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Sarah Elizabeth Elias

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## Shaken Baby Syndrome: Child Abuse or Judicial Misuse?

Sarah Elias

The admissibility Shaken Baby Syndrome (SBS) experts have increasingly been called into question within the last decade.<sup>1</sup> SBS is a type of traumatic brain injury that supposedly occurs when a child is violently shaken.<sup>2</sup> The theory is that since young children have weak necks and heavy heads that shaking of a child makes their fragile brain bounce back and forth inside the skull causing bruising, swelling, and bleeding.<sup>3</sup> SBS can lead to severe brain damage or even death.<sup>4</sup> Experts testify in court that the brain damage or death of the child is not accidental but due to child abuse by the caretaker.<sup>5</sup> They even testify that they are able to pinpoint the time the shaking occurred, giving them the ability to place blame on a particular caretaker.<sup>6</sup> Today, there are now many critics who refute the theory of SBS claiming that there are many alternative explanation for the symptoms associated with SBS besides intentional shaking.<sup>7</sup>

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<sup>1</sup>David Perlstein, MD, FAAP, *Shaken Baby Syndrome (SBS)*, available at [http://www.medicinenet.com/shaken\\_baby\\_syndrome/article.htm](http://www.medicinenet.com/shaken_baby_syndrome/article.htm).

<sup>2</sup> *Id.* at 1.

<sup>3</sup> *Id.* at 1.

<sup>4</sup> *Id.* at 1.

<sup>5</sup> *State of Nebraska, Appellee, v. Michelle Leibhart, Appellant*, 662 N.W.2d 618 at 135 (2003) at 138.

<sup>6</sup> *Felipe San Martin Adriano, Appellant, v. The State of Texas, Appellee*, at 3.

<sup>7</sup> Emily Bazelon, *Shaken-Baby Syndrome Faces New Questions in Court*, N.Y. Times, Feb. 2, (2011), available at <http://www.nytimes.com/2011/02/06/magazine/06baby-t.html?pagewanted=all>

First, the paper will explain the slightly surprising history and development of SBS beginning with monkeys and ending in an SBS national campaign. Second, the theory, frequency, symptoms and diagnosis of SBS will be discussed. Third, the evidentiary standard of admitting expert testimony will be laid out focusing mostly on the *Daubert* standard. Fourth, the paper will discuss who the courts hold to be a “reliable” SBS expert witness. The fifth section is a detailed analysis of whether SBS is “reliable” and thus admissible focusing on testability, peer review, potential rate of error and general acceptance. The sixth section is on the scope of the expert’s testimony and how it needs to be narrowed. Last, the paper will conclude that SBS is “reliable” and thus admissible under the *Daubert* standard but the testimony should be narrowed in its scope through the exclusion of time lines.

### **I. The History and The Development of Shaken Baby Syndrome: From Monkeys to Magazines**

SBS had an almost eerie beginning. It began in the 1960’s by a neurosurgeon by the name of Ayub Ommaya.<sup>8</sup> Ommaya strapped fifty monkeys to a chair, without securing their necks, and then placed the chairs on a twenty foot long track sending the monkeys zooming into the wall.<sup>9</sup> He did so in order to determine how much acceleration was needed to cause a head injury.<sup>10</sup> The monkeys were then killed and dissected.<sup>11</sup> As a result of the experiment fifteen monkeys had some kind of cerebral hemorrhage, and eight had injuries to the brain or cervical cord.<sup>12</sup>

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<sup>8</sup> *Commonwealth of Kentucky v. Raymond Martin*, 290 S.W.3d 59, 62 (2008)

<sup>9</sup> *Id.* at 62.

<sup>10</sup> *Id.* at 62.

<sup>11</sup> *Id.* at 62.

<sup>12</sup> *Id.* at 62.

In *Commonwealth Kentucky, Appellant v. Raymond Martin, Appellee*, the defense's expert witness, Dr. Uscinski, whom is a distinguished neurosurgeon, argued that Ommaya's research was flawed.<sup>13</sup> Dr. Uscinski opined that the research was flawed because Ommaya never quantified precisely how much rotational acceleration would be necessary to cause a subdural hematoma in an infant by manual shaking.<sup>14</sup> He also asserted that the study was conducted on monkeys which have smaller heads and stronger, thicker necks than human beings; that the whiplash action was different from shaking; and that it was possible that some of the monkeys hit their heads on the back of the seats which suggests that their brain injuries were not due to the movement alone but also due to direct impact.<sup>15</sup>

Despite the fact that Ommaya's experiment did not involve shaking or babies, in the 1980's two pediatric specialist each wrote a paper that used Ommaya's experiment as evidence that unexplained subdural bleeding in babies could occur without direct impact to the head and with or without visible neck injury.<sup>16</sup> It was at this time the term "Shaken Baby Syndrome" came into broad use and a national prevention and awareness campaign was set into motion.<sup>17</sup>

The diagnosis of SBS became prevalent in medicine and prosecutors began to bring charges based on SBS without any other evidence of child abuse.<sup>18</sup> Doctors began to testify that shaking alone could generate the same force as throwing a child out of a second-story window.<sup>19</sup> Also doctors began to testify that they could pinpoint the time the shaking occurred within

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<sup>13</sup> *Id.* at 62.

<sup>14</sup> *Id.* at 62.

<sup>15</sup> *Id.* at 62.

<sup>16</sup> *Id.* at 63.

<sup>17</sup> *Id.* at 63.

<sup>18</sup> Emily Bazelon, *Shaken-Baby Syndrome Faces New Questions in Court*, N.Y. Times, February 2, (2011), at 3.

<sup>19</sup> *Id.* at 3.

minutes, allowing them to place blame on the caretaker within that narrow time frame.<sup>20</sup> Juries began to convict once seemingly good caretakers of second-degree murder based on absolutely no other evidence of child abuse other than a few symptoms associated with SBS.<sup>21</sup>

### **SBS Today: The Theory, The Statistics, The Symptoms and The Diagnosis**

#### ***The Theory of Shaken Baby Syndrome***

SBS is the theory that when certain symptoms are present in a child, usually of one year old or less, it is presumed that the caretaker abused the child by violently shaking them.<sup>22</sup> As a result of this presumed abuse the child may suffer severe brain damage, spinal-cord injuries, bleeding in the eyes (retinal hemorrhages), or may even die.<sup>23</sup> According to the doctors whom support SBS this occurs because infants have weak neck muscles and relatively large, heavy heads compared to their bodies.<sup>24</sup> Since the infant brain needs room to grow there is a space between the skull and the brain to allow for development.<sup>25</sup> Thus, violently shaking an infant causes the brain to move within the skull resulting in cerebral contusions (bruising of brain tissue) and shearing (tearing) of blood vessels.<sup>26</sup> Initially, the injuries which are linked to SBS may not be immediately noticeable.<sup>27</sup> Some infants may only present complications such as irritability or vomiting.<sup>28</sup> However, in addition lethargy, breathing difficulties, and seizures often present themselves in these same infants.<sup>29</sup>

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<sup>20</sup> *Felipe San Martin Adriano, Appellant, v. The State of Texas, Appellee*, 2005 Tex. App. LEXIS 7140, 9

<sup>21</sup> *Id.* at 10.

<sup>22</sup> David Perlstein, MD, FAAP, *SBS(SBS)*, MedicineNet.com, at 1.

<sup>23</sup> *Id.* at 1.

<sup>24</sup> *Id.* at 2.

<sup>25</sup> *Id.* at 2.

<sup>26</sup> *Id.* at 2.

<sup>27</sup> *Id.* at 2.

<sup>28</sup> *Id.* at 2.

<sup>29</sup> *Id.* at 2.

### *The Statistics of SBS*

According to The National Center on SBS there are no firm statistics regarding the actual incidence of SBS because there are no central reporting registries to collect the data.<sup>30</sup> However, based on clinical experience and extrapolated figures from hospitals caring for children estimates have been made.<sup>31</sup> On the lower end estimates have been made that annually there are about 600 cases per year in the United States and on the high end about 1400 cases per year.<sup>32</sup> Advocates have recognized SBS to be the most common cause of mortality and long-term disability in young children due to physical abuse.<sup>33</sup> The average victim of SBS is between three and eight months.<sup>34</sup>

A team of researchers, led by child-abuse expert Dr. Rachel Berger, at the Children's Hospital of Pittsburgh claim that due to the economic crisis the number of SBS cases have increased.<sup>35</sup> They claim that the stress associated with hard financial-times causes parents to take it out on their children at an increased rate.<sup>36</sup> Also since there is less funding to support social-resources for preventing and addressing child-abuse there has been an increase in such child abuse.<sup>37</sup> The researchers analyzed data on 512 cases of head trauma in the children's centers of

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<sup>30</sup> Robert M. Reece, M.D. and Robert H. Kirschner, M.D., *Shaken Baby Syndrome/Shaken Impact Syndrome*, National Center on Shaken Baby Syndrome, at 1.

<sup>31</sup> *Id.* at 1.

<sup>32</sup> *Id.* at 1.

<sup>33</sup> *Id.* at 1.

<sup>34</sup> *Id.* at 1.

<sup>35</sup> Alice Park, *Study: Shaken-Baby Cases Rose During the Recession*, Time Health, May 3, (2010) at 1.

<sup>36</sup> *Id.* at 1.

<sup>37</sup> *Id.* at 1.

four hospitals and found that the rate of SBS cases have increased from the steady rate in 2004 of 6 per month to 9.3 per month in 2007.<sup>38</sup>

### *The Symptoms and Physical Manifestations Associated with Shaken Baby Syndrome*

Proponents of SBS have stated that usually the trigger for shaking an infant is when the caretaker cannot get the infant to stop crying.<sup>39</sup> In frustration the caretaker grabs the infant, either by the chest, under the arms, or by the arms and violently shakes the baby.<sup>40</sup> The duration of the shaking varies, usually from around five seconds to fifteen to twenty seconds. Typically, SBS is diagnosed when a child is admitted to a hospital with the physical manifestations of subdural hematomas, retinal hemorrhages, and has not been in a motor vehicle accident or has fallen from a significant height.<sup>41</sup> Some of the typical physical manifestation generally associated with SBS will now be examined in turn.<sup>42</sup>

#### *Subdural Hematoma*

Subdural Hematoma is pools of blood under the dura.<sup>43</sup> The dura is a relatively tough connective tissue membrane that is firmly attached to the under surface of the skull.<sup>44</sup> The inner underside of the dura is connected to the arachnoid, which is a much thinner, transparent membrane.<sup>45</sup> This interface is easily separated, forming the subdural space.<sup>46</sup> The subdural space is referred to as a “potential space” because a space is not generally created unless a subdural

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<sup>38</sup> *Id.* at 1.

<sup>39</sup> Robert M. Reece, M.D. and Robert H. Kirschner, M.D. , *Shaken Baby Syndrome/Shaken Impact Syndrome*, National Center on Shaken Baby Syndrome, at 1.

<sup>40</sup> *Id.* at 1.

<sup>41</sup> Toni M. Blake, JD, MA, “*Shaken Baby Syndrome*” *A Tutorial and Review of the Literature*, SBSDefense.com, at 1.

<sup>42</sup> *Id.* at 1.

<sup>43</sup> *Id.* at 1.

<sup>44</sup> *Id.* at 1.

<sup>45</sup> *Id.* at 1.

<sup>46</sup> *Id.* at 1.

hematoma or another space occupying mass is formed.<sup>47</sup> When violent shaking occurs the veins that bridge from the brain to the dura, which is fixed to the inside of the skull, are stretched and, exceeding their elasticity tear open and bleed creating subdural hematoma which is a characteristic of the syndrome.<sup>48</sup>

However, many doctors argue that subdural hematoma can be caused by several other causes.<sup>49</sup> They assert that accidental falls can lead to subdural hematoma and even death.<sup>50</sup> A history of coughing, vomiting, or choking can account for retinal hemorrhaging and subdural bleeding in otherwise healthy infants.<sup>51</sup> This is because when a baby stops breathing the lack of oxygen causes their brain to swell and blood vessels to rupture.<sup>52</sup>

### *Retinal Hemorrhages*

Retinal hemorrhages are small hemorrhages on the back of the eye.<sup>53</sup> The presence of retinal hemorrhages is often used by prosecution doctors to determine whether or not the case is non-accidental trauma.<sup>54</sup> “Traumatic retinoschisis is a particularly diagnostic lesion caused by traction applied to the retina by the vitreous jelly (which fills the eye and is attached firmly to the retina) as the child is submitted to repetitive acceleration-deceleration forces. The retina splits,

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<sup>47</sup> *Id.* at 1.

<sup>48</sup> Robert M. Reece, and Robert H. Kirschner, *Shaken Baby Syndrome/Shaken Impact Syndrome*, National Center on Shaken Baby Syndrome, at 1.

<sup>49</sup> Jane McCellan, *Forensic Science: “Shaken Baby Cases”*, June (2002), available at [http://www.fd.org/pdf\\_lib/FJC2010/fjc2010\\_Forensic\\_Science.pdf](http://www.fd.org/pdf_lib/FJC2010/fjc2010_Forensic_Science.pdf).

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

<sup>53</sup> Toni M. Blake, “*Shaken Baby Syndrome*” *A Tutorial and Review of the Literature*, SBS Defense.com, at 1.

<sup>54</sup> *Id.* at 1.



creating a blood filled cystic cavity, not reported in otherwise well children except SBS victims and perhaps severe head crush injury which would otherwise be obvious by history.”<sup>55</sup>

However, critics of SBS have argued that this is not an accurate mechanism.<sup>56</sup> They argued that “the pattern, number, location or type of retinal hemorrhages that ‘point to a diagnosis of SBS’ or other non-accidental trauma has changed many times.”<sup>57</sup> Also, the mechanisms behind retinal hemorrhages in infancy were never fully explained by proponents of SBS.<sup>58</sup> It has been stated that most studies do not support mechanical causes (physical shaking) of retinal hemorrhages and rather current research points to internal mechanisms (that are not due to physical shaking); rapid increases in intracranial pressure, cerebral venous spasm or increased venous pressure, and possibly hypoxia.<sup>59</sup> Some doctors argue that retinal hemorrhages are associated with a wide variety of causes such as; bleeding disorders, CPR and other resuscitation, induced labor, increase intracranial pressure from any cause, short falls of less than ten feet, mild to moderate vitamin C depletion, vaccinations with hepatitis B vaccine given at birth.

### *Skull Fractures*

The proponents of SBS argue that skull fractures are associated with SBS.<sup>60</sup> The skull fracture apparently results from the impact when the infant is thrown against a hard or soft surface.<sup>61</sup> However, critics believe that skull fractures do not necessarily result in symptoms or

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<sup>55</sup> Alex V. Levin, M.D. MHSc, FAAP, FAAO, FRCSC, *Eye Findings in Shaken Baby Syndrome*, National Center on Shaken Baby Syndrome, May 25, (2006) at 1.

<sup>56</sup> Toni M. Blake, JD, MA, “*Shaken Baby Syndrome*” A Tutorial and Review of the Literature, SBS Defense.com, at 1.

<sup>57</sup> *Id.* at 1.

<sup>58</sup> *Id.* at 1.

<sup>59</sup> *Id.* at 1.

<sup>60</sup> Robert M. Reece, M.D. and Robert H. Kirschner, M.D. , *Shaken Baby Syndrome/Shaken Impact Syndrome*, National Center on Shaken Baby Syndrome, at 1

<sup>61</sup> *Id.* at 1.

signs associated with SBS.<sup>62</sup> In respect to the creation of skull fractures, many argue that falls of less than three feet only rarely produce any sort of skull fracture and that they only occur when “extremely violent forces are brought to bear on the infant.”<sup>63</sup> Others have shown that skull fractures can occur from “short” falls. Overall critics argue that skull fractures cannot occur with just mere shaking “skull fractures can occur when there are crushing forces applied against the infant skull.”<sup>64</sup> Skull fractures cannot occur without impact of the head against a rigid object.<sup>65</sup> Doctors have said that skull fractures and bruising could be caused several different ways; vitamin C depletion in infants can lead to bone fragility, metabolic disease of the premature, osteogenesis imperfecta and other genetic bone disorders, hyperparathyroidism, vitamin D deficiency and idiopathic juvenile osteoporosis.<sup>66</sup>

### *The Way in Which Doctors Diagnose SBS*

Diagnosing SBS can be, at times, very difficult.<sup>67</sup> This is because of several different factors.<sup>68</sup> The diagnosis can be complicated by vague symptoms such as; irritability, sluggishness, vomiting, and a poor appetite.<sup>69</sup> Often symptoms of SBS also occur with common illnesses, such as the flu, ear infections, stomach flu (gastroenteritis), and kidney infections.<sup>70</sup> There could be a lack of visible signs of injuries such as bruises or broken bones.<sup>71</sup> In addition, caretakers may be hesitant to bring the child to the doctor’s in fear that they will be charged with

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<sup>62</sup> Toni M. Blake, “Shaken Baby Syndrome” A Tutorial and Review of the Literature, SBS Defense.com, at 1.

<sup>63</sup> *Id.* at 1.

<sup>64</sup> *Id.* at 1.

<sup>65</sup> *Id.* at 1.

<sup>66</sup> *Forensic Science: “Shaken Baby Cases”*, *supra* note 49.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

abuse.<sup>72</sup> When a doctor suspects abuse they seek to confirm so by examining the child's medical history and by conducting a variety of tests.

#### *Inquiry into Child's Medical History*

The inquiry of a child's medical history usually involves a timeline of the child's symptoms specifically noting if there has been a change in the child's behavior.<sup>73</sup> The doctor will ask questions about the caregivers and family members such as "who has been caring for the child?"<sup>74</sup> They will also ask questions about the symptoms such as "has the child had any recent injuries or falls?"<sup>75</sup> This information helps the doctor determine when the injury most likely occurred.<sup>76</sup>

#### *Computerized Tomography (CT) Scan*

Generally, the first test that is done is a Computerized Tomography (CT) scan which is used to determine the presence of brain injury.<sup>77</sup> A CT scan uses X-ray images to provide cross sectional images of the child's brain.<sup>78</sup> This test helps to detect injuries that need immediate care.<sup>79</sup> An iodine dye is used to make structures and organs easier to see on the CT scan. The dye

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<sup>72</sup> *Id.*

<sup>73</sup> Healthwise, *Shaken Baby Syndrome-Exams and Tests*, Feb. 16 (2011), available at <http://www.everydayhealth.com/health-center/shaken-baby-syndrome-exams-and-tests.aspx>.

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> *Id.*

<sup>77</sup> *Id.*

<sup>78</sup> Mayo Clinic, *Tests and Diagnosis*, Nov. 6, (2009), available at <http://www.mayoclinic.com/health/shaken-baby-syndrome/DS01157/DSECTION=tests-and-diagnosis>

<sup>79</sup> *Id.*

may be used to show blood flow, detect tumors, and look for other problems.<sup>80</sup> A CT scan of the face can provide information about the eyes and facial bones.<sup>81</sup>

### *Magnetic Resonance Imaging (MRI)*

Magnetic Resonance Imaging (MRI) can be used along side of a CT scan. An MRI uses a powerful magnetic field and radio waves to create detailed images of the child's brain. Images from this test may help doctors determine when the injury was likely to have occurred. Because it is difficult to conduct an MRI on an unstable child it is usually done two or three days after the injury when the child has calmed down.

### *Skeletal X-rays*

Skeletal X-rays are also used in order to determine if the child has any fractures. X-rays should be repeated two weeks after because sometimes fractured bones don't show up until they begin to heal.<sup>82</sup> The series of skeletal X-rays could possibly include the arms, hands, legs feet, spine, ribs, and skull. X-rays may be used to gauge whether the fractures were purposeful or accidental and can also look for previous fractures which would be an indication of past child abuse.<sup>83</sup>

### *Ophthalmologic Exam*

The last, of the most common tests in the diagnosis of SBS is an ophthalmologic exam. An ophthalmologic exam may be conducted in order to determine if there is eye bleeding or

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<sup>80</sup> *Id.*

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

other eye injuries.<sup>84</sup> This test is very important because retinal hemorrhaging is a cardinal symptom in the diagnosis of Shaken Baby Syndrome.<sup>85</sup> Examination should be conducted by an ophthalmologist using the indirect ophthalmoscope to view the entire retina.<sup>86</sup> Examination done by a non-ophthalmologist using the direct ophthalmoscope is said to be insufficient.<sup>87</sup>

### Evidentiary Standard of Expert Testimony

#### *General Admissibility of Relevant Evidence*

Rule 402 says that all relevant evidence is admissible.<sup>88</sup> Evidence which is not relevant is not admissible.<sup>89</sup> Under Rule 401 relevant evidence is defined as that which has “any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.”<sup>90</sup> The standard of evidence is a liberal one.<sup>91</sup> Under Rule 403, although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger or unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.<sup>92</sup>

#### *Frye Test: General Acceptance Test*

In *Frye v. United States*, the court states that expert opinion based on scientific technique is inadmissible unless the technique is “generally accepted” as reliable to the scientific

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<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*

<sup>88</sup> Fed. R. Evid. 402.

<sup>89</sup> *Id.*

<sup>90</sup> Fed. R. Evid. 401.

<sup>91</sup> *Daubert v. Merrel Dow Pharmaceuticals, Inc.* 509 U.S. 579, at 587 (1993)

<sup>92</sup> Fed. R. Evid. 403.

community “the court declared that expert opinion based on a methodology that diverges ‘significantly from the procedures accepted to be recognized authorities in the field...cannot be shown to be generally accepted as a reliable technique.’”<sup>93</sup> The *Frye* “general acceptance” test is a common law rule and should not be applied in federal cases because in such cases the federal rules of evidence supersedes.

*Explanation of Rule 702: Daubert and Kuhmo Principles*

Rule 702 states that “If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, or education, may testify thereto in the form of an opinion or otherwise.”<sup>94</sup> In the case *Daubert v. Merrel Dow Pharmaceuticals, Inc.*, the court sets a gate-keeping responsibility to the judge in determining whether or not an expert witness shall be qualified as such.<sup>95</sup> The court stated that there is nothing in the text of the rule that established “general acceptance” as an absolute prerequisite to admissibility.<sup>96</sup> When determining admissibility of expert testimony, courts must consider whether the expert opinion is based on scientific knowledge and whether the expert opinion will assist the trier of fact to understand or determine a fact in issue.<sup>97</sup>

The *Daubert* court considered four (4) general questions in determining the admissibility of expert testimony; (1) whether the theory or technique can be tested; (2) whether the theory or

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<sup>93</sup> *Daubert, supra* note 91.

<sup>94</sup> Fed. R. Evid. 702.

<sup>95</sup> *Daubert, supra* note 91 at 589.

<sup>96</sup> *Id.* at 581.

<sup>97</sup> *Id.* at 588.

technique has been subjected to peer review and publication: (3) the known potential rate of error, and (4) whether the theory or technique has general acceptance.<sup>98</sup>

In *Kuhmo Tire Company, LTD. v. Carmichael*, the court concluded that the general principles set forth in *Daubert* apply to the expert matters described in Rule 702.<sup>99</sup> The court went on to discuss that Rule 702 establishes a standard of evidentiary reliability.<sup>100</sup> That it requires a valid connection to the pertinent inquiry as a precondition to admissibility and where such testimony's factual basis, data, principles, methods, or their application are called sufficiently into question, the trial judge must determine whether the testimony has a "reliable basis of knowledge and experience of [the relevant] discipline."<sup>101</sup>

The factors identified in *Daubert* are not mandatory or exhaustive but may serve as helpful tools.<sup>102</sup> Also, experts need not only rely on the application or scientific principles they may also rely on skill or experience-based observation.<sup>103</sup> The policy behind this is that life and the legal cases in which it generates are widely diverse and thus needs flexibility.<sup>104</sup> There are too many complexities in the wide range of cases to warrant so definitive a match.<sup>105</sup> Therefore *Kuhmo*, concluded that the trial judge must have considerable leeway in deciding how to go about determining whether the expert testimony is reliable in each particular case.<sup>106</sup> Thus, the trial judge should consider the specific questions identified in *Daubert* in cases where they are

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<sup>98</sup> *Id.* at 581.

<sup>99</sup> *Kuhmo Tire Company, LTD. v. Carmichael* 526 U.S. 137, at 149 (1999)

<sup>100</sup> *Id.* at 149.

<sup>101</sup> *Id.* at 149.

<sup>102</sup> *Id.* at 140.

<sup>103</sup> *Id.* at 140.

<sup>104</sup> *Id.* at 140.

<sup>105</sup> *Id.* at 140.

<sup>106</sup> *Id.* at 140.

reasonable measures of reliability of expert testimony.<sup>107</sup> The rules seek to avoid unjustifiable expense and delay as part of their search for truth.<sup>108</sup> Without such flexible discretion the trial judge would lack the discretionary authority needed to both avoid unnecessary “reliability” proceedings in ordinary cases and to require appropriate proceedings in the less usual more complex proceedings.<sup>109</sup>

### **V. The Qualifications of SBS Expert Witness’: Specialized in Nothing Qualified in Everything**

The expert witness’ for SBS are always some sort of medical doctor. The experts are, at times, doctors that do not practice within the specific field of (forensic) pathology or neurology which is the field of medicine which makes for the most qualified expert.<sup>110</sup> Also it is not necessary to have specialized experience or training in SBS. Pathology is the branch of medicine concerned with the cause, origin, and nature of disease.<sup>111</sup> It also includes the physical and mental abnormalities that results from disease or trauma, especially the changes occurring in tissues or organs.<sup>112</sup> Neurologists are brain doctors who specialize in the diagnosis and treatment of diseases of the nerves and nervous system.<sup>113</sup>

#### ***Different Types of Doctors Can Testify to Shaken Baby Syndrome***

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<sup>107</sup> *Id.* at 149.

<sup>108</sup> *Id.* at 140.

<sup>109</sup> *Id.* at 140.

<sup>110</sup> *State v. Rocco D’Alessio*, 848 A.2d 1118, at 1120 (2004)

<sup>111</sup> THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE, (4<sup>th</sup> ed. 2000).

<sup>112</sup> *Id.*

<sup>113</sup> *Id.*



Courts allow doctors from all different branches of the medical field to testify, conclusively, that the infant suffered from SBS. In the case *Gary A. Deese v. State of Maryland*, the defendant was convicted of second degree felony murder and sentenced to twenty years in prison under the theory that he violently shook his girlfriend's child in combination of a blunt force trauma which resulted in the death of the child.<sup>114</sup> The defendant argued that the court erred in allowing the State's expert witness, Dr. Walker, to testify because he was not a specialist and not board certified in pathology or forensic pathology.<sup>115</sup> The defense also argued that he belonged to no medical societies or groups having to do with that discipline.<sup>116</sup> Dr. Walker's expertise is in pediatrics and pediatric emergency case which is the branch of medicine that deals with the care of infants and children.<sup>117</sup> This court allowed a pediatrician to testify about SBS and justified doing so by comparing the relationship between pediatrics and forensic pathology with the relationship that was held sufficient in *Massie v. State*.<sup>118</sup>

In *Massie*, the court held sufficient the relationship between forensic chemistry/crime scene investigation and forensic pathology.<sup>119</sup> In this case the trial court admitted expert testimony as to time of death by a "forensic employee of the investigating police department, who was not a doctor of medicine."<sup>120</sup> Since, it was held in *Massie* that the trial court did not abuse their discretion by allowing a non-doctor to testify about what a doctor should ideally

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<sup>114</sup> *Gary A. Deese v. State of Maryland*, 367 Md. 293, at 296 (2001)

<sup>115</sup> *Id.* at 301.

<sup>116</sup> *Id.* at 301.

<sup>117</sup> *Id.* at 301.

<sup>118</sup> *Gary A. Deese*, *supra* note 114 at 303.

<sup>119</sup> *Id.* at 304.

<sup>120</sup> *Id.* at 304.

testify to, this court claimed that it was proper to allow a pediatrician to testify albeit the fact he was not a (forensic) pathologist or neurologist.<sup>121</sup>

In *State v. Rocco D'Alessio*, the defendant was found guilty of second-degree murder on the theory that he violently shook his baby causing her death.<sup>122</sup> The defense argued that the State's expert witness, Dr. Laposata, was not qualified to offer an expert opinion that the cause of the victim's death was SBS.<sup>123</sup> He claimed such because Dr. Laposata was not a specialist in the field of neuropathology and had limited experience with SBS. Nevertheless, the court determined that there was no error in the trial judge's decision to allow Dr. Laposata to testify.<sup>124</sup>

This court explained that in determining whether a witness is qualified to testify as an expert "prime considerations" include evidence of the witness' education, training, employment or prior experiences.<sup>125</sup> Rule 702 does not require that a proffered expert have formal certification or specialization in a particular field.<sup>126</sup> This court discussed that in *Leahey v. State*, the court held that a general surgeon could offer his expert opinion that there was no casual relationship between an individual's injuries and his work-related duties.<sup>127</sup> In *Leahey*, the court went on to explain that the fact that [the surgeon] is not a specialist in the orthopedic field might bear upon weight given to his testimony, but does not affect the admissibility of his testimony.

<sup>128</sup>This court held that forensic pathologists and medical examiners, by virtue of their education

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<sup>121</sup> *Id.* at 304.

<sup>122</sup> *Rocco D'Alessio*, *supra* note 110 at 1120.

<sup>123</sup> *Id.* at 1120.

<sup>124</sup> *Id.* at 1124.

<sup>125</sup> *Id.* at 1123.

<sup>126</sup> *Id.* at 1123.

<sup>127</sup> *Id.* at 1123.

<sup>128</sup> *Id.* at 1123.

and experience, are qualified to offer their opinions on a wide range of topics relating to cause of death.<sup>129</sup>

The court explained that because Dr. Laposata is a medical doctor, trained and certified in anatomic and forensic pathology, she was sufficiently trained and educated to offer her opinion about the victim's cause of death.<sup>130</sup> Some examples of prior occurrences where they allowed an expert to testify outside their immediate field that the court discussed are; In *State v. Morales*, this court held that a forensic pathologist was qualified to testify about the distance between a shooter and a victim because "he had attended firearms seminars on this subject and had prior occasions examined wounds for fouling or stippling."<sup>131</sup> Along those same lines, this court has held that Dr. Laposata, despite the fact that she was not an expert in ballistics, was qualified to offer her opinion about how a bullet that was lodged in a victim's leg became deformed.<sup>132</sup>

Generally, the application the courts applied above, that a SBS expert need not be from a specific field of medicine in order to qualify as an expert seems proper. This is because courts hold that medical doctors, by virtue of their education, training, employment and prior experiences are able to conduct the tests required and read the results in order to diagnose SBS. Many different fields of medicine require doctors to know how to read X-rays, MRIs and CT scans. Although a neurologist would obviously be better educated, have more training and prior experience in reading MRIs and CT scans than for example a pediatrician, does not mean the inclusion of one if the exclusion of the other. The fact that it is not a neurologist testifying and rather it is a pediatrician can be pointed out during cross-examination and weighted by the jury.

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<sup>129</sup> *Id.* at 1123.

<sup>130</sup> *Id.* at 1123.

<sup>131</sup> *Id.* at 1123.

<sup>132</sup> *Id.* at 1123.

Although the court's comparison of relationships that were found admissible in previous cases,, for example a medical doctor testifying to what a ballistics expert should be ideally testifying to, seems to be a viable justification there are potential problems. How far will the relationship be stretched before the expert becomes inadmissible? Eventually, will it be held that a dentist can diagnose a fractured skull because they were trained to read X-rays? This justification seems like a slippery sloped that needs to be constricted and defined by the courts.

#### **VI. The Admissibility of the Science of SBS Itself: Is "Reliable" Really Reliable?**

The *Daubert* test is designed to keep out unreliable or "pseudoscientific" expert scientific testimony that would confuse or mislead the jury, or that cannot legitimately be challenged in a courtroom.<sup>133</sup> Essentially, the gate keeping role is designed to banish 'junk science' evidence from the courtroom.<sup>134</sup> If there are disputes as to the faults in the use of a particular methodology, or lack of textual authority for the opinion it does not go to the admissibility, rather it goes to the weight of the evidence.<sup>135</sup> The role of the gatekeeper is not meant to replace the jury system.<sup>136</sup> The fact that experts disagree as to the methodologies and conclusion is not grounds for excluding relevant testimony.<sup>137</sup> That is the role of cross-examination, to highlight the alleged defects in the science and thus reduce the possibility of prejudice.<sup>138</sup>

In grappling with two well qualified experts courts have concluded that "merely because two qualified experts reach directly opposite conclusions using similar, if not identical, data bases, or disagree over which data to use the manner in which the data should be evaluated, does

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<sup>133</sup> *Raymond Martin, supra* note 8 at 67.

<sup>134</sup> *Id.* at 67.

<sup>135</sup> *Id.* at 68.

<sup>136</sup> *Id.* at 68.

<sup>137</sup> *Id.* at 68.

<sup>138</sup> *Id.* at 68.

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not necessarily mean that, under *Daubert*, one opinion is *per se* unreliable.<sup>139</sup> *Daubert* does not empower the district judge to simply “pick one expert over the other, because that expert is more credible or convincing, under the guise of exercising the gate-keeping function.”<sup>140</sup> To do so would improperly usurp the jury’s function.<sup>141</sup>

In *Commonwealth of Kentucky v. Raymond Martin*, the appellant court discussed the way in which the trial court abused their discretion in deciding that the expert medical testimony on SBS was unreliable and therefore inadmissible.<sup>142</sup> As a result of the conflict between the “medical” and “scientific” opinion, the trial court held that the *Daubert* standard had not been met, and that neither party could call a witness to give an expert opinion as to whether the child’s injuries was due to SBS in a case where there is no other evidence of abuse.<sup>143</sup> Other evidence of abuse would include; long-bone injuries, a fractured skull, bruising, or other indications that abuse occurred.<sup>144</sup> In this case, there was a conflict between two well-qualified expert’s opinions with no other evidence of abuse. Therefore the trial court held that neither side can introduce the testimony.<sup>145</sup>

In coming to this decision the trial court found the clinical studies which found a strong correlation between abuse and the two symptoms of subdural and hematoma and retinal hemorrhaging unconvincing.<sup>146</sup> They concluded that when the state’s witness observed that there was a stronger correlation between retinal hemorrhaging and subdural hematoma with abusive head trauma than with unintentional head trauma it does not mean that retinal hemorrhages are

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<sup>139</sup> *Id.* at 68.

<sup>140</sup> *Id.* at 68.

<sup>141</sup> *Id.* at 68.

<sup>142</sup> *Id.* at 61.

<sup>143</sup> *Id.* at 64.

<sup>144</sup> *Id.* at 64.

<sup>145</sup> *Id.* at 64.

<sup>146</sup> *Id.* at 64.

always caused by violent shaking.<sup>147</sup> Thus the court recognized other reasons why the two symptoms are present other than violent shaking.<sup>148</sup> The trial court therefore found both arguments plausible and thus unreliable.

The appellant court found that the trial court abused their discretion in excluding the expert testimony.<sup>149</sup> They explained that the jury court is fully capable of understanding that just because a retinal hemorrhaging and subdural hematoma is present does not necessarily mean that violent shaking has occurred.<sup>150</sup> The process of cross-examination is where this distinction is made in order for the jury to judge the credibility of the testimony.<sup>151</sup> Policy wise, the appellant court explained that clinical studies and trials which observe correlations are an important part of medical research.<sup>152</sup> Also, since experiments utilizing the “scientific” method cannot be performed on living infants it is unreasonable to conclude that clinical studies and trials are inherently unreliable because they cannot and do not follow a particular methodology.<sup>153</sup>

### *The Critic's Argument*

From a logical standpoint many could argue that the trial court's decision to exclude the testimony without any other signs of abuse is the more sound of the two decisions. Since neither expert, the state's nor the defendant's, can say to any significant certainty that a child was indeed violently shaken, due to the conflicting qualified medical testimony it would be useless. The jury would have no real basis of a decision if both sides produce sufficient contradictory evidence without any other evidence of child abuse. The gate-keeping role indeed is not there to usurp the

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<sup>147</sup> *Id.* at 69.

<sup>148</sup> *Id.* at 69.

<sup>149</sup> *Id.* at 69.

<sup>150</sup> *Id.* at 69.

<sup>151</sup> *Id.* at 69.

<sup>152</sup> *Id.* at 69.

<sup>153</sup> *Id.* at 69.

jury's role, however it is there to throw out not only "junk science" but also testimony that cannot legitimately be refuted in court. By the trial court holding that unless there are other signs of child abuse the testimony may not be admitted, can be argued, to strike a balance between the two competing concerns. On one hand, the jury needs to be the trier of fact and not the judge, however, on the other hand, the judge's responsibility is to ensure justice. If the jury is displayed with only two qualified experts testifying to contradictory medical evidence, than without any other evidence of abuse, how could the testimony be legitimately refuted? If other evidence of abuse is required than the jury will have enough evidence in order to serve justice rather than rely on a game of he said she said. Nevertheless, under the *Daubert* standard the exclusion of SBS testimony is almost guaranteed to fail.

#### *Application of the (4) Daubert Questions To Shaken Baby Syndrome*

In *Daubert*, the court stated that when faced with a proffer of expert scientific testimony the trial judge must determine at the outset, pursuant to Rule 104(a), whether the expert is proposing to testify to scientific knowledge that will assist the trier of fact to understand or determine a fact in issue.<sup>154</sup> This includes a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and can properly be applied to the facts in issue. *Daubert*, laid out four general questions.<sup>155</sup> Although, these questions set out by *Daubert* is not exhaustive and are not always necessary in making the determination of whether or not expert testimony is admissible it is still a good starting point.<sup>156</sup> The admissibility of SBS will be analyzed under the four questions laid out by *Daubert*: (1) whether the theory or technique can be tested; (2) whether the theory or technique has been subjected to peer review

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<sup>154</sup> *Daubert*, *supra* note 91 at 581.

<sup>155</sup> *Kuhmo Tire Company, LTD*, *supra* note 99 at 149.

<sup>156</sup> *Id.*

and publication: (3) the known potential rate of error, and (4) whether the theory or technique has general acceptance.<sup>157</sup>

### *Testability*

First, the question of “whether the theory or technique can be tested” will be analyzed. Clinical studies are the only way to test the theory of SBS. SBS cannot be tested using the scientific method because it would be unethical to violently shake living infants in order to test the theory.<sup>158</sup> Albeit, the fact that the scientific method cannot be used, many courts have found clinical studies a reliable method of testing.<sup>159</sup> In *Commonwealth of Kentucky, v. Raymond Martin*, the appellant court stated “...clinical studies and trials which observe such correlations are an integral part of medical research.<sup>160</sup> Experiments utilizing the ‘scientific’ method cannot be performed on living infants.<sup>161</sup> It is unreasonable to conclude that clinical studies and trials are inherently unreliable (and hence inadmissible) because they cannot and do not follow a particular methodology.<sup>162</sup>”

In *Raymond Martin*, the state’s expert, Dr. Spivack, testified about various clinical trials and studies which she felt supported the theory behind Shaken Baby Syndrome.<sup>163</sup> Dr. Spivack discussed a study performed in 1989, on thirty-six children who had suffered abusive head trauma.<sup>164</sup> The results were that thirteen children showed no evidence of impact.<sup>165</sup> Also, of the six that were autopsied five showed no signs of impact but they did have evidence of epidural

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<sup>157</sup> *Id.*

<sup>158</sup> *Raymond Martin, supra* note 8 at 69.

<sup>159</sup> *Id.* at 69.

<sup>160</sup> *Id.*

<sup>161</sup> *Id.*

<sup>162</sup> *Id.*

<sup>163</sup> *Id.* at 67.

<sup>164</sup> *Id.*

<sup>165</sup> *Id.*



and subdural hematomas of the cervical spinal cord.<sup>166</sup> Based on these results Dr. Spivack explained that it was possible to have impact without outward evidence such as bruising. She also concluded that bilateral, extensive retinal hemorrhages, in conjunction with a hematoma, are a good indicator that shaking occurred.<sup>167</sup> She supported this statement by saying "...in automobile or bike accidents, children who suffer subdural hematomas rarely display retinal hemorrhages. Dr. Spivak also testified that multiple studies have confirmed that up to eighty percent of abusive head trauma cases have retinal hemorrhages."<sup>168</sup>

### *Peer Review and Publication*

The second question laid out in *Daubert* is whether the theory or technique has been subjected to peer review and publication. Publication, which is one element of peer review, does not necessarily correlate with reliability.<sup>169</sup> At times well-grounded and innovative theories are too particular, too new, or of too limited interest to be published.<sup>170</sup> However, submission to the scientific community for scrutiny increases the likelihood that substantive flaws in methodology will be detected which helps to ensure "good science."<sup>171</sup> Again this inquiry is relevant, not dispositive.<sup>172</sup>

SBS has been written upon, published, and subjected to peer review for decades. In *State v. Vandemark*, the State's expert, is a pediatrician, lecturer and author. Particularly she is well-qualified to speak about SBS based on her prior experiences.<sup>173</sup> She has authored a textbook and

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<sup>166</sup> *Id.*

<sup>167</sup> *Id.*

<sup>168</sup> *Id.*

<sup>169</sup> *Kuhmo Tire Company, LTD, supra* note 99 at 149.

<sup>170</sup> *Id.*

<sup>171</sup> *Id.*

<sup>172</sup> *Id.*

<sup>173</sup> *State v. Vandemark*, 2004 Del. Super. LEXIS 376, 4 (Del. Super. Ct. Nov. 19, 2004)

had written twenty papers on Shaken Baby Syndrome, and her publications have been peer reviewed.<sup>174</sup> One article that she co-authored on SBS appeared in the *New England Journal of Medicine*.<sup>175</sup>

### *Known Potential Rate of Error*

The third question laid out in *Daubert* is the known potential rate of error “the court ordinarily should consider the known or potential rate of error, and the existence and maintenance of standards controlling the technique’s operation. Many experts testify that the rate of error is very low.”<sup>176</sup> In *Leibhart*, at the conclusion of the *Daubert* hearing the district court held that SBS had been clinically tested the best it can and it has a small error rate.<sup>177</sup> However, in *Vandemark*, the defense argued that since a rate of error was established for certain undisputed cases of abusive head trauma there must an error rate for over reported cases or cases of false negatives.<sup>178</sup> The state’s expert, Dr. Christian, admitted that the rate of error for cases wrongfully diagnosed as inflicted head traumas was not known.<sup>179</sup> Nonetheless, the court held that this is the best of what can be expected as children cannot be tested.<sup>180</sup> The absence of a known rate of error merely reflects a limitation of the subject matter and the defense can bring this out during cross-examination so the jury can determine its credibility.<sup>181</sup>

### *General Acceptance within the Medical Community*

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<sup>174</sup> *Id.* at 3.

<sup>175</sup> *Id.*

<sup>176</sup> *Id.* at 10.

<sup>177</sup> *State of Nebraska, Appellee, v. Michelle Leibhart, Appellant*, 662 N.W.2d 618 at 135 (2003)

<sup>178</sup> *Vandemark, supra* note 173.

<sup>179</sup> *Id.*

<sup>180</sup> *Id.*

<sup>181</sup> *Id.*

Finally, the fourth question laid out in *Daubert* is whether the theory or technique has general acceptance “A ‘reliability’ assessment does not require, although it does permit, explicit identification of a relevant scientific community and an express determination of a particular degree of acceptance within that community”.<sup>182</sup> Many qualified experts and many courts have recognized that SBS is generally accepted within the medical community.<sup>183</sup> In *State of Nebraska v. Michelle Leibhart*, the state’s expert, Dr. Moran, testified regarding his qualifications as a pediatrician and his training with respect to SBS.<sup>184</sup> He testified that clinical studies had been conducted to study SBS and that SBS is a scientifically recognized medical diagnosis within the pediatric community.<sup>185</sup> In *State v. Compton*, after listing several published and peer reviewed articles on SBS, the court concluded that “there is sufficient, authoritative legal and medical literature to substantiate the conclusion that SBS has been widely accepted in the medical community.”<sup>186</sup>

*SBS Satisfies Daubert but is Daubert Adequate?*

Virtually all courts hold that SBS satisfies all four questions laid out in *Daubert* and thus is admissible.<sup>187</sup> Many courts hold that the reasoning or methodology underlying testimony about SBS is sufficiently reliable.<sup>188</sup> “The theory has been clinically tested and peer reviewed.”<sup>189</sup> The findings have been documented by considerable literature.<sup>190</sup> The findings are generally accepted

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<sup>182</sup> *Daubert*, *supra* note 91 at 581.

<sup>183</sup> *Id.*

<sup>184</sup> *Michelle Leibhart*, *supra* note 177.

<sup>185</sup> *Id.*

<sup>186</sup> *State v. Compton*, 304 N.J. Super. 477, 472.

<sup>187</sup> *Id.*

<sup>188</sup> *Id.*

<sup>189</sup> *Id.*

<sup>190</sup> *Id.*

within the field of pediatrics....The absence of known rate of error reflects the limitations of the subject matter. Areas of defense interest can be explored by cross examination, and the jury can give this evidence the weight it deserves.”<sup>191</sup>

When analyzed under the four *Daubert* questions courts are correct for holding that SBS is “reliable” and thus admissible. This is because it satisfies the *Daubert* questions in the best possible way. Clinical studies are used because you cannot shake a living child in order to determine their injuries. Based on these clinical studies several pieces have been written, published, and subjected to peer review within the medical community on SBS. Albeit, the fact that the medical community does not know the potential rate of error for false negatives, the medical community are in general agreement that generally, the potential rate of error of the diagnosis of SBS is very low. In addition, it is undoubtedly generally accepted within the medical community, as numerous qualified medical experts testify to the validity of the theory. So, the question presented now is not whether SBS is properly admitted into courts under the *Daubert* standard but whether the *Daubert* standard is enough to ensure justice.

Since the coming of DNA evidence about twenty-five cases, in which the caretaker was convicted of violently shaking their child, have been appealed and many overturned. SBS cannot be tested under the scientific method, and thus the reliability of such diagnosis is highly questioned. Doctors have testified to several other ways in which a child could develop the same symptoms associated with SBS. Yes, SBS has generally been said to have a low potential rate of error by many medical experts but it is admitted that the most important potential rate of error, false positives, is unknown. SBS experts do not know how many children they say suffered from SBS but actually did not, doesn't that piece of information seem vital to knowing whether SBS is

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<sup>191</sup> *Vandemark, supra* note 173.

reliable? Shouldn't the judge, in seeking justice, need to know how often caretakers are wrongfully accused of severe child abuse? SBS has been generally accepted within this medical community, however it has been accepted with its many flaws shining through. It seems that in applying *Daubert* judges find SBS admissible by justifying each major flaw in the theory with the argument that it's the best we have and thus it is good enough. When people's lives are at stake one would think that the judicial system should raise the bar of admissibility and not just settle with the explanation of "there is no better way."

The next question this paper turns to is the scope in which SBS should be allowed to be testified to in court. Just because the science of SBS is found to be acceptable under the *Daubert* standard does not mean that the judge has no responsibility to sever the scope in which experts testify. Not only do judges permit medical experts to testify that there is absolutely no other cause of the child's injuries other than SBS but they shockingly allow them to testify to the timelines in which the shaking occurred within minutes. This disrupts the journey to justice for just because the theory of SBS is held "reliable" does not mean the entire scope of the expert's testimony is "reliable".

### **The Scope of SBS Expert's Testimony: Adding Insult to Injury**

SBS experts are often permitted to testify in court in a conclusive fashion.<sup>192</sup> They often testify that there is absolutely no other explanation of the child's injuries besides SBS.<sup>193</sup> Most alarming, is that they claim to know the precise time frame the shaking occurred.<sup>194</sup> Fraught with controversy, some experts are permitted to testify that they can pin point the time of the shaking

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<sup>192</sup> Michelle Leihbart, *supra* note 177 at 138.

<sup>193</sup> *Id.*

<sup>194</sup> *Id.* at 139.

within minutes, while others claim hours, some claim weeks, and others claim that it is impossible to determine.<sup>195</sup>

### *Testifying to Absolute Certainties*

First, the State's expert witness', quite often, testify to an absolute certainty that the child was a victim of Shaken Baby Syndrome, despite the fact that there is no other evidence or history of child abuse.<sup>196</sup> Critics are worried that a large emotional bias plays a huge role into the admission of the testimony "the most worrying element in this misplaced eagerness to 'protect' babies against abuse, it is the ignorance of the medical 'experts' who adamantly, and under oath in court, will testify that there is no evidence (published or otherwise) or 'no reputable evidence' that the observed injuries, considered pathognomic of SBS, have other, viable, non-traumatic, causes."<sup>197</sup> Juries, fraught with emotion, seek to cast blame on someone in the desperate attempt to obtain justice for the innocent child.<sup>198</sup> If placing more weight on the State's expert's testimony than it deserves is all it takes to punish someone for the tragic death then the temptation may be too strong to withstand.<sup>199</sup>

The expert, Dr. Shaffer, in the *Michelle Leibhart*, case discussed prior, testified conclusively that the child had been violently shaken and thus had suffered from Shaken Baby Syndrome.<sup>200</sup> He did not testify that she "may have", or that it was "highly likely" but that the

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<sup>195</sup> *Id.* at 139.

<sup>196</sup> *Id.* at 139.

<sup>197</sup> Viera Scheibner, Ph.D., *SBS Diagnosis of Shaky Ground*, Journal of Australasian College of Nutritional & Environmental Medicine, Vol. 20 No.2; August 2001, at 2.

<sup>198</sup> *Id.*

<sup>199</sup> *Id.*

<sup>200</sup> *Michelle Leibhart*, *supra* note 177 at 138.

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child “had” been a victim of Shaken Baby Syndrome.<sup>201</sup> He supported this absolute statement by testifying that the child had been shaken in a manner such that the brain was shaken back and forth and that small blood vessels and nerve cells in the brain were torn.<sup>202</sup> Also, he testified that there was diffuse brain injury which was indicative of shaking, as opposed to trauma from something such as a fall or a hit to the head which would result in a more localized injury.<sup>203</sup>

However, Dr. Shaffer also testified that he saw no signs of external injuries or bruising or evidence of blunt trauma on the outside of the child’s head.<sup>204</sup> There were no bruises on the child’s body where the child could have possibly been gripped to be shaken in an angry rage, in fact there were no bruises anywhere on the child’s body.<sup>205</sup> Therefore, without any other sign of child abuse, besides the symptoms associated with SBS, or past accusations or suspicions of child abuse, Dr. Shaffer was permitted to testify to an absolute certainty.<sup>206</sup>

The State’s final witness in this case was Dr. Moran, a pediatrician, who testified that the child’s injury was consistent with SBS and that there was no other explanation for her injury.<sup>207</sup> He testified that the injuries could not have been caused by a fall from a couch or a bump to the head and that the shaking that resulted in her injury could not have been caused by a child.<sup>208</sup> Therefore, the court allowed Dr. Shaffer and Dr. Moran to testify that the child was absolutely

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<sup>201</sup> *Id.* at 137.

<sup>202</sup> *Id.* at 137.

<sup>203</sup> *Id.* at 137.

<sup>204</sup> *Id.* at 138.

<sup>205</sup> *Id.* at 138.

<sup>206</sup> *Id.* at 138.

<sup>207</sup> *Id.* at 138.

<sup>208</sup> *Id.* at 139.

violently shaken by the defendant completely based on a theory that has been highly controversial within the medical community with zero other evidence of abuse.<sup>209</sup>

### *Under Daubert Conclusive Testimony is Reliable*

Although it is dangerous to testify to absolute certainties it follows that since SBS is found to be reliable under the *Daubert* standard medical experts should be permitted to do so. The whole point of the *Daubert* standard is to determine reliability behind the science taking testing, peer review, rates of error, and general acceptance into consideration. If SBS is constantly found to be a reliable science than there is no error in allowing expert's to testify to such. Defense attorneys should use the cross-examination mechanism to point out the flaw in the expert's theory by highlighting other plausible causes for the symptoms. It is the jury's job to weigh the credibility of the evidence.

### *Testifying to Timelines*

Second, and the most urgent of concerns, is that experts are often allowed to testify to the time in which the shaking occurred right down to a five to ten minute time-frame. Some medical experts testify that the bleeding occurs suddenly and therefore they are supposedly able to pin point the time the shaking occurred within as little as a few minutes. This allows an expert to blame the person who was in custody of the child in that short time frame of child abuse, albeit the fact that the child was in the custody of several others within that day. Other medical experts say that this is not necessarily true because bleeding can be chronic rather than acute which means that they cannot predict accurate timing and therefore are not able to cast blame on one of the several caretakers. Many of these experts speak of the pressure they get from the police to be

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<sup>209</sup> *Id.* at 209.



able to determine the time of the trauma within hours but they cannot do so. They say that they can only time it within weeks making anyone in custody of that child within those weeks the possible abuser.

In the case *Felipe San Martin Adriano, Appellant v. State of Texas*, the defendant was convicted of violently shaking his five-month old child.<sup>210</sup> In this case the child was in the presence of six people, other than the defendant, at different times throughout the day.<sup>211</sup> The child was first left briefly with her aunt while the others went out.<sup>212</sup> Next, the child was left with her father, the defendant, alone while the others went to Dairy Queen.<sup>213</sup> When the others returned from Dairy Queen it was at this time that the child's mother noticed that she was not moving.<sup>214</sup> She was then taken to the hospital and declared brain dead. Both the defendant and the mother were indicted for their child's death.<sup>215</sup> The reason why the jury concluded that it was indeed the defendant rather than the child's mother was because of the expert testimony claiming that they could pin point the time of the violent shaking within five to ten minutes.<sup>216</sup>

Dr. Turlipati, the pediatric intensive care doctor, who treated the child testified that based on the gravity of the child's injuries the symptoms would have appeared five to ten minutes after shaking, and that the brain swelling itself would have occurred within minutes or seconds.<sup>217</sup> Several medical experts testified that based on the magnitude of her injuries, the child would have been symptomatic within five to ten minutes of her injury.<sup>218</sup> Since the defendant was the

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<sup>210</sup> *Felipe San Martin Adriano, Appellant*, 2005 Tex. App. LEXIS 7140, 9 at 1. \*HELP!\*

<sup>211</sup> *Id.* at 2.

<sup>212</sup> *Id.* at 2.

<sup>213</sup> *Id.* at 2.

<sup>214</sup> *Id.* at 2.

<sup>215</sup> *Id.* at 2.

<sup>216</sup> *Id.* at 10.

<sup>217</sup> *Id.* at 7.

<sup>218</sup> *Id.* at 10.

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only person with the child during the fifteen to twenty minute period before her symptoms were observed by the mother this persuaded the jury to place blame on the defendant.<sup>219</sup> However, Dr. Wilson Sy, the pediatric neurologist testified that the child's injuries were inflicted approximately six to twelve hours before his examination of her at 3:00 am on the night of the incident.<sup>220</sup> The court justified the admissibility of the testimony by stating that the inconsistencies of the timeline are within the province of the jury to determine its credibility.<sup>221</sup>

In *State v. Nebraska v. Michelle Leibhart*, the defendant was convicted of first degree assault and was sentence to one to three years in prison.<sup>222</sup> The defendant was charged with violently shaking an eighteen-month old child for whom she was caring for.<sup>223</sup> The child's father testified that she had bumped the top of her head while crawling under a table that same evening and when he dropped her off to the defendant's the child was "kind of fussy."<sup>224</sup> The defendant also testified that her two and a half year old son got mad at the child and as a result hit her on the head with a phone.<sup>225</sup> She then testified that after the child was hit on the head she laid her on the couch to rest and when she returned fifteen minutes later she found the child on the floor.<sup>226</sup>

In this case, the state used Dr. Kenton Shaffer, the child's pediatrician, as an expert witness to testify as to the cause of the child's injuries.<sup>227</sup> He testified that after observing the child's physical condition he concluded that she had suffered a brain injury, and a CAT scan

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<sup>219</sup> *Id.* at 9.

<sup>220</sup> *Id.* at 7.

<sup>221</sup> *Id.* at 10.

<sup>222</sup> *State of Nebraska, Appellee, v. Michelle Leibhart, Appellant*, 662 N.W.2d 618 at 135 (2003)

<sup>223</sup> *Id.* at 135.

<sup>224</sup> *Id.* at 137.

<sup>225</sup> *Id.* at 139.

<sup>226</sup> *Id.* at 139.

<sup>227</sup> *Id.* at 137.

showed bleeding and swelling on the left side of her brain.<sup>228</sup> Dr. Kenton Shaffer testified that Emily had suffered from SBS and that the symptoms of SBS would have manifested themselves within minutes of the precipitating event. The testimony about the timeline would exclude the child's father, mother, or anyone else who had handled the child and place blame on the defendant.

*Expert Testimony on Timelines are Unreliable*

Testimony about the time in which a child was violently shaken should be excluded from the scope of the expert's testimony.<sup>229</sup> This is because the factors that made SBS "reliable" and admissible in the first place do not reach to this specific aspect of the testimony.<sup>230</sup> Those doctors claim that by viewing the bleeding in the brain they can tell if it happened suddenly and thus they can pin point the exact timing of the shaking in order to cast blame on the parent who has custody of the child at that time.<sup>231</sup> However, the same medical experts that "generally accepted" SBS within the medical community remain very conscious of the validity of this argument. If it was acute then there is a possibility that a doctor can pinpoint the time of the trauma more accurately, however if it was chronic then there is no way for the doctor to do so.<sup>232</sup> The problem is that medical experts have stated that there is no way of determining whether there was acute hemorrhaging within the brain or whether it was chronic.<sup>233</sup>

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<sup>228</sup> *Id.* at 137.

<sup>229</sup> *Shaken-Baby Syndrome Faces New Questions in Court, supra* at note 7.

<sup>230</sup> *Id.*

<sup>231</sup> *Id.*

<sup>232</sup> *Id.*

<sup>233</sup> *Id.*

Medical experts have begun to point out that clinical observations show that it's possible for a child to have a brain injury and still remain conscious.<sup>234</sup> The child may be lethargic or even fussy or may not eat or sleep normally for hours or days, while the subdural hemorrhage and other injuries become more serious, ending in acute crisis.<sup>235</sup> Even when doctors are sure abuse occurred this has made doctors hesitant of pin pointing the timing of a child's injury.<sup>236</sup> John Leventhal, a Yale pediatrics professor and medical director of child-abuse programs at Yale-New Haven Children's Hospital has said "the police want us to time it within one to three hours but sometimes we can only time it within days."<sup>237</sup>

Also, testing this aspect of the testimony is not possible since not only do some doctors believe you can't tell whether the hemorrhaging was acute or chronic but some doctors claim there are many factors that come into play when determining whether there has been acute or chronic hemorrhaging. Although the potential rate of error of SBS in general is claimed by medical experts to be low there is no way of knowing whether the potential rate of error in the determination of the timeline is also low. The defendants, in which the blame was placed upon, fight for their innocence and in most cases, under the assumption abuse actually occurred; don't admit when the violent shaking took place. Since again there is no potential rate of error of false positives there is no way of knowing how often caretakers get accused wrongfully and thus no way of knowing whether their time-line diagnosis is indeed correct. Although the diagnosis of the timeline in which a child was violently shaken has been written upon, published, and peer reviewed it does not always withstand peer scrutiny. As stated earlier, many SBS advocates are not willing to join some of their co-advocates and claim they can tell whether the hemorrhaging

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<sup>234</sup> *Id.*

<sup>235</sup> *Id.*

<sup>236</sup> *Id.*

<sup>237</sup> *Id.*

was acute or chronic. They are skeptical of their ability to do so and wouldn't risk testifying to such a grave injustice.

The judge should exclude the testimony as unreliable. This is because the portion of the SBS testimony no longer meets the *Daubert* Standard. Although the theory of timelines have been published and peer reviewed they do not always get the support of other experts. Timelines do not have general acceptance within the medical community. The same people who join together to advocate for SBS have hesitancy in the ability of their fellow advocates to be able to pin point the time in which the shaking occurred. Testing the timeline theory seems impossible since many SBS advocate experts testify that at times it's impossible to determine between acute and chronic hemorrhaging. There is no way of accurately determining the potential rate of error of false positive. There is no way of determining whether or not that particular defendant was the one who actually violently shook the child especially in absence of other evidence. In combination, this makes the timeline portion of expert's testimony unreliable and hence should be deemed inadmissible. In seeking justice for one innocent person's life you should not do so by taking away another innocent person's life, this would be the gravest injustice.

### **Child Abuse or Judicial Misuse?**

From monkeys to magazines, SBS undeniably became wide spread throughout the nation. Prosecutors bring charges against caretakers under SBS and often they succeed. The critics and the defendants continue to struggle in their attempt to ban SBS from courts. Overall, although the science behind SBS is undoubtedly "shaky," it is properly admitted under the *Daubert* standard. It has answered all four questions sufficiently enough for most courts to deem it "reliable" and thus admissible. Although fraught with controversy SBS remains generally

**Shaken Baby Syndrome: Child Abuse or Judicial Misuse?**

accepted within the medical community, several clinical studies have been conducted, it has a supposed low rate of potential error, and it has been peer reviewed and published several times over again. But the real question was is *Daubert* enough? They say that you are innocent until proven guilty, but a conviction based on some associated SBS symptoms when no other evidence, history, or even suspicion of child abuse is present seems to take “proven” away and leaves you with only innocent until guilty.

In judges admitting SBS expert testimony a wide scope seems to leave defendants without any hope. Juries seek to convict in emotional cases where young children are the victims, it is human inclination to seek the child’s justice. It’s only adding insult to injury when courts allow experts to testify not only conclusively but most importantly to the time, within minutes, that the shaking occurred. When the child is in the care of many this creates a game of eenie meenie miny moe, which caretaker is going to take the blow. Human lives are sacred and there is no justice in punishing one innocent person in the name of another. Shaken Baby Syndrome, though supported and criticized in its theory, is properly held to be admissible as long as the *Daubert* standard lives, but the scope of the testimony must be severed.