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STATE OF MICHIGAN
IN THE MICHIGAN SUPREME COURT

PEOPLE OF THE STATE OF MICHIGAN,
Plaintiff-Appellee,

v **No. 163939**

MILTON LEE LEMONS,
Defendant-Appellant.

Court of Appeals No. **348277**
Circuit Court No. **06-004818-01-FC**

PLAINTIFF-APPELLEE'S ANSWER OPPOSING DEFENDANT-APPELLANT'S APPLICATION FOR LEAVE TO APPEAL

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The People of the State of Michigan—through Kym L. Worthy, Prosecuting Attorney, County of Wayne; Jon P. Wojtala, Chief of Research, Training, and Appeals; Daniel E. Hebel, Assistant Prosecuting Attorney—ask this Court to deny defendant's application for leave to appeal.

1. Defendant's application relies on the same arguments made in the Court of Appeals.
2. The People's brief on appeal in the Court of Appeals adequately addresses these issues and is incorporated in this answer. See Appendix 1.
3. The Court of Appeals did not clearly err in rejecting defendant's arguments and affirming defendant's convictions. MCR 7.305(B)(5).
4. Defendant's application does not demonstrate any of the other grounds for granting leave to appeal. MCR 7.305(B)(1)-(3).

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5. Defendant also raises issues not presented to the Court of Appeals, but review of those issues is foreclosed in this Court. When a defendant does not afford the Court of Appeals the opportunity to pass on an issue, the Court of Appeals cannot have rendered a "decision" on it, and thus this Court has no jurisdiction to review it. Michigan Court Rule 7.303(B) sets out this Court's jurisdiction. The only relevant subsection—(1)—provides for jurisdiction of a case "after *decision* by the Court of Appeals." Subsection (2) also references MCR 7.305, which clarifies the meaning of "decision" and unquestionably requires that the Court of Appeals actually pass on an issue—otherwise the "clearly erroneous" language is rendered superfluous. This Court specifically stated in *People v Holloway,* 387 Mich 772 (1972), that "an appellant may not raise in this Court an issue not presented to the Court of Appeals."

6. In sum, defendant's application raises no issues worthy of this Court's review, and it should be denied.

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RELIEF

THEREFORE, the People request that this Honorable Court deny defendant's application for leave to appeal.

Respectfully submitted,

KYM WORTHY
Prosecuting Attorney
County of Wayne

JON P. WOJTALA
Chief of Research, Training,
and Appeals

/s/ *Daniel E. Hebel*

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Dated: February 11, 2022

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STATE OF MICHIGAN
IN THE MICHIGAN SUPREME COURT

PEOPLE OF THE STATE OF MICHIGAN,
Plaintiff-Appellee,

v **No. 163939**

MILTON LEE LEMONS,
Defendant-Appellant.

Court of Appeals No. **348277**
Circuit Court No. **06-004818-01-FC**

Appendix 1
People's Brief on Appeal to the Court of Appeals

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STATE OF MICHIGAN
IN THE COURT OF APPEALS

PEOPLE OF THE STATE OF MICHIGAN,
Plaintiff-Appellee,

v **No. 348277**

MILTON LEE LEMONS,
Defendant-Appellant.

Third Circuit Court No. 06-004818-01-FC

PLAINTIFF-APPELLEE'S BRIEF ON APPEAL
ORAL ARGUMENT REQUESTED

Filed under AO 2019-6

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COUNTERSTATEMENT OF JURISDICTION

The People concur with defendant's statement of appellate jurisdiction.

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COUNTERSTATEMENT OF QUESTIONS PRESENTED

I

Litigants are not entitled to present unreliable and unaccepted scientific information to juries. Here, the trial court ruled that defendant's newly discovered scientific evidence was not admissible under *Daubert*. Is defendant entitled to a new trial based on unreliable and unaccepted scientific claims?

The trial court answered, "No."

The People answer, "No."

Defendant would answer, "Yes."

II

Neither the legislature nor the Courts has created a policy requiring the admission of expert opinions that a trial court finds fail the *Daubert* standard. Here, the defense asserts that cases that have nothing to do with the *Daubert* standard somehow preclude the trial court from applying the *Daubert* standard in SBS cases. Do defendants in SBS cases have a free pass to present evidence that fails the *Daubert* standard?

The trial court answered, "No."

The People answer, "No."

Defendant would answer, "Yes."

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III

To receive a new trial on a claim of newly discovered evidence, a defendant must show that the admissible evidence makes a different result probable on retrial. Here, the scant evidence that survived the *Daubert* standard consists only of the equivocations of a witness who is no longer in a position to change the official diagnosis and an incorrect claim about a tangentially relevant fracture. Is defendant entitled to a new trial based on evidence that would not make a different result probable on retrial?

The trial court answered, "No."

The People answer, "No."

Defendant would answer, "Yes."

IV

A successive motion for relief from judgment is limited to claims that satisfy MCR 6.502(G)(2); claims of new evidence and retroactive changes of the law. Here, defendant submitted a host of claims that ignored MCR 6.502(G)(2), including a claim of ineffective assistance of counsel, hoping to let them ride the coattails of a single claim of new evidence, rendering the prohibition nugatory. In a successive motion for relief from judgment, was defendant entitled to review of claims that did not satisfy MCR 6.502(G)(2)?

The trial court answered, "No."

The People answer, "No."

Defendant would answer, "Yes."

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COUNTERSTATEMENT OF FACTS

The Facts of the Case

Although this case is tragic and horrific, the facts of what happened are relatively simple. On October 10, 2005, the victim, Nikita Lemons, was about two and a half months old.[1] Her mother, Lori Lemons, went to work at 2:30 p.m. and left the baby with the father, defendant.[2] Both Lemons and defendant were nursing assistants.[3] Lemons's mother, Pamela VanMeter, lived across the street. During the evening, defendant went next door to the home of Renee Zdyb and asked for help because the baby was not breathing.[4] Zdyb told defendant to call 911.[5] Instead, defendant called Lemons.[6] It was around 7:00 p.m when defendant called Lemons and said that the victim was no longer breathing.[7] Zdyb told defendant again to call 911, so defendant took the phone and called VanMeter for assistance.[8] Zdyb again told defendant to call 911, because she did not know CPR.[9] Defendant claimed to know CPR and took the baby. Zdyb seized the opportunity, picked up the phone, and called 911.[10] VanMeter attempted a gentle infant CPR, but had no success.[11] When Lemons got to the scene, she saw her daughter

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[1] T. 8/3, 7-8.
[2] T. 8/3, 17.
[3] T. 8/3, 11-12.
[4] T. 8/3, 99.
[5] T. 8/3, 99.
[6] T. 8/3, 100-01.
[7] T. 8/3, 19.
[8] T. 8/3, 101.
[9] T. 8/3, 101.
[10] T. 8/3, 101.
[11] T. 8/3, 52-54.

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unresponsive on the floor as she was being worked on by the paramedics.[12] Similarly to VanMeter, the EMS team used gentle infant compressions for CPR.[13]

The victim was brought to Annapolis Hospital and, from there, air-lifted to University of Michigan Children's Hospital in Ann Arbor.[14] The victim never again regained consciousness. She was pronounced dead at 6:28 a.m. on October 11, 2005.[15]

Defendant initially told the OIC, the now-Chief, John Williams, a story about how the victim went to bed fine. Defendant claimed to awake to banging. Defendant's son was banging on the wall because the victim had stopped breathing.[16]

After the officer informed defendant that the victim died due to shaking, the defendant changed the story.[17] Defendant said:

> At about 6:20, my son started fussing and then she started crying also. I went into the room to get him out, but picked her up instead. She wouldn't stop crying and he was still crying too. So I shook her three or four times to get her to be quiet. She stopped crying and started spitting up formula, but was unresponsive.[18]

Williams continued to ask defendant questions, including:

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[12] T. 8/3, 20.
[13] T. 8/3, 81.
[14] T. 8/3, 20.
[15] T. 8/3, 21.
[16] T. 8/7, 56-57. (The transcripts from 8/7 have multiple page numbers on most pages. This brief will only utilize the page number on the very bottom.)
[17] T. 8/7, 57.
[18] T. 8/7, 58.

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[Williams] [O]n a scale of one to ten, ten being shaking her very hard, how hard did you shake Nikita?
[Defendant] [S]even.
[Williams] [W]hat was Nikita's head doing as you shook her.
[Defendant] [B]ack and forth. I went blank. I just wanted her to stop crying.

***

[Williams] [H]ow did you feel when you were shaking her?
[Defendant] [V]ery angry, depressed. It was a combination of things.

***

[Williams] [W]hat did you intend to do when you shook her?
[Defendant] [T]o quiet her up.

***

[Williams] [D]o you know shaking an infant can be fatal.
[Defendant] Yes. I've seen it on TV and heard about it. [sic]
[Williams] [A]nd you're statement you said after you shook her, she was unresponsive. What did you mean[?] [sic]
[Defendant] [S]he was not saying anything with her head to the side and milk was coming out of her mouth.
[Williams] [W]hy didn't you tell anyone what happened?
[Defendant] I didn't want anyone to be disappointed in me.[19]

The autopsy was handled by the Washtenaw County Medical Examiner's office. The medical examiner who conducted the autopsy, Dr. Bader Casin, discovered that the victim suffered from bilateral retinal hemorrhages, optic nerve sheath hemorrhages, subdural

[19] T. 8/7, 60-61.

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hemorrhaging (intracranial bleeding), brain swelling, and had a fractured shoulder.[20]

After reviewing the victim's medical history, including an incident where the baby was gasping that resulted from an allergy to milk,[21] Casin diagnosed that the victim died from shaken baby syndrome (SBS) and described the basics of SBS to the Court.[22]

The trial court found that defendant acted in anger and violently shook the victim, resulting in her death. On August 11, 2005, defendant was convicted of first-degree felony murder[23] and first-degree child abuse.[24]

Defendant's successive motion for relief from judgment and the* Daubert *hearing.

Defendant filed a successive motion for relief from judgment. The trial court found that most of defendant's claims were barred by MCR 6.502. The trial court held that defendant had met the requirements for one claim under MCR 6.502(G)(2); a claim of newly discovered evidence. Defendant's claim of newly discovered evidence asserted that there had been a "sea change" in how the scientific community now viewed the diagnosis of SBS, that SBS was no longer good science, that the victim's death could not have resulted from SBS, and that there were alternate explanations for the death of the victim. The People moved to exclude

[20] T. 8/3, 11; T. 8/7, 14-15.
[21] T. 8/3, 11; T. 8/7, 14-15.
[22] T. 8/7, 8-10.
[23] MCL 750.316(1)(b).
[24] MCL 750.136b(2).

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defendant's so-called scientific evidence because it failed to meet the standards provided by *Daubert v Merrell Dow Pharmaceuticals, Inc.*[25] and its progeny. The trial court held an extensive evidentiary and *Daubert* hearing throughout 2017.

Ten expert witnesses testified during this hearing. The experience, credentials, and specialties of the experts called varied a great deal. The first defense expert was Dr. John Galaznik. Galaznik received his full board certification in pediatrics in 1979. He practiced general pediatrics until 1980 and then went to work at the University of Alabama, where he continued to work "provid[ing] care to active, vigorous college students." As of the hearing, he was retired and only worked at the University clinic part time. [26] Galaznik did not establish any clinical experience in the realm of child abuse. The second defense expert was Dr. George Nichols. Nichols practiced in forensic pathology for approximately 20 years.[27] He retired from his position as a medical examiner approximately 19 years ago.[28] Since then he has worked as a consultant, primarily for criminal defendants.[29] The third defense expert was Dr. Patrick Barnes. Barnes was a neuroradiologist, who also claimed specialty as a pediatric radiologist, but lacked the corresponding certificate.[30] Barnes did not produce the official skeletal survey readings, which are conducted by pediatric radiologists.[31] He reviews

[25] *Daubert v Merrell Dow Pharm., Inc*, 509 US 579 (1993).
[26] H. 4/6, 16-17.
[27] H. 4/19, 15.
[28] H. 4/19, 41.
[29] H. 4/19, 16.
[30] H. 7/19, 18.
[31] H. 7/19, 18.

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the official surveys as part of the local child abuse team and provides his additional readings at the team meetings.[32] He is a member of the Society for Pediatric Radiology. The fourth defense expert was Dr. Bader Cassin, the forensic pathologist who performed the autopsy on the victim, Nikita Lemons, when he worked for the Washtenaw County Medical Examiner's Office. The fifth defense expert was Chris Van Ee, a biomechanical engineer at a local design firm, who specializes in impact and orthopedic biomechanics. Van Ee was called in rebuttal and did not know the specifics of the instant case, but simply was called to point out the utility of biomechanical engineering. The sixth and final defense expert was Dr. Roland Auer. Auer was a neuropathologist and was called in rebuttal. As of the time of the hearing, Auer had no clinical or research experience with shaken baby syndrome or abusive head trauma cases, aside from providing his opinion in court cases.[33]

The People's first expert was Dr. Jeffrey Jentzen. Jentzen was a forensic pathologist. He is the Washtenaw County Medical Examiner, the Director of Forensic and Autopsy Services at the University of Michigan, and the former president of the National Association of Medical Examiners. The People's second expert was Dr. Peter Strouse. Strouse is a certified pediatric radiologist. Strouse was the Director of Pediatric Radiology at C.S. Mott Children's Hospital, the president of the Society for Pediatric Radiology, the Editor of the scientific journal *Pediatric Radiology,* and the original radiologist in this case.[34] The

[32] H. 7/19, 19.
[33] H. 9/18, 12.
[34] H. 7/20, 7-8.

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People's third expert was Dr. Dan Davis. Davis was a forensic pathologist who clinically dealt with numerous child abuse cases and conducted an experiment to show approximate rotational movement of an infant brain within its skull when shaken. The People's fourth and final expert was Dr. Cindy Christian. Christian is a certified child abuse pediatrician and was a child abuse pediatrician before board certification existed in that discipline. Christian was the immediate past chair of the American Academy of Pediatrics (AAP) Child Abuse and Neglect Committee, a member of numerous child abuse teams and medical oversight boards, and was the author of the seminal position papers by the AAP defining abusive head trauma and discussing shaken baby syndrome.[35]

Although their credentials varied, all the expert testimony was largely confined to two topics: (1) the validity of both shaken baby syndrome (SBS) and abusive head trauma (AHT) and (2) whether an alternate cause explained the victim's injuries.

The validity of SBS and AHT was extensively questioned by some of the defense witnesses. The defense experts asserted two types of anti-SBS claims. The first type of anti-SBS claims were based on select scientific literature. The defense experts asserted these two literature-based claims: the AAP abandoned SBS in favor of AHT because SBS was not scientifically sound, and two reviews claim there is insufficient literary support for SBS. The second type of anti-SBS claims were based on select biomechanical papers. The defense experts asserted three

[35] H. 7/26, 5-11.

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biomechanics-based claims: some biomechanical models indicate that shaking alone does not generate enough force to match scaled single indirect-impact head-injury criteria, some experiments indicate that before shaking could cause brain injury, according to scaled single indirect-impact head-injury criteria, catastrophic neck damage would occur; and some animal studies of rabbits and pigs do not exhibit the same injuries present in human SBS cases.

The second assertion levied by the defense experts was the claim that an alternative cause would better fit the victim's injuries at the time of death. Here, the defense experts made numerous assertions or suggestions, in which not all of them joined: (A) there was not enough blood in the victim's head cavity for SBS to have happened, (B) there might not be a fracture in the victim's shoulder, (C) the victim's shoulder may have fractured during autopsy, (D) the victim may have died from non-traumatic hypoxia (choking) and then the resuscitative efforts caused the victim's traumatic injuries, and (E) the victim had rickets, which caused the shoulder fracture and the associated extreme lack of calcium caused choking.

The People's experts responded to the defense experts' attacks on the validity of SBS and AHT through affirming scientific studies, their own extensive experience, and a thorough discussion of the rather impressive faults of anti-SBS studies relied upon by the defense. The People's experts also refuted the claims regarding the instant case's diagnosis of SBS and the varied suggestions of alternate causes. Numerous scientific articles were also provided to the trial court in support of the People's experts' opinions.

In an extensive written opinion, the trial court denied relief, holding that the defense theories failed to meet the requirements of the *Daubert* test. Therefore, the claims that made the foundation of defendant's newly discovered evidence failed.

Both the facts and the holding of the trial court will be discussed in much greater detail in the argument of the brief.

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ARGUMENT

I.

Litigants are not entitled to present unreliable and unaccepted scientific information to juries. Here, the trial court ruled that defendant's newly discovered scientific evidence was not admissible under *Daubert*. Defendant is not entitled to a new trial based on unreliable and unaccepted scientific claims.

Standard of Review

In the successive motion for relief from judgment in the trial court, defendant filed only a single claim that met the requirements of MCR 6.502(G)(2). That claim was that the science behind SBS had changed and no longer would support defendant's conviction. The People challenged this assertion under *Daubert* and, after a hearing, the trial court excluded the defense's scientific claims based on the evidence presented at the hearing.

Defendant, apparently, wants to minimize or ignore the fact that the trial court based its opinion on the application of the *Daubert* standard.[36] To acknowledge that fact, would be to admit that this case is fact specific and must be judged on its own merits, rather than by references to dissimilarly situated cases. Rather than concentrate on the facts of this case and the trial court's determination that their evidence was inadmissible under *Daubert*, the defense has jumped

[36] The defense buried the entire focus of the evidentiary hearing into a couple subpoints near the end of its brief. This is odd because the reason for the extreme length and exhaustive nature of the hearing was to allow the trial court to receive all the information in order to make a ruling on whether the defense theories passed *Daubert*. Defendant's Brief on Appeal, 38.

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ahead to other issues, all of which assume the admittance of the evidence. Defendant, wrongly, suggests that the People inappropriately introduced experts in the attempt to retry the case under the *Cress* standard.[37] Rather, both the People and the defense presented experts to give the trial court all the facts from which to decide whether the defendant's scientific theories passed the test of MRE 702 and *Daubert*. The trial court held that defendant's theories failed the *Daubert* test and would be excluded.

Accordingly, the standard of review for whether the trial court was right to hold that the defendant's evidence was unreliable is a two-part question. The decision of whether to admit evidence is reviewed for an abuse of discretion and the preliminary questions of law regarding the requirements of the rules of evidence on admission and exclusion are reviewed de novo.[38]

---

[37] Defendant incorrectly asserts that the trial court used the hearing to impermissibly determine which set of experts it would allow at a retrial or which experts were better. That was *never* the point of the *Daubert* hearing. Rather, the *Daubert* hearing was exclusively focused on whether the newly discovered scientific theories that the defense used as a basis for its motion passed the *Daubert* standard as reliable science. Contrary to defendant's assertions, litigants are not entitled to use junk science in rebuttal, any more than they can use junk science in any other manner. Junk science is always excluded. That is the entire purpose of *Daubert.* Defendant's experts were excluded, not because the People's experts were better and more credible, but because the defendant's experts used unreliable scientific theories that failed *Daubert*.

[38] *People v Muhammad*, 326 Mich App 40, 47 (2018).

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Discussion

This case is all about the scientific facts. The trial court exercised its gate-keeping function and based its decision on *Daubert*. Defendant is not entitled to relief, because defendant's claim was based on unreliable junk science that was properly excluded under *Daubert*.

Factually, this case is different than most cases where shaken baby syndrome and abusive head trauma are central issues. At trial, there was no uncertainty about the identity of the perpetrator or the method of injury. Defendant confessed to shaking the 2-month-old victim hard, until she stopped responding, in the effort to get her to stop crying. That confession matched the autopsy report, which indicated shaking was the cause of death.

Defendant's successive motion for relief from judgment was based on the audacious—and false—claim that newly discovered scientific evidence would so undermine the trial evidence, including the confession, that a different result would be probable at retrial. To meet this high bar, the defense experts had to establish more than a few unsettled scientific questions. If shaking *could* cause the injuries the victim suffered, and defendant confessed to shaking the victim resulting in the victim's injuries, the clear conclusion is that shaking *did* cause the injuries to the victim and defendant is guilty. To have any shot of reaching the level of showing a different result probable on retrial, the defense had to undermine the accuracy of defendant's own confession. Accordingly, the defense attempted to disprove the confession, not by eliciting confusion or conflicting opinions, but by affirmatively invalidating the diagnosis of shaken baby syndrome. The defense

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experts attempted to prove their assertion that "[t]here is now no credible evidence that shaking caused Nakita Lemons's death."[39] Unfortunately for defendant, that radical claim required radical and incredible expert testimony. The People objected to this fringe testimony and the trial court ordered that a *Daubert* hearing be held to determine whether defendant's experts were offering good science or junk science. After an extensive, 10-expert, *Daubert* hearing that stretched throughout most of 2017 the trial court held that defendant's radical, fringe theories were excluded by *Daubert*.

There is no end-run around discussing the science in this case. The science is everything. As discussed above, this is not a case where a defendant is asking for a new trial based on a trial counsel's failure to call a witness that might have been helpful. In this case, we know exactly what evidence is being alleged. That evidence was largely excluded under *Daubert* for being unreliable or junk science. Although defendant asserts that this Court should avoid considering the scientific facts presented at the hearing, defendant is wrong. Here, there is no way around the facts.

According to the Michigan Supreme Court, under *Daubert* the trial court has the "fundamental duty of ensuring that *all* expert opinion testimony—regardless of whether the testimony is based on 'novel' science—is reliable."[40] Stated conversely, if the evidence is unreliable, the trial court has the responsibility to keep it away from a jury. Courts may not, as defendant requested of the trial court, abdicate this duty by

[39] Defendant's [Successive] Motion for Relief from Judgment, 3/21/16, 2.
[40] *Gilbert v DaimlerChrysler Corp*, 470 Mich 749, 781 (2004).

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shuffling the question of scientific reliability off to a new jury. Rather, before a jury, including a hypothetical retrial-jury, can receive "scientific" evidence, the trial courts must determine that the science proffered is sound and reliable.[41] In *Gilbert v DaimlerChrysler Corp.*,[42] the Michigan Supreme Court expressly adopted the *Daubert* analysis to govern scientific questions coming through MRE 702.

The *Daubert* Court provided a framework of four "key question[s]" that trial courts should use to determine the appropriateness of proffered scientific testimony. Two subsequent interpretive cases in the United States Supreme Court each added another key question to the list.[43] Thus, when *Daubert* is combined with its progeny there are six key questions for determining the reliability of scientific evidence that include:

1. Can the proposed scientific evidence be "tested" "to see if [it] can be falsified?"[44]
2. "Whether the theory or technique has been subjected to peer review and publication" in order to detect any "substantive flaws in methodology."[45]
3. Does the proposed scientific evidence have a "known or potential rate of error?"[46]
4. Is there general acceptance of this proposition within the relevant scientific community?[47]

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[41] *Daubert v Merrell Dow Pharm., Inc*, 509 US 579 (1993).
[42] *Gilbert*, 470 Mich at 782.
[43] *Gen Elec Co v Joiner*, 522 US 136, 146 (1997) and *Kumho Tire Co, Ltd v Carmichael*, 526 US 137, 152 (1999).
[44] *Daubert,* 509 US at 593 (1993).
[45] *Id* at 593-94.
[46] *Id.*
[47] *Id.*

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5. Is there "too great an analytical gap between the data and the opinion proffered?"[48]
6. Does the proposed scientific evidence employ "the same level of intellectual rigor that characterizes the practice of an expert in the relevant field?"[49]

The trial court determined that the vast majority of the scientific theories defendant asserted as new evidence failed the combined *Daubert* test. Defendant takes umbrage with that decision because those theories, despite their intrinsically radical and fringe nature, were presented by experts. But defendant's ire is misplaced. It is no more permissible to use good science to push bad theories, than it is to use bad science to push bad theories. The *Gilbert* Court noted this when discussing how "ostensibly legitimate data may serve as a Trojan horse that facilitates the surreptitious advance of junk science and spurious, unreliable opinions."[50] This section of the brief will explain why the defendant's theories failed the *Daubert* test as junk science and why the opinions of the defense experts were unreliable.

A. Abusive head trauma and its subset, shaken baby syndrome, are generally accepted in all the relevant scientific communities, those few doctors that disagree with these diagnoses are classified as holding fringe opinions.

It is a difficult thing to convince a factfinder that a different outcome at trial would be likely, when the defendant confessed to murdering the victim in the exact manner described by the medical

[48] *Joiner*, 522 US at 146.
[49] *Kumho Tire Co* , 526 US at 152.
[50] *Gilbert*, 470 Mich at 783.

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examiner. In the effort to do that, the defense experts in this case launched an audacious attack on the use of shaken baby syndrome (SBS)—and to a lesser extent its parent diagnosis, abusive head trauma (AHT)—claiming the diagnoses were unreliable and scientifically invalid. But this anti-SBS theory is undermined by the fact that since its inception it has attracted almost no followers. It is a fringe theory and is largely unaccepted throughout the medical field.

Although the preceding *Frye*[51] standard exclusively relied on the general acceptance of science in the relevant field, the *Daubert* cases did not eliminate or belittle that factor, so much as augment it with other factors to determine the reliability of the science. *Daubert* itself emphasized that "[w]idespread acceptance can be an important factor in ruling particular evidence admissible."[52] Inversely, the *Daubert* Court held that "a known technique which has been able to attract only minimal support within the community, may properly be viewed with skepticism."[53] Both AHT and SBS have been prominent and frequently discussed medical topics since 1987.[54] Accordingly, the "known" theory, that SBS and/or AHT are improper diagnoses, which has only attracted

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[51] *Frye v United States*, 293 F 1013 (DC Cir, 1923).
[52] *Daubert,* 509 US at 594 (cleaned up).
[53] *Id* (cleaned up).
[54] It is uncontroverted that the challenges to SBS science started based on a 1987 biomechanical study by Duhaime. The Duhaime study was discussed and the conclusions the defense wanted to rely upon based on that study were refuted at the hearing. But that study still marks the start of both significant studies in the field of SBS and a fringe group of doctors and lawyers who have since attempted to undermine SBS science.

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"minimal support within" the medical field, is "properly viewed with skepticism."

The defense witnesses largely refrained from discussing whether their theories had general acceptance or support in the medical community. A notable exception from this was Nichols who referred to Galaznik and Barnes as "outlier[s]."[55]

The People's witnesses, speaking from their experiences heading the three most relevant national medical-professional organizations, agreed with Nichols's characterization. Christian, the immediate past chair of the Child Abuse and Neglect Committee for the American Academy of Pediatrics said, "I think [the diagnosis of AHT is] incredibly widely accepted."[56] She went on to support her opinion by quoting a study. Jentzen, the former head of the National Association of Medical Examiners, said, "the majority of forensic pathologists still consider shaken baby syndrome to be a plausible and accepted diagnosis for a subset of abusive head injury."[57] The president of the Society for Pediatric Radiology, Strouse, likewise said, "I think it's very well-accepted within the medical community that Shaken Baby Syndrome occurs."[58] Considering that these three doctors were uniquely situated

[55] H. 4/19, 53. Nichols was arguing that occasionally an outlier is right. Although that statement is self-obvious, it is also inapplicable because the outliers in this case chose to base their opinions on previously disproven studies and studies that relied on raw speculation rather than science.
[56] H. 7/26, 28.
[57] H. 7/19, 67.
[58] H. 7/20, 62.

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so as to have a far better understanding of the minds of the physicians in their particular fields, their testimony carries tremendous weight.

The most telling evidence regarding the fourth factor of the *Daubert* test is that the medical community has already provided us with empirical evidence of whether there is general acceptance for SBS/AHT in the relevant medical field. Dr. Sandeep Narang, *et al.* conducted a study of relevant physicians that deal with child abuse at the ten leading children's hospitals titled *Acceptance of Shaken Baby Syndrome and Abusive Head Trauma as Medical Diagnoses (Acceptance of SBS Study).*[59] This study analyzed the professional opinions of these physicians to see where there was general agreement, where there was conflict in opinions, and where there were outlying "fringe" opinions. "Fringe" opinions were those opinions that were shared by less than five percent of responding physicians.[60]

The *Acceptance of SBS Study* found that 96.7 percent of respondents agreed that SBS and/or AHT were valid diagnoses.[61] Of that group that agreed with SBS or AHT, 89.7 percent of those reported that their opinion was informed by both their own clinical experience

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[59] Appendix 1, *Acceptance of SBS Study*. (Admitted at the hearing as Defense Hearing Exhibit 27.)

[60] Fringe science has always been the shadowy companion of traditional science. Even today, some people disbelieve in modern medicine, believe the Earth is flat, or subscribe to beliefs in aliens. It is not the purpose of this brief to criticize all fringe science. Fringe science can be interesting and is often based, in part, on established fact. The problematic issue is that fringe science is not reliable, which is why most scientists do not rely on it. That is the same reason why juries are not given fringe-science-based testimony, it is just not reliable.

[61] Appendix 1, 275.

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and the scholarly literature.[62] Of the just six respondents who disagreed with the diagnosis of AHT, five of them agreed that shaking with or without impact was likely to cause subdural hemorrhage and retinal hemorrhage, making their disagreement appear to be semantic only.[63] Meanwhile, the belief that SBS was invalid and the belief that AHT was invalid were reported as fringe opinions with less than five percent of respondents supporting each of those statements.[64]

The *Acceptance of SBS Study*, which was admitted at the hearing, clearly shows that the medical field does not accept the fringe claim that SBS and AHT are illegitimate diagnoses. On the contrary, the medical field overwhelmingly supports both SBS and AHT. Defendant is not entitled to present fringe science in his efforts to impeach his own confession, by invalidating the established diagnoses of SBS and AHT.

The *Daubert* test was designed to shield the jury from unreliable fringe sciences by placing the court as the gatekeeper for expert testimony. All the conclusions presented by defendant's experts regarding the validity of shaken baby syndrome and abusive head trauma fall into the category of fringe science, positions the medical field overwhelmingly disagrees with. Furthermore, the trial court listed out several of the organizations that recognize the diagnoses of AHT, that list included: The American Academy of Pediatrics, The American Academy of Family Physicians, The American Academy of Ophthalmology and Strabismus, The American Association for Pediatric

[62] Appendix 1, 275.
[63] Appendix 1, 275.
[64] Appendix 1, 275.

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Ophthalmology, The American Association of Neurologic Surgeons, The American College of Radiology, The American College of Surgeons, The Canadian Pediatric Society, The Centers for Disease Control and Prevention, The Royal College of Ophthalmologists, The Royal College of Pediatrics and Child Health, The Royal College of Radiologists, The World Health Organization.[65] The trial court did not abuse its discretion by finding that the defense theory that SBS and AHT were illegitimate diagnoses was inadmissible under *Daubert*.

Similarly, defense expert witness Galaznik, the college-student pediatrician,[66] opined that the term SBS was no longer used by the AAP and that they abandoned it because of some biomechanical studies.[67] Galaznik likewise opined that the AAP removed retinal hemorrhaging from the list of injuries of AHT and replaced it with neck injury, due to changes in the science.[68] Although this distinction was in line with Barnes's opinion,[69] Nichols recognized that AHT, or abusive head injury, included SBS.

Galaznik's statement was directly rebutted by Christian, the very person he quoted in support of his position.[70] Christian testified that

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[65] Opinion of the Trial Court, 17.
[66] Although defendant refers to Galaznik as a "very knowledgeable child abuse expert," this description belies the facts of the case. Galaznik was exclusively qualified as a pediatrician and the trial court expressly denied the defense's motion to qualify him as a child abuse expert. H. 4/6, 40-41. Galaznik's area of experience, where he actually worked, was general practice and later diagnosing and treating "active, vigorous college students." H. 4/6, 16.
[67] H. 4/6, 49-50.
[68] H. 4/6, 49-51.
[69] H. 4/20, 30.
[70] H. 4/6, 85-86.

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Galaznik's assertion about why she changed the AAP's recommended diagnosis from SBS to AHT was false.[71] Rather than abandon SBS, Christian explained that she introduced AHT because it is a broader term that accurately describes more injuries, some of which were being inaccurately lumped into SBS.[72] She also expressly said that the AAP did not "abandon[] the importance of shaking as a mechanism [of AHT injury]," and that "shaken baby syndrome is a subset of abusive head trauma."[73] Christian also emphasized that retinal hemorrhages were never removed from the constellation of AHT injuries in the official AAP publication *Understanding AHT in Infants & Children*.[74]

Galaznik's attempt to separate the traditional diagnostic language of "shaken baby syndrome" from the more modern terminology of "abusive head trauma" failed. There is no separation. This was an inconsequential semantic difference that was only asserted in the effort to mislead a jury into thinking that the AAP believes SBS is a defunct science, when the opposite is true. Christian, the very person who originally wrote the definition of AHT explained, in both this hearing and in numerous official AAP publications, that AHT includes SBS. The trial court was right to exclude defendant's theory that SBS was not generally accepted.

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[71] H. 7/26, 40.
[72] H. 7/26, 13-15.
[73] H. 7/26, 15-16.
[74] Appendix 2, *Understanding AHT in Infants & Children.* (Admitted at hearing as People's Hearing-Exhibit 2.)

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B. The claim that the "triad" is diagnostic of AHT or SBS is a strawman argument.

The topic of "the triad" was discussed at length during the hearing. Defendant argues that the so-called triad of symptoms was once used in an exclusive manner, in a vacuum, to reduce the diagnosis of SBS to an additive equation. (i.e. Defense argues doctors thought that retinal hemorrhage + subdural hemorrhage + brain swelling always equaled SBS.) That is not the case. As Christian and Davis pointed out, SBS has never been treated like that, because that is not how medicine works.[75] Nevertheless, it is important to note that these three injuries[76] are highly indicative of shaking, *in the absence of any other clear causation*.[77]

The conflict arises when the defense experts remove that last part, claiming that SBS is an "assumed" diagnosis when "the triad" is present, making it an exclusionary rather than a deductive diagnosis. But that is not, and never has been, the case. Rather, the diagnostic process is simple: in medical science there are very, very few mechanisms that can cause retinal hemorrhage, subdural hemorrhage, and brain swelling simultaneously, and each of those mechanisms have clear indicators apparent from the situation of the case. If the child has a rare, aberrant, blood disorder, it will appear in the history and the blood work. If the child is in a severe car accident, there will be a record

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[75] H. 7/25, 47; H. 7/26, 37-40.
[76] According to Christian, encephalopathy is a stronger indicator of SBS and AHT than brain swelling. H. 9/11, 19-20.
[77] This point was discussed exhaustively by Jentzen, Davis, and Christian on both direct and cross examination.

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of the accident. If the child suffered some other major blunt-force trauma—such as in the case where a baby's head was smashed by a falling television—that will be apparent upon gross examination. But when all these exterior indicators are absent, the lone remaining diagnosis is shaking.[78] Thus, the real question being argued over is not who called what a "triad." The real question is whether SBS was used as a proper diagnosis through deduction, or whether those injuries were used as an exclusive calculation, devoid of thought.

Cassin's testimony directly favored the People. Although the defense has preemptively declared victory based on Cassin statements, Cassin's discussion of "the triad" conforms to the proper diagnosis of SBS, rather than the defense's concept of exclusive calculation. Cassin mentioned his diagnostic process by describing the victim's injuries and then stating that he "recognized this as an organization of findings *in the absence of any other thing or phenomena* called the shaken baby syndrome."[79] Since a proper SBS diagnosis is the result of a process of deduction, such as described by Cassin, this supports the People's argument that the diagnosis was properly done.

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[78] Defendant would like to add other types of causation as potential diagnoses. But those other types of causation lack scientific backing and are, at best, fringe theories. Appendix 1.

[79] H. 7, 19, 27 (emphasis added).

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C. There is no serious doubt in the medical field as to whether shaking a baby can cause the constellation of injuries in SBS cases or the injuries the victim suffered.

Defendant asserts that "[t]here is significant doubt as to whether shaking alone is sufficient to cause the injuries associated with SBS."[80] This statement is hyperbole. SBS—shaken baby syndrome—is the diagnosis of a pure shaking form of abusive head trauma. If the *Acceptance of SBS*[81] study shows anything, it shows that only very few experts[82] agree with the defense stance. Of course, as with most hyperbole, this is a subjective statement. The defense could claim that its own doubt in the People's case is "significant." Regardless, the facts established at the hearing show that regardless of the label they are given, experts that disagree with shaking as a cause for the constellation of injuries in AHT/SBS cases are an extremely small, fringe minority.

In the attempt to justify that statement, defendant attempted to use a select few biomechanical studies that—when viewed in a vacuum and without reference to later clarifying or refuting studies—might cast doubt on the method of injury in shaken baby syndrome. But the trial court excluded the biomechanical studies and testimony under *Joiner*.[83] The court found that there was too great an analytical gap between the data and the opinions proffered in order to use the biomechanical

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[80] Defendant's Brief on Appeal, 33.
[81] Appendix 1.
[82] Technically, the study only reviews *relevant* experts, who actually work in the field diagnosing or treating potential victims of SBS and AHT, of whom very few support the defense contention.
[83] Opinion of the Trial Court, 23.

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testimony in court.[84] As the trial court noted, this opinion was supported by the testimony of the defense biomechanics expert, Chris Van Ee, who acknowledged that biomechanics was not a substitute for medicine and could not account for all the variables in an actual human being.[85]

Ultimately, the defense contention that we do not fully understand the human brain is both accurate and irrelevant. Copious information was presented during the hearing that supports the incredibly widely accepted science that shaking an infant causes retinal hemorrhage, subdural hemorrhage, and brain swelling, and often other injuries such as shoulder or rib fractures. There are no completely biofidelic models of the human infant, so shaking a model cannot truly replicate shaking an infant. It is ethically impossible to perform experiments on infants to determine how the damage is being caused during the act of shaking. Fortunately, a perfect understanding of the internal mechanism of injury does not matter to the question of whether the act *caused* the injury. A juror can understand that being shot in the head leads to death, without knowing the medical minutiae. It is not necessary for that juror to understand the trajectory the bullet would take through the head, how it would interact with the victim's brain tissue, what cognitive and survival functions would be disrupted, and the details of how the impact of the bullet eventually lead to death,

[84] *Joiner*, 522 US at 146.
[85] Opinion of the Trial Court, 23.

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before the juror could convict the shooter.[86] Rather, the juror would simply need to know beyond a reasonable doubt that (1) the defendant was the shooter and (2) the victim died from being shot in the head. So too, here, decades of science and medicine have proven that shaking a child leads to a particular constellation of devastating brain injuries and, often, death. The "why" shaking harms infants, is largely an academic question, rather than a legal question. All that matters legally is that the damage did come from shaking and defendant did the shaking.

In an effort to spin the study to make their theory look less fringe, defendant falsely claims "59% of forensic pathologists surveyed did not consider SBS a valid diagnosis,"[87] according to the *Acceptance of SBS Study*.[88] Even a cursory reading of the study shows that to be a false assertion. As Table III clearly shows, only 29.63 percent of the forensic pathologists disagree with the SBS diagnosis, 29.63% of forensic pathologists did not know or were unsure, and 40.74 percent of forensic pathologists agreed with the SBS diagnosis.[89] Likewise, the

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[86] Obviously, some knowledge of the details of a crime are helpful to understanding it. But while helpful, they are also unnecessary to determine whether the crime occurred.

[87] Defendant's Brief on Appeal, 38.

[88] Defense Hearing Exhibit 27.

[89] The People feel that this statement was probably a simple oversight on behalf of the defense, reverse extrapolated from the much discussed 41% agreement statistic.

In the unlikely event, however, that the sentence was specifically constructed to be ambiguous enough to include the unsure category along with the disagree category to create the illusion of more disagreement than was actually represented in the article, the People feel that such a tactic is misleading in the extreme. Regardless, the People do not believe that is what

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immediately following statement, where defendant asserts that the "majority" of pathologists do not accept SBS as valid, is false. The trial court specifically told defense counsel that it disagreed with that reading of the study.[90] According to the study, more pathologists agree with the SBS diagnosis than disagree with it. Ultimately, this is a moot point because more than 92 percent of forensic pathologists agreed with the diagnosis of AHT, which incorporates all the injuries and mechanisms of shaken baby syndrome. The one thing that this argument shows is that forensic pathologists are up-to-date on proper child-abuse terminology.

The trial court did not abuse its discretion when finding that the anti-SBS theories presented were "outliers, not generally accepted in the medical community" and that it failed the "foundational requirements of *Daubert, Joiner,* and *Kumho*.[91]

D. Medical science does not support defendant's theory that the victim's injuries could not present from shaking, absent a grossly apparent neck injury.

Defendant, likewise, relied on few, cherry-picked biomechanical studies in the effort to make the contrasting claim that shaking would only cause the injuries the victim suffered, after inflicting grossly apparent neck injury.[92] The trial court correctly excluded the speculative biomechanical studies pertaining to this issue for the same

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happened and will continue to assume it was an innocent error unless presented with a reason to question that belief.

[90] H. 12/7, 49.

[91] Opinion of the Trial Court, 24.

[92] Although the term gross can mean different things, when used in the pathological context it refers to examination by the bare eye.

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reason as the other biomechanical studies, there was simply too great an analytical gap between the data and the conclusions defendant wanted to draw. Nevertheless, the biomechanical studies on the sub-issue of neck injury had the additional problem of having their theory previously disproven. Although Van Ee was opaque, Nichols was transparent in citing papers by Bandak and Ommaya to support his conclusion that a neck injury would be necessary.[93]

Bandak's paper, which was an exclusively computational paper, was completely discredited and refuted. The forces on the infant's neck were ten times lower than he reported.[94] It has no business being used in court. The whole purpose of *Daubert's* peer review requirement is to determine whether the theory is flawed or has been falsified so that the jury is not presented with junk science. It stands the *Daubert* test on its head to allow a litigant to lie to a jury by using a scientific study that was publicly and unambiguously shown to be fraudulent.

The Ommaya paper cited by Nichols is, like the Bandak paper, a computational paper, comparing human specifications to animal injury criteria without any physical models. Accordingly, this paper lacks any modeling simulation to replicate the motion of the human body and instead relies purely on mathematical calculations and an assumption of similarity. The Ommaya paper is not, at its heart, a criticism of shaken baby syndrome. Rather, it is a call to doctors for further

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[93] T. 4/19, 25-26. Neither paper was introduced into evidence.

[94] Appendix 3, *Shaken Baby Syndrome: A flawed biomechanical analysis.* Susan Margulies, et.al. (admitted as People's Hearing Exhibit 8) and Appendix 4, *Response in Forensic Science International,* N. Rangarajan and T. Shams (admitted as People's Hearing Exhibit 9).

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biomechanical analysis of both adult and child traumatic brain injury. The paper contains several interesting discussions, including a discussion of what can only be described as shaken adult syndrome. The article describes how an adult captive was shaken, without impact, by his captors resulting in death, with findings of a subdural hematoma and retinal hemorrhaging. When discussing infant traumatic brain injuries, however, the article uses admittedly theoretical mass-scaling injury criteria. These criteria suggest that it would take four times greater force to be applied to an infant's head to cause the same traumatic brain injury as would occur in an adult's head. Thus, the paper postulates that catastrophic neck injury would be required in order for an infant to suffer injuries like subdural hemorrhage and retinal hemorrhage. The flaw in the experimental injury criteria was that it did not account for any of the significant differences between an infant brain and an adult brain, outside of mass, rendering the paper's discussion of necessary neck injury meaningless. It is common sense that it does not require four times the force to damage an infant's unformed brain than it does to damage an adult's completely formed brain. This is an excellent example of evidence inadmissible under *Joiner*.[95] Defendant's desired conclusion is so far removed from the underlying data that it creates a bizarre, unpassable analytical gap.[96]

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[95] *Joiner*, 522 US at 146.

[96] Basically, the defense wants the courts to conclude that because it has been proven that someone *can* shake an adult to death without catastrophic neck injury, the same *cannot* be said of an infant. The trial court declined to take such an aberrant and counter-logical leap over a vast analytical gap.

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Further, Christian explained that recent breakthroughs in medical knowledge about abusive head trauma show that the soft tissue, ligaments, and nerves in the neck are often damaged during the process of abusive shaking.[97] These injuries can be found using the advanced imaging equipment available today. But these injuries were not checked for at the time the victim was killed more than a decade ago. Most of the various neck injuries that the victim could have sustained during shaking would not have shown up on the imaging that was conducted at the time.[98] Christian also explained that neck injury was not universal, it occurs in between fifty percent and two-thirds of infant victims of SBS. Accordingly, it is completely possible that the victim could have suffered internal neck injuries while being shaken to death by defendant. But as there was no dissection or MRI of the neck, there is no way to know. The type of neck injury common to SBS cases would not have been apparent on the x-rays performed on the victim.[99] All that defendant can accurately claim is that there was no catastrophic neck failure—the spinal process was not broken on the skeletal survey or upon visual examination of the victim—which is an irrelevant claim.[100] The trial court did not abuse its discretion excluding these theories under *Daubert* and *Joiner*.

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[97] H. 7/26, 39-40.
[98] H. 9/11, 73.
[99] H. 9/11, 73.
[100] H. 7/26, 18-23.

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E. Defendant's theory that the victim suffered traumatic brain injuries through choking failed the Daubert *test.*

The trial court found that the defense theory that the victim died from choking, which ignores the confession and instead focuses on defendant's earlier denials, failed *Daubert*. Although the defense keeps the discussion of this theory vague, it is very important to know exactly how they attempted to explain that the victim received severe traumatic injuries without any physical, trauma-inducing event. The defense theory started with the victim choking on formula. From there they theorized that the victim suffered hypoxic-ischemic encephalopathy (HIE),[101] or a loss of blood flow to the brain. Finally, they hypothesized that the return of blood to the victim's head during the resuscitative efforts caused blood to "leak" into the subdural space creating a subdural hemorrhage and the increased pressure would cause retinal hemorrhages. Barnes and Galaznik also claimed the shoulder fracture was caused by the resuscitative efforts.

The most obvious criticism of this theory is that it is not a medical theory at all; it is a legal theory, completely concocted for litigation. HIE is not some rare, bizarre condition that lacks proper studies that would show it, combined with resuscitation, mimics traumatic intracranial

[101] Hypoxic-ischemic encephalopathy is nearly always seen in abusive shaking cases, as a result of the brain damage suffered by the victimized infant. The distinguishing factor of the intradural leakage theory is that the defense suggests some non-traumatic reason for the HIE and then blames the traumatic injuries, such as subdural hemorrhaging, on the HIE. It is not in question that HIE can be caused by many ailments. The unproven, unscientific portion of this theory is the claim that the HIE, itself, mimics traumatic injury.

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injuries. HIE is the ultimate cause of death for every drowning, asphyxiation, choking, asthmatic, cardiac arrest, and SIDS fatality. If there were any validity to the claim that HIE and attempted resuscitation caused subdural hemorrhage and retinal hemorrhage, then the evidence would be abundant. More importantly, these injuries would manifest in cases that did not exhibit a high probability of being abuse.

To justify part of this traumatic-injury-without-trauma theory, the defense cited three articles by Cohen and Scheimberg, which failed to differentiate between the few reviewed subjects of the age of the victim, and the numerous neonatal subjects who would often be expected to have some sort of subdural-hemorrhage due to birth. One of the articles reviewed nothing but neonate and fetuses. The trial court rightly held that the use of the subdural-hemorrhage-via-HIE theory based upon these articles was excluded by *Daubert*. Specifically, there were the following *Daubert* problems: a methodological defect in the defense theory (these articles did not feature any particularized findings relevant to a subject of the victim's age), the articles lacked error rates, and there was no showing of general acceptance in the medical community for their conclusion. Again, the trial court did not abuse its discretion.

Meanwhile, Nichols also alleged that choking was the cause but only cited an anecdotal article written by two other defense witnesses—Galaznik and Barnes—as his reasoning for believing the cause could

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have been choking.[102] The trial court excluded that opinion because the underlying article did not meet any of the *Daubert* factors.[103] The trial court did not abuse its discretion.

Similarly, the trial court found that the relevant studies done regarding children of the victim's age did not support defendant's theory and defendant's theory was only recognized by a small fringe group of experts.[104] The decision of the trial court to exclude the junk science that choking mimics internal head trauma was not an abuse of discretion, because it was supported by the facts of the case.

F. Defendant did not provide any reliable scientific alternative cause for the acromion fracture.

The trial court did not abuse its discretion when it excluded defendant's alternate theories about the cause of the victim's acromion fracture. The defense advanced three theories suggesting causes other than abuse for the victim's acromion fracture: (1) that it was caused by autopsy, (2) that it was caused by resuscitation, and (3) that the fracture was caused by rickets.

First, Cassin, who testified on behalf of the defense indicated that, although he did see the acromion fracture on the radiology, he believed that the fracture could have taken place during the autopsy and thus showed up on "post-autopsy films."[105] Cassin was simply incorrect. The radiology that showed the fracture was performed before the

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[102] T. 4/19, 53-34.
[103] Opinion of the Trial Court, 21.
[104] Opinion of the Trial Court, 21.
[105] H. 7/19, 35-36.

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autopsy including two x-rays that were performed while the victim was alive.[106] The trial court did not abuse its discretion in excluding this false scientific theory under *Daubert*.

Second, the defense suggested the theory that resuscitation efforts were the cause of the broken acromion. The trial court rightly excluded this speculation. "[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert."[107] Not only did the defense fail to provide scientific support for this theory, Christian indicated that she searched for scholarly articles that might support the theory that CPR was connected to acromion fractures, but found none.[108]

Third, through Barnes, the defense suggested that the victim may have had a bone disease—specifically rickets—that was the root cause of the fracture (and other symptoms). Again, the trial court rightly excluded this theory. The rickets theory was both unsupported, like the resuscitation theory, and shown to be objectively false, like the occurrence-during autopsy theory. A simple review of the victim's medical chart and blood work, by Christian, showed that she did not suffer from rickets. A child with rickets would show a very low calcium level and a very high alkaline phosphate level. Here, the victim was admitted with a normal calcium level that went down slightly and a

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[106] H. 7/20, 15.
[107] *Joiner*, 522 US at 146.
[108] H. 7/26, 58.

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normal alkaline phosphate level.[109] Thus, the victim did not have rickets.

Conclusion

Defendant is not entitled to relief, because junk science is inadmissible. The defense burden of undermining an exact and detailed confession was simply too great for reasonable or proven science to reach. Accordingly, the defense experts used fringe theories and unproven—and in some cases, objectively disproven—articles to justify their extreme assertions. *Daubert* does not allow unreliable fringe science to be given to a jury. If a defendant felt that she could be acquitted if she got physicists to testify to their belief that the world was flat, would she be permitted to present that "science" to a jury? No. Fringe science and junk science are not admissible, even when dressed up by experts with the purpose of sneaking it in as a Trojan horse.[110] The trial court did not abuse its discretion when ruling that the newly discovered scientific theories presented by the defense failed *Daubert*.

[109] H. 7/26, 57.
[110] *Gilbert*, 470 Mich at 783.

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II.

Neither the legislature nor the Courts has created a policy requiring the admission of expert opinions that a trial court finds fail the *Daubert* standard. Here, the defense asserts that cases that have nothing to do with the *Daubert* standard somehow preclude the trial court from applying the *Daubert* standard in SBS cases. Defendants in SBS cases do not have a free pass to present evidence that fails the *Daubert* standard.

Standard of Review

From the inception of this successive motion for relief from judgment, the defense has argued that the cases of *People v Ackley*[111] and *In Re Yarbrough Minors*[112] precluded the trial court's application of the *Daubert* standard. Defendant is wrong. Neither of these cases involved a *Daubert* hearing and neither of them has any bearing on the decision in this case.

The decision of whether to admit evidence is reviewed for an abuse of discretion and the preliminary questions of law regarding the requirements of the rules of evidence on admission and exclusion are reviewed de novo.[113]

Discussion

According to the necessities of this case, the defense has adopted the radical stance that both this Court and the Michigan Supreme Court have actually ruled against SBS to the point that *Daubert* no longer

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[111] *People v Ackley*, 497 Mich 381 (2015).
[112] *In re Yarbrough Minors*, 314 Mich App 111 (2016).
[113] *Muhammad*, 326 Mich App at 47.

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functions as a restraint to the testimony of whatever any defense expert chooses to say. The defense is mistaken. Neither *Ackley* nor *In Re Yarbrough Minors* authorizes a trial court to admit evidence that fails the *Daubert* standard. In fact, neither case has any legal or factual similarity to the instant case.

A. The Ackley *case does not say anything about* Daubert *hearings.*

The *Ackley* case does not, and cannot, control the outcome of a *Daubert* hearing in the instant case, because the two cases do not even share the same issue. The first thing that is notable about *Ackley* is its procedural posture. In *Ackley*, the question revolved around whether defense counsel was constitutionally ineffective. Specifically, trial counsel chose to only consult one expert, medical examiner Dr. Brian Hunter, who candidly said that he was not the best expert to opine for the defense on short falls. Hunter recommended that counsel consult with another forensic pathologist, Dr. Mark Shuman, who would be able to help him. Nevertheless, counsel refused to contact Shuman and proceeded to trial without an expert.[114] At a later *Ginther* hearing, Dr. Werner Spitz testified on behalf of the defense and indicated that the victim's head injuries were likely caused by an accidental mild impact, such as a short fall.[115]

Contrary to defendant's attempt to remake *Ackley* so as to dominate all cases where a child's head injury was an issue, the *Ackley* Court provided a very narrow and fact-specific holding:

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[114] *Ackley*, 497 Mich at 383.
[115] *Id* at 387.

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> [W]e conclude that defense counsel's failure to attempt to engage a single expert witness to rebut the prosecution's expert testimony, or to attempt to consult an expert with the scientific training to support the defendant's theory of the case, fell below an objective standard of reasonableness, and created a reasonable probability that this error affected the outcome of the defendant's trial.[116]

The *Ackley* Court went on to explain why, under *Strickland*, the failure to even consult Shuman was deficient performance. After the Court explained its holding it went on to note, in a statement of clear *obiter dictum*, that there was a dispute surrounding the SBS and AHT diagnoses. That statement was not the holding of *Ackley*, because the holding of *Ackley* was an answer to the question of what investigations counsel must make to be considered constitutionally effective. The *Ackley* Court found that, on the topic of short falls, there was a reasonable probability that the counsel's failure to consult Spitz or Shuman met the elements of a *Strickland* claim of ineffective assistance.[117] But that holding is irrelevant to the instant case. A

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[116] *Id* at 383.

[117] Rather than address the differences between this case and *Ackley*, defendant resorts to attempting to fabricate enmity between the People and the Courts. Defendant claims that the trial court "apparently accepted" a footnote by the People that the current Chief Justice of the Michigan Supreme Court, the Honorable Bridget M. McCormack, was involved in obtaining the Innocence Clinic grant to challenge shaken baby cases, when she worked for the Innocence Clinic. This statement was contained in a footnote in the People's response to the defense brief.

As the defense knows, the trial court most certainly did not "accept" that statement and any argument to the contrary is transparently misleading. Upon discovery that the information relied upon was inaccurate, the People expressly indicated that they "st[ood] corrected," regarding the issue of the

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dispute about of SBS and AHT diagnoses regarding a particular victim's set of injuries is not a matter of law. It is a matter of fact to be determined during the finding of facts. Facts are unique to each case. The facts of *Ackley* have no bearing on this case. The *Ackley* Court did not rule that extreme and unsupported assertions by Barnes, Galaznik, and Nichols were admissible despite *Daubert*. The *Ackley* Court did not opine on defendant's false assertion that "[t]here is now no credible evidence that shaking caused Nakita Lemons's death."[118]

Thus, the *Ackley* case does not say anything about whether this defendant's extreme scientific theories would pass the rigors of a *Daubert* hearing.

Here, defendant was facing a much steeper challenge than the *Ackley* defendant. The instant defendant confessed to the murder by way of shaking. Defendant brought in experts to propose fringe theories in the effort to undermine that confession. The trial court excluded those theories under *Daubert*. Nothing about *Ackley* implies any particular result at a *Daubert* hearing in the instant case.

Chief Justice being previously involved in obtaining the Innocence Clinic grant. H. 12/7/17, 39. Thus, the trial court knew to disregard the errant statement well-before it rendered its opinion. Outside of a pure ad hominem attack, there is absolutely no defensible reason to accuse the trial court of basing part of its holding on a misinformed statement that was expressly withdrawn on the record.

[118] Defendant's [Successive] Motion for Relief from Judgment, 3/21/16, 2.

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B. *The* Yarbrough Minors *case does not say anything about* Daubert *hearings.*

As above, defendant's citation to the *Yarbrough Minors*[119] case is the suggestion that a factually dissimilar case, in a totally different procedural situation, should control an issue that never arose in that case. The *Yarbrough Minors* case was a civil appeal from a parental rights termination case where the primary issue was that the trial court denied funds to consult an expert in order to properly cross-examine the medical experts from the hospital.[120] The Court of Appeals opined,

> [A]fter weighing the respective private and public interests, we hold that the chief judge abused his discretion by failing to employ the requisite due process analysis under *Eldridge,* and by refusing to authorize reasonable expert witness funding in this case.[121]

Although the Court of Appeals mentioned that there were different perspectives on child abuse and shaken baby syndrome, they never opined on defendant's assertion that "[t]here is now no credible evidence that shaking caused [a victim's death]"[122] or anything remotely similar. The victim in the *Yarbrough Minors* case did not die, there was no *Daubert* hearing, and the only legal standards discussed were about parental rights.

Defendant's claim that the trial court's findings of fact at the *Daubert* hearing are undermined by the *Yarbrough Minors* case is false.

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[119] *Yarbrough Minors*, 314 Mich App 111.
[120] *Id* at 119.
[121] *Id* at 137.
[122] Defendant's [Successive] Motion for Relief from Judgment, 3/21/16, 2.

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Conclusion

Neither the *Ackley* case nor the *Yarbrough Minors* case has anything to do with the instant case. All defendant can say about these cases is that:

- different litigants,
- in cases involving very different facts,
- pursuing claims of ineffective assistance or wrongful parental rights termination,
- presenting different experts or no experts,
- to deal with different topics, such as short falls and skull fractures,
- without *Daubert* hearings,
- had different outcomes.

This case is nothing like the other two cases, does not present any similar legal questions to those cases, and has vastly different facts from those cases. The facts established at the *Daubert* hearing *in this case* control *this case*. Neither of defendant's keystone cases provide any support for the argument that bad science is admissible under *Daubert*. This is not just another case where a second opinion may have been helpful in a murky area. As discussed above, this case is radically different from the vast majority of SBS and AHT cases. The entire defense theory for this successive motion for relief from judgment is based on trying to use science to undercut defendant's own confession. To do something that difficult, defendant turned to extreme, fringe theories. Those theories failed *Daubert*. The trial court did not abuse its discretion. Neither *Ackley* nor *Yarbrough Minors* take the decision on a *Daubert* motion away from the trial court.

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III.

To receive a new trial on a claim of newly discovered evidence, a defendant must show that the admissible evidence makes a different result probable on retrial. Here, the scant evidence that survived the *Daubert* standard consists only of the equivocations of a witness who is no longer in a position to change the official diagnosis and an incorrect claim about a tangentially relevant fracture. Defendant is not entitled to a new trial based on evidence that would not make a different result probable on retrial.

Standard of Review

A defendant's proper claim of newly discovered evidence is scrutinized according to MCR 6.508(D)(3).[123] The defendant bears the burden of showing "good cause" and "actual prejudice." A trial court's decision on a motion for relief from judgment is reviewed for an abuse of discretion and the trial court's findings of fact are reviewed for clear error.[124]

Any admissible newly discovered evidence is evaluated under the test established in *People v Cress*:

> For a new trial to be granted on the basis of newly discovered evidence, a defendant must show that: (1) the evidence itself, not merely its materiality, was newly discovered; (2) the newly discovered evidence was not cumulative; (3) the party could not, using reasonable diligence, have discovered and produced the evidence at

[123] MCR 6.508(D)(3).
[124] *People v McSwain*, 259 Mich App 654, 681 (2003).

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> trial; and (4) the new evidence makes a different result probable on retrial.[125]

The Michigan Supreme Court case of *People v Johnson* both clarified the *Cress* rule and broadened the scope of information that a court could consider when determining whether a new trial should be granted based on newly discovered evidence.[126] *Johnson* clarified the fourth prong of the *Cress* test by bifurcating the test into two parts: "In order to determine whether newly discovered evidence makes a different result probable on retrial, a trial court must first determine… whether a *reasonable juror* could find the testimony credible on retrial."[127]

Additionally, the Court broadened the scope of the evidence the trial court could consider when reviewing the newly discovered evidence. Previously, the Court had instructed, in *People v Grissom*, that the reviewing court "carefully consider the newly discovered evidence in light of the evidence presented at trial."[128] The *Johnson* Court quoted that language and then added to it saying, "[t]he trial court must also consider the evidence that would be admitted at *retrial*."[129] The Court concluded that trial courts should not wear blinders, but must consider the newly discovered evidence in the context of "not simply the evidence presented at the original trial, but also the evidence that would be presented at a new trial."[130]

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[125] *People v Cress*, 468 Mich 678, 692 (2003) (citations and quotation marks omitted).
[126] *People v Johnson*, 502 Mich 541, 566–67 (2018)
[127] *Id.*
[128] *People v Grissom*, 492 Mich 296, 321 (2012).
[129] *Johnson*, 502 Mich at 571.
[130] *Id.*

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Defendant asks this Court to change the Michigan Supreme Court's opinion in *Johnson* when it instructed that trial courts should consider the newly discovered evidence in light of "the evidence that would be admitted at *retrial*."[131] Instead, defendant would apparently prefer that this Court add in a requirement that the only evidence that the trial court could review is what "a defendant would present upon *retrial*."[132] Of course, that is *not* what the clear language of *Johnson* instructs the trial court to do. To justify blatantly changing *Johnson*, defendant attempts to use a fundamentally flawed analysis, claiming that the People cannot present evidence at a hearing, due to defendant's right to be convicted beyond a reasonable doubt. Defendant has already been convicted beyond a reasonable doubt. The People's burden has been met. On a motion for relief from judgment, the burden rests upon defendant. It is defendant's burden to show that there is a reasonable probability that the admissible newly discovered evidence would result in a different outcome upon retrial. And the People are entitled to present evidence to rebut that claim at a hearing, which is exactly what happened in this case.

Discussion

Without the fringe scientific theories that do not pass the *Daubert* test, defendant is left without much of a case to present under the *Cress* standard. As discussed below, the remaining pieces of newly discovered

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[131] *Id* at 572 (emphasis in original).
[132] Defendant's Brief on Appeal, 21 n 6.

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evidence fail to create a reasonable probability of a different outcome at retrial.

A. The newly equivocating testimony of Dr. Bader Cassin would not result in a reasonable probability of a different outcome at retrial.

Defendant's characterization of Cassin's testimony as "recanting" is flawed for two reasons: (1) Cassin cannot recant a report from an office he is no longer a member of and (2) Cassin did not actually recant his position, so much as equivocate.

First, Cassin lacks the authority to "recant" the contents of his autopsy report. Recant means "[t]o withdraw or renounce (prior statements or testimony) formally or publicly."[133] Cassin cannot formally withdraw or change the autopsy report. That authority is relegated to the Washtenaw County Medical Examiner, Dr. Jeffrey Jentzen, who stands by the autopsy report and its diagnosed manner of death.[134] Second, Cassin did not actually recant the contents of the report. Cassin agreed with all the findings he previously made regarding the victim's cause of death. He even agreed that the manner of death was consistent with homicide and the new term used for this type of homicide would be abusive head trauma.[135]

The only thing useful to the defense was Cassin's testimony that if he did the autopsy today, he would label the manner of death as "indeterminate" rather than "homicide." Thus, Cassin's only change

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[133] Black's Law Dictionary, "recant" (10th Ed. 2014).
[134] H. 7/19, 76-77.
[135] H. 7/19, 48-49.

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was that he felt that something else other than homicide might have been an alternate cause of death. Defendant implies that the partial recantation would somehow modify or eliminate the autopsy report from evidence. That is not the case. Cassin is no longer employed by the Washtenaw County Medical Examiner's Office and therefore lacks any authority to change the autopsy.

The part of Cassin's testimony that consisted of the partial recantation was unreliable. "[W]here newly discovered evidence takes the form of recantation testimony, it is traditionally regarded as suspect and untrustworthy."[136] Although this maxim is usually applied to lay witnesses, here the circumstances make it particularly poignant. There was a vast difference between Cassin's clear and detailed testimony regarding his medical findings and his nebulous, uncertain testimony regarding the new theories that supposedly undermine his earlier diagnosis. When discussing his review of his prior findings, Cassin was thoroughly descriptive and concrete. When asked about the presence of retinal hemorrhages he said, "Hemorrhage was indeed there, and it was layered but all acute."[137] In summarizing his review of his previous findings, Cassin was again very confident and concrete.

> I would characterize her death as having occurred with the findings that I mentioned at the time. I think that is incontrovertible. I found subarachnoid and subdural hemorrhage. I also found nerve sheath hemorrhages. I also found brain swelling, and then in addition to that I found some early bronchial pneumonia.[138]

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[136] *People v Canter*, 197 Mich App 550, 559 (1992).
[137] H. 7/19, 30.
[138] H. 7/19, 33.

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But when discussing what influenced him to change to his present opinion, his testimony became vague and uncertain. He did not know what studies or articles caused him to question his earlier determination.[139] He was unable to list any diseases that could mimic the injuries indicating SBS.[140] He did not remember the victim having any disease that could mimic SBS.[141] He could not rule out a reaction to vaccines as a cause of the victim's injuries.[142] Finally, Cassin acknowledged that everything in his report could very well be accurate, *including homicide as the manner of death*.[143] Cassin provided no reason for his change of opinion, other than to suggest the issues brought up by the other defense experts. As detailed exhaustively above, the opinions presented by the other defense witnesses are inadmissible fringe science under *Daubert*.

This issue is simple. Cassin's testimony does not create a reasonable probability for a different outcome at trial. To help illustrate the point, a comparison is warranted. At the initial trial, the key evidence was:

(1) the medical examiner testified to the content of the autopsy report and his conclusion that the death was a homicide,
(2) other witnesses testified to the situation, and
(3) the police testified regarding defendant's confession.

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[139] H. 7/19, 39-40.
[140] H. 7/19, 41.
[141] H. 7/19, 41.
[142] H. 7/19, 43.
[143] H. 7/19, 43. Cassin also said, later, that these days he would use "abusive head trauma" rather than "shaken baby syndrome," due to the change in the recommended language of the diagnosis. H. 7/19, 48-49.

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At a hypothetical retrial, the key evidence would be identical:

> (1) the medical examiner would testify to the content of the autopsy report and his conclusion that the death was a homicide
> (2) other witnesses would testify to the situation, and the police would testify regarding defendant's confession.

If Cassin testified, he would not be testifying as the Washtenaw County Medical Examiner, which he is not. He would be testifying as a defense witness, to argue that he is no longer certain that the cause of death is homicide. Cassin would not be able to testify to any supposed alternate causes because (1) he was unable to provide any scientific backing for any of the causes theorized and (2) to whatever extent the other causes were discussed by the other defense experts, they are inaccurate and inadmissible under *Daubert*.

Rather than argue that the meager substance of Cassin's partial recantation alone meets the burden to show a reasonable probability of a different result at trial, the defense relies upon an assumption that the People's evidence would suddenly disappear. Under this assumption, defendant apparently believes that the autopsy report would not be used, the Medical Examiner would not testify, and the confession would be inadmissible. These assumptions are false.[144]

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[144] Defendant claims that all the People's witnesses were superfluous and then flippantly suggests that their only utility would be to testify at a new trial. That suggestion completely ignores the fact that Jentzen was testifying, not as an outside expert, but in his official capacity as the Washtenaw County Medical Examiner and that the People's witnesses were called to testify regarding the *Daubert* reliability of the defense theories.

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Defendant assumes that the Washtenaw County Medical Examiner would not appear at a retrial to explain that the death was a homicide. To support this assumption, defendant relies on a line from *People v Grissom*, where the Michigan Supreme Court instructs the trial court to put aside its belief that impeachment evidence was insufficient to warrant a new trial and to merely review the facts in the "newly discovered evidence and those in the record."[145] *Grissom* spoke to a totally different issue, the bias of a judge on whether impeachment evidence was sufficient to grant a new trial. Accordingly, that statement is *dictum* as applied to this case and does not provide any rule of any kind. Regardless, defendant intentionally ignored the latter part of the statement, where the Supreme Court specifically told the lower court it could refer to facts "in the record."[146] The entirety of this hearing is, incontrovertibly, part of the record. Although it would be helpful for the defense if its case was insulated from accurate medical testimony, *Grissom* is not such an insulator.

Ultimately, the question of whether *Grissom* limited the trial court's ability to look at the evidence that would be presented at retrial is irrelevant. Any such limitation was expressly overruled in *Johnson*.[147] As discussed above, *Johnson* requires the trial court to look at the evidence that would be admitted at retrial. In this case, that includes the testimony from the current Washtenaw County Medical Examiner. In contrast, defendant's brief does not even follow its own

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[145] *Grissom*, 492 Mich at 321.
[146] *Id.*
[147] *Johnson*, 502 Mich at 571.

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interpretation of the *Grissom* rule, because it does not compare the evidence presented at trial to the new testimony from Cassin. Instead, it creates an idealized fantasy trial, where nobody testifies for the Medical Examiner's Office and Cassin testifies for the defense. But that does not reflect reality. To claim that Jentzen's testimony should be ignored because he is a different individual from Cassin (and therefore, according to defendant's proposed revision to *Johnson*, ineligible to take Cassin's place in the hypothetical new trial) is ridiculous. If that claim were accurate, every time a medical examiner moved or left his job, all the cases in which he testified would be entitled to new trials. After all, there would no longer be any cause of death, until the new medical examiner testified at a new trial. Defendant's proposed revision to *Johnson* would assume that nobody would testify on behalf of the Medical Examiner's Office, even if the new Medical Examiner testified to the contrary at a hearing.

Fortunately, defendant's favored assumption is not grounded in the caselaw. It is the Office of the Medical Examiner that is called upon to defend its determinations, not specific individuals. Cassin was called in his capacity with the Washtenaw County Medical Examiner's Office during the first trial. At any hypothetical retrial, a representative from the Washtenaw County Medical Examiner's Office would again testify in support of the autopsy report, which it fully supports. The fact that the individual in question would be Jentzen rather than Cassin is immaterial to the analysis and defendant has not shown any on-topic cases that would suggest otherwise.

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Defendant is not entitled to a new trial on the basis of Cassin's testimony, because his new uncertainty that the death was a homicide does not make a different outcome probable in light of the autopsy report, the Medical Examiner's testimony, and defendant's own confession. The trial court did not abuse its discretion when it found that Cassin's testimony would not have made a different result probable on retrial.

B. Raising slight doubt over whether the victim had a fractured acromion would not change the outcome of trial.

Barnes suggested that the fracture in the victim's shoulder might actually have been a normal variant in ossification.[148] In contrast to other bare assertions, Barnes supported this statement with scientifically accurate and accepted literature.

The statement itself was inaccurate. Strouse explained the definition and appearance of a normal variant in ossification and then used a PowerPoint presentation of the victim's radiology to explain why the injury exhibited was a fracture rather than a normal variant.[149]

> That [indicating the dark line across through the victim's acromion] is a fracture. It's sharply defined line. The normal variant of scapula ossification usually are closer to the end of the scapula and not in the middle or towards the base as this one is. It's asymmetric. There's not a similar finding on the other side, although that doesn't completely exclude it being a normal variant. If it were a normal variant we would expect the margins of it to be less well defined and maybe a little white from some sclerosis

[148] H. 4/20, 54-55, 60.
[149] H. 4/20, 11-16; discussing People's Hearing Exhibit 15.

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> because it's a normal structure and that's what it would look like. This is clearly not a normal variant.[150]

Considering both the quality of the explanation and the experience of the two experts,[151] Strouse's explanation is far more credible. Regardless, a faulty conclusion by an expert does not automatically render the statement inadmissible, if it is based on good science and does not violate the *Daubert* test factors. In contrast to defendant's other theories, this one survives *Daubert*. Normal variants of ossification are proven to exist and that information does not violate any of the *Daubert* factors.

Unfortunately for defendant, the *Cress/Johnson* analysis easily disposes of this claim. It quite simply does not make a difference on retrial. A reasonable juror would not buy Barnes's suggestion that the fracture was actually a normal variant, because (1) Strouse's explanation of the differences between the two makes it clear that the radiology shows a fracture and (2) Strouse has more expertise and experience in this field and was the more credible witness.

Nevertheless, even if it were assumed that the jury believed Barnes's normal variation of ossification suggestion, it would not have changed the outcome of trial. The victim still died from all the injuries found in abusive shaking. The defendant still confessed. The presence of the fracture in the shoulder lends more weight to the fact that

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[150] H. 4/20, 16.

[151] Strouse has performed hundreds of official pediatric skeletal surveys as a certified pediatric radiologist. H. 7/20, 10. Barnes is a certified neuroradiologist that provides no official skeletal surveys, but comments on the official report at the child abuse team meetings. H. 7/19, 18-19.

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defendant abused the child, but it is ultimately unnecessary to the diagnosis or the confession. Accordingly, defendant is not entitled to relief on this claim.

Conclusion

After the evidence that was inadmissible under the *Daubert* standard is excluded, the two remaining pieces of newly discovered evidence are insufficient to meet the requirements of *Cress*.

Although defendant trumpets the "recanting" testimony of the original medical examiner as some sort of a magic bullet, a simple reading of the transcript shows that this characterization is way off. Cassin never really recanted. Rather, he equivocated and said he was no longer certain. He absolutely stood by all his original findings. He merely said that some undisclosed studies led him to feel that he would rule the death indeterminate today. But he was very quick to acknowledge that his original diagnosis, including the determination of homicide, could well be correct. Furthermore, Cassin cannot recant the report of the Washtenaw County Medical Examiner's office, because the current head of the Washtenaw County Medical Examiner stands by both the diagnosis and the report.

From the beginning, the defense was seeking to prove "[t]here is now no credible evidence that shaking caused Nakita Lemons's death," in order to undermine defendant's confession.[152] The testimony of Cassin indicating that his original findings were correct and his original

[152] Defendant's [Successive] Motion for Relief from Judgment, 3/21/16, 2.

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diagnosis that the victim was shaken to death could still be correct does not undermine that confession at all.

Likewise, the Barnes's testimony about the acromion fracture was weak and mostly tangential. Although in Barnes's opinion there was no shoulder fracture, no reasonable juror would believe that opinion in light of the evidence that it was wrong. But further, even if a jury did believe that the victim's shoulder may not have been broken, that fact would not undermine SBS, AHT, or defendant's confession.

Cress requires that the defendant bears the burden of proving that the new evidence makes a different result probable on retrial.[153] Defendant abjectly failed to do that. The trial court did not abuse its discretion by denying defendant's motion under *Cress*.

[153] *Cress*, 468 Mich at 692.

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IV.

A successive motion for relief from judgment is limited to claims that satisfy MCR 6.502(G)(2); claims of new evidence and retroactive changes of the law. Here, defendant submitted a host of claims that ignored MCR 6.502(G)(2), including a claim of ineffective assistance of counsel, hoping to let them ride the coattails of a single claim of new evidence, rendering the prohibition nugatory. In a successive motion for relief from judgment, defendant was not entitled to review of claims that did not satisfy MCR 6.502(G)(2).

Standard of Review

A trial court's decision on a motion for relief from judgment is reviewed for an abuse of discretion and the trial court's findings of fact are reviewed for clear error.[154]

Discussion

Defendant is not entitled to raise claims that are excluded by MCR 6.502(G)(2) in a successive motion for relief from judgment. Defendant made three claims that were excluded under the court rule against subsequent motions for relief from judgment. Defendant only appeals the trial court's decision to exclude his claim of ineffective assistance of counsel. Implicit in defendant's argument is the idea that MCR 6.502(G)(2) can be nullified or ignored as long as the words "based on new evidence" appear somewhere in the defendant's successive motion for relief from judgment. But that implication is false. Court rules should not be interpreted in such a way as to render them

[154] *McSwain*, 259 Mich App at 681.

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nugatory.[155] The rule requires that the defendant make a threshold showing of newly discovered evidence to support a claim. On four of defendant's claims, he abjectly failed to make that showing. The trial court did not abuse its discretion when it dismissed those claims.

A. Defendant's claim of ineffective assistance of counsel does not meet the gate-keeping requirements of MCR 6.502(G)(2).

Defendant is not entitled to a hearing on his claim of ineffective assistance of trial counsel, because that claim is neither an assertion of a retroactive change in law, nor is it a claim of newly discovered evidence. This claim is excluded by MCR 6.502(G)(2). In fact, this claim is diametrically opposed to defendant's claim that the proffered expert-testimony he presents is actually newly discovered.

The plain language requirements of the court rule demand that the claim be: (1) "a claim of new evidence that" (2) "was not discovered before the first [motion for relief from judgment.]"[156] Meanwhile, a claim of ineffective assistance of counsel requires a defendant show that counsel's performance was objectively unreasonable and that there is a reasonable probability that, but for counsel's error, the result of the proceedings would have been different.[157] It is flatly contradictory to claim both that the evidence is new and recently discovered, while simultaneously claiming that counsel was objectively unreasonable for failure to produce this new, recently discovered, evidence. Typically,

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[155] *People v Swain*, 288 Mich App 609, 632 (2010) citing *Johnson v White*, 261 Mich App 332, 348 (2004). (Referred to herein as *Swain I*.)
[156] MCR 6.502(G)(2).
[157] *People v Leonard*, 224 Mich App 569, 592 (1997); *Strickland v Washington*, 466 US 668 (1984).

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this would not be a problem; the defense may usually raise contradictory claims in appellate filings. But in this instance, where defendant may only file his claim as a successive motion under MCR 6.502(G)(2), not only has defendant failed to reach that bar, this claim essentially asserts that the bar is unreachable.

This claim falls to MCR 6.502(G)(2) and must be dismissed.

B. The Michigan Supreme Court order in the Case of **People v Swain** *did not change the requirements for a successive motion for relief from judgment.*

People v Swain (Swain II) has no bearing whatsoever on this case.[158] In *Swain II*, Michigan Supreme Court's order exclusively addressed whether the case of *People v Cress*,[159] which controls substantive requirements for claims of newly discovered evidence, impacted the procedural requirements of successive motions for relief from judgment. The Court merely held that *Cress* did not apply to the procedural requirement. In other words, a claim of newly discovered evidence is not procedurally barred, even if it is substantively ineligible for relief under the higher *Cress* standard. It was a simple matter of applying the plain language to the rule. But this holding was exclusively confined to claims of newly discovered evidence. The *Swain II* order did not rewrite the rule to allow other claims barred by the court rule to ignore the rule's requirements.

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[158] *People v Swain*, 499 Mich 920 (2016) (referred to herein as *Swain II*.)
[159] *Cress*, 468 Mich 678.

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A *Brady*[160] claim, can be—and almost always is—a claim of newly discovered evidence. As explained above, a claim of ineffective assistance of counsel *cannot* be a claim of newly discovered evidence. If the evidence truly is newly discovered, counsel cannot have been ineffective. If the evidence is not newly discovered, the claim is precluded.

Conclusion

Defendant is not allowed to make a successive motion for relief from judgment on claims that fail to meet the requirements of MCR 6.502(G)(2). Defendant's claim of ineffective assistance abjectly fails to meet the requirements of MCR 6.502(G)(2). Accordingly, the trial court did not err by excluding that claim under the court rules.

[160] *Brady v Maryland*, 373 US 83 (1963).

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RELIEF

THEREFORE, the People request that this Honorable Court affirm the trial court's denial of defendant's successive motion for relief from judgment.

Respectfully submitted,

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Prosecuting Attorney
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JON P. WOJTALA
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Dated: August 27, 2020

CERTIFICATE OF COMPLIANCE

I certify that the foregoing brief complies with AO 2019-6. The body font is 12 pt. Century Schoolbook set to 150% line spacing. This document contains 14,182 countable words.

/s/ *Daniel E. Hebel*

DANIEL E. HEBEL (P73580)
Assistant Prosecuting Attorney

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STATE OF MICHIGAN
IN THE COURT OF APPEALS

PEOPLE OF THE STATE OF MICHIGAN,
Plaintiff-Appellee,

v **No. 348277**

MILTON LEE LEMONS,
Defendant-Appellant.

Third Circuit Court No. 06-004818-01-FC

APPENDIX 1

Acceptance of SBS Study

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Acceptance of Shaken Baby Syndrome and Abusive Head Trauma as Medical Diagnoses

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Objective To assess the current general acceptance within the medical community of shaken baby syndrome (SBS), abusive head trauma (AHT), and several alternative explanations for findings commonly seen in abused children.

Study design This was a survey of physicians frequently involved in the evaluation of injured children at 10 leading children's hospitals. Physicians were asked to estimate the likelihood that subdural hematoma, severe retinal hemorrhages, and coma or death would result from several proposed mechanisms.

Results Of the 1378 physicians surveyed, 682 (49.5%) responded, and 628 were included in the final sample. A large majority of respondents felt that shaking with or without impact would be likely or highly likely to result in subdural hematoma, severe retinal hemorrhages, and coma or death, and that none of the alternative theories except motor vehicle collision would result in these 3 findings. SBS and AHT were comsidered valid diagnoses by 88% and 93% of the respondents, respectively.

Conclusions Our empirical data confirm that SBS and AHT are still generally accepted by physicians who frequently encounter suspected child abuse cases, and are considered likely sources of subdural hematoma, severe retinal hemorrhages, and coma or death in young children. Other than a high-velocity motor vehicle collision, no alternative theories of causation for these findings are generally accepted. *(J Pediatr 2016;177:273-8).*

Although shaking, with or without impact, has been recognized as a dangerous form of child physical abuse since the early 1970s,[1,2] the validity of shaken baby syndrome (SBS) and abusive head trauma (AHT) has recently been called into question in prominent national newspapers such as the *New York Times* and *Washington Post*,[3,4] judicial decisions,[5,6] and some medical literature.[7,8] In fact, a US Supreme Court Justice recently commented in a dissenting opinion that there is widespread "controversy" within the medical community regarding the concepts of AHT and SBS.[9,10] Not surprisingly, this has resulted in confusion in the courts and a chilling effect on child protection hearings and criminal prosecutions.[11]

Legal interventions are an important part of primary safety determinations and secondary prevention for victims of maltreatment. In that process, courts frequently rely on medical expert testimony to opine on the most likely source of a child's injuries. To determine the admissibility of scientific testimony, courts must assess whether concepts are "generally accepted" in the medical community. In approximately one-half of the US jurisdictions, known as Frye jurisdictions, "general acceptance" is the sole criterion for admitting expert testimony on a certain concept.[11] In the remainder of US jurisdictions, known as Daubert jurisdictions, "general acceptance" is one of several criteria used to assess reliability, but is still afforded significant weight.[12] In addition, several professional medical society ethical guidelines for expert testimony state that testimony should reflect generally accepted opinions, and/or that an expert who endorses a minority opinion should volunteer that information.[13-16]

In courts, evidence of what is generally accepted in the medical community has typically been adduced by the opinion of a solitary expert or a small cadre of experts. This approach is susceptible to the biases and knowledge base of the testifying physicians, and leaves open the possibility that a small group could create an incorrect impression about whether or not any particular concept is generally accepted. Courts are ill-equipped to measure the broad opinion of the wider medical field or to assess the validity of a single physician's assessment of that broad opinion. Although SBS has historically been considered a valid medical diagnosis,[17] to date no well-conducted study has measured the acceptance of SBS or AHT as diagnoses, or of the likelihood that shaking will result in subdural hematoma (SDH), retinal hemorrhages (RH), or coma or death, the findings commonly associated with SBS and AHT.[18,19]

Given the importance of this issue to child protection and legal outcomes, we aimed to attain empirical data on the acceptance of SBS and AHT as valid medical

AHT	Abusive head trauma
MVC	Motor vehicle collision
REDCap	Research Electronic Data Capture
RH	Retinal hemorrhages
SBS	Shaken baby syndrome
SDH	Subdural hematoma

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diagnoses by the physicians most commonly involved in those cases. We also sought to determine whether shaking, with or without impact, and other mechanisms of injury are generally accepted as reasonable explanations for SDH, RH, and coma or death.

Methods

This observational survey study was reviewed and approved by the University of Texas-Houston Institutional Review Board, and was conducted between March and October 2015. To identify a feasible sample size and limit enrollment or response bias, we surveyed hospitals identified from the 2014-15 *US News & World Report* Honor Roll of Children's Hospitals.[20] From the 10 leading children's hospitals, we identified faculty physicians (MD, DO) within the specialty departments most commonly involved in suspected AHT cases: Emergency Medicine, Critical Care, Child Abuse Pediatrics, Pediatric Ophthalmology, Pediatric Radiology, Pediatric Neurosurgery, and Child Neurology. Because forensic pathologists are not typically located within children's hospitals, we contacted the medical examiners' offices that jurisdictionally comported with the surveyed hospitals and offered participation in the survey. If no medical examiner's office comported with a particular jurisdiction, we contacted the responsible coroner's office and offered participation in the survey.

We obtained contact information (e-mail and mailing addresses) from hospital websites or physician collaborators. In March 2015, physicians were invited to participate by e-mail, and were informed that the survey was voluntary and anonymous. Using a modified Dillman method,[21] the lead investigator (S.N.) sent an e-mail to eligible physicians, providing a summary of the study's objective and methods, along with a unique, anonymous online link to the survey. After the initial e-mail, nonresponders were sent a reminder e-mail (with survey links) every 2 weeks on 2 separate occasions. If a physician had not completed the survey after 3 e-mail attempts, then a hard copy of the survey (with $1 attached) was mailed to the physician's office address on 2 separate occasions at 2-week intervals. After this, if the participant still had not responded, he or she was logged as a nonresponder, and his or her contact information was permanently deleted. Data collection efforts were completed in October 2015. As an incentive to improve response rates, participants were entered into up to 5 randomized, biweekly drawings for a $200 gift card (depending on the time of response, with earlier responders being eligible for and entered into more drawings).

To minimize the potential for bias, we did not approach nonresponders and used no additional methods to encourage recruitment by any respondent. To ensure an appropriate sampling frame, we asked each respondent to report his or her specialty on the survey, and those who reported specialties other than those being sought to be surveyed excluded.

Study data were collected and managed using REDCap (Research Electronic Data Capture) tools hosted at the University of Texas at Houston.[22] REDCap is a secure, web-based application designed to support data capture for research studies. No identifying information was recorded in REDCap, and once a physician completed the survey, his or her contact information was permanently deleted, thereby preserving anonymity.

Survey

Each participant reported his or her age (20-30, 31-40, 41-50, 51-60, 61+ years), board certification status, and years in practice (0-5, 6-10, 11-20, 20-30, 31-40, or 41+ years). Each participant was also asked to choose his or her field of specialty from the list of specialties sought (ie, Emergency Medicine, Critical Care, Child Abuse Pediatrics, Pediatric Ophthalmology, Pediatric Radiology, Pediatric Neurosurgery, and Child Neurology), or to report another specialty. Those reporting more than 1 surveyed specialty (n = 8) were included under each specialty for the report of respondent characteristics, but were only counted once in the remainder of the survey. Those reporting a specialty that was included in the sampling frame and a specialty that was not included (eg, Pediatric Emergency Medicine, General Pediatrics) were counted within the included specialty. Those identified within a division of pediatric emergency medicine who listed their specialty as "urgent care" were included with Emergency Medicine. Those listing only exclusion specialties (eg, General Pediatrics, Allergy and Immunology, Anesthesia, Pulmonology) were excluded.

Respondents rated the likelihood of each finding (SDH, RH, coma or death) to result from several proposed mechanisms in a child aged <3 years using a 5-point Likert scale (from "highly unlikely" to "highly likely"). "Severe RH" was defined as too numerous to count, multilayered hemorrhages extending to the periphery. Proposed mechanisms included shaking without impact, shaking with impact against a soft surface (eg, a bed), a very short fall (<3 feet) with impact against a hard surface, a high-velocity motor vehicle collision (MVC), hypoxia, dysphagic choking, vitamin D deficiency rickets, and adverse reaction to vaccines.

Finally, respondents were asked whether they believed SBS to be a valid medical diagnosis (yes, no, don't know/unsure), whether they believed AHT to be a valid medical diagnosis (yes, no, don't know/unsure), and the basis for those opinions (clinical experience, medical literature, both, or neither). Respondents were offered the chance to ask questions or to comment on the survey or the study as a whole by contacting the principal investigator.

For analysis, we defined a "fringe opinion" as one in which <5% of respondents deemed a given mechanism for a finding as likely/highly likely or unlikely/highly unlikely (**Table I**). For analysis of shaking with impact versus shaking without impact results, we defined "discordance" as a rating that changed from highly unlikely or unlikely to likely or highly likely (or vice versa), depending on whether or not impact was present. Descriptive statistics were used to determine the prevalence of each response along with associated 95% CIs. Comparisons were conducted using OR with 95% CI.

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Table I. Fringe opinions

	Likely/highly likely	%	Unlikely/highly unlikely	%
SDH	Vaccines	0.0	Shake WITH impact	3.2
	Vitamin D	2.3		
	Choking	2.7		
	Hypoxia	4.0		
RH	Vaccines	0.0	Shake WITH impact	1.0
	Vitamin D	0.8	Shake NO impact	1.8
	Short fall	3.2		
Coma/death	Vitamin D	0.6	Shake NO impact	3.7
	Vaccines	1.0	Shake WITH impact	4.8
	Short fall	3.1	MVC	3.5
	SBS invalid		4.8	
	AHT invalid		1.0	

A causative mechanism was considered a fringe opinion if the combined percentage of respondents rating it as likely or highly unlikely or as unlikely or highly unlikely was <5%.

Results

The survey was sent to 1378 clinicians, of whom 682 (49.5%) responded. A department of child neurology (n = 22) at 1 institution declined as a block to participate, and were counted as nonresponders. We excluded 54 (8%) survey respondents because they either did not list their specialty (n = 9) or listed only specialties that were not included in our sampling frame (23 general, primary, or hospitalist pediatricians and 22 other pediatric subspecialists). The remaining 628 respondents composed the main cohort for this analysis. Characteristics of the respondents are summarized in **Table II**. Among the respondents, the most common specialties listed were Emergency Medicine, Critical Care, Neurology, and Radiology. The large majority (88.2%) of respondents reported being board-certified in their specialty.

Table II. Respondent characteristics

Characteristics	n (%)
Specialty*	
Emergency Medicine	192 (30.9)
Critical Care	108 (17.4)
Neurology	101 (16.3)
Radiology	96 (15.5)
Ophthalmology	45 (7.2)
Neurosurgery	30 (4.8)
Child Abuse	30 (4.8)
Pathology	27 (4.3)
Board-certified†	548 (88.2)
Age, y‡	
20-30	4 (0.6)
31-40	240 (38.6)
41-50	180 (29.0)
51-60	128 (20.6)
61+	68 (11.0)
Years in practice§	
0-5	148 (23.8)
6-10	135 (21.7)
11-20	164 (26.4)
21-30	106 (17.1)
31-40	48 (7.7)
41+	16 (2.6)

*Sums to 629 because 8 respondents listed 2 specialties.
†Six respondents did not report board certification status.
‡One respondent did not report age.
§Four respondents did not report years in practice.

Ninety-nine respondents (15.8%) omitted answers for at least 1 question. The most common scenarios in which more than 3 responses were omitted were nonophthalmologists omitting questions about RH and, conversely, ophthalmologists exclusively answering questions related to RH. No question was omitted by more than 22 respondents.

Respondents' opinions about the most likely source of SDH, severe RH, and coma or death are shown in the **Figure**. More than 80% of respondents felt that shaking with or without impact was likely or highly likely to produce SDH, more than 90% reported that it was likely or highly likely to produce RH, 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.

Either SBS or AHT was characterized as a valid diagnosis by 607 respondents (96.7%; 95% CI, 94.9%-97.9%). SBS was endorsed as valid by 554 respondents (88.1%; 95% CI, 85.3%-90.5%); AHT, by 584 respondents (93.0%; 95% CI, 90.7%-94.9%). Pathologists were statistically significantly more likely to be divergent with respect to the validity of AHT and SBS, with 8 of 27 stating that SBS is not a valid diagnosis, but that AHT is valid (OR, 13.5; 95% CI, 4.7-38.1, relative to other specialties) (**Table III**). Two pathologists responded that SBS is valid, but AHT is not.

Among the respondents stating that SBS or AHT is a valid diagnosis, 545 (89.7%) reported that they were informed by both the scientific literature and their own clinical experience, 48 (8%) were informed only by their clinical experience, and 11 (1.8%) were informed only by the scientific literature. One respondent did not answer the question, and 2 respondents listed "other" as the reason for considering the diagnosis valid. With respect to specific findings (SDH, RH, coma or death), the respondents showed very little discordance in their responses according to the presence or absence of impact.

Using our definition of "fringe opinion," 165 respondents (26.6%) reported at least 1 fringe opinion. We also included respondents who stated that either SBS (n = 30; 4.8%) or AHT (n = 6, 1.0%) were not valid. Of the 6 respondents who stated that they thought AHT was not a valid diagnosis, 5 agreed that shaking with or without impact was likely or highly likely to result in SDH and RH. All 5 of these respondents agreed that shaking with impact was likely or highly likely to result in coma or death; 2 of the 5 were neutral about the likelihood of shaking without impact resulting in coma or death. One respondent reported that AHT was invalid, and that shaking with or without impact is unlikely or highly unlikely to result in SDH, RH, or coma or death. This respondent reported that only a MVC or a short fall were likely to result in SDH, no option was likely to result in RH, and only a MVC was likely to result in coma or death.

Discussion

Our survey results represent national, multidisciplinary physician opinions on the validity of SBS and AHT, and of the

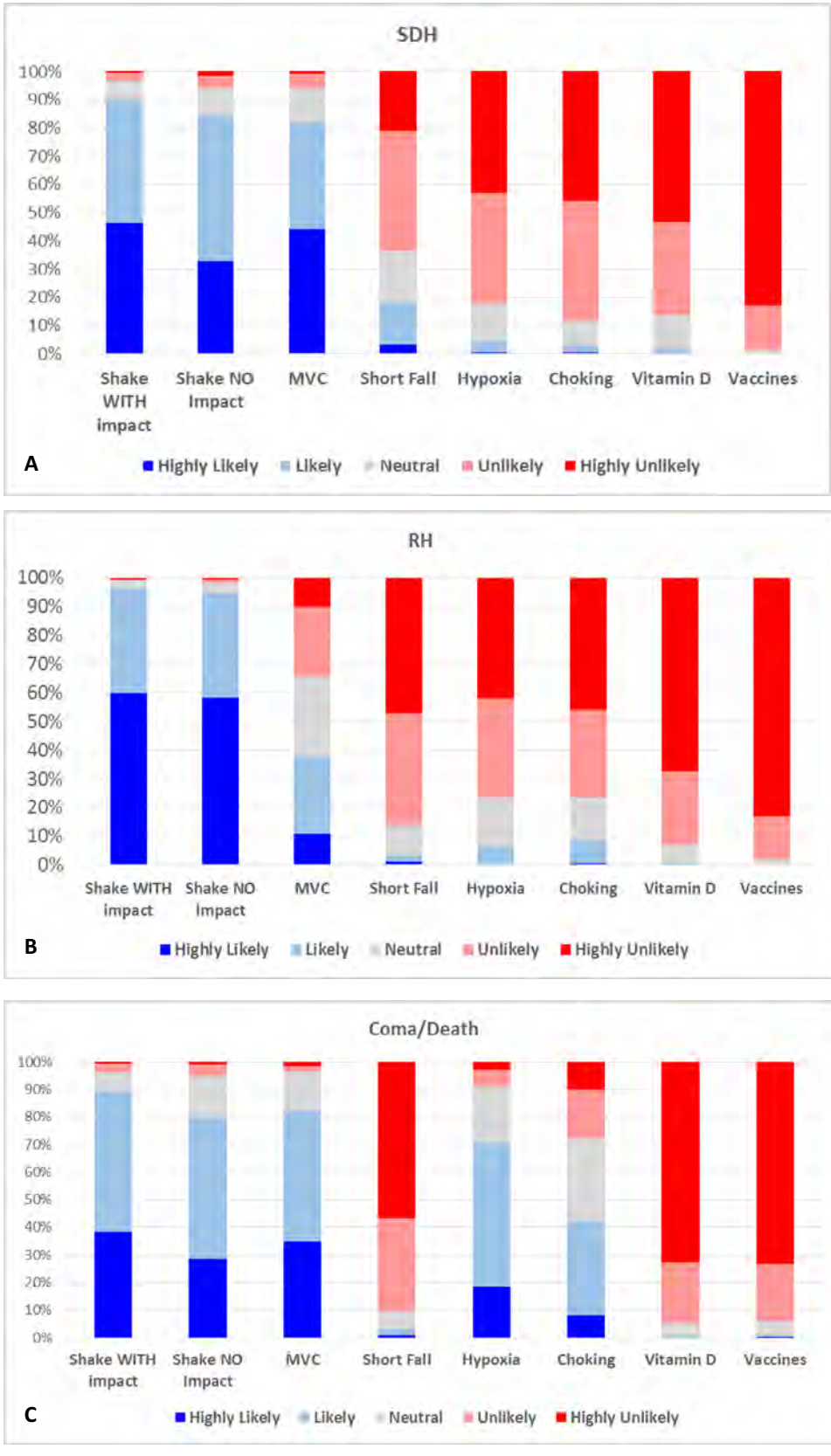

Figure. Percentage of respondents who believe that SDHs, severe RHs, and coma/death would result from the above events.

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Table III. Validity of AHT and SBS by specialty

Specialties	n	Yes, n (%)	No	Don't know/ unsure	Blank
AHT valid					
Emergency Medicine	196	184 (93.9)	0	10	2
Critical Care	108	102 (94.4)	2	3	1
Neurology	103	95 (92.2)	1	5	2
Radiology	96	82 (88.5)	2	8	4
Ophthalmology	46	44 (95.7)	0	2	0
Neurosurgery	30	30 (100.0)	0	0	0
Child Abuse Pediatrics	30	30 (100.0)	0	0	0
Pathology	27	25 (92.6)	1	1	0
SBS valid					
Emergency Medicine	196	175 (89.3)	7	11	3
Critical Care	108	99 (91.7)	2	7	0
Neurology	103	96 (93.2)	4	1	2
Radiology	96	84 (87.5)	2	6	4
Ophthalmology	46	45 (97.8)	0	1	0
Neurosurgery	30	23 (76.6)	5	2	0
Child Abuse Pediatrics	30	28 (93.3)	2	0	0
Pathology	27	11 (40.7)	8	8	0

Totals sum to 636 because 8 respondents listed 2 specialties: 4 for Child Abuse Pediatrics and Emergency Medicine, 2 for Critical Care and Emergency Medicine, and 2 for Critical Care and Neurology.

likelihood that findings commonly seen in those cases—SDH, severe RH, and coma or death—result from various causal mechanisms. Although "general acceptance" is not defined by a definitive numerical threshold in legal settings (although acceptance by <50% of field clearly would not meet the criterion for "general acceptance"), our results provide empirical data that clearly support the conclusion that SBS and AHT are still generally accepted as valid medical diagnoses across a broad range of specialties. Furthermore, our data show that shaking with or without impact (in contradistinction to several other alternative theories) is generally accepted to be a dangerous form of child physical abuse and capable of producing SDH, RH, and coma or death. Several alternative explanations that have been proposed to cause SDH, RH, and coma or death are not generally accepted. This high degree of consensus, irrespective of specialty, experience, or age, refutes recent reports in the lay press and legal commentary of a substantial controversy within the medical community regarding SBS and AHT. Other authors have discussed the various motivations for those media sources to proffer such assertions.[22,23]

As a specialty, forensic pathologists were discordant from other respondents, being more likely to question the validity of SBS as a diagnosis, although not more likely to question the validity of AHT (**Table III**). In this respect, our results are similar to the results of a survey of forensic pathologists that showed 35% questioning SBS.[23] That survey did not address the topic of AHT separately from SBS, however.

Our survey results demonstrate that physicians, irrespective of specialty, viewed the risks of shaking, with or without impact, to be similar to a high-velocity MVC and dissimilar to a very short fall. Although this finding may seem unremarkable to clinicians, it is important in light of some biomechanical literature arguing that shaking without impact cannot generate sufficient forces to cause SDH,[24,25] and biomechanical[24] and pathology[26] literature suggesting very short falls as a reasonable explanation for those findings. We believe the divergence of our results from this literature represents a recognition of the limitations of biomechanical data, a primacy of clinical literature and experience in relation to that literature, or both.

Our study has several limitations. First, we did not include general pediatricians in our sampling frame, even though some general pediatricians have substantial experience caring for children who have sustained physical abuse. Thus, our results are susceptible to selection bias. However, we chose to include only those specialties with the greatest likelihood of evaluating and treating pediatric traumatic brain injury. Our results could be different if general pediatricians with high rates of exposure to traumatic brain injury had systematically different opinions about the risks and injuries associated with shaking or other suggested mechanisms.

Second, as with all survey studies, ours might have been subject to response bias if respondents held systematically different opinions from nonrespondents. If present, this could have affected our results by increasing or decreasing the true proportion of clinicians who accept SBS or AHT. We do not feel that this limitation significantly affected our results, however, for several reasons. First, our sampling frame was chosen to reflect practicing clinicians from 10 leading hospitals, rather than groups that are most active in legal proceedings involving child abuse and neglect (and thus more motivated to respond). Second, our relatively high response rate (nearly 50% of those surveyed, with more than 600 clinicians) limits the potential that a small cadre of clinicians with divergent opinions would significantly affect results. Finally, our results show remarkable unanimity. Thus, nearly all nonresponders would have to harbor opinions that are diametrically opposed to responders for AHT or SBS to have an acceptance rate of <50% or for fringe opinions to be generally accepted.

The limitations of the *US News & World Report* hospital rankings have been discussed elsewhere.[27] Our intention in using these rankings was not to endorse a ranking of any particular children's hospital; rather, we sought to identify a relatively large and diverse cohort of clinicians likely to care for child victims of trauma, and to decrease the possibility that the survey would be preferentially distributed to clinicians whose opinion regarding AHT or SBS was known to the authors. It is possible that our results would differ if we were to use different hospitals or a different ranking system; however, given the degree of consensus, we believe it unlikely that such different choices would change the conclusion regarding whether SBS, AHT, or the other alternative hypotheses are generally accepted.

Finally, some respondents indicated confusion about the questions. For example, 1 respondent (who contacted the lead investigator) noted that there are important developmental and anatomic differences between infants aged <12 months and young children aged <3 years that could significantly impact the likelihood of the resulting findings. Another respondent noted that it would have been more appropriate to ask about the likely mechanism, given a particular finding, than to ask about the likely findings resulting from a given mechanism.

Although we recognize both points, we believe that any ambiguity in the survey design would bias against a high level of consensus. ■

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STATE OF MICHIGAN
IN THE COURT OF APPEALS

PEOPLE OF THE STATE OF MICHIGAN,
Plaintiff-Appellee,

v **No. 348277**

MILTON LEE LEMONS,
Defendant-Appellant.

Third Circuit Court No. 06-004818-01-FC

APPENDIX 2

Understanding AHT in Infants & Children

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UNDERSTANDING ABUSIVE HEAD TRAUMA IN INFANTS AND CHILDREN

Answers from America's Pediatricians

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

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ABOUT US

AMERICA'S PEDIATRICIANS

The American Academy of Pediatrics (AAP) is a professional membership organization of 64,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults.

POLICY AND CLINICAL GUIDANCE

AAP recommendations form the basis of pediatric preventive health care. The AAP issues policy statements, clinical reports, technical reports, and practice guidelines on a broad range of topics.

ADVOCACY

Advocating for all infants, children, adolescents, and young adults, the AAP works with government, community, and other stakeholders to promote child health and safety.

PUBLIC EDUCATION

The AAP produces numerous patient education resources and books, as well HealthyChildren.org, which offers health advice for parents and caregivers. The AAP works extensively with the media and carries out public information campaigns to ensure that timely, accurate messages and information reach families and professionals engaged in the care and well-being of children.

PROFESSIONAL EDUCATION

Ongoing education of pediatricians is a cornerstone of promoting optimal care for children. Continuing medical education (CME) is a major activity of the AAP. Member pediatricians participate in a variety of educational formats, including live, print, and online lifelong learning activities.

AUTHORS

Based on AAP policy and the most up-to-date research on this issue, this resource was developed by:

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- AAP Committee on Child Abuse and Neglect
- AAP Section on Child Abuse and Neglect

June 1, 2015

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WHAT IS ABUSIVE HEAD TRAUMA (AHT)?

- Abusive head trauma (AHT) is a well-recognized constellation of brain injuries caused by the directed application of force to an infant or young child, resulting in physical injury to the head and/or its contents.[1] Approximately 20/100,000 children sustain AHT annually.[2,3]

- Physicians from distinct fields including pediatrics, neurology, neurosurgery, ophthalmology, critical care medicine, radiology, neuroradiology, and physiatry have contributed to the scientific data that support AHT as a firmly established medical diagnosis.[4,5,6,7,8,9,10,11] The clinical diagnosis of AHT has been confirmed by pathologists, forensic pathologists, and neuropathologists through autopsies and postmortem research.[12,13,14,15,16]

- Extensive peer-reviewed medical literature regarding AHT over the past 50 years[17] and clinical experience and reasoning by thousands of physicians leave no doubt that infants and young children sustain head and brain injury—sometimes severe, sometimes fatal—by caregivers.

- In 2009, the AAP published a policy statement, "Abusive Head Trauma in Infants and Children," that briefly reviewed the mechanisms and pathophysiology related to AHT and called for physicians "to use the term abusive head trauma rather than a term that implies a single injury mechanism, such as shaken baby syndrome (SBS), in their diagnosis and medical communications."[18] The goal of the statement was "not to distract from shaking as a mechanism of AHT but to broaden the terminology to account for the multitude of primary and secondary injuries that result from AHT, some of which contribute to the often permanent and significant brain damage sustained by abused infants and children." This policy statement has been mischaracterized in subsequent legal and medical literature and in court testimony to suggest that the AAP no longer recognizes shaken baby syndrome as a legitimate diagnosis.[19,20] On the contrary, the AAP reinforces the fact that shaking is an important contributor to abusive head injuries and that shaken baby syndrome is a subset of AHT. Additionally, since the release of this statement, peer-reviewed medical literature—including case reports in which adults have admitted shaking an infant or child—has been published and further underscores the significance of shaking as an important contributing mechanism of injury.[5]

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WHAT IS ABUSIVE HEAD TRAUMA (AHT)?

- There is no legitimate medical debate among the majority of practicing physicians as to the existence or validity of AHT/SBS. The only real debate and controversy appear to be in the legal system and the media. Claims that shaking is not dangerous to infants or children are not factual and are not supported by AAP policy, despite being proffered by a few expert witnesses in the courtroom. Alternative hypotheses have been offered by a few physicians and others, but the evidence for these hypotheses is lacking. Several experts who have published and testified regarding alternative theories of AHT causation have conceded in recent medical publications that infants can be damaged or killed by violent shaking or abuse.[21,22]

- It is unequivocally clear that inflicted head injury is a relatively common and clearly defined entity and that a differential diagnosis, including medical diseases that can mimic AHT/SBS, can be evaluated by physicians objectively.

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IDENTIFICATION OF AHT-RELATED INJURIES

- AHT in children is diagnosed through a thorough history, physical examination, laboratory tests, and imaging studies. Experienced pediatricians have been trained in making these diagnoses; often they consult with specially trained, board certified child abuse pediatricians.

- Infants who have sustained AHT typically present for medical care with symptoms of their injury, with or without a history of preceding trauma. Physicians rely on information provided by parents and caregivers in their diagnostic process, and in cases of child abuse, the history is often incomplete or incorrect. In all cases, the history provided is critically important, because it is the first step in a thorough diagnostic evaluation. The identification of injury, either by physical examination or radiography, often alerts the physician to the possibility of injury to the child.

- Subdural hematomas (SDHs), with concomitant brain injury, and retinal hemorrhages (RHs), with or without additional injury, including spinal,[23] skin, and skeletal injuries,[24,25] are the hallmarks of child abuse and AHT, although individually these findings are not specific for the diagnosis.

- Children sustaining AHT may be injured in a number of ways, including shaking, blunt impact, suffocation, strangulation, and others. Children with minor injury may never receive medical care; some are harmed repeatedly before they receive medical attention[5]; others present for medical care with mild or nonspecific symptoms but are misdiagnosed by unsuspecting physicians, only to return with more severe or fatal injury.[10,26]

SUBDURAL HEMATOMA (SDH)

- Subdural hematoma is the medical term for bleeding inside the skull but outside the brain. SDH, most commonly attributable to trauma in infants, children, and adults, is found in the majority of victims of AHT,[2,13,27] and the majority of neurologically symptomatic SDHs identified in infants and toddlers are the result of child abuse.[28] The extent, location, and size of SDHs are variable, and SDHs can result from accidental or abusive trauma and secondary to medical disease.[29] A thorough medical evaluation typically includes the consideration of known mechanisms.

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IDENTIFICATION OF AHT-RELATED INJURIES

- Although SDHs are not exclusive to abusive trauma, a number of prospective studies have demonstrated a significant and strong association of SDH with abuse compared with accidental injury,[30,31] and additional support is found in a number of retrospective clinical and radiologic peer-reviewed studies.[32,33,34] Multiple studies examining SDH and abuse found in the pediatric, pathologic, and radiologic literature have produced similar results showing a robust statistical association of SDH with child abuse, and there is no published, peer-reviewed clinical study that concludes differently.[17]

RETINAL HEMORRHAGES (RH)

- Bleeding in the back of the eye, known as retinal hemorrhages, are often found in infants with AHT. RHs can result from medical disease or trauma, including accidental or birth trauma, and AHT.[35] RHs can vary in size, number, and location within the retina itself. The physical mechanism(s) leading to the development of RH are likely multifactorial, with traction forces on the retina coupled with other factors, contributing to the severe RH often seen in victims of AHT.[36,37]

- Although mild and moderate RHs are seen in a number of medical and traumatic conditions in children,[38] clinical and pathological studies have shown strong associations of severe RH with AHT.[8,39] In recent years, 2 systematic reviews of the literature, comprising more than 30 clinical studies and thousands of children, confirm the strong association of severe RH with AHT.[6,40] Additionally, studies examining the contributions of cardiopulmonary resuscitation,[41,42] seizures,[43,44,45] Valsalva pressure from coughing or vomiting,[46,47] and increased intracranial pressure attributable to medical disease[48] in children have failed to identify any association with severe RH.

- When severe RH is identified in a child, the cause is almost always severe head trauma leading to neurologic compromise and brain injury. Like SDH, robust literature supports the association of severe RH and AHT, and although there are medical diseases that can rarely lead to extensive RH,[38] there is no published literature that refutes the association of severe RH and AHT.

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IDENTIFICATION OF AHT-RELATED INJURIES

HYPOXIC ISCHEMIC ENCEPHALOPATHY (HIE)

- Hypoxic ischemic encephalopathy, injury to the brain caused by lack of oxygen and blood flow to the brain, is a common feature of AHT and is largely responsible for the poor outcomes of victims.[49] The pathophysiology for HIE in victims of AHT is multifactorial and includes traumatic axonal injury to the brainstem and spinal cord, apnea (inadequate breathing) attributable to injury, seizures, alterations in blood flow to the brain after trauma, unmet metabolic demands of the injured brain, secondary cerebral edema (brain swelling), and others.[50] Potential causes of HIE in infants and children include birth asphyxia, accidental or intentional trauma or suffocation, infection, metabolic disease, congenital anomalies, drowning, and choking.

- Over the past decade, a few researchers have postulated that SDH in victims of AHT results from hypoxia, brain swelling, and raised intracranial venous pressure leading to vascular leakage from immature dural vessels,[51,52,53,54] although clear evidence to support this hypothesis is lacking. Other investigators who have tested this hypothesis have not found SDH in children with HIE from known causes,[55,56,57,58] including neonates who have sustained perinatal asphyxia.[59,60,61]

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AHT AND THE TRIAD

- Arguments against the validity of AHT/SBS have recently focused on the specificity of a "triad" of subdural hematoma, retinal hemorrhage, and encephalopathy that is claimed to be diagnostic of AHT. This controversy regarding a triad is a "straw man" created for legal arguments against the diagnosis of AHT/SBS. The diagnosis of AHT is made following detailed medical examinations and testing and is not made automatically on the basis of the presence of these 3 findings, nor can it be excluded if 1 or more of these elements is missing.

- In all cases, a diagnosis of child abuse requires careful consideration of all clinical facts, including the medical history, physical examination findings, and laboratory and radiologic testing. For some children, the identification of additional injury confirms the diagnosis of injury and child abuse. In others, known medical diseases are identified and abuse is eliminated from consideration. In some cases, additional investigation by law enforcement or child protective services uncovers information that supports or refutes accidental or abusive injury. In many cases, adult caregivers confess that they injured the infant themselves; these cases do not garner media attention.

- Children who are victims of AHT require protection. Adults who injure children sometimes require prosecution, and courts are then faced with the challenge of weighing medical testimony to find justice. In this, like other scientific arenas, the courts must be careful to distinguish between scientifically supported evidence and evidence based on untested hypotheses.

- In medicine, astute clinical observation and careful research advance our modern understanding of the human body. This is true in every field of medicine, including child abuse pediatrics. Studies to improve the understanding of causation, pathophysiology, and treatment of AHT are ongoing, and clinically tested hypotheses continue to lead to improvements in treatment and prevention. The medical research regarding AHT is extensive and comprises more than 1000 peer-reviewed clinical medical articles written by over 1000 medical authors from more than 25 different countries.[17]

- Alternative medical diseases requiring consideration have been identified, are known to practitioners, and are diagnosed by history, physical examination, and adjunct testing. On the other hand, the new hypotheses presented to refute the diagnosis of AHT are, to date, largely untested and unconfirmed. Some are presented only in the courtroom as alternative diagnoses, not in clinical practice in children's hospitals throughout the country. Although there is always "new science," the accumulating evidence underscores, rather than refutes, the reality of AHT.

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AHT AND THE TRIAD

- The validity of AHT in all of its various forms has been established. The diagnosis is recognized by the following organizations:
  - The American Academy of Pediatrics
  - The American Academy of Family Physicians
  - The American Academy of Ophthalmology
  - The American Association for Pediatric Ophthalmology and Strabismus
  - The American Association of Neurologic Surgeons
  - The American College of Radiology
  - The American College of Surgeons
  - The Canadian Paediatric Society
  - The Centers for Disease Control and Prevention
  - The Royal College of Ophthalmologists
  - The Royal College of Paediatrics and Child Health
  - The Royal College of Radiologists
  - The World Health Organization

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STATE OF MICHIGAN
IN THE COURT OF APPEALS

PEOPLE OF THE STATE OF MICHIGAN,
Plaintiff-Appellee,

v **No. 348277**

MILTON LEE LEMONS,
Defendant-Appellant.

Third Circuit Court No. 06-004818-01-FC

APPENDIX 3

Shaken Baby Syndrome: A flawed biomechanical analysis.
Susan Margulies, et.al.

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Letter to the Editor

Shaken baby syndrome: A flawed biomechanical analysis

Keywords: Injury; Infant; Shaken; Baby; Rotational; Acceleration/deceleration; Syndrome; Neck

To the Editor,

We are gravely concerned that the conclusions reached by Bandak [1] may be invalid due to apparent numerical errors in his estimation of forces experienced in an infant neck during vigorous shaking. More specifically, we have repeated the author's calculations and we find values of neck forces that are actually more than 10 times *lower* than those presented in Bandak's Table 3.

Using the free body diagram of the infant head and neck (Fig. 3), Bandak identified the two components of neck force during rotation of the head—the tangential force F_t and the normal force F_n. Bandak described the basic equations for neck forces during a simplified shaking event, but did not present detailed methods for calculating the upper neck loads. We define them here for completeness:

$$F_t = m_{head} a_t = m_{head} r \frac{d^2\theta}{dt^2} \quad (1)$$

$$F_n = m_{head} \frac{v^2}{r} = m_{head} r \left(\frac{d\theta}{dt}\right)^2 \quad (2)$$

where r is the length of the neck in meters, m_{head} the mass of the head in kilograms, a_t the tangential linear head acceleration in meters per second squared, $d^2\theta/dt^2$ the angular acceleration of the head in radians per second squared, v the linear velocity of the head in meters per second, and $d\theta/dt$ the angular velocity of the head in radians per second.[1] As Bandak pointed out, when F_n reaches its maximum value, F_t is at a minimum, so it would be incorrect to sum or otherwise combine peak F_n and F_t to estimate peak neck forces. Yet, using the same angular acceleration and velocity values Bandak reported from the literature, we calculate forces 10 times lower than those presented in Bandak's Table 3.

For example, to calculate neck forces for the most severe shaking event reported in Bandak's Table 3, we used the largest angular acceleration and angular velocity values, the longest neck length and the heaviest head mass provided in Table 3 (15,000 rad/s^2, 150 rad/s, 6.35 cm, and 1.59 kg, respectively). Substituting these values into Eqs. (1) and (2) above, we find that normal force F_n exceeds the tangential force F_t, and is calculated as follows:

$$F_{n,high} = m_{head}(r)\left(\frac{d\theta}{dt}\right)^2 = (1.59\,\text{kg})\left(6.35\,\text{cm} \times \frac{1\,\text{m}}{100\,\text{cm}}\right)\left(150\,\frac{\text{rad}}{\text{s}}\right)^2 = 2272\,\text{N}$$

However, Bandak reported $F_{n,high}$ at 35,931 N in Table 3, a value 15.8 times higher than the correct value. Similarly, to calculate forces for the least severe shaking event discussed by Bandak, we used the minimum values of each parameter range provided by Bandak's Table 3 and calculated the lower range of the normal force as:

$$F_{n,low} = m_{head}(r)\left(\frac{d\theta}{dt}\right)^2 = (0.68\,\text{kg})\left(3.81\,\text{cm} \times \frac{1\,\text{m}}{100\,\text{cm}}\right)\left(50\,\frac{\text{rad}}{\text{s}}\right)^2 = 65\,\text{N}$$

The corresponding value reported by Bandak in Table 3 is 1027 N.

We repeated the force calculations for all values in Bandak's Table 3 and our attempts to reproduce these neck force calculations consistently yield values that are at least 10 times *lower* than those reported for shaking in Table 3 and Fig. 4 of Bandak's paper. While in some cases the error appears to be a failure to include the neck length, there is no single, simple explanation responsible for the errors that appear in *every* value in Table 3. Also, Prange and Myers [2] analysis of the same data yielded neck forces similar to what we have calculated here.

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[1] It is important to note that the equations for tangential and normal acceleration in Bandak's methods and repeated in this letter do not account for chest acceleration, and it is not known if the actual neck forces would be higher or lower if chest acceleration were considered.

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Based upon his flawed calculations, Bandak erroneously concluded that the neck forces in even the least severe shaking event far exceed the published injury tolerance of the infant neck. However, when accurately calculated, the range of neck forces is considerably lower, and includes values that are far *below* the threshold for injury. In light of the numerical errors in Bandak's neck force estimations, we question the resolute tenor of Bandak's conclusions that neck injuries would occur in all shaking events. Rather, we propose that a more appropriate conclusion is that the possibility exists for neck injury to occur during a severe shaking event without impact.

References

[1] F.A. Bandak, Shaken baby syndrome: a biomechanics analysis of injury mechanisms, Forensic Sci. Int. 151 (2005) 71–79.
[2] M.T. Prange, B.S. Myers, Evidenced-based biomechanical analysis of craniocervical inflicted neurotrauma, in: Inflicted Childhood Neurotrauma, American Academy of Pediatrics, 2003, pp. 237–243.

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STATE OF MICHIGAN
IN THE COURT OF APPEALS

PEOPLE OF THE STATE OF MICHIGAN,
Plaintiff-Appellee,

v **No. 348277**

MILTON LEE LEMONS,
Defendant-Appellant.

Third Circuit Court No. 06-004818-01-FC

APPENDIX 4

Response in Forensic Science International
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Letter to the Editor

Keywords: Shaken baby syndrome; Biomechanics; Brain injury

In the paper entitled ''Shaken baby syndrome: A biomechanical analysis of injury mechanism, published in Forensic Science International 15 (2005) 71–79'', a mechanical analogue has been used to model infant head and neck. Neck distraction forces have been calculated for various combinations of head mass, neck length, and head angular velocities. Calculated neck distraction forces have been compared to experimentally observed forces in goats, baboons, and infants. Based on these comparisons, the paper hypothesises, among other things, that neck injury is most likely to occur when a baby is shaken in addition to or before there is brain injury (Table 1).

It is unclear how the head velocities listed in Table 2 were calculated. The free head velocity during shaking is indicated to be 4.31 m/s which perhaps corresponds to the 15 kph figure assigned to Shaking in column 1 of Table 2. Could the author please explain how this 15 kph value was calculated. It will also be interesting to know how this velocity relates to the angular accelerations [5000–15,000 rad/s^2] and angular velocities [50–150 rad/s] which presumably were used to calculate the values of neck distraction forces in Table 3.

The paper indicates on page 76, column 2, para 2, that rotational velocities of 50 rad/s and 150 rad/s were used to compute neck distraction forces presented in Table 3. We were unsuccessful in reproducing the neck distraction forces presented in Table 3 using these values. Presented below is a table with the recomputed values of the neck distraction forces using the neck lengths, head masses used by the author and using a low end rotational velocity of 50 rad/s and an upper end rotational velocity of 150 rad/s. Corresponding values presented in Table 3 of the paper are provided within parenthesis.

The values for neck distraction forces were calculated using the following formula:

$$\text{Neck distraction force}, F_n = \text{mass} \times \frac{\text{velocity}^2}{\text{radius}} = \text{mass} \times \text{angular velocity}^2 \times \text{radius} \quad (1)$$

As an example, for a head mass of 0.68 kg, neck length of 0.0381 m, and a rotational velocity of 50 rad/s, neck distraction force is computed as:

$$\text{Neck distraction force} = 0.68 \times 0.0381 \times 50 \times 50 = 64.77\ \text{N as tabulated below.}$$

Perhaps the author could comment on how the neck distraction forces in Table 3 in the paper were computed. If he finds that the force values are closer to the recomputed values, he might perhaps comment on the validity of the paper's conclusions bearing in mind newly computed much lower values of neck distraction force.

We also reviewed the normal acceleration between the neck and head during shaking experiments conducted by Dr. C. Jenny, MD, et al. (reference [11] in the paper) using a biofidelic dummy. This dummy had a tri-axial accelerometer cluster at the top of the neck, the bottom of the neck and the centre of gravity (C.G.) of the head. The accelerations recorded at the three locations were not completely in phase with respect to each other (i.e. the peaks did not always coincide in time). But they were also not totally out of phase (i.e. the maximum at one location coinciding with the minimum at a second location). The typical peak acceleration at the CG in the normal direction (i.e. trying to pull the neck apart) was about 15 *g*. The peak accelerations at the top and bottom of the neck were about 5 *g* at both locations. The maximum difference between the accelerations at the head CG and top of the neck was about 10 *g*. With a head mass of 1 kg, and $g = 9.81$ m/s^2, this leads to a peak distraction force acting at the top of the neck of about 100 N. In these experiments, head rotational velocity was of the order of 50 rad/s, and accelerations of the order of 3000 rad/s^2.

Eq. (1) can be used to calculate the neck distraction force for this case where the neck length was about 5 cm and head mass about 1 kg. Thus,

$$\text{Neck distraction force} = 1\,\text{kg} \times 50\,\text{rad/s}^2 \times 50\,\text{rad/s}^2 \times 0.05\,\text{m} = 125\,\text{N}$$

Even if we assume that the acceleration at the C.G. was totally in opposite phase to the acceleration at the top of the neck, this would lead to a maximum acceleration of

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Table 1
Recomputed values of neck distraction forces

Calculation basis	Head weight (kg)	Neck length (m)	Neck distraction force (N)
Low end SBS rotational velocity (50 rad/s)	0.68	0.0381	65 (1027)
Low end SBS rotational velocity (50 rad/s)	0.68	0.0635	107 (1711)
Low end SBS rotational velocity (50 rad/s)	1.34	0.0381	128 (1711)
Low end SBS rotational velocity (50 rad/s)	1.34	0.0635	213 (2852)
Low end SBS rotational velocity (50 rad/s)	1.59	0.0381	151 (2395)
Low end SBS rotational velocity (50 rad/s)	1.59	0.0635	252 (3992)
High end SBS rotational velocity (150 rad/s)	0.68	0.0381	582 (9240)
High end SBS rotational velocity (150 rad/s)	0.68	0.0635	971 (15399)
High end SBS rotational velocity (150 rad/s)	1.34	0.0381	1149 (15399)
High end SBS rotational velocity (150 rad/s)	1.34	0.0635	1915 (25665)
High end SBS rotational velocity (150 rad/s)	1.59	0.0381	1363 (21559)
High end SBS rotational velocity (150 rad/s)	1.59	0.0635	2271 (35931)

15 g + 5 g = 20 g, which would lead to a distraction force of 200 N, again far below the numbers quoted in the paper, at this level of angular velocity and neck length.

A more interesting calculation is the difference in the accelerations at the top and bottom of the neck column. This would provide an estimate of the actual tension force (or distraction force) acting within the neck. In this case, the time histories of the accelerations follow each other fairly closely, with peak differences rising to about 5 g. This would lead one to conclude that the tension force within the neck column may be quite low.

This might suggest that the mechanical analogue proposed in the paper may not be entirely appropriate when used to model the motion of the head and neck of infants when a baby is shaken. It would be interesting to hear the author s views on the wide variation between experimentally obtained values and those calculated using the formula given in the paper and what this variation indicates about the validity of the proposed analogue.

Duncan (reference [9]) conducted static pull experiments to obtain values of neck distraction forces leading to failure of the neck. Perhaps the author might like to comment on the validity of comparing this failure criterion to predict failures in dynamic situations such as cases where a baby is shaken.

A final point. The paper uses three presentations made at the NHTSA sponsored International Workshop on Human Subject Biomechanics as references [11,20,22]. At the beginning of each of these workshops, the Chairperson of the Workshop announces that material presented in these workshops should not used as references. This is because much work that is presented at these workshops is preliminary in nature and presentations are also used to gather input from experts in the audience. It is discouraging to see the paper use material from the workshop as references thus contravening the spirit of the workshop.

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