

IN THE CIRCUIT COURT OF THE NINTH JUDICIAL CIRCUIT,
IN AND FOR ORANGE COUNTY, FLORIDA

ALAN R. YURKO

v.

Case No.: CR 98-1730

STATE OF FLORIDA
_____ /

MOTION TO FILE AND BRIEF AMICUS CURIAE OF PHYSICIANS AND
BIO-SCIENTISTS ON BEHALF OF APPELLANT
ALAN YURKO

Joseph L. Hammons
Florida Bar No. 218979
Hammons & Whittaker, P.A.
17 West Cervantes Street
Pensacola, FL 32501
(850) 434-1068
Fax: (850) 434-3597

Ron Fujino
Utah State Bar Number 5387
5638 Lake Murray Blvd. #122
La Mesa, CA 91942
(619) 469-5143

IN THE CIRCUIT COURT OF THE NINTH JUDICIAL CIRCUIT,
IN AND FOR ORANGE COUNTY, FLORIDA

ALAN R. YURKO

v.

Case No.: CR 98-1730

STATE OF FLORIDA
_____ /

MOTION FOR LEAVE TO PRESENT BRIEF OF AMICI CURIAE
IN SUPPORT OF APPELLANT YURKO APPEAL AND
STATEMENT OF AMICI CURIAE
IN SUPPORT OF RELIEF

Pursuant to Rule 9.370, Florida Rules of Appellate Procedure, (printed names of signatures)(hereinafter “Amici Curiae”), by and through counsel, respectfully submit this motion for leave to present their statement of Amici Curiae in support of the Appellant, Mr. Alan Yurko (hereinafter “Mr. Yurko”), and this statement of Amici Curiae in support of his request for relief. As grounds in support thereof, the Amici Curiae respectfully submit as follows:

1. Amici Curiae are physicians and bio-scientists who are familiar with the medical condition and diagnosis called “Shaken Baby Syndrome”. We are informed that in the Appellant’s case the State introduced inaccurate misleading medical

testimony by presenting as scientific fact that: 1) shaking alone, of an otherwise healthy child, causes retinal hemorrhages and subdural hematomas; 2) short distance falls cannot cause a fatal injury; 3) chronic subdural hematomas do not rebleed spontaneously or with lesser trauma; 4) a child suffering from an ultimately fatal head injury cannot experience a lucid interval between the inception of the subdural and his or her death; 5) and retinal hemorrhages are exclusively diagnostic of non-accidental trauma. Hereafter referred to as the “Five Alleged Facts.”

2. We, the undersigned, know, through our own experience and through data published in peer-reviewed scientific journals, that each of the “Five Alleged Facts” about childhood head injuries are false, misleading and contradict published scientific literature. We wish to present to this Court the published data supporting our position. It is our opinion that were the medical testimony proffered by the state in appellant’s case put to the test of rigorous scrutiny by the scientific community, it would fail to meet the judicial standard of majority acceptance.¹ Furthermore, testimony about syndromes refuted by peer reviewed literature or unsupported by scientific proof are more prejudicial than probative and should not be admitted into evidence.² We understand that Appellant has challenged, in his brief, the “Five Alleged Facts” presented at trial and set

1. People v. Frye, 293 F. 1023 (D.C. Cir. 1923)

forth above, and our brief fully supports Appellant's challenge.

3. The Amici Curiae are alicant (conscience statement of identity of the Amici Curiae and its interest in the case). _____

4. The amicus brief raises issues that may not be fully addressed by either party in their submissions to this Court, and these issues are relevant to the disposition of this appeal. Attached hereto and incorporated herewith is a copy of the proposed amicus brief for review by the court in its consideration of this motion.

WHEREFORE, in consideration of the above, Amici Curiae respectfully move this Court for an Order granting, under the authority of Rule 9.370, Florida Rules of Civil Procedure, leave for Amici Curiae to file this brief in support of the position of Appellant, Mr. Allen Yurko.

Respectfully submitted,

Dated: _____

2. Florida v. Sercey, 825 So.2d 959 (2002)

Dated: _____

Joseph L. Hammons
Florida Bar No. 218979
Hammons & Whittaker, P.A.
17 West Cervantes Street
Pensacola, FL 32501
(850) 434-1068
Fax: (850) 434-3597

**IN THE CIRCUIT COURT OF THE NINTH JUDICIAL CIRCUIT,
IN AND FOR ORANGE COUNTY, FLORIDA**

ALAN R. YURKO

v.

Case No.: CR 98-1730

STATE OF FLORIDA
_____ /

AMICUS BRIEF

I. INTRODUCTION

We are physicians, bioengineers, research scientists, and medical experts that work with various aspects of child or adult head injuries or neurological disorders. This brief addresses our concerns about the scientific inaccuracies behind certain theories on the pathology of non-accidental trauma in children (also referred to as shaken baby syndrome, shaken baby impact syndrome, shaken whiplash syndrome, battered child syndrome, etc.). We are concerned about " experts " who give testimony in childhood head injury cases, incompatible with the relevant empirical data. Specifically, our concern is that such testimony contradicts and/or is inadequately supported by empirical data and that juries may, as a result, be misled

by the presentation and introduction of unsupported theories that would violate the Frye standard and the holding in State v. Sercy, 825 So.2d 959 (Fla. 1st DCA 2002) and progeny.

Pursuant to Frye, expert testimony is not admissible unless the expert is qualified to present a medical opinion on the issue, the testimony will assist the jury in determining a fact at issue and the expertise can be shown to be generally accepted in the relevant scientific field. Frye v. United States, 293 F. 1013 (D.C. 1923) This “general acceptance” requirement is commonly referred to as the Frye standard. Utilizing the Frye standard, Florida courts require both the basic underlying principals and the methodology of scientific evidence be “sufficiently tested and accepted by the relevant scientific community.” Brim v. State, 695 So2d. 268, 272 (Fla. 1997) citing Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923). See also Cerna v. South Florida Bioavailability Clinic, Inc., et al, 815 So2d. 652 (Fla. 3rd D.C.A. 2002).

In Florida, medical opinion evidence based on a physician’s own knowledge and experience is generally considered an exception to the Frye standard and is otherwise admissible. While “pure opinion” based on an expert’s personal experience and training need not meet the Frye test, expert opinion testimony, which, by its nature, necessarily relies upon some scientific principal or test “which implies an

infallibility not found in “pure opinion” must meet the Frye test designed to ensure the jury will not be misled. Sercy, at 978 citing Flanagan v. State, 625 So.2d 827, 828 (Fla. 1993). In Ramirez v. State, 651 So.2d 1164 (Fla. 1995), the Florida Supreme Court considered the steps requisite to the admission of expert opinion testimony noting the trial judge must determine whether the expert’s testimony is based on a scientific principal or discovery that is “sufficiently established to have gained general acceptance in the particular field in which it belongs.” Ramirez v. State, 651 So.2d 1164, 1166-67 (Fla. 1995). In Ramirez, the court noted that the second step, that of determining general acceptance, embodies the Frye standard stating “[t]he principle inquiry under the Frye test is whether the scientific theory or discovery from which an expert derives an opinion is reliable.” Sercy, at 979 citing Ramirez, at 1167.

The application of the Frye standard would prohibit prosecution expert witnesses from testifying to “scientific fact” that (1) shaking alone of an otherwise healthy child causes retinal hemorrhages and subdural hematomas; (2) short distance falls cannot cause a fatal injury; (3) chronic subdural hematomas do not rebleed spontaneously or with lesser trauma; (4) a child suffering from an ultimately fatal head injury cannot experience a lucent interval between the inception of the subdural and his or her death and (5) that retinal hemorrhages are exclusively diagnostic of non-

accidental trauma. (Hereinafter referred to as the “Five Alleged Facts.”)

The Five Alleged Facts surrounding shaken baby syndrome are contentious and of great consequence. The scientific community appears split along the lines of training and discipline. Experts trained over the past 10 years in pediatrics or general medicine have been taught that shaking alone can cause subdural hematomas and retinal hemorrhages in an otherwise healthy infant. This group was also erroneously trained that short falls cannot cause death in a healthy infant or one with a previous subdural and that retinal hemorrhages are diagnostic of abuse.¹ Experts trained in biomechanics, engineering, neurosurgery, ophthalmology, and other similar fields who have taken a scientific approach to the mechanisms of head injuries know that the data tends to show otherwise.

The prosecution of “Shaken Baby Syndrome” cases and non-accidental trauma cases involving children is usually based on these five specific assumptions which are either demonstrably wrong and scientifically unsupported. The theories and testimony often presented by medical experts in these cases violate known rules of physics and fundamental concepts of biomechanical engineering. Furthermore, many of the fundamental assumptions behind a diagnosis of non-accidental head trauma or shaken

baby syndrome are inconsistent and/or incompatible with known cases presented in scientific literature.

Belief in the validity of unsupported scientific theories can lead to the conviction of innocent persons.

II. ALLEGED FACT NUMBER ONE:

“Shaking Alone, Without Impact, Can Cause Subdural Hematomas and Retinal Hemorrhages in Previously Healthy Babies.”

In 1972 John Caffey published an article in the American Journal of Diseases in Children about what would eventually be called “Shaken Baby Syndrome.”² Caffey stated that “shaken whiplash syndrome” was generally found in conjunction with fractures of the long bones and/or bilateral symmetrical fractures of the arms and legs. He acknowledged however, in that same article, that retinal hemorrhages could be caused by rather ordinary events such as coughing, vigorous burping, CPR, bouncing a child on one’s knee, throwing a baby into the air, crossing rough roads, and from flipping a toddler head over heels to his or her feet. Since 1972 the theory of “Shaken

1. American Academy of Pediatrics. “Treatise on SBS – American Academy of Pediatrics Tutorial on Shaken Baby Syndrome: Inflicted Cerebral Trauma.” 10(7) *Pediatrics*; May (2001).
2. Caffey, “On the theory and practice of shaking infants,” 124 *American Journal of Diseases in Children*; pp. 161-169 (1972)

Baby Syndrome” had to be modified several times as a result of empirical data. For instance, when Caffey and others were confronted with the fact that most children with retinal hemorrhages and subdural hematomas did not show external signs of abuse, external signs of abuse was dropped from the list of symptoms and the lack of external signs of abuse became a diagnostic criteria **for** the syndrome.³

In 1974 Caffey revised his theory again to add neck and head trauma to the list of symptoms of Shaken Baby Syndrome.⁴ Despite Caffey’s opinion that neck trauma is a symptom of Shaken Baby Syndrome, pediatricians and other State witnesses, after repeatedly being confronted with the fact that a neck injury has never been present in a single case that was prosecuted as SBS, have refused to include neck trauma as a symptom of SBS. Since the original theory espoused by Caffey,⁵ Kempe,⁶ and Guthkelth,⁷ the debate surrounding childhood head trauma has been whether shaking alone can cause the symptoms associated with SBS or whether an impact, such as a

3. Caffey, J. “The Parent-Infant Traumatic Stress Syndrome: (Caffey-Kempe Syndrome), (Battered Baby Syndrome).” 114 *Amer J Radiol*; pp. 218-229 (1972).

4. Caffey, J. “The Whiplash Shaken Infant syndrome: Manual Shaking by the extremities with whiplash-induced intraocular bleedings, linked with residual permanent brain damage and mental retardation.” 54 *Pediatrics*; pp.396-403 (1974).

5. Caffey, J. “The Parent-Infant Traumatic Stress Syndrome: (Caffey-Kempe Syndrome), (Battered Babe Syndrome).” 114 *Amer J Radiol*; pp. 218-229 (1972).

6 . Kempe, CH. “Uncommon Manifestations of the Battered Child Syndrome.” 129 *Am J Disease in Children*; pp.1265 (1975).

7 . Guthkelch, AN. “Infantile Subdural Hematoma and its Relationship to Whiplash Injuries.” 2 *British Medical Journal*; pp. 430-431 (1971).

short fall, is needed to cause the symptoms present in these cases. The State's experts have consistently testified that shaking alone of an otherwise healthy infant can cause the symptoms associated with SBS and that the impact of a short fall cannot.

In 1987 Duhaime, Genarelli, Thibault, Bruce, Marguiles, and Wiser conducted an experiment by placing an accelerometer on a model of an infant and measuring the results of shaking versus impact.⁸ The peak acceleration for shaking was found to be between 10 and 12 G's. The study found that impact increased the force of shaking by up to 40 times. The experts concluded that shaking alone of an otherwise healthy infant could not cause the constellation of injuries generally associated with SBS. They determined that an impact was needed. This study has been replicated several times with similar results.

A recent study by Ommaya, Goldsmith, and Thibault supports the 1987 findings of Duhaime, Genarelli, Thibault, Bruce, Marguiles, and Wiser. This study revealed that, biomechanically, impact creates 50-100 times the G force created by shaking. The study revealed that shaking alone, without impact, did not create enough force to cause the subdural hematomas and retinal hemorrhages found in several cases

8. Duhaime, Genarelli, Thibault, Bruce, Marguiles, & Wiser. "The Shaken Baby Syndrome." *J Neurosurg.* 66: 409-415 (1987)

prosecuted as SBS.⁹ These experts concluded that, while a great deal of damage can be caused by long term repeated shaking, infants that were victims of long term repeated shaking would also show signs of neck injuries and other soft tissue injuries. Ommaya, Goldsmith, and Thibault state that the properties of an infants' skull make it susceptible to deformation and that other factors increase its vulnerability to trauma. This contradicts prosecution theories that childrens' brains are somehow more resilient than adult brains and therefore not as prone to short fall deaths and rebleeds.

A recent study by Geddes also illustrates the differences in the brains of infants and those of adults. The study documented the presence of intradural hematomas in 36 of 50 infants with other than traumatic deaths. The study showed that many of the subdural hematomas found in infants 5 months and younger can be caused by the combination of severe hypoxia, increased central venous pressure and brain swelling from a variety of different causes including sepsis and other disease processes. These findings have called into question the very diagnosis of "shaken baby syndrome,"¹⁰

9. Ommaya, Goldsmith, and Thibault. "Biomechanics and Neuropathology of Adult and Pediatric Head Injury." 16(3) *British Journal of Neurosurgery*; pp. 220-242 (2002).

10. Geddes, Taskert, Hackshaw, Nichols, Adams Whitwell and Schelmborg. "Dural Hemorrhages in Non-Traumatic Infant Deaths: does it explain the bleeding in "shaken baby syndrome," 29 *Neuropathology and Applied Neurobiology*; pp.14-22 (2003).

III. ALLEGED FACT NUMBER TWO:

“Short Falls Don’t Kill Children.”

Prosecution witnesses in shaken baby cases have generally testified that children cannot die from shortfalls but can die from shaking. They have been allowed to testify that the amount of force required to cause the types of injuries seen in these cases are akin to a two to three story fall or a 35 mile per hour, unrestrained car impact. Physician witnesses (both percipient and expert) have been allowed to testify using these metaphors, even though they are contrary to known biomedical research and even though they are not qualified as experts in biomechanics or shortfalls.

The allowance into evidence of such comparisons is particularly prejudicial because there is ample scientific evidence and medical literature showing that short falls of less than six feet can and do produce the amount of force required to cause a subdural hematoma and retinal hemorrhages.^{11,12,13,14} A recent study by John Plunkett analyzed the Consumer Product Safety Commission's database on falls from

11. Aoki, N, and Masuzawa, H. “Infantile Subdural Hematomas.” *Neurosurgery*: Chapter 13: Neuropathology; pp. 273-280 (1984).

12. Reiber, G. “Fatal Falls in Childhood.” 14(3) *The American Journal of Forensic Medicine and Pathology*; pp. 201-207 (1993).

13. Root, I. “Head Injuries from Short Falls.” 13(1) *The American Journal of Forensic Medicine and Pathology*; pp. 201-207 (1993).

14. Hall, John R. “The Mortality of Childhood Falls.” 29(9) *The Journal of Forensic Medicine and Pathology*; pp. 85-87 (1992).

playground equipment that occurred between Jan. 1988 and June 1999.¹⁵ According to the study, 18 deaths were caused by falls of less than 10 feet. Thirteen of these children had subdural hematomas, and twelve of these children had lucid intervals ranging from five minutes to forty-eight hours. Four of the six children that had fundoscope examinations also had retinal hemorrhages. The article is important in the study of childhood head injuries because it supports many of the previous studies on short falls^{16, 17} and refutes some of the fundamental assumptions upon which SBS cases have been prosecuted and convicted.

IV. ALLEGED FACT NUMBER THREE:

“A Child Becomes Immediately Unconscious After Suffering A Subdural Hematoma.”

In shaken baby or non-accidental trauma cases, the alleged abuser is generally determined to be the person who was last with the child when the child went into respiratory arrest. This determination has been based on the following two false

15. Plunkett, John. “Fatal Pediatric Head Injuries Caused by Short Distance Falls.” 22 *American Journal of Forensic Medicine and Pathology*; pp. 1-12 (2001).

16. Gurdjian, E.S., Roberts, V.L., and Thomas, L.M. “Tolerance Curves of Acceleration and Intracranial Pressure and Protective Index of Experimental Head Injuries.” 6(5) *The Journal of Trauma*; pp. 600-604 (1966).

17. Mahajan BM, Beine WB. “*Impact attenuation performance of surfaces installed under playground equipment*: Report to the Consumer Product Safety Commission.” US Department of Commerce, National Bureau of Standards, Washington, DC: Publication Number NBSIR 79-1707. Feb., (1979).

medical facts: 1) that there are no “lucid intervals” after the inception of a subdural hematoma (Alleged Fact 3); and 2) that older subdurals cannot rebleed with lesser trauma or no trauma at all (Alleged Fact 4).

It is undisputed in the field of head injuries that an adult can suffer an impact to the head and appear relatively normal and then later collapse and die. The period of time between the impact and the loss of consciousness or death is referred to as a “lucid interval” when consciousness seems to be relatively unaffected. This phenomenon, although called by several different names in different bodies of literature, is generally agreed to occur. Doctors specializing in sports medicine have coined the term “Second Impact Syndrome” to describe athletes who incur a blow to the head but suffer little to no alteration in consciousness, until hours or days later when they unexpectedly lapse into unconsciousness or death.¹⁸ Pediatricians use the term “Talk and Deteriorate or Die” or TADD to describe the lucid intervals that occur in individuals with epidural hematomas.¹⁹ TADD is the reason physicians and hospitals keep people under 24-hour observation after suffering a major head injury and the reason parents are advised to awaken their children periodically after such an event.

18. Kelly, J. “Sports Related Recurrent Brain Injuries: Second Impact Theory.” 46(10) MMWR; pp. 224-227 (2000).

Apparently the only false alleged fact that persists is whether the phenomena can occur in babies with subdural hematomas. The State's expert witnesses testify that lucid intervals do not occur in children because children are somehow different than adults. Once again, this contention is not only unsupported by any evidence or explanation, but is refuted by logic and published literature in the field.²⁰

Recent studies have shown that lucid intervals are fairly common with subdural hematomas. In Plunkett's 2001 study of short falls from playground equipment, 12 out of 18 children had lucid intervals (with lengths ranging from 5 minutes to 48 hours). Also, it has long been recognized that intracranial injuries may go undiagnosed or may be misdiagnosed as being benign only to result in complications later.^{21, 22, 23} Studies also call into question the ability to time injuries based on an unproven theory that decomposition begins immediately after the subdural hematoma is formed.^{24, 25, 26, 27, 28, 29}

19. Trial Testimony in People v. John Stevens, P.118 H9700551 (Boise, Idaho).

20. Usinski, R. "Shaken Baby Syndrome: Fundamental Question." 16(3) *British Journal of Neurosurgery*; pp. 217-219 (2002).

21 . Jenny, C., Hymel, K.P., Ritzen, A., Reinert, S.E. and Hay, T.C. "Analysis of Missed Cases of Abusive Head Trauma." 281(7) *JAMA*; pp. 621-626 (1999).

22. Greenes, D. Schultzman, S.A., "Occult Intracranial Injury in Infants." 32(6) *Annals of Emergency Medicine*; pp. 680-686. (1998).

23. Dacey, R.G., Alves, W., Rimel, R., Winn, R., and Jane, J., "Neurosurgical Complications After Apparently Minor Head Injury." 65 *Neurosurgery*; pp. 203-210 (1986).

24. Barnes, Patrick D. "Ethical Issues in Imaging Nonaccidental Injury: *Child Abuse Topics in Magnetic Resonance Imaging*; 13(2) 85-94 (2202).

Even trial testimony of leading prosecution experts supports the existence of a lucid interval after a subdural hematoma. Prosecution witness Randall Alexander has testified that subdural hematomas can often be mistaken for gastroenteritis or other minor childhood ailments³⁰ and that as many as 50% of SBS cases have evidence of an old subdural hematoma. Also, many of these children were treated by doctors^{31,32},³³ while having undetected subdural hematomas, or were cared for by physician or nurse parents.^{34,35,36} and the subdural remained undetected. Again, logic and science

25. Nahelski, M. and Dix, J. "The Time Interval Between Lethal Infant Shaking and onset of Symptoms: A review of the Shaken Baby Syndrome Literature." 16(2) *The American Journal of Forensic Medicine and Pathology*; pp 154-157. (115).

26. Snock, W. "Delayed Deterioration Following Mild Head Injury in Children." (107) *Brain*; pp15-36 (1984).

27. Usinski, R. Shaken Baby Syndrome: Fundamental Question." 16(3) *British Journal of Neurosurgery*; pp. 105-116 (2000).

28. Geddes, J.F. "Traumatic Axonal Injury: Practical Issues for Diagnosis in Medico Legal Cases." 26 *Neuropathology and Applied Neurobiology*; pp. 105-116 (2000).

29. Geddes, J.F. "The Diagnosis of Diffuse Axonal Injury: Implications for Forensic Practice." 23 *Neuropathology and Applied Neurobiology*; pp. 339-347 (1997).

30. Alexander Randall, Trial Testimony in Iowa v. Weaver, P. 33; 17-18 CR 552-0693 (Iowa City, Iowa.)

31. Georgia v. Braddy, #25693 (Houston County, Georgia.)

32. People v. Basuta, 94 Cal. App. 4th 370 (2001)

33. Iowa v. Weaver, CR 552-0693, (Iowa City, Iowa.)

34. California v. Melvenia Martin, SCD 129065 (San Diego, Ca.) Foster mother was an operating room nurse who kept taking the baby in for EEGs, developmental assessments and seizures. Doctors repeatedly saw the child and pronounced him as healthy until his death, when it was discovered that he had an old subdural hematoma on his brain. Ms. Martin was convicted and sentenced to 25 to life.

35. New York v. Martin Scoon, Father was a pediatrician and did not notice that the child was showing signs of an old subdural.

prevail over this false statement of fact. If a previously undetected subdural hematoma exists in 50% of these cases, then obviously children can and do have lucid intervals after incurring subdural hematomas.

V. ALLEGED FACT NUMBER FOUR:

“Chronic Subdurals Do Not Re-bleed.”

Prosecution witnesses in non-accidental trauma cases have been allowed to testify that chronic subdural hematomas do not rebleed without significant force. This testimony is also false. The presence and importance of an old subdural hematoma in these cases is regularly pathologically misinterpreted. Prosecution experts often deny the rebleeding propensity and vulnerability of an old subdural hematoma and then blame the “trauma” on the defendant.³⁷

In fact, chronic subdural hematomas often rebleed during the regular course of

36 . People v. Louis Woodward, 97-433 (Middlesex County, Mass.) Doctors testified that the child showed evidence of an old subdural hematoma, yet the parents, who were both physicians did not suspect it’s existence until their child went into respiratory arrest with their Nanny. Ms. Woodward was convicted of murder, which was later reduced to involuntary manslaughter by the judge. She served 18 months in jail and was released to return home to England.

37 . Trial Testimony of Prosecution witness Randall Alexander, People v. Basuta, 94 Cal. App. 4th 370 (2001) in, Supra: (35)

Q. " well, what is the relationship of the old subdural hematoma to the present condition ...?"

A. “It's an indicator of prior injury, in my opinion prior shaken baby syndrome. It does not mean that the forces the second time around are any the less to cause all of these new injuries. You still have to have the same forces. So it doesn't have a significance that way. Its significance is just this is not the first time the similar things have happened. ”

healing. Studies on subdural hematomas indicate that they wax and wane during the healing process and can rebleed with little to no impact.^{38, 39, 40, 41,42} Even prosecution witnesses, when faced with this evidence, will admit that rebleeds occur.^{43, 44} Thus,

38. Parent, A.D. "Pediatric Chronic Subdural Hematoma: A Retrospective Comparative Analysis." 18 *Pediatric Neurosurgery*; pp 266-271 (1992).

39. Piatt J., "A Pitfall In The Diagnosis of Child Abuse: External Hydrocephalus, Subdural Hematoma & Retinal Hemorrhages." 7(4)(4) *Neurosurgical Focus*; pp.1-9 (1999).

40. Lindenberg R. in Spitz and Fisher's "Medicological Investigation of Death: *Guidelines for the App. Of Pathology to Crime Investigation.*" 3ed., Charles C. Thomas Publisher, (1993).

41. Mahmood H, Barbat S, Baccouche M, "Crashworthiness, Occupant Protection and Biomechanics in Transportation System." *AMD*; vol.246 *BED* vol. 49 (2000).

42. Trial Testimony of Randall Alexander: Georgia v. Braddy, P.31; 7-15. Supra: (34)

"If you get a subdural in about 10 to 14 days, new blood vessels are forming. The body is trying to absorb the back of the clot you have inside, and new blood vessels are forming. And then the, it doesn't really happen spontaneously, but a minor trauma can come along, a bump or something, and because these are somewhat delicate, the blood vessels, it's possible, you wouldn't usually see it, but it's possible to get some bleeding either within that same blood clot or it can extend just a little bit away from the blood clot itself." (Pg 31, LL 7-15).

43. Trial is pretty Testimony of Randall Alexander in *People v. Basuta*, 94 Cal. App. 4th 370 (2001) Supra: (35)

" There are such things as rebleed. We see--if you see them, you tend to see them in elderly. But if you see them in children, which rare--and I have seen a case or 2--often there with neurosurgical things being done on a child for another reason, and little bit of bleeding happened. And then a couple weeks later, the blood vessels are real fragile that are trying to heal this process, this old bleed, and a trivial trauma, a minor trauma can come along and break those, the same way you can have a scab and in kind of a minor trauma to that scab, and it rebleeds a little. And in that case, then, you get a slow process of some extra blood accumulation, either within the original blood clot or next to that blood clot.

"Usually we don't see any clinical signs of all, but if we did, they're slow signs. Somebody's increasing irritability or something else like that. It doesn't really lead to any catastrophic problems at all. There's nothing sudden. There's nothing massive. There's nothing--there's really not a whole lot to it. But it's something which we might want to get CTs and see if the neurosurgeons would want to go in and drain some blood out or something." Page 393-394.

"Rebleeds are gradual and slow and are a product of venous bleeding. You might not see the symptoms runaway. Or that might be gradual." Page 395 "subdural hematomas take months to heal." Page 96 lines 9 through 16 " the size of the subdural has a rough correlation with the size of

the fact that the defendant was the last person with the baby when his or her subdural reached a critical point is not dispositive of the mechanism of the original trauma or that the defendant caused the injury.⁴⁵

Even State experts have testified that there is evidence of an old subdural hematoma in 50% of these cases. Because old subdurals can go undetected, or misdiagnosed⁴⁶ and can rebleed with little to no trauma,^{47,48} the determination of the mechanism and/or individual that caused the subdural hematoma cannot be based solely on the identity of the person that called 911.

VI. ALLEGED FACT NUMBER FIVE

the force than impacts on it, although not completely. Sometimes the smallest subdural is the in the most severely brain injured. " Page 397 line 23-26.

44 . Kawakami Y, Chikama M, Tamiya T, et al. "Coagulation and fibrinolysis in chronic subdural hematoma." *25 Neurosurgery*; pp. 25-9 (1989).

45 . Nahelsky, M. and Dix, J. "The Time Interval Between Lethal Infant Shaking and Onset of Symptoms: A Review of the Shaken Baby Syndrome Literature." 16(2) *The American Journal of Forensic Medicine and Pathology*; pp.154-157 (1995).

46 . Trial Testimony of Randall Alexander in Iowa v. Weaver, Supra: (36)

47, 48 . Randall Alexander Trial Testimony in People v. Basuta, 94 Cal. App. 4th 370 (2001)

52. Randall Alexander Trial Testimony in Georgia v. Braddy Supra. (45)

“Retinal Hemorrhages are Diagnostic of Non Accidental Trauma.”

Pediatricians and other proponents of “shaken baby syndrome” have been allowed to testify that retinal hemorrhages are pathoneumonic for (i.e. diagnostic of) “shaken baby syndrome” or non-accidental trauma. This testimony has often been allowed in spite of foundational objections and without confirming testimony of an expert with relevant training and experience, e.g., board certified pediatric ophthalmologist. Once again, the scientific literature refutes the notion that retinal hemorrhages are diagnostics of non-accidental trauma. The type or location of retinal hemorrhages is not diagnostic of the cause or manner of death in these cases.

The relevant literature states that retinal hemorrhages are found in a myriad of different locations and with a myriad of different pathologies, most of which involve a sudden increase in intracranial pressure.^{49, 50, 51} Retinal hemorrhages are found in 30-40% of vaginal childbirths;^{53, 54, 55, 56, 57} in CPR cases;^{58, 59, 60, 61, 62} in strangulation

49

50

51

53. Greenwald MJ, Weiss A, Oestlerle CS. “Friendly DS Traumatic Retinoschisis in battered Babies.” 93 *Ophth*; pp. 618-625 (1986).

54. Usinski, ron. “Shaken Baby Syndrome: Fundamental Question.” 16(3) *British Journal of Neurosurgery*; pp. 217-219 (2002)

55. Vanderlinden, G., Chisholm, L. “Vitreous Hemorrhages and Sudden Increased Intracranial Pressure. 41 *Journal of Neurosurgery*; pp. 167-176 (1974).

56. Tomasi LG, rosman NP. “Purtscher Retinopathy in the Battered Child Syndrome.” 129 *Amer J Dis Child*; pp. 1335-1337 (1975).

cases;⁶³ and in scurvy cases.⁶⁴ Retinal hemorrhages are commonly found with subarachnoid hemorrhages⁶⁵ and are indistinguishable from those found in patients with subdural hematomas.⁶⁶ Retinal hemorrhages have also been observed where there are conditions that cause retinal vein occlusion;^{67, 68, 69} after vaccination with Hepatitis B Vaccine;⁷⁰ in persons with coagulation disorders;^{71, 72, 73, 74, 75, 76, 77, 78} and in

57. Kaur B, & Taylor D. "Current Topic: Retinal Hemorrhages." 65 *Arch.Dis. Child* pp. 1369-1372 (1990).

58. Pollack JS, Tychsen L. Prevalence of Retinal Hemorrhages in Infants After Extracorporeal Membrane Oxygenation." 121 *AM J Ophthalmol*; pp. 297-303 (1966).

59. Trial Testimony of Randall Alexander in People v. Basuta, 94 Ca. App. 4th 370 (2001) P. 97-98 Supra: (35, 46, 50)

60. Georgia v. Braddy, P. 54; 9-20 Supra(34)

61. Goetting MG, Sowa B. "Retinal Hemorrhage After Cardiopulmonary Resuscitation in Children: an Etiologic Reevaluation." 85 *Pediatrics*; pp. 585-588 (1990).

62. Weedn VW, Mansour AH, Nichols NM. "Retinal Hemorrhages in an infant after cardiopulmonary resuscitation." 11 *Am J Foren Med Pathol*; pp.79-82 (1990).

63. Kramer K, & Goldstein B. "Brief reports: Retinal Hemorrhages Following Cardiopulmonary Resuscitation." 32 *Clin Pediatrics*; pp. 366-368 (1993).

64. Kanter RK. "Retinal Hemorrhage After Cardiopulmonary Resuscitation or Child Abuse." 108 *J Pediatr*; pp.430-432 (1986).

65. Kirschner, R h., and Stein, R.J. "The Mistaken Diagnosis of Child Abuse." 139 *American Journal of Diseases in childhood*; pp. 873-875 (1985).

66. Spitz and Fisher: Medicological Investigation of Death. Supra: (42)

67. Hess, A. *Scurvy Past and Present*. J.P. Lippincott Company. Philadelphia and London. (1920).

68. Biousse, V., Mendicino, M., Simon, D. and Newman, N. "The Ophthalmology of Intracranial Vascular Abnormalities." 125(4)*American Journal of Ophthalmology*; pp. 527-544 (1994).

69. Budenz D.L., Farber M.G., Mirchandani H.G., Park H, Rorke L.B. "Ocular and Optic nerve Hemorrhages in Abused Infants with Intracranial Injuries." 101 *Ophthalmol*; pp. 559-565 (1994).

70. Devin F, Roques G, Disdier P, rodor F, Weiller P.J. "Occlusion of Central Retinal Vein after Hepatitis B Vaccination." 147 *The Lancet*; pp. 1626 (1996).

71. Gutman, F. "Evaluation of a Patient with Central Vein Occlusion." 90(5) *American Academy of Ophthalmology*; pp/ 481-483 (1983).

persons with autoimmune disorders such as Goodpaster's Syndrome.^{79, 80}

Studies have shown that accidental trauma causes retinal hemorrhage as often as non-accidental trauma.⁸¹ A 1990 article by Elner⁸² states that retinal hemorrhages are not as likely to be caused by shaking as by blunt force/impact (which would include falls).

Goffstein et al⁸³ found that retinal detachment was due to intentional trauma in only 19% of the 580 cases studied and due to an accident in 63% of the cases. A study by

72. Iijima H, Gohdo T, Imai M, & Tsukahra S. "Thrombin-Anti-Thrombin III Complex in Acute Retinal Vein Occlusion." 126(5) *American Journal of Ophthalmology*; pp. 677-682 (1998).

73. Devin F, Roques G, Disdier P, Rodor F, Weiller P.J. *Supra*: (71)

74. Mansen, T., McCance, K., Field, R. Alterations of Leukocyte, Lymphoid, and Hemostatic Function. *In: Pathophysiology The Biologic Basis for Disease in Adults and Children.*

McCance, K., Huether, S. Third Edition. Mosby (St. Louis)pgs. 922-923 (1998).

75. Bart, K. Immunization Practice. *In Textbooks of Pediatrics.* Behrman, R., Kliegman, R., Arvin, A. Fifteenth Edition. W.B. Saunders Company

76. Corrigan, J. Hemorrhagic and Thrombotic Disease. *In: Textbooks of Pediatrics.* Behrman, R., Kliegman, R., Arvin, A. Fifteenth Edition. W.B. Saunders Company (Philadelphia) pgs. 1437-1438 (1996).

77. Nelson, L. Disorders of the Eye. *In: Textbooks of Pediatrics.* Behrman, R., Kliegman, R., Arvin, A. Fifteenth Edition. W. B. Saunders Company (Philadelphia) pgs. 1790-1797 (1996).

78. Lindberg, R. Mechanical Injuries of Death. *In: Medicological Investigation of Death.* Ed., Spitz, N. Third Edition. Thomas (Springfield) pgs. 590-636 (1993).

79. Di Maio. "Trauma to the Skull and Brain: Craniocerebral Injuries." *Journal of Forensic Pathology*; pp. 139-169 (1993).

80. Pollack JS, Tyychsen L. *Supra*: (58).

81. Miller, E. et al., "Idiopathic Thrombocytopenic Purpura and MMR Vaccine", 84 *Archives of Disease In Children*; pp. 227-229 (2201).

82. Boucher, M.C. et. Al. "The Phot Gallery of Clinical Opthamology: Bilatera Serous Retinal Detachemnts Associated with Goodpaster's Syndrome." 33 *Canadian Journal of Opthamology*; pp.46-47 (1998).

83. Garrity, James A.; Liesgang, Thomas J. "Ocular Complications of Atopic Dermatitis." 19(1) *Canadian Journal of Ophthalmology*; (1984).

Kaur⁸⁴ found retinal hemorrhages in 32% of the cases with sub-arachnoid hemorrhages, with some appearing simultaneously with the accident while others took a few days to appear.

Finally, a study by Kanter,⁸⁵ that looked at CPR and retinal hemorrhages and found that head trauma, combined with CPR, created retinal hemorrhages in 53% of the cases, suggests that a combination of factors may contribute to intracranial pressure. All of these studies, when taken together, suggest that intracranial pressure causes retinal hemorrhages rather than shaking.^{86, 87}

The obvious problem with using retinal hemorrhages as a diagnostic indicator of abuse is that retinal hemorrhages can be found in a myriad of other conditions not associated with head trauma.

V. CONCLUSION

It is simply scientifically wrong for witnesses to testify that shaking alone of an otherwise healthy child will cause a subdural hematoma; that short-distance falls by

84. Gilliland, MGF, Luckenback MW, and Chenier TC. "Systematic and Ocular Findings in 169 Prospectively Studied Child Deaths: Retinal Hemorrhages Usually Mean Child Abuse." 68 *Foren Sci International*; pp. 117-123 (1994).

85. Elnor SG, Elnor VM, Arnall M, Abert DM. "Ocular and Associated Systematic Findings in Suspected Child Abuse. A Necropsy Study." 108 *Arch Ophthal*; pp. 1094-1101 (1990).

86. Goffstein, R and Burton, T.C. "Differentiating traumatic From Non-traumatic Retinal Detachment." 89(4) *American Academy of Ophthalmology*; pp. 361-368 (1982).

children are never fatal; that a child suffering from an ultimately fatal brain injury will not experience any lucid interval; that a re-bleed from an existing subdural hematoma can only cause relatively minor symptoms; and that retinal hemorrhages occur only in shaken babies. None of these assertions are supported by empirical data. These inaccurate statements of fact should not be allowed into evidence to prove that a child has suffered a non-accidental injury. Unfortunately, care-takers of children with accidental head trauma that is combined with one or more of these conditions can be wrongfully convicted as the result of expert testimony from State witnesses that these conditions are exclusive to vigorous shaking.

87. Kaur B, & Taylor D. "Current topic: Retinal Hemorrhages." 65 *Arch. Dis. Child*; pp. 1369-

Respectfully submitted,

Dated: _____

Dated: _____

Joseph L. Hammons
Florida Bar No. 218979
Hammons & Whittaker, P.A.
17 West Cervantes Street
Pensacola, FL 32501
(850) 434-1068
Fax: (850) 434-3597

1372 (1990).