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November 5, 2020

Honorable Pedro Jimenez, Jr., J.S.C.
Middlesex County Courthouse- Room 408
56 Patterson Street
New Brunswick, New Jersey 08903

Re: State v. Darryl Nieves
Ind..No.: 17-06-785
Pros. No.: 17000837

Dear Judge Jimenez:

Kindly accept this letter brief in lieu of a more formal brief supplementing the State's previous submissions in opposition to defendant's motion to preclude Dr. Medina's testimony regarding her diagnosis of Abusive Head Trauma (hereinafter "AHT").

PROCEDURAL HISTORY AND STATEMENT OF FACTS

The State would incorporate the statement of facts and procedural history detailed in its previously submitted trial court and appellate briefs on this issue. The State would add the following:

On October 29, 2019, the Appellate Division vacated this Court's order granting the State's motion to reconsider and remanded the matter for a 104 hearing. On September 24, 29, and 30, 2020, and October 12 and 13, 2020, this Court conducted the 104 hearing.

LEGAL ARGUMENT

The State would also incorporate and rely upon the arguments made in aforementioned briefs. The State would add the following:

POINT I: DR. MEDINA'S TESTIMONY IS RELIABLE AND ADMISSIBLE.

The State has clearly established that AHT is generally accepted in the medical community as a valid diagnosis and that Dr. Medina's testimony regarding her diagnosis of AHT of this infant is reliable. Pursuant to Rule 702, expert testimony is admissible if "[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue."[1] A court will allow such testimony where: (1) the intended testimony … concern[s] a subject matter that is beyond the ken of the average juror; (2) the field testified to … [is in] a state of … art that such an expert's testimony could be sufficiently reliable; and (3) the witness … [has] sufficient expertise to offer the intended testimony.[2] These requirements should be construed liberally as Rule 702 favors the admissibility of expert testimony.[3]

In criminal cases, the Frye test remains the standard for determining if expert testimony is reliable.[4] The party offering such evidence must demonstrate its reliability by showing that "the scientific community generally accepts the evidence."[5]

When establishing general acceptance, the offering party may do so:

> (1) expert testimony as to the general acceptance, among those in the profession, of the premises on which the proffered expert witness based his or her analysis;
> (2) authoritative scientific and legal writings indicating that the scientific community accepts the premises underlying the proffered testimony; and
> (3) judicial opinions that indicate the expert's premises have gained general acceptance.[6]

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[1] N.J.R.E. 702.
[2] State v. Kelly, 97 N.J. 178, 208 (1984); State v. Jenewicz, 193 N.J. 440, 454 (2008).
[3] Jenewicz, 193 N.J. at 454.
[4] State v. Harvey, 151 N.J. 117, 170 (1997), cert. denied 528 U.S. 1085 (2000).
[5] Id. (citing State v. Spann, 130 N.J. 484, 509-10 (1993)); see also State v. Marcus, 294 N.J. Super. 267, 287 (App. Div. 1996), certif. denied 157 N.J. 543 (1998).
[6] Windmere, Inc. v. International Ins. Co. 105 N.J. 373, 378 (1987) (citing State v. Johnson, 42 N.J. 146, 171, (1964)); Harvey, 151 N.J. at 170 (citing Kelly, 97 N.J. at 210); see also Frye v. United States, 293 F. 1013 (D.C. Cir. 1923).

The party offering the evidence has the burden of "clearly establishing" general acceptance.[7] However, there is no requirement that the scientific acceptability of the technique or methodology underlying the evidence be universally agreed upon or unanimously believed.[8] Similarly, the accuracy of the evidence does not need to be undisputed and the possibility of error in the expert's opinion does not need to be completely excluded in order for it to be generally accepted.[9]

In the present matter, the State has clearly established the general acceptance of AHT as a valid diagnosis within the medical community. During the Frye hearing, Dr. Medina testified that AHT is accepted as a valid diagnosis by all of the pediatric subspecialties involving intracranial injuries: general pediatrics, pediatric ophthalmology, pediatric neurology, pediatric neurosurgery, pediatric radiology, and pediatric neuroradiology. She also noted that AHT is generally accepted by several national and international societies, including: the American Academy of Pediatrics; the American Academy of Ophthalmology; the American Academy of Pediatric Ophthalmology and Strabismus; the Royal College of Ophthalmology; the Royal College of Pediatric and Child Health; the Norwegian, Japan, and Swedish Pediatric Societies; the American and European Societies for Radiology and Neuroradiology; the Latin American Society for Pediatric Radiology; the American Professional Society for the Abuse of Children; the CDC; and the World Health Organization. Her testimony is consistent with the extensive medical literature that recognizes AHT as a general accepted medical diagnosis.[10] Dr. Medina's testimony is also supported by the findings of courts throughout the United States and

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[7] Windmere, Inc. v. International Ins. Co. 105 N.J. 373, 378 (1987) (citing State v. Johnson, 42 N.J. 146, 171, (1964)). There is no dispute that the first factor is met so the State's brief will only address factors two (2) and three (3).

[8] Romano v. Kimmelman, 96 N.J. 66, 80 (1984); Marcus, 294 N.J. Super. at 287 (holding that the results need not be "beyond all legitimate debate"); see also State v. McGuire, 419 N.J. Super. 88, 133 (App. Div. 2011), certif. denied 208 N.J. 335 (2011); State v. Chun, 194 N.J. 54, 91-92 (2008).

[9] Harvey, 151 N.J. at 171; Kimmelman, 96 N.J. at 80 (finding that the "total or absolute infallibility" of the underlying techniques, methodologies, or procedures of the scientific need not be demonstrated in order to establish its general acceptance).

[10] Aribinda Kumar Choudhary et al, Consensus Statement on Abusive Head Trauma in Infants and Young Children, 48 Pediatric Radiology 1048-1065, 1051 (2018); Dr. Sandeep Narang, M.D., J.D. A Daubert Analysis of Abusive Head Trauma/Shaken Baby Syndrome, 11 Hous, J. Health L. & Pol'y 505-633, 505 (2011); American Academy of Pediatrics, Policy Statement: Abusive Head Trauma in Infants and Children, 123 Pediatrics 1409-1411, 1409 (2009); Christopher Spencer Greeley, Abusive Head Trauma: A Review of the Evidence Base 204 AJR 967-973, 968 (2015); Understanding Abusive Head trauma in infants and children, answers from America's Pediatricians, 1-11 (2015).

internationally.[11] Therefore, the State has clearly established the general acceptance of AHT in the medical community.

Moreover, the controversy surrounding AHT does not negate its general acceptability. Dr. Medina acknowledged that, in recent years, there has been controversy surrounding whether shaking alone can cause injury to infants. However, she noted that the controversy is primarily limited to the biomechanical field where the studies conducted on the topic have resulted in diverse conclusions and lack their own consensus on the controversy. The defendant's own biomechanical expert, Dr. VanEe, could not definitively rule out shaking as a mechanism of injury in AHT. At best, Dr. VanEe could only say that, from a biomechanical standpoint, it was still unknown whether shaking could cause injury. Moreover, both Dr. VanEe and Dr. Medina noted that there are widely-recognized limitations to the models and theories used in the biomechanical studies involving shaking.[12] Specifically, Dr. Medina and Dr. VanEe's testimony and the biomechanical literature indicate that the scaling laws used to scale to infants have not been validated, the injury tolerance levels used for infants are too high, and the models used cannot accurately simulate an infant's brain.[13] Thus, the biomechanical community's uncertainties regarding shaking as a mechanism of injury in AHT cases do not invalidate its general acceptance within the medical community.

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[11] A Daubert Analysis of Abusive Head Trauma/Shaken Baby Syndrome, 11 Hous, J. Health L. & Pol'y at 580-81, n. 513 (citing "People v. Martinez, 74 P.3d 316 (Colo. 2003) ('[W]e assume, as it is not in dispute, that the scientific principles of shaken-impact syndrome and subdural hematomas resulting from extreme accidents are reasonably reliable'); State v. McClary, 541 A.2d 96,102 (Conn. 1988) (shaken baby syndrome is generally accepted by medical science); State v. Torres, 121 P.3d 429, 437 (Kan. 2005) (testimony by physicians that infant's injuries were shaken baby syndrome, and not consistent with falling off a chair was sufficient for conviction of felony murder); State v. Leibhart, 662 N.W.2d 618 (Neb. 2003) (expert testimony on shaken baby syndrome admissible; passes Daubert); Order Denying Motion to Exclude Testimony on AHT/SBS at 5, State v. Mendoza, No. 071908696 (Utah Dist. Ct., June 5, 2009) ('[T]he State's experts made a very compelling … showing that SBS is both still widely accepted and applicable to the current case'); see also R v. Harris, [2005] EWCA (Crim) 1980, [267](Eng.); R. v. Henderson; R v. Butler, R v. Oyediran, [2010] EWCA (Crim)1269, [7](Eng.)"); see also A Daubert Analysis of Abusive Head Trauma/Shaken Baby Syndrome, 11 Hous, J. Health L. & Pol'y at 586, n. 533 (citing "United States v. Vallo, 238 F.3d 1242, 1245 (10th Cir. 2001); People v. Dunaway, 88 P.3d 619, 633-34 (Colo. 2004); … State v. Glenn, 900 So.2d 26, 34-35 (La. Ct. App. 2005)…"). See also Johnson v. State, 933 So. 2d 568, 569-570 (Fla. Dist. Ct. App. 2006), citing Washington v. State, 737 So. 2d 1208 (Fla. 1st DCA 1999); Caban v. State, 892 So. 2d 1204 (Fla. 5th DCA 2005) ("Because Shaken Baby Syndrome testimony has been admitted in Florida and in other jurisdictions, Shaken Baby Syndrome testimony is no longer a new or novel scientific principle subject to a Frye analysis."); People v. Yates, 290 A.D. 2d 888, 736 N.Y.S. 2d 798, 801 (N.Y. App. Div.2002) (stating that evidence of Shaken Baby Syndrome is not a novel scientific theory).

[12] Policy Statement: Abusive Head Trauma in Infants and Children, 123 Pediatrics at 1409; Can Shaking Cause Fetal Brain Injury? A Biomechanical Assessment of the Duhaime Shaken Baby Syndrome Model 43 Med Sci. Law at 317, 319-20, 327.

[13] Can Shaking Cause Fetal Brain Injury? A Biomechanical Assessment of the Duhaime Shaken Baby Syndrome Model 43 Med Sci. Law at 327, 331-32; Carole Jenny, Alternate Theories of Causation in Abusive Head Trauma: What the Science Tells Us, 44 Pediatr. Radiol S543-547 (2014); see also Biomechanical Response of the Infant Head to Shaking: An Experimental Investigation, 34 J. Neurotrauma at 5, 8.

That is especially true when considering the cautions of Dr. Narang that the relevant medical community should be the medical professionals who spend a "reasonable portion, if not majority, of their clinical time and practice in the evaluation and care of children suspected of AHT and child abuse, and who have either obtained subspecialty certification, or are eligible for subspecialty certification, in the field of child abuse."[14] Those, like biomechanical experts, who are not involved in the treatment of AHT and child abuse are not relevant.[15]

Dr. Medina, who is a board-certified pediatrician with a sub-specialty in child abuse and regularly evaluates children for child abuse and neglect, recognizes shaking as a mechanism of injury for a diagnosis of AHT. In her testimony, she referenced two studies involving confession cases that support the conclusion that shaking an infant causes injuries such as subdural bleeding, retinal hemorrhages, and neurological signs and noted that even the SBU report gave these studies moderate weight. Additionally, shaking has been recognized as a mechanism of injury of AHT in other medical literature and caselaw. For example, in 2009, the AAP stated that "case histories clearly support the conclusion that shaking occurs in some injury scenarios."[16] In 2015, they reiterated that "shaking is an important contributor to abusive head injuries" and noted that published, peer-reviewed medical literature, including case reports in which adults admitted to shaking an infant or child, supported this notion.[17] Similarly, in Narang's 2016 article he noted that shaking, even without impact, has been recognized as dangerous child abuse since early in the 1970s.[18] In that study he found that:

> 80% of respondents felt that shaking with or *without* impact was likely or highly likely to produce SDH, more than 90% report that it was likely or highly likely to produce [retinal hemorrhage], and more than 78% reported that it was likely or highly likely to result in coma or death. The corresponding results for a short fall were 18%, 3%, and 3%, respectively.[19]

Moreover, according to the 2018 consensus statement, "the medical literature and overwhelming clinical experience and judgment demonstrate that AHT can be caused by *shaking alone*, shaking

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[14] A Daubert Analysis of Abusive Head Trauma/Shaken Baby Syndrome, 11 Hous, J. Health L. & Pol'y at 582.
[15] Id.
[16] Policy Statement: Abusive Head Trauma in Infants and Children, 123 Pediatrics at 1409.
[17] Understanding Abusive Head Trauma in Infants and Children, Answers from America's Pediatricians, 2.
[18] Acceptance of Shaken Baby Syndrome and Abusive Head Trauma as Medical Diagnoses, 177 J. of Pediatrics 1.
[19] Id. at 3.

with impact, or blunt impact alone."[20] Additionally, in Middlesex County, a trial court has recently recognized the general acceptability of AHT as a medical diagnosis and specifically of the notion that "shaking an infant can cause brain trauma, subdural hematoma, severe retinal hemorrhage, coma or death".[21]

Conversely, none of the defense experts have received any training in diagnosing AHT or regularly practice pediatrics. Furthermore, they are not experts in child abuse pediatrics or qualified to make a diagnosis of AHT so their opinions lack the expertise necessary in the relevant field. Moreover, Dr. Scheller acknowledged that his views on AHT are only held by a five-percent minority percentage of the medical community. He further acknowledged that his testimony has even been excluded in one case because its lack of general acceptance and reliability.[22] It is also important to note that none of the defense experts disputed that shaking was dangerous and injurious to infants. They also admitted that impact and shaking with impact could cause the "triad" of symptoms, that being subdural hemorrhages, retinal hemorrhages, and encephalopathy. As such, it is clear that the opinions expressed by the defense experts are not shared by a majority of the medical community.

Furthermore, as indicated by Dr. Medina and in the medical literature, the diagnosis methodology used by child abuse pediatricians for AHT is widely accepted within the medical community.[23] This methodology requires much more than merely finding the presence of the "triad" symptoms since the mere presence of any one or all of the "triad" symptoms alone is insufficient to sustain a diagnosis AHT. As noted by Dr. Medina, the "triad" symptoms merely flag concerns for AHT that would then require further investigation, both medical and social, to determine the nature of the findings and viability of an AHT diagnosis. Dr. Medina also made clear that it is not merely the existence of retinal hemorrhages that is suggestive of AHT, it is existence of a certain pattern of retinal hemorrhages that being retinal hemorrhages that are in the three layers of the retina that are too numerous to count and extending from the back of the eye

[20] Consensus statement on abusive head trauma in infants and young children, 48 Pediatric Radiology at 1051 (emphasis added).
[21] State v. Cifelli, Case 17-11-1303, *7-8 (Law. Div. 2019); see also State v. Wells-Rivera, Case 19-06-1046 (2020).
[22] See U.S. v. Duran, Case 1:14-cr-03762-WJ, *4 (Dist. Ct. 2019).
[23] Consensus Statement on Abusive Head Trauma in Infants and Young Children, 48 Pediatric Radiology at 1048, 1060.

to the periphery and the front of the eyeball that have a very high specificity rate with AHT as noted in the medical literature.[24] Dr. Medina elaborated that a diagnosis of AHT would involve a review the infant's comprehensive medical history including his prior history, the reason for his hospital visit, and his demeanor and behavior before and during his hospital stay; an evaluation of the physical examination; and consultation with multiple subspecialties in the field of pediatrics and trauma who would conduct a comprehensive evaluation of other possible findings that might be co-existing with the external presentation and evaluate the possible pathology or medical issues that could be contributing to the presentation of observed symptoms. The child abuse pediatrician will consider all of the information obtained during the workup and rule out all other possible causes for the infant's injuries, including medical diseases whose symptoms can mimic AHT, before making such a diagnosis.[25] If this widely accepted methodology is followed, the AHT diagnosis will be reliable.

In this case, Dr. Medina used this widely accepted methodology in making her diagnosis of AHT and gave a well-reasoned and thorough opinion. She testified that the infant presented to St. Peter's Hospital on February 10, 2017, after an episode of non-responsiveness and seizures. While there, the infant underwent a CT scan which identified that he had subacute and chronic subdural hemorrhages. At that point, the concern for AHT was raised. However, no diagnosis of AHT was not made at that point. Instead, the infant was given a comprehensive evaluation, which involved tests and examinations performed by several different pediatric sub-specialists. Thereafter, Dr. Medina, in consultation with those sub-specialists, considered and ruled out all other causes for the infant's injuries. That included consultations with the four radiologists who had read the infant's neuro-sonograms and found all of the infant's prior neuro-sonograms to be normal. That also included consultations with the retinal specialists who found that the infant had the pattern of retinal hemorrhages associated with AHT and who specifically noted in the medical records that the infant's case should be reviewed to rule out AHT. That

[24] See State's Exhibits "S12" through "S18".
[25] Id.; see also A Daubert Analysis of Abusive Head Trauma/Shaken Baby Syndrome, 11 Hous, J. Health L. & Pol'y at 571-73.

further included consultations with the neurologist and floor staff noted there were no recurring seizures while at the hospital. It was only after this month-long testing and review of his medical history, presenting symptoms, and clinical findings; examining of the infant; speaking with the infant's parents; and discounting all other possible causes for the infant's injuries that Dr. Medina made her diagnosis of AHT. She testified extensively on her training, experience, and the various studies and medical literature which supported her opinion regarding AHT and her diagnosis thereof. She stated that while she has conducted approximately 250 evaluations for AHT, she has only diagnosed roughly seven percent of those infants with AHT. Her diagnosis of AHT in this case based upon the medical literature; and her twenty years of training and experience in pediatrics and conducting AHT evaluations.

Several jurisdictions have recently found that the Frye standard is not even applicable to such AHT. In People v. Cook, 10 N.E. 3d 410 (Ill. App. Ct. 2014), the Court held a Frye hearing was not necessary where a jury heard conflicting evidence regarding whether shaking could produce the forces necessary to cause the victim's injuries.[26] The Court reasoned that the opinion of the State's expert was based on medical knowledge and experience, instead of a "theory of Shaken Baby Syndrome" or any new or novel scientific theory so any contrary testimony would only go to the weight of the opinion.[27] Similarly, in People v. Glucksmann, 2019 Ill. App. Unpub. Lexis 966 (Ill. App. Ct. 2019), certif. denied People v. Glucksmann, 2019 Ill. LEXIS 1223 (Ill., Nov. 26, 2019), the court held that a Frye hearing was not necessary where expert testimony was given that retinal and intracranial hemorrhages found in an infant were not caused by a short fall based and instead were consistent with SBS or AHT.[28] The court reasoned that the testimony was based upon the experts training and experience and they employed the well-established differential diagnosis scientific methodology to make such a diagnosis neither of which would be subject to a Frye hearing.[29] Given that Dr. Medina's expert opinion was

[26] 10 N.E. 3d at 425-426.
[27] Id.; see also Johnson v. State, 933 So. 2d 568 (Fla. Dist. Ct. App. 2006); Herlihy v. State, 927 So. 2d 146 (Fla. 1st DCA 2006) (citing Gelsthorpe v. Weinstein, M.D., 897 So. 2d 504, 509 (Fla. 2d DCA 2005)).
[28] Id. at 42-43.
[29] Id.; see also Creanga v. Jardal, 185 N.J. 345 (2004) (finding that a differential diagnosis is not novel and is acceptable testimony in New Jersey).

based upon her training and expertise and employment of methodology similar to that already well-recognized in New Jersey of a differential diagnosis, her testimony is sufficiently reliable and should be admitted.

Finally, the defense experts' opinions do not undermine the reliability of Dr. Medina's diagnosis or require exclusion of her testimony. Expert testimony should not be excluded merely because it fails to account for an alternative fact deemed relevant by the defense or involves an alternative interpretation of a particular set of data.[30] Such criticisms go towards weight not admissibility and can be addressed through cross examination.[31] Further, the defense experts' opinions are speculative and not reliable. None of the doctors used the widely accepted method for diagnosing AHT to reach their conclusions. Dr. VanEe did not review any materials specific to this case prior to writing his report and did not give any opinions as to this infant's specific diagnosis. Additionally, Dr. Mack only reviewed the neuro-sonograms and ultrasounds of the infant. She did not review any additional medical records regarding this infant including the documents related to his retinal hemorrhages. She also did not consult with any of the infant's doctors, including the radiologists and neurologists, who were involved in the infant's case and found no abnormalities in his images prior to February of 2017. Additionally, her opinion that a bridge vein rupture and subdural hemorrhage cannot be caused by tension and stretching of the bridging veins is contradicted in the testimony of Dr. Medina, Dr. Scheller, and Dr. VanEe. Finally, while Dr. Scheller reviewed all of the medical records in this case, he did not speak with the parents or any other doctors involved in this case. Additionally, the reliability of his conclusions are further undermined by his admission to lying about not currently practicing pediatrics, the financial benefits he has been afforded by testifying for the defense hundreds of times without ever finding AHT in any of those cases, and the contradictory and unsupported information he provided during cross examination regarding the studies conducted by Ommaya. As such, exclusion of Dr. Medina's testimony is not warranted.

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[30] State v. Dreher (II), 302 N.J. Super. 408, 461-465 (App. Div.), certif. denied 152 N.J. 10 (1997); State v. McGuire, 419 N.J. Super. at 126-127.

[31] Dreher (II), 302 N.J. Super. at 461-465 (App. Div); McGuire, 419 N.J. Super. at 126-127.

CONCLUSION

For the foregoing reasons, this Court should find that AHT is widely accepted within the medical community and that Dr. Medina's testimony regarding same is reliable thereby making it admissible.

Respectfully Submitted,

/s/ Vanessa I. Craveiro

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cc: Caroline Bielak, Esq. (via e courts)