may require inquiries about what happened to the baby for treatment purposes, such as how long it was not breathing, or the signs and symptoms observed by the caregiver. *See supra* Part III.C.

265. *R v. Harris & Ors* [2005] EWCA Crim 1980.

266. *Cf. Draper v. United States*, 358 U.S. 307, 313 (1959).

267. There are even prosecutors that are known to be experts on prosecuting SBS cases. *See Julie Bykowitz, Father Acquitted in Baby’s Death*, BALT. SUN, Feb. 8, 2007, at 1B (“[T]he prosecutor, Assistant State’s Attorney Mary-Ann Burkhart, is a national expert on how to prosecute shaken-baby syndrome cases.”).

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accountable for infant deaths. In England, while Zellick's idea of having only the judge hear the medical evidence²⁶⁸ is appealing, a judge is not necessarily in a better position than the jury to understand such disputed and complicated medical evidence.

Finally, and perhaps most feasibly, given the current climate, state legislatures should set up taskforces to examine supposed SBS cases more thoroughly. Instead of replicating Hong Kong's case conferences, implementing an independent taskforce of doctors, scientists, judges, lawyers, and child-abuse specialists would allow examination of all arguments and establishment of standards for cases in which the baby only suffered from the triad of symptoms. This taskforce could look to other countries and studies from various medical fields—including pathology, neurology, ophthalmology, pediatrics, and biomechanics—in coming to a conclusion about how to handle such cases. Because medical professionals disagree on the merits of the SBS triad and whether such injuries can be accurately timed, courts must adapt to changes in the medical community.²⁶⁹ A taskforce should study evidence-based SBS research²⁷⁰ and legal challenges, and create a standard for "reasonable medical certainty" to help prevent wrongful convictions in already tragic cases of infant deaths.

268. Dyer, *supra* note 43.

269. Cf. Stephen Hunt, *Shaken Baby Concept Denied*, SALT LAKE TRIB., July 8, 2004, at B1.

270. Evidence-based medicine predicates "medical practice and opinions on the best available medical and scientific evidence." Donohoe, *supra* note 56, at 239.