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SJC-11928

COMMONWEALTH vs. OSWELT MILLIEN.

Middlesex. December 7, 2015. - June 3, 2016.

Present: Gants, C.J., Spina, Cordy, Botsford, Duffly, Lenk, & Hines, JJ.

Assault and Battery. Child Abuse. Evidence, Expert opinion. Constitutional Law, Assistance of counsel. Due Process of Law, Assistance of counsel. Practice, Criminal, New trial, Assistance of counsel.

Indictments found and returned in the Superior Court Department on December 23, 2009.

The cases were tried before S. Jane Haggerty, J., and a motion for a new trial, filed on June 24, 2013, was heard by her.

The Supreme Judicial Court granted an application for direct appellate review.

David Hirsch for the defendant.

Kate Cimini, Assistant District Attorney, for the Commonwealth.

The following submitted briefs for amici curiae:

Seth Miller, of Florida, Katherine H. Judson, of Wisconsin, Adam W. Deitch & Lindsay A. Olson, of New York, & Mark W. Batton for The Innocence Network.

Heather Kirkwood, of Washington, & David E. Meier for David Ayoub & others.

Matthew R. Segal, Dennis Shedd, & Chauncey B. Wood for
Committee for Public Counsel Services & others.

GANTS, C.J. On the evening of October 20, 2009, the defendant's six month old daughter, Jahanna, was rushed to the emergency room, unconscious and unresponsive. She was diagnosed with traumatic brain injury, and scans of her brain showed retinal hemorrhages, subdural hematoma, and brain swelling, the three symptoms known as "the triad" associated with shaken baby syndrome. The defendant, who was the baby's sole caretaker when she became unconscious, claimed that Jahanna accidentally fell backwards from the couch where she was sitting and landed on the wooden floor. After Jahanna's physicians concluded that her brain injuries could not have been caused by an accidental fall from the couch but were instead caused by a violent shaking, the defendant was charged and later convicted by a jury of assault and battery on a child causing substantial bodily injury (head injuries), in violation of G. L. c. 265, § 13J (b), and assault and battery on a child causing bodily injury (fractured vertebrae), in violation of G. L. c. 265, § 13J (a).¹

There is a heated debate in the medical community as to whether a violent shaking of a baby alone can generate enough

¹ The defendant was found not guilty on two indictments alleging assault and battery on a child causing bodily injury (fractured tibia and fractured ribs), in violation of G. L. c. 265, § 13J (a).

force to cause the triad of symptoms of traumatic brain injury, and as to whether these symptoms can sometimes be caused by a short accidental fall. At trial, the jury heard only one side of this debate, because the defense attorney did not retain a medical expert to offer opinion testimony or to assist him in cross-examining the Commonwealth's medical experts. We conclude that, in these circumstances, where the prosecution's case rested almost entirely on medical expert testimony, the defendant was denied his constitutional right to the effective assistance of counsel because, by not providing the jury with the other side of this debate, his attorney's poor performance "likely deprived the defendant of an otherwise available, substantial ground of defence." See Commonwealth v. Saferian, 366 Mass. 89, 96 (1974).²

Background. 1. Evidence at trial. We summarize the evidence presented at trial. The defendant was in his early twenties when his girl friend, Amanda Leavitt, told him that she was pregnant. He urged her to "keep" the baby, and accompanied her to medical appointments during the pregnancy. Although he was disappointed when he learned that Leavitt was going to have

² We acknowledge the amicus briefs submitted by The Innocence Network and "concerned physicians and scientists," and the amicus brief jointly submitted by the American Civil Liberties Union of Massachusetts, the Committee for Public Counsel Services, and the Massachusetts Association of Criminal Defense Lawyers.

twin girls, preferring a boy, he was happy when the girls, Jahanna and Taeja, were born on March 27, 2009, and was with Leavitt in the operating room when she had her cesarean section.

Before the babies were born, Leavitt moved to the home of her mother, Dianna Gagnon, who lived with her boy friend and Leavitt's teenaged siblings in Woburn. The defendant visited nearly every day and generally stayed overnight after the twins were born. The defendant shared the responsibilities of child care with Leavitt; he fed, changed, and played with the twins daily. When the twins were approximately five months old, Leavitt found a job at a restaurant, working several nights a week from between 4 and 5 P.M. to between 9 P.M. and midnight, and during that time the defendant, Leavitt's mother, or the defendant's mother or sister cared for the twins. In September, 2009, Leavitt and the twins moved to a townhouse apartment in Woburn, and the defendant lived there with them.

The defendant was inexperienced in caring for babies, but he sought advice regarding child care from Leavitt and Gagnon. No witness ever saw him spank or abuse the twins, but at times, he patted the twins too roughly while trying to burp them and on a few occasions walked away from the changing table while he was changing them. He was responsive to criticism, however, when other caretakers instructed him how better to care for the twins. Jahanna was the fussier baby, and the defendant was more

comfortable caring for Taeja than he was caring for Jahanna. But when Jahanna was colicky, the defendant sometimes would pick her up and walk around and talk with her. Gagnon described the defendant as a man of quiet demeanor whom she never saw angry and never heard shout, and whom she never saw hit or grab anyone.

There were no complications regarding the twins' birth, but Jahanna soon developed various health problems. She was "cranky," cried often, and was difficult to feed. When Jahanna was approximately two months old, her primary care pediatrician, Dr. Elizabeth Burba, placed her on a more gentle formula. Nine days later, Leavitt telephoned the doctor's office and reported that Jahanna had vomited blood. She was referred to the emergency room at Winchester Hospital, where she was diagnosed with gastro-esophageal reflux and was prescribed antacid medication. Dr. Burba noted at Jahanna's three-month "well visit" that she was "taking her feeds now" and gaining weight. Leavitt discontinued using the medication after "a couple of months" because Jahanna was doing well. When Jahanna was approximately four months old, Leavitt noticed that one of her legs "would kind of be limp." She testified, "I would hold her up and one leg would be touching the ground and one would be in the air, like a bend in the knee." Leavitt took Jahanna to Dr. Burba's office, where she was diagnosed with a "hip click." She

was given a hip ultrasound, which was normal. On September 29, 2009, Leavitt reported that Jahanna had again vomited blood, and returned to the Winchester Hospital emergency room, where she was given an abdominal x-ray, which was normal, and once again was prescribed the antacid medication. At her six-month "well-visit" on October 2, Jahanna was "no longer fussy or irritable," and her "gross motor development examination," which showed that she could roll over from side to side, move objects from one hand to another, and sit up with a bit of support, was normal for her age. During her care of Jahanna, Dr. Burba saw no sign that Jahanna had been abused.

On October 20, 2009, Leavitt was at work and the defendant was alone in her Woburn apartment caring for the twins. At approximately 8:45 P.M., Robert Jeffrey, who lived next door with his wife, Eileen, knocked on the door to Leavitt's apartment, which was slightly ajar, and asked the defendant for a cigarette. He saw the defendant sitting on the couch in the living room feeding Jahanna, with Taeja sitting in "a little bouncy thing" on the floor. Their demeanor appeared "good"; Jahanna "was just whining like she was hungry." The defendant said he did not have any cigarettes, so Robert³ drove to a nearby gasoline station, approximately four minutes away. When Robert

³ We refer to Robert Jeffrey and Eileen Jeffrey by their first names because they share the same last name.

parked in front of his apartment, about ten minutes later, the defendant ran over, looking "[v]ery shaken up," and asked to use Robert's telephone to call his girl friend because something had happened to one of the babies. Eileen, who was a certified nurse assistant, was walking towards Robert from the steps of the Jeffrey home when Robert returned. She heard the defendant say that the baby fell, and when Eileen asked if she was okay, the defendant said he did not know. She then immediately walked into the defendant's apartment and saw Jahanna on the couch. Jahanna was pale and unresponsive, and her eyes were closed. Robert then drove the defendant and Jahanna to the emergency room at Winchester Hospital.

At trial, Eileen testified that she was sitting at her computer on the first floor of her apartment when Robert left to find cigarettes, and she went outside when she heard him returning. Although the walls between her apartment and the Leavitt apartment were thin, and she could often hear noises coming from the Leavitt apartment, Eileen heard no banging or other noise during the time that Robert was gone.

Jahanna arrived in the emergency room of Winchester Hospital at approximately 9:18 P.M. Dr. Atima Delaney, the attending pediatric physician in the emergency room who treated Jahanna, obtained a medical history of Jahanna from the defendant that evening. Dr. Delaney described the defendant as

"worried and quiet." The defendant told Dr. Delaney that he had been sitting on the couch while Jahanna had been lying on the couch. When he turned around to grab a bottle, Jahanna fell off the couch. When he turned back, he saw the baby lying on her back on the hardwood floor. She immediately vomited, and then became unconscious.

A computerized tomography (CT) scan taken at Winchester Hospital revealed a large subdural hematoma (a collection of blood between the dura⁴ and the brain), brain swelling, and a comminuted skull fracture located in the left parietal skull.⁵ The CT scan also showed a "midline shift," meaning that one side of the brain had started to push over to the other side because of the brain swelling. Because of the severity of Jahanna's injuries, she was transferred to Children's Hospital, where a pediatric neurosurgeon, Dr. Mark Proctor, performed emergency brain surgery. When he opened the dura inside the skull to relieve the brain swelling, the fluid, including clotted blood, was under such high pressure that it "squirted up about one and a half to two feet." The presence of clotted blood revealed that the injury had happened "within hours." Dr. Proctor did

⁴ The dura is the membrane between the skull and the brain.

⁵ A fracture is characterized as comminuted where there is a series of fractures that cross or are parallel rather than a single fracture in one straight line, which is characterized as linear.

not see extensive injury to the brain itself, but saw that the brain was swelling to such an extent that he needed to remove more bone to relieve the pressure. He located the torn blood vessel that was the cause of the hemorrhage, which was in the subdural space towards the top of the head, to the left of the midline.

On the afternoon of October 21, Inspector Timothy Donovan of the Woburn police department interviewed the defendant at Children's Hospital. The defendant recounted essentially what he had told Dr. Delaney, but with some additional details. He said he was sitting in the middle of a two-seat loveseat, watching a baseball game on the television, and was preparing to feed Jahanna. He placed her to his right on the loveseat, facing the back of the couch. He reached back to grab a bottle and saw Jahanna fall off the couch. When he picked her up from the floor, her eyelids were closed, she was not crying, and her head was "bobbling." He saw that she was breathing, but unresponsive, so he took off her pajamas, brought her upstairs to the bathroom, placed her in her "bathinet," and sprinkled water on her face. When he saw that she was still unresponsive, he put her pajamas back on, and ran next door to speak to the Jeffreys. When the inspector told him that Jahanna's injuries were consistent with her having been shaken, the defendant replied that the only shaking he ever did was bouncing Jahanna

on his knee. The inspector later measured the distance from the floor to the seat of the couch and determined that it was seventeen and one-half inches tall.

The defendant spoke that same day with Donna Hughes, an investigator with the Department of Children and Families, and told her essentially what he had told Dr. Delaney and Inspector Donovan, but with one important additional detail: he said that, when Jahanna fell, she fell backwards and her head hit the floor.

An examination by a pediatric ophthalmologist, Dr. Iason Mantagos, on October 22 found no sign of direct trauma to the eyes. But he found in both eyes extensive hemorrhages (blood spots) in all four quadrants of the retina (the multiple layers of cells that include the photo receptors that are stimulated by light and create impulses that are sent to the brain), from the center to the periphery of the retina, including on the optic nerve (which sends information from the retina to the brain) and in the macular (the area of the eye responsible for sharpest vision). Dr. Mantagos testified that "[t]his finding is consistent with trauma and the force that's required to cause such bleeding is extensive." In describing the different kinds of trauma that can produce retinal hemorrhages, he included the extreme shaking of an infant, which causes the contents of the eyeball to move rapidly back and forth at different speeds,

which in turn causes the vitrious (the jelly that fills the eye) to separate from the retina and put traction on the blood vessels.⁶ Claiming reliance on the medical literature in peer-reviewed journals, he opined on redirect examination that the retinal hemorrhaging he found would be consistent with a fall only if it were from the highest point of a swing to a cement floor, a fall down a flight of stairs in a stroller, or a fall from a height of one or two stories and hitting the ground.

Dr. Alice Newton was the medical director of the Child Protection Program at Children's Hospital, and has written extensively on shaken baby syndrome, which she testified was now called abusive head trauma.⁷ She examined Jahanna on October 21

⁶ Dr. Iason Mantagos also testified that the shaking of an infant can cause bleeding inside the skull, swelling of the brain, and fractures of the vertebrae where the skull meets the spinal cord.

⁷ In 2009, the American Academy of Pediatrics (AAP) in a policy statement recommended that pediatricians "use the term 'abusive head trauma' rather than a term that implies a single injury mechanism, such as shaken baby syndrome, in their diagnosis and medical communications." Christian, Block, and the Committee on Child Abuse and Neglect, *Abusive Head Trauma in Infants and Children*, 123 *Pediatrics* 1409, 1411 (2009). The AAP explained, "The goals of this policy statement is not to detract from shaking as a mechanism of [abusive head trauma] but to broaden the terminology to account for the multitude of primary and secondary injuries that result from [abusive head trauma], some of which contribute to the often-permanent and significant brain damage suffered by abused infants and children." *Id.* at 1410. It noted that the term "shaken baby syndrome" is "sometimes used inaccurately to describe infants with impact injury alone or with multiple mechanisms of head and brain

to determine whether Jahanna's injuries were caused by child abuse. Dr. Newton testified that, "when one refers to shaken baby syndrome, one refers to a combination of findings": bleeding around the brain (subdural hematoma), brain injury, and retinal hemorrhages.⁸ She testified that Jahanna displayed all three of these injuries, and she described how shaking can cause each of them. She opined to a "reasonable degree of medical certainty" that the cause of Jahanna's subdural hematoma, brain injury, and retinal hemorrhages was that Jahanna was "violently shaken." She stated as the basis of her opinion that the constellation of injuries sustained by Jahanna fit the definition of shaken baby syndrome and "do not have any other medical explanation." She declared that Jahanna "did not have some type of massive accidental head injury" and that "the amount of force in a short household fall is not very significant." Dr. Newton also offered a motive for violently shaking a baby, explaining that when a caretaker is unable to handle a crying infant, he or she sometimes shakes the infant as a mode of discipline or simply out of frustration.

injury and focuses on a specific mechanism of injury rather than the abusive event that was perpetrated against a helpless victim." Id.

⁸ Dr. Alice Newton noted that it is not always true that the violent shaking of an infant results in all three of the constellation of injuries.

She further testified that in addition to the brain bleeding, brain injuries, and retinal hemorrhages, Jahanna was diagnosed with fractures of multiple ribs and of the tibia of her right leg, both of which were in an advanced state of healing and were "probably at least a month old." Dr. Newton also noted that Jahanna had compression fractures of thoracic vertebrae eleven and twelve. She said she could not opine when the vertebral fractures occurred, because they do not heal with new bone formation like ribs and the tibia, but she did offer the opinion that these fractures were caused by "some type of crushing force," which could include the extreme flexion caused by violent shaking.

Dr. Newton opined to a reasonable degree of medical certainty that, of all the injuries suffered by Jahanna, "the only injury . . . that could possibly be related" to a short fall was the skull fracture, but that this was "very unlikely," because short falls are more likely to result in linear, rather than comminuted, fractures. She testified that the skull fracture required "some type of blow," such as "slamming the child against something."⁹ She stated that one could not determine when a skull fracture occurred simply by looking at

⁹ Dr. Newton noted that it is "common" that the violent shaking of an infant is followed by the angry caretaker throwing the infant on the floor, resulting in swelling of the scalp or some type of fracture.

the CT scan because it heals in the same way that vertebrae heal, but she felt strongly that the skull fracture was "acute, although that's a little bit harder to be definitive about."

The defendant called three witnesses in his defense: his sister, his mother, and himself. His sister testified that she never saw the defendant shake, spank, or throw Jahanna, and never saw him compress Jahanna's ribs. His mother said little regarding the defendant's care of the twins because, when the twins were at her house, she or the defendant's sister would feed and change them, not the defendant. The defendant's testimony was essentially consistent with what he had already told Dr. Delaney and the investigators. The defendant offered no expert witness to rebut the medical opinion evidence regarding shaken baby syndrome.

The prosecutor in closing argument argued that the defendant "shook [Jahanna] with such violence it caused the blood vessels in her brain to hemorrhage. It caused the [blood vessels in her] retinas in the back of her eyes . . . to hemorrhage in an attempt to get her to stop crying so he could focus on the game that he so wanted to watch. . . . He collided her head against a blunt object or surface to cause that multiple fracture in her skull, and shook her with such force that T11 and T12 vertebrae were fractured in a compressive manner consistent with her shaking back and forth with her spine

moving back and forth in a rapid acceleration and deceleration fashion." The prosecutor also argued that "[i]t does not make sense" that Jahanna's fall from the couch could have caused her extensive brain bleeding and swelling, or her comminuted skull fractures. He claimed that "[c]hildren fall all the time" and "[t]heir heads collide with hard objects or floors," but "[t]hey do not go unresponsive" or sustain the injuries found here.

The defense attorney in closing argument focused almost entirely on the multiple persons who cared for Jahanna before October 20, and invited the jury to consider that any one of them could have been responsible for the fractures to her ribs and tibia that occurred before that date. As to the head injuries suffered on October 20, he said that it was an "accident that can happen with any one of us who may be taking care of children."

The defendant's strategy of focusing the jury on the number of Jahanna's caretakers was successful in obtaining acquittals on the two indictments charging the defendant with causing Jahanna's fractured tibia and fractured ribs, both of which showed signs of healing before October 20 and therefore occurred before that date. But the jury found the defendant guilty on the indictments alleging that the defendant caused Jahanna's

head and vertebral injuries on the theory of intentional assault and battery.¹⁰

2. Motion for new trial. The defendant filed a motion for a new trial under Mass. R. Crim. P. 30 (b), as appearing in 435 Mass. 1501 (2001), on grounds of ineffective assistance of counsel. The defendant claimed that trial counsel was ineffective for failing to consult or call an expert on the science of shaken baby syndrome, and that his counsel's failure to do so denied him a substantial ground of defense. The trial judge held an evidentiary hearing on the motion.

At the hearing, where the defendant was represented by new counsel, the defendant presented an affidavit from his trial attorney.¹¹ Trial counsel attested that the defendant was indigent but he was retained privately by the defendant's father. He sought funds from the defendant's father to retain an expert, but the father refused to pay, so he did not consult with any medical expert or present any expert testimony.

¹⁰ The defendant was sentenced to not less than four and not more than five years in State prison on the indictment charging assault and battery on a child causing substantial bodily injury (head injuries), followed by a five-year term of probation on the indictment charging assault and battery on a child causing bodily injury (fractured vertebrae).

¹¹ Although the affidavit was not formally admitted in evidence, it was informally admitted in that the defendant submitted the affidavit at the hearing, the judge suggested that she would consider it, and the Commonwealth did not object.

Instead, he reviewed the studies Dr. Newton cited in her testimony and the medical literature on shaken baby syndrome.

At the hearing, the defense offered the judge a glimpse of the scientific evidence that could have been presented at trial through the testimony of Dr. Ronald Uscinski, a board-certified clinical neurosurgeon. Dr. Uscinski testified to opinions that challenged the opinions of the Commonwealth's experts who testified at trial and offered an alternative scientific explanation for Jahanna's injuries consistent with an accidental fall.

First, Dr. Uscinski called into question whether shaken baby syndrome is a valid and scientifically supported medical diagnosis. He testified to the weaknesses of the methodologies employed by many of the foundational shaken baby syndrome studies, and stated that numerous studies have shown that humans cannot shake babies hard enough to cause bleeding in the subdural space. He explained that no one knows the minimum force required to cause subdural bleeding in a baby, but it is known that "[t]here's a range, and we don't come anywhere near that range by shaking." He pointed to research showing that if an infant were shaken so violently to produce the level of force needed to cause the triad of symptoms of shaken baby syndrome, the infant's neck would not be able to withstand the force and would suffer some sort of injury. He concluded that shaken baby

syndrome is a hypothesis that has "never been proved" and is "scientifically . . . not plausible." He also opined to a reasonable degree of medical certainty that shaking an infant cannot cause the "triad of injuries" associated with shaken baby syndrome (subdural hematoma, brain swelling, and retinal hemorrhages).

Second, Dr. Uscinski put forth an alternative theory of the cause of Jahanna's injuries. Dr. Uscinski opined to a reasonable degree of medical certainty that a skull fracture of the type Jahanna sustained can be caused by a fall of seventeen and one-half inches onto a hard surface. He explained that a fracture can result from an impact in another area of the head, caused by one part of the bone being pushed in and other parts of the bone being pushed outward. He explained that the parietal bone is "quite thin in [the area of compression] and will be susceptible to being cracked if bent that way, and that resulted in that parietal fracture." He also stated that the impact from the fall could have caused the tearing of the blood vessels and the development of subdural bleeding. The subdural bleeding could then have caused elevated intracranial pressure, the presence of which was evident from the increased retinal venous pressure shown on Jahanna's CT scan. In his opinion, this elevated intracranial pressure in turn caused the retinal hemorrhages. Based on this scientific theory, Dr. Uscinski

testified that a short fall of seventeen and one-half inches onto a hard surface could account for the head injuries that Jahanna sustained.

The Commonwealth again called Drs. Mantagos and Newton to testify at the hearing. Dr. Mantagos testified that retinal hemorrhages can result from elevated intracranial pressure, but such hemorrhages "tend to be isolated in number[]." In contrast, where caused by abusive head trauma, the retinal hemorrhaging tends to be more extensive, to involve more layers of the retina, and to be present in all four quadrants of the retina. He testified that the retinal hemorrhaging in Jahanna's right eye was extensive, was in at least two layers of the retina, and was in all four quadrants, and that the retinal hemorrhaging in her left eye was "less extensive . . . but still a significant number." He opined that he "would not expect" intracranial pressure to be the cause of the retinal hemorrhaging in both eyes.

Dr. Mantagos admitted that retinal hemorrhages can occur even with short falls, but stated that they "tend to be" rare, associated with bleeding in the brain, and isolated in one eye. Dr. Mantagos stated that "the hemorrhages that we see here involve both eyes and they're more in number than you would expect to see from falls." He opined that he "would not expect"

a short fall of seventeen and one-half inches to be the cause of the retinal hemorrhages.

Dr. Newton reiterated the opinion she gave at trial that the only cause consistent with Jahanna's injuries was the intentional infliction of injury by her caretaker. But her testimony at the motion hearing differed from her trial testimony in that, at trial, Dr. Newton had opined that Jahanna's brain injuries and retinal hemorrhaging were caused by shaking alone, but she testified at the motion hearing that the cause of these injuries was shaking combined with a slamming against a hard surface. She opined that it is "very, very unlikely" that Jahanna's comminuted skull fracture, which was located on the left side of her skull, could have resulted from a fall onto the back of her head. Rather, she testified that the amount of swelling and the collection of blood around the fracture signify that Jahanna had a blow to the left side of her head. She rejected Dr. Uscinski's opinion that Jahanna's head injuries were consistent with an accidental fall as described by the defendant.

The judge concluded that trial counsel's failure to consult with an expert to attempt to counter the opinions of the Commonwealth's experts, explore an alternative theory of causation, and assist him in cross-examination fell below the minimum level of performance expected from an ordinary, fallible

criminal defense attorney, because it ceded the "pivotal issue" of causation and left the defendant "without an opportunity for a viable defense." She determined that trial counsel "should have sought the necessary funds to hire an expert to examine the medical records in order to explore whether Jahanna could have sustained her injuries from falling from . . . a couch." But the judge denied the defendant's motion for a new trial because she concluded that, "due to the powerful medical evidence that was before the jury, it is unlikely that an expert's assistance or opinion would have 'accomplished something material for the defense'" (citation omitted). In short, the judge determined that the Commonwealth's experts had so overwhelmingly established that Jahanna's injuries were intentionally inflicted that "it cannot be reasonably asserted that Jahanna sustained [the injuries] by merely falling off of a couch onto the back of her head," so neither better cross-examination nor an expert's opinion would have "added anything substantial to the defense."

The defendant appealed from his convictions and from the denial of his motion for a new trial, and we granted the defendant's motion for direct appellate review. The defendant presents two claims on appeal. First, he contends that the judge erred in denying his motion for a new trial. Second, he contends that the evidence was insufficient as a matter of law to support his conviction on the indictment charging assault and

battery of a child causing bodily injury (fractured vertebrae) because no reasonable jury could ascertain when these fractures occurred and that he had caused them.

Discussion. 1. Motion for new trial. As we consider "whether there has been a significant error of law or other abuse of discretion" in the denial of the motion for a new trial, Commonwealth v. Grace, 397 Mass. 303, 307 (1986), it is important to recognize that the Commonwealth's case rested almost entirely on inferences regarding the defendant's conduct based on the medical evidence. There was no evidence that the defendant had ever before shaken, spanked, or struck Jahanna; at worst, he was inexperienced in caring for an infant and, at times, burped her a bit too hard and left her without adequate vigilance when she was being changed. On October 20, within ten minutes of when Jahanna was found unconscious and unresponsive, Robert Jeffrey saw the defendant feeding her on the living room sofa. During those ten minutes, despite the thin walls that separated their neighboring apartments, Eileen Jeffrey heard nothing unusual. The Commonwealth's theory of the case at trial was that, at some moment within those ten minutes, the defendant became so enraged at Jahanna that he shook her so violently that he caused her to suffer the triad of symptoms of shaken baby syndrome.

Essentially, the Commonwealth's prosecution rested on two related claims: first, that the only medically reasonable explanation for the nature and severity of Jahanna's injuries was that she was violently shaken by the defendant; and second, that injuries of the nature and severity she suffered could not possibly have been caused by an accidental fall from a sofa, so the defendant was lying when he offered that explanation, demonstrating his consciousness of guilt. A competent defense attorney would have recognized that, if the jury were to find that the defendant's report of an accidental fall was credible and that medically it was reasonably possible that Jahanna's injuries were caused by that fall, the jury might have a reasonable doubt whether the defendant violently shook Jahanna. Therefore, it was critically important to the defendant to elicit evidence, whether through cross-examination of the prosecution's expert, the testimony of a defense expert, or both, that may cause the jury to have a reasonable doubt whether Jahanna's injuries could have been caused by the accidental fall described by the defendant.

To prevail on a motion for a new trial claiming ineffective assistance of counsel, a defendant must show that there has been a "serious incompetency, inefficiency, or inattention of counsel -- behavior of counsel falling measurably below that which might be expected from an ordinary fallible lawyer," and that

counsel's poor performance "likely deprived the defendant of an otherwise available, substantial ground of defence."

Commonwealth v. Saferian, 366 Mass. 89, 96 (1974). We agree with the judge that the first prong of the Saferian test was met in this case.

The defendant's trial counsel here was ineffective, not because he failed to understand that he needed an expert witness to advise him regarding the medical evidence and to offer opinion testimony, but because he failed to seek funds from the court to retain an expert witness for his indigent client. A defendant who is indigent is entitled to funds for an expert witness where the retention of such a witness is necessary to the defense even where the defendant's family member is paying the defendant's legal fees. See G. L. c. 261, § 27C (Commonwealth shall provide funds to cover "extra fees and costs" for indigent defendant if "the document, service or object is reasonably necessary to assure the applicant as effective a . . . defense . . . as he would have if he were financially able to pay"). Where, as here, the defendant was indigent and the family member who was otherwise furnishing funds for the defense refused to pay for an expert witness, it was manifestly unreasonable for defense counsel not to apply to the judge for the funds needed to retain an expert witness. See Hinton v. Alabama, 134 S. Ct. 1081, 1088 (2014) ("The trial

attorney's failure to request additional funding in order to replace an expert he knew to be inadequate because he mistakenly believed that he had received all he could get under Alabama law constituted deficient performance"); Commonwealth v. Kolenovic, 471 Mass. 664, 674 (2015), quoting Commonwealth v. Acevedo, 446 Mass. 435, 442 (2006) (where defendant's ineffective assistance of counsel claim "is based on a tactical or strategic decision, the test is whether the decision was '"manifestly unreasonable" when made)'). See also Commonwealth v. Haggerty, 400 Mass. 437, 442 (1987) ("Failure to investigate the only defense a defendant has, if facts known to or with minimal diligence accessible to counsel support that defense, falls beneath the level of competency expected").

Turning to the second prong of the Saferian test, we consider whether counsel's failure to seek funds to retain an expert witness prejudiced the defendant. Prejudice in this context means that the defendant has likely been deprived of an "available, substantial ground of defence," Saferian, supra at 96; the challenge is to articulate when a defense is substantial such that its deprivation requires a new trial.

Ten years after we established the Saferian test to determine when a defendant is entitled to a new trial because of the ineffectiveness of counsel, the United States Supreme Court established its own test under Federal constitutional law.

Strickland v. Washington, 466 U.S. 668, 693-694 (1984). The Court held that, where counsel has been ineffective, the defendant must "affirmatively prove prejudice." Id. at 693. In order to prove prejudice,

"[t]he defendant must show that there is a reasonable probability that, but for counsel's unprofessional errors, the result of the proceeding would have been different. A reasonable probability is a probability sufficient to undermine confidence in the outcome."

Id. at 694. We have not adopted this precise formulation but have recognized that the prejudice standard under the Massachusetts Constitution "is at least as favorable to a defendant as is the Federal standard." Commonwealth v. Curtis, 417 Mass. 619, 624 n.4 (1994).

In reviewing convictions in noncapital cases such as this, we have sometimes said that, for a new trial to be ordered because of counsel's inadequate performance, "there ought to be some showing that better work might have accomplished something material for the defense." Commonwealth v. Satterfield, 373 Mass. 109, 115 (1977). This phrase from Satterfield has often been cited as the prejudice standard where counsel failed to investigate or present a ground of defense. See, e.g., Commonwealth v. Valentin, 470 Mass. 186, 190 (2014) (citing Satterfield and explaining that its statement that "better work might have accomplished something material for the defence" is standard for Saferian requirement that counsel's ineffectiveness

must have deprived defendant of "available, substantial ground of defence" [citations omitted]; Commonwealth v. Marinho, 464 Mass. 115, 129 (2013) (same); Commonwealth v. Dargon, 457 Mass. 387, 403 (2010) (same); Commonwealth v. Urena, 417 Mass. 692, 701 (1994) (same). But, when viewed in the context of the opinion in Satterfield, the words that have subsequently been described as a prejudice standard appear to be simply a minimum threshold for a showing of prejudice, which in that case the defendant failed to meet. See Satterfield, supra.¹²

In other cases, we have drawn parallels between the second prong of the Saferian test and the standard that applies where a claimed error that defense counsel failed adequately to

¹² In reviewing convictions of murder in the first degree, where we determine pursuant to G. L. c. 278, § 33E, whether there has been a substantial likelihood of a miscarriage of justice, we have declared that "a new trial is called for unless we are substantially confident that, if the error had not been made, the jury verdict would have been the same." Commonwealth v. Alcide, 472 Mass. 150, 157 (2015), quoting Commonwealth v. Spray, 467 Mass. 456, 472 (2014). We have also said that a new trial is required where the error "was likely to have influenced the jury's conclusion." Commonwealth v. Gonzalez, 473 Mass. 415, 421 (2015), quoting Commonwealth v. Wright, 411 Mass. 678, 682 (1992), S.C., 469 Mass. 447 (2014). If we were to apply the language in Commonwealth v. Satterfield, 373 Mass. 109, 115 (1977) -- "better work might have accomplished something material for the defense" -- as a prejudice standard, it would appear to be more favorable to defendants than the Alcide or Gonzalez standard under § 33E, which would be inconsistent with our view that the substantial likelihood of a miscarriage of justice standard applied to § 33E cases is more favorable to a defendant than the substantial risk of a miscarriage of justice standard applied to noncapital cases. See Wright, supra at 681.

challenge at trial is raised for the first time on appeal or in a postappeal motion for a new trial. See Commonwealth v. Azar, 435 Mass. 675, 685 (2002), S.C., 444 Mass. 72 (2005); Commonwealth v. LeFave, 430 Mass. 169, 173-174 (1999). In those cases, we have said that the defendant is entitled to a new trial if there is a substantial risk of a miscarriage of justice arising from counsel's failure. See Azar, supra; LeFave, supra. See also Commonwealth v. Robideau, 464 Mass. 699, 705 (2013). Under that standard, a defendant is entitled to a new trial "if we have a serious doubt whether the result of the trial might have been different had the error not been made." Azar, supra, quoting LeFave, supra at 174. We now declare that this standard is effectively the same as the prejudice standard under the second prong of Saferian: where counsel was ineffective for failing to present an available ground of defense, that defense is "substantial" for Saferian purposes where we have a serious doubt whether the jury verdict would have been the same had the defense been presented.¹³ The defendant need not prove that he

¹³ We recognize that the language we adopt for the prejudice standard under the second prong of the test in Commonwealth v. Saferian, 366 Mass. 89, 96 (1974) -- "we have a serious doubt whether the jury verdict would have been the same had the defense been presented" -- differs slightly from the language of the substantial risk of a miscarriage of justice standard that we used in Commonwealth v. Azar, 435 Mass. 675, 685 (2002), quoting Commonwealth v. LeFave, 430 Mass. 169, 174 (1999) ("we have a serious doubt whether the result of the trial might have

or she would have been found not guilty if defense counsel had presented the jury with this ground of defense. See Strickland, 466 U.S. at 693 ("a defendant need not show that counsel's deficient conduct more likely than not altered the outcome in the case").

We conclude that the judge erred in finding that counsel's ineffectiveness did not prejudice the defendant. The judge recognized that Dr. Uscinski challenged the proposition that the force produced by shaking a baby alone could have caused Jahanna's head injuries, but determined that this opinion did not relate to this case because "there was evidence that Jahanna was not only shaken but suffered some sort of impact trauma as well." At trial, however, as earlier noted, Dr. Newton offered the opinion that the cause of Jahanna's triad of head injuries was that she was "violently shaken." She did not claim the skull fracture to be a contributing cause of these injuries until she testified at the hearing on the motion for a new trial. Therefore, had Dr. Uscinski's expert testimony been

been different had the error not been made"). We believe the standards are identical in their application; we have revised the language only because we think it more clear.

offered at trial, the defendant could have challenged Dr. Newton's opinion as to the cause of Jahanna's head injuries.¹⁴

Nor can we say with confidence that such a challenge to Dr. Newton's opinion that violent shaking caused Jahanna's head injuries would not have been persuasive. An expert witness testifying at trial in October, 2010, once his or her opinion was challenged on cross-examination, on redirect examination could have cited to numerous scientific studies supporting the view that shaking alone cannot produce injuries of the type and severity suffered by Jahanna.¹⁵ Indeed, Dr. Newton herself

¹⁴ Dr. Mantagos was a treating physician and did not offer an opinion as to the cause of Jahanna's retinal hemorrhaging, but the reasonable takeaway from his testimony was that it was caused by extreme shaking. Dr. Uscinski's expert testimony would also have challenged this apparent conclusion.

¹⁵ See, e.g., Bandak, Shaken Baby Syndrome: A Biomechanics Analysis of Injury Mechanisms, 151 Forensic Sci. Int'l 71, 78 (2005) (infant shaking cannot cause serious injuries without also resulting in neck injury); Ommaya, Goldsmith, & Thibault, Biomechanics and Neuropathology of Adult and Pediatric Head Injury, 16(3) Brit. J. of Neurosurgery 220, 233 (2002) (based on standard biomechanical principles, shaken baby syndrome hypothesis requires forces that are biomechanically improbable and increased intracranial pressure is more likely to cause retinal bleeding than shaking); Duhaime, Gennarelli, Thibault, Bruce, Margulies, & Wiser, The Shaken Baby Syndrome: A Clinical, Pathological, and Biomechanical Study, 66 J. Neurosurgery 409, 413-414 (1987) (subjecting biomechanical model to repetitive violent shaking demonstrated that shaking fell below established injury thresholds). See also Cavazos v. Smith, 132 S. Ct. 2, 10 (2011) (Ginsburg, J., dissenting), quoting State v. Edmunds, 308 Wis. 2d 374, 386 (2008), and sources cited ("Doubt has increased in the medical community

appears to have changed her opinion that shaking alone caused Jahanna's triad of head injuries.

If a defense expert had caused the jury to doubt whether violent shaking alone could have caused Jahanna's severe injuries, they may have asked whether there was any corroborative evidence that Jahanna was slammed against the wall or thrown to the floor. But Eileen Jeffrey heard nothing unusual during the ten minutes her husband was gone, even though the walls between the apartment were thin and sounds could often be heard from next door. And if the jury had determined that Jahanna's injuries could not have happened without impact trauma, they might have considered more carefully whether the impact trauma described by the defendant -- Jahanna's head-first fall from the sofa onto the wooden floor -- could have sufficed to cause her head injuries.

If they had done so, it is likely that the opinion testimony of such a defense expert would have influenced the jury's evaluation of whether the Commonwealth had eliminated the

'over whether infants can be fatally injured through shaking alone'").

A more recent study would also support this proposition. See generally Jones, Martin, Williams, Kemp, & Theobald, Development of a Computational Biomechanical Infant Model for the Investigation of Infant Head Injury by Shaking, 55 Med., Sci., & Law 291 (2015) (biomechanical study using computational model suggests shaking cannot generate levels of force necessary to produce injuries associated with abusive head trauma).

possibility that Jahanna's injuries were caused by the accidental fall described by the defendant beyond a reasonable doubt, such that we have a serious doubt whether the jury's verdict would have been the same. See Commonwealth v. LaBrie, 473 Mass. 754, 772-774 (2016) (counsel's failure to consult with independent oncologist likely deprived defendant of substantial ground of defense on key issue in case -- whether defendant intended to kill her child by failing to give him prescribed medication). The judge erred in finding that Dr. Uscinski "failed to address the severity of Jahanna's injuries." The judge determined that, although Dr. Uscinski testified that it was possible to sustain head injuries from an accidental short fall, he "did not mention whether a fall from such a short distance could cause the extent of the skull fractures and brain hemorrhaging that Jahanna suffered." Dr. Uscinski, however, stated unequivocally in his testimony that a short fall from seventeen and one-half inches "could account for" the head injuries that Jahanna sustained. Dr. Uscinski also explained in detail why Jahanna's comminuted skull fracture could have been caused by a fall of only seventeen and one-half inches. Specifically, he stated that "a fracture of this nature can be sustained from a fall of that distance."

Moreover, an expert witness testifying at trial in October, 2010, could have cited to numerous scientific studies in support

of an opinion that accidental short falls can produce injuries of the nature and severity suffered by Jahanna.¹⁶ Such opinion

¹⁶ See, e.g., Roth, Raul, Ludes, & Willinger, Finite Element Analysis of Impact and Shaking Inflicted to a Child, 121 Int'l J. Legal Med. 223, 225 (2007) (based on computer simulation, eighteen inch fall as likely to cause subdural hemorrhage as shaking); Prange, Coats, Duhaime, & Margulies, Anthropomorphic Simulations of Falls, Shakes, and Inflicted Impacts in Infants, 99 J. Neurosurgery 143 (2003) (shaking and minor falls produce similar rotational responses, with falls of only twelve inches with head impact producing accelerations in excess of those produced during shaking); Hymel, Jenny, & Block, Intracranial Hemorrhage and Rebleeding in Suspected Victims of Abusive Head Trauma: Addressing the Forensic Controversies, 7 Child Maltreatment 329 (2002) (describing two cases of serious head trauma from accidental short falls); Jenny, Shams, Rangarajan, & Fukuda, Development of a Biofidelic 2.5 kg Infant Dummy and Its Application to Assessing Infant Head Trauma During Violent Shaking, Injury Biomechanics Research, Proceedings of the Thirtieth International Workshop, at 138 (Nov. 10, 2002) (based on biomechanical experiment, maximum head center of gravity acceleration produced by shaking less than one-third of that produced by rolling off sofa); Plunkett, Fatal Pediatric Head Injuries Caused by Short-Distance Falls, 22 Am. J. Forensic Med. & Pathology 1, 7-9 (2001) (symptoms attributed to shaken baby syndrome also found in fatal short falls); Christian, Taylor, Hertle, & Duhaime, Retinal Hemorrhages Caused by Accidental Household Trauma, 135 J. Pediatrics 125, 127 (1999) (reporting three cases of infants between seven months and thirteen months of age who had retinal hemorrhages after short falls); Hall, Reyes, Horvat, Meller, & Stein, The Mortality of Childhood Falls, 29 J. Trauma 1273-74 (1989) (of fatal falls by children in Cook County, Illinois, during four-year period, forty-one per cent were minor falls from less than three feet).

More scientific support for this proposition will be available at a new trial. See Barnes, Imaging of Nonaccidental Injury and the Mimics: Issues and Controversies in the Era of Evidence-Based Medicine, 49 Radiologic Clinics of N. Am. 205, 217 (2011) (based on clinical, biomechanical, neuropathological, and neuro-radiological evidence, significant head injury, including subdural and retinal hemorrhages, may result from low level falls); Squier, The "Shaken Baby" Syndrome: Pathology and

testimony would likely have caused a reasonable jury carefully to consider whether they were certain beyond a reasonable doubt that Jahanna's head injuries were not caused by the accidental fall described by the defendant. At the hearing on the motion for a new trial, Dr. Mantagos said that he "would not expect" that Jahanna's retinal hemorrhages could have been caused by a fall of seventeen and one-half inches, and Dr. Newton testified that it was "very, very unlikely" that the fall could have caused Jahanna's comminuted skull fracture. But, in the circumstances of this case, the jury would need to determine more than whether such injuries were unexpected or very unlikely; they would need to determine whether they were certain beyond a reasonable doubt that these injuries were not caused by an accidental fall from the sofa onto the hardwood floor.

The judge accurately found that, although "Dr. Uscinski . . . testified that retinal hemorrhaging can be caused by an increase in intracranial pressure and noted that such increase was present in [this] case . . . , he did not opine specifically

Mechanisms, 122 *Acta Neuropathologica* 519 (2011) (same); Cummings, Trelka, & Springer, *Atlas of Forensic Histopathology*, Cambridge Univ. Press (2011) (skull fractures, subdural hematomas, and retinal hemorrhages have all been found after short falls); Lantz & Couture, *Fatal Acute Intracranial Injury, Subdural Hematoma, and Retinal Hemorrhages Caused by Stairway Fall*, 56(6) *J. Forensic Sciences* 1648 (2011) (case study of infant who fell from short height and had subdural hemorrhage, midline shift, mild edema, and severe retinal hemorrhages).

as to whether Jahanna's retinal hemorrhages were caused by this increased intracranial pressure."¹⁷ But the judge erred in concluding that this meant that the defendant was not deprived of a substantial ground of defense by the failure to retain a defense expert. The defendant bears the burden of proving the second prong of the Saferian test, but he may meet this burden by showing that the poor performance of his attorney deprived him of expert evidence that would likely have influenced the jury's conclusion as to whether the prosecution had eliminated reasonable doubt regarding the cause of Jahanna's retinal hemorrhages; the defendant is not required conclusively to prove that the intracranial pressure arising from the accidental fall was the cause of the retinal hemorrhages. See, e.g., Commonwealth v. Polk, 462 Mass. 23, 34 (2012) (evidence regarding alleged victim in sexual assault case that is consistent with diagnosis of disorder is "sufficient to permit a reasonable inference that the alleged victim may have the disorder"); Commonwealth v. Alvarez, 433 Mass. 93, 103-104 (2000) (new trial ordered for ineffective assistance of counsel

¹⁷ Dr. Uscinski testified that a short fall of seventeen and one-half inches may account for a subdural hematoma (which he called an "intradural hematoma") like the one sustained by Jahanna, and that a subdural hematoma, in turn, can cause an increase in intracranial pressure, which can result in retinal hemorrhages. Dr. Uscinski noted that the computerized tomography scans of Jahanna's brain showed an increase in intracranial pressure.

because "the jury may have ruled differently" if medical evidence of defendant's brain damage had been properly investigated, reviewed with the defense expert, and presented at trial). See also Strickland, 466 U.S. at 693.

We recognize that the testimony of Drs. Newton and Mantagos regarding the cause of Jahanna's injuries finds support in scientific research, and that numerous scientific studies were cited in support of their opinions.¹⁸ But a defense expert could have assisted a competent defense attorney in mounting a significant challenge to their opinions at trial on cross-examination by identifying the methodological shortcomings of

¹⁸ See, e.g., Trenchs, Curcoy, Morales, Serra, Navarro, & Pou, Retinal Haemorrhages in Head Trauma Resulting from Falls: Differential Diagnosis with Non-Accidental Trauma in Patients Younger Than 2 Years of Age, 24 Child's Nervous System 815, 818-819 (2008) (study of infants who sustained accidental falls showed that accidental falls provoked only small, isolated, and unilateral retinal hemorrhages, whereas inflicted injury caused bilateral and diffuse retinal hemorrhages); Newton & Vandeven, Update on Child Maltreatment with a Special Focus on Shaken Baby Syndrome, 17 Current Opinion in Pediatrics 246, 249 (2005) (based on review of studies on shaken baby syndrome, retinal hemorrhage found to be much more common in inflicted than non-inflicted injuries); Schloff, Mullaney, Armstrong, Simantirakais, Humphreys, Myseros, Buncie, & Levin, Retinal Findings in Children with Intracranial Hemorrhage, 109 Ophthalmology 1472, 1475 (2002) ("Our study suggests that intraretinal hemorrhages in children with intracranial hemorrhage from causes other than shaken baby syndrome would be expected in less than [eight per cent] of cases").

the studies they cited.¹⁹ A defense expert could also have assisted a competent defense attorney in highlighting in cross-examination the studies that recognize the difficulties faced by physicians in accurately diagnosing the cause of injuries that

¹⁹ See, e.g., Vinchon, Defoort-Dhellemmes, Desurmont, & Dhellemmes, *Accidental and Nonaccidental Head Injuries in Infants: A Prospective Study*, 102 *J. Neurosurgery: Pediatrics* 380, 383 (2005) ("[T]he evaluation of the incidence of [retinal hemorrhages] in child abuse remains a self-fulfilling prophecy" because children are diagnosed as being abused "in great part based on the presence of [retinal hemorrhage]"); Donohoe, *Evidence-Based Medicine and Shaken Baby Syndrome*, 24 *Am. J. Forensic Med. & Pathology* 239, 240-241 (2003) (performing review of shaken baby syndrome literature from 1966 through 1998 and concluding that "there existed serious data gaps, flaws of logic, inconsistency of case definition, and a serious lack of tests capable of discriminating [non-accidental injury] cases from natural injuries. . . . [By 1999] the commonly held opinion that the finding of [subdural hematoma] and [retinal hemorrhages] in an infant was strong evidence of [shaken baby syndrome] was unsustainable"). For example, in one study seeking to determine whether short falls of children cause death, after finding an unexpectedly large number of deaths after reported short falls, the author excluded those deaths because they assumed those reports to be false. See Chadwick, Chin, Salerno, Landsverk, & Kitchen, *Deaths from Falls in Children: How Far Is Fatal?*, 31 *J. Trauma* 1353, 1355 (1991).

The challenges to this research have not subsided. See, e.g., Gabaeff, *Exploring the Controversy in Child Abuse Pediatrics & False Accusations of Abuse*, 18 *Legal Med.* 90, 93 (2016) (documenting unreliability of confessions used in shaken baby syndrome research); Guthkelch, *Problems of Infant Retinodural Hemorrhage with Minimal External Injury*, 12 *Houst. J. Health L. & Pol'y* 201, 207 (2012) ("[Shaken baby syndrome] and [abusive head trauma] are hypotheses that have been advanced to explain findings that are not yet fully understood. . . . [They are] not proven medical or scientific facts").

allegedly result from child abuse.²⁰ See Commonwealth v. Baran, 74 Mass. App. Ct. 256, 277 (2009) (expert could have strengthened cross-examination and provided material for rebuttal). See also Dugas v. Coplan, 428 F.3d 317, 340 (1st Cir. 2005) (had defense counsel been advised by expert in arson case, "his cross-examination of the fire investigators could have been far more pointed").

Considering together the opinion testimony regarding the cause of Jahanna's head and vertebral injuries that reasonably could have been offered by a defense expert and the assistance such an expert could have offered to defense counsel's cross-examination of the Commonwealth's medical experts, we conclude

²⁰ See, e.g., Christian, Taylor, Hertle, & Duhaime, Retinal Hemorrhages Caused by Accidental Household Trauma, 135 J. Pediatrics 125, 127 (1999) (recognizing overlap between accidental and abusive head injury and cautioning against presumption of abuse when infants under one year present with traumatic retinal hemorrhages); Sirotnak, Medical Disorders that Mimic Abusive Head Trauma, in Abusive Head Trauma in Infants and Children 191 (2006) (many conditions mimic abusive head trauma); Barnes, Ethical Issues in Imaging Nonaccidental Injury: Child Abuse, 13(2) Topics in Magnetic Resonance Imaging 85, 86-87, 91 (2002) (applying standard of evidence-based medicine to shaking mechanism and concluding that no scientific basis exists indicating force required to produce traumatic brain injury and that many conditions mimic child abuse); Case, Graham, Handy, Jentzen, & Monteleone, Position Paper on Fatal Abusive Head Injuries in Infants and Young Children, 22 Am. J. Forensic Med. & Pathology 112, 116-117 (2001) (acknowledging that retinal hemorrhages have many nontraumatic causes, including increased intracranial pressure, bleeding disorders, sepsis, meningitis, and vasculopathies, and that pathogenesis of retinal hemorrhages is not precisely understood).

that defense counsel's manifestly unreasonable failure to seek public funds to retain such an expert likely deprived the defendant of an available, substantial ground of defense. Because the defendant was deprived of his constitutional right to effective counsel, we vacate the defendant's convictions and order a new trial.

We are not the first State Supreme Court to vacate a conviction because defense counsel was ineffective in failing to consult with an appropriate medical expert where the theory of the prosecution's case was that the defendant injured an infant through violent shaking or blunt force trauma. See, e.g., People v. Ackley, 497 Mich. 381, 388-398 (2015); State v. Hales, 152 P.3d 321, 337-344 (Utah 2007). Although each case alleging abusive head trauma is different and must be evaluated on its own facts, the legal analysis used by these two courts that yielded the conclusion that a new trial is in the interests of justice is similar to our own.

In Ackley, 497 Mich. at 385, defense counsel contacted only one expert in preparing for trial, who advised counsel that there was a wide divide within the medical community between those who believe that an infant's injuries can be caused by a short distance fall and those who believe that such injuries are the result of shaking or striking the infant, and that the divide is so deeply held that it is "like a religion." The

expert told counsel that "he [the expert] was on the wrong side of this debate to be able to assist the defendant," but recommended a forensic pathologist who had expertise in short falls. Id. Defense counsel never contacted this forensic pathologist or any other expert in short falls, and instead relied only on the first expert's advice in cross-examining the prosecution's experts. Id. at 386-387. The Supreme Court of Michigan concluded that "counsel performed deficiently by failing to investigate and attempt to secure an expert witness who could both testify in support of the defendant's theory that the child's injuries were caused by an accidental fall and prepare counsel to counter the prosecution's expert medical testimony." Id. at 389. As to the issue of prejudice, the court noted that "[t]here was no explanation for the child's injuries beyond the theories presented by the experts, and the prosecution produced no witnesses who testified that the defendant was ever abusive." Id. at 395. The court concluded, "Had an impartial, scientifically trained expert corroborated the defendant's theory, the defendant's account of the child's death would not have existed in a vacuum of his own self-interest. While we cannot say that a battle of the experts would have ensured the defendant's acquittal, counsel's failure to prepare or show up for the battle sufficiently 'undermine[s our] confidence in the outcome' of this case to entitle the

defendant to relief." Id. at 397, quoting Strickland, 466 U.S. at 694.

In Hales, 152 P.3d at 328-329, a murder case based on a theory of shaken baby syndrome, the prosecution at trial relied primarily on the testimony of experts that CT scans of the infant showed brain injury consistent with violent shaking. The theory of the defense was that the infant's injuries were caused by a "near-miss car accident" hours earlier. Id. at 329. In support of this theory, defense counsel called an expert witness who testified that shaking can cause neck injury, but not brain injury, and that the most likely cause of the child's injuries was a "near-miss car accident that caused the bruising followed by a lengthy 'lucid interval.'" Id. Defense counsel, however, never retained a qualified expert to provide an independent interpretation of the CT scans and did not put forth any evidence contradicting the prosecution expert's interpretation of them. Id. at 329, 340-341. Nor did defense counsel offer any evidence that his theory of defense comported with the CT scan evidence. Id. at 340-341. In vacating the conviction, the Supreme Court of Utah reasoned that "the defense's theory that the injuries were caused by the near-miss car accident depended upon convincing the jury that the brain injury shown in the CT scans could have been caused by an impact injury and would not have caused immediate unconsciousness as [the State's expert]

had testified." Id. at 340. The court concluded that the defendant was prejudiced by his counsel's failure because, "had his trial attorneys sought out an expert analysis of the CT scans, there was a reasonable probability that they would have obtained and the jury would have credited [the defense's competing] expert testimony regarding the timing, nature, and violence of the injury," which was consistent with the injuries being caused by the near-miss automobile accident. Id. at 344.

In a policy statement issued in May, 2009, the American Academy of Pediatrics declared:

"Few pediatric diagnoses engender as much debate as [abusive head trauma] . . . Controversy is fueled because the mechanisms and resultant injuries of accidental and abusive head injury overlap, the abuse is rarely witnessed, an accurate history of trauma is rarely offered by the perpetrator, there is no single or simple test to determine the accuracy of the diagnosis, and the legal consequences of the diagnosis can be so significant."

Christian, Block, & Committee on Child Abuse and Neglect of American Academy of Pediatrics, Abusive Head Trauma in Infants and Children, *Pediatrics*, Vol. 123, No. 5, 1409, 1410 (2009). By vacating the defendant's convictions in this case and ordering a new trial, we do not claim to have resolved the ongoing medical controversy as to how often the triad of symptoms of abusive head trauma are caused by accidental short falls or other medical causes. We are simply recognizing that there is a vigorous debate on this subject, that arguments are

being made on both sides with support in the scientific and medical literature, that this debate is evolving, and that, in the circumstances of this case, we do not have confidence in the justice of these convictions where defense counsel did not retain an expert to evaluate the medical evidence and, as a result, the jury heard only one side of this debate. See Hinton, 134 S. Ct. at 1090 (risk of mistakes by prosecution experts "is minimized when the defense retains a competent expert to counter the testimony of the prosecution's expert witnesses"). See generally Melendez-Diaz v. Massachusetts, 557 U.S. 305, 319 (2009) ("One study of cases in which exonerating evidence resulted in the overturning of criminal convictions concluded that invalid forensic testimony contributed to the convictions in [sixty per cent] of the cases").

2. Sufficiency of evidence of assault and battery of child causing bodily injury (vertebral fractures). The defendant claims that his conviction of assault and battery of a child causing bodily injury (fractured vertebrae) must be reversed and dismissed because the evidence was insufficient as a matter of law. In essence, the defendant claims that, because there was uncertainty in the evidence as to when the vertebral fractures occurred and what caused them, no reasonable jury could find beyond a reasonable doubt that these injuries were caused by the

intentional infliction of force by the defendant on the evening of October 20 when he was Jahanna's sole caretaker.

In determining whether a defendant is entitled to a required finding of not guilty, we consider whether, viewing the evidence in the light most favorable to the Commonwealth, a reasonable jury could have found the essential elements of the crime beyond a reasonable doubt. Commonwealth v. Latimore, 378 Mass. 671, 676-677 (1979). At trial, Dr. Newton offered the opinion that the fractured vertebrae were caused by "some type of crushing force," which could include the extreme flexion caused by violent shaking, and that they could not be caused by the force involved in a short household fall. Although Dr. Newton admitted that the age of the fractured vertebrae could not be discerned from the CT scan, a reasonable jury, viewing the totality of the evidence in the light most favorable to the prosecution, could have concluded beyond a reasonable doubt that Jahanna's head injuries were caused by a violent shaking on the evening of October 20, when the defendant was her sole caretaker, and that the same shaking that caused these injuries produced the extreme flexion that fractured her vertebrae. Therefore, the judge did not err in denying the defendant's motion for a required finding of not guilty on this indictment.

Conclusion. For the reasons stated above, the judge's order denying the motion for a new trial is reversed, and the

judgments of conviction are vacated. The case is remanded to the Superior Court for a new trial on these two indictments.

So ordered.