

2016 IL App (1st) 150312

No. 1-15-0312

THE PEOPLE OF THE STATE OF ILLINOIS,)	Appeal from the
)	Circuit Court of
Plaintiff-Appellee,)	Cook County.
)	
v.)	No. 10 CR 5551
)	
JASON SCHUIT,)	Honorable
)	Colleen Ann Hyland,
Defendant-Appellant.)	Judge Presiding.

JUSTICE HOWSE delivered the judgment of the court, with opinion.
Presiding Justice Ellis and Justice Burke concurred in the judgment and opinion.

OPINION

¶ 1 Following a bench trial, the circuit court of Cook County convicted defendant, Jason Schuit, of aggravated battery of a child. The victim was defendant’s newborn son, Dylan (born October 2, 2009). The trial court denied defendant’s motion for a new trial and sentenced him to ten years’ imprisonment. For the following reasons, we affirm.

¶ 2 BACKGROUND

¶ 3 The State charged defendant with two counts of aggravated battery based on injuries to defendant’s newborn son Dylan. Specifically, the State charged defendant with aggravated battery to a child in that defendant shook Dylan resulting in great bodily harm (count I) and permanent disability (count II). Before trial, defendant moved to bar evidence of “Shaken Baby Syndrome” and requested a hearing pursuant to *Frye v. United States*, 293 F. 1012 (D.C. Cir. 1923). The trial court denied defendant’s motion. Following a bench trial the court convicted and sentenced defendant. On appeal defendant challenges the trial court’s order denying his

motion for a *Frye* hearing and the sufficiency of the evidence to prove his guilt beyond a reasonable doubt.

¶ 4 Dylan was born October 2, 2009. Dr. John McInerney delivered Dylan by C-section. The medical records from the delivery noted bruises on Dylan's lip and scalp after his birth. Dr. McInerney testified that photographs of Dylan show a bruise on Dylan's lip and a bruise or birthmark on Dylan's forehead. Dylan's mother, defendant's wife Jeanette, testified that during the delivery she was being jerked around and was vomiting. Defendant similarly testified that Dylan's birth was difficult. However, Dr. McInerney testified Dylan had a normal, non-traumatic birth by C-section and that Dylan was born healthy.

¶ 5 On October 14, 2009, Dylan's pediatrician, Dr. Christopher Calvert, examined Dylan. Dr. Calvert gave Jeanette medication for a yeast infection in Dylan's mouth and found Dylan to be healthy and thriving. Jeanette testified that on October 15 Dylan started crying and could not be soothed. The following day Jeanette called the pediatrician, who changed Dylan's formula and prescribed another medication. On that day Dylan cried most of the time and could not be consoled. Jeanette called the doctor again, and he saw Dylan on October 17, 2009. Dr. Calvert testified that on October 17 he talked to Dylan's parents about reflux and prescribed a medication to help. Dr. Calvert testified he saw no signs of abuse on Dylan. Jeanette testified the medication for reflux did not help and Dylan would not stop crying. Jeanette called Dr. Calvert's office on October 22 and November 3. Dylan saw an associate of Dr. Calvert on November 9, 2009 and again on November 18, 2009. The records from those two visits do not indicate any suspicions of abuse. Jeanette testified Dylan continued to cry and was throwing up more than a typical baby would in her experience (including as a daycare worker).

¶ 6 On December 13, 2009, Dylan suffered projectile vomiting. Jeanette called the pediatrician and as a result she and defendant took Dylan to the emergency room. Dylan's

parents told doctors that Dylan's older brother had a pyloric stenosis. Pyloric stenosis can cause projectile vomiting. Increased intracranial pressure is another cause of projectile vomiting. Dylan was admitted for pyloric stenosis surgery. Dylan's surgery occurred on December 19, 2009. It was later determined Dylan did not have pyloric stenosis. After surgery, Dylan had another episode of projectile vomiting and he also vomited if he was fed more than one ounce. Dylan had a low fever and one radiologist believed that an October 16 chest X-Ray suggested bronchiolitis. The hospital discharged Dylan on December 17, 2009. On the day of his discharge, Dylan took one ounce of fluid without vomiting but vomited with a 1.5-ounce feeding.

¶ 7 Jeanette testified that after Dylan was discharged from the hospital, Dylan slept more than usual and continued to have a fever. On December 19, 2009 Jeanette and Dylan returned to Dr. Calvert and she reported that Dylan was in pain. Dr. Calvert testified there was no bruising or indications of abuse on Dylan's body. He believed Dylan was completely normal. Later that afternoon, Jeanette left Dylan with defendant, their other son Tyler, and defendant's brother Michael. Defendant and Michael testified Dylan spent the afternoon sleeping, eating, playing, and in a bouncy chair. Defendant testified they tried to get Dylan to smile but could not. Jeanette attempted to call home but no one answered. Then, at approximately 6:50 p.m. defendant answered and told Jeanette that Dylan was getting sick. Jeanette planned to call the pediatrician for an appointment. Defendant testified that between 10 and 15 minutes later he put Dylan in his bouncy chair and put Tyler to bed. When defendant came back from putting Tyler to bed he found Dylan hunched over. Dylan had thrown up. When defendant picked Dylan up, Dylan's head went back. Dylan took a breath and defendant knew something was not right. Defendant called 9-1-1 and reported that Dylan was not breathing. Defendant was instructed to perform CPR. When a paramedic arrived and defendant let her in, she saw that Dylan was blue

indicating a lack of oxygen. She immediately took Dylan from the floor and started performing CPR on her way back to the ambulance. The paramedic testified that when performing CPR on Dylan she did not taste, see, or smell vomit but she did taste “boogers, snots, and slime.”

Dylan’s heartbeat and pulse were restored and he was eventually transferred to Hope Children’s Hospital (also referred to as Christ Hospital).

¶ 8 Tests revealed that Dylan had both new and old bleeding all around his brain. Additional tests at Hope revealed severe “bilateral retinal hemorrhages,” a healing twisting fracture at the end of his left tibia, and a bruise on his forehead. Someone advised Jeanette that Dylan was the victim of “Shaken Baby Syndrome” (SBS). Jeanette utilized a computer at the hospital to do some research and as a result she requested an MRI for Dylan, but it was not performed. At the time of this incident, defendant was on a methadone maintenance program for a prior heroin addiction. As a result of his injuries Dylan is permanently disabled. He is blind and likely deaf, cannot breathe or eat on his own, and will never walk.

¶ 9 The State’s Expert Witnesses

¶ 10 The following experts provided testimony for the State:

1. Dr. Richard Kampanatkosol
2. Dr. Nagendra Polavarapu
3. Dr. Jose Ramilo
4. Dr. Alexander Khammar
5. Dr. Mohamed Homsy
6. Dr. Jill Glick

¶ 11 1. Dr. Richard Kampanatkosol

¶ 12 Dr. Kampanatkosol testified as an expert in pediatrics and neonatology (the care of critically ill infants). Dr. Kampanatkosol first saw Dylan at Palos Hospital (Palos), where the

ambulance took him, which was 4 or 5 days before Dylan was transferred to Christ Hospital (Christ). He learned that Palos Hospital had performed a CT scan of Dylan's head that showed an intracranial bleed. He also learned that Dylan was born full-term via C-section and was feeding normally. There were no developmental concerns at all. When Dr. Kampanatkosol saw Dylan at Christ, Dylan was intubated and unresponsive. He observed bruising on Dylan's forehead which was "bluish and faint" which can be indicative of a recent bruise. He also saw "mild petechiae" on Dylan's shoulder, which is usually indicative of low platelets. Dr. Kampanatkosol did not see anything indicative of a skull fracture. Dylan had a tremor in his left arm which is usually indicative of a seizure. Dr. Kampanatkosol's neurological exam revealed neurological injury and injury to the cranial nerves.

¶ 13 Dylan was admitted to the pediatric intensive care unit and tests were ordered. Tests for white blood cell count, hemoglobin, and platelets were "all within normal limits." Dr. Kampanatkosol testified that a CT of Dylan's head showed bleeding in the brain, specifically "a right frontal parietal bleed and left temporal subarachnoid hemorrhage." Dr. Kampanatkosol also testified that X-rays indicated multiple healing rib fractures.

¶ 14 The State asked Dr. Kampanatkosol if, based on his treatment of Dylan, he diagnosed what happened to Dylan. Dr. Kampanatkosol responded nonaccidental trauma. He stated he arrived at that diagnosis "[g]iven the findings of the intracranial bleeds, the retinal hemorrhages seen by the ophthalmologist and the multiple rib fractures, those combined."

¶ 15 On cross-examination, Dr. Kampanatkosol clarified his testimony that the bruising on Dylan's forehead was recent, stating "recent" meant "within a few days." Dr. Kampanatkosol testified that in his opinion, the bruise did not cause or contribute to Dylan's condition. He had no opinion as to how old Dylan's intracranial bleed was. According to the report of the scan, there were both old and new bleeds. Dr. Kampanatkosol initially testified you do not need to do

a vitamin D level to check for rickets because rickets is diagnosed by x-ray. But he later said that to rule out rickets you need to do a vitamin D level. He agreed that bone can lose a lot of calcium before there is any suggestion of that on an X-ray; bone can lose up to 30% of its calcium and still appear normal on an X-ray.

¶ 16 2. Dr. Nagendra Polavarapu

¶ 17 Dr. Nagendra Polavarapu testified as an expert pediatric critical care physician. He worked with his pediatric ICU physician “Dr. Kamp” when he evaluated Dylan. When Dr. Polavarapu saw Dylan, the infant was “somewhat comatose” and his brain stem functions were “inadequate or not there at all.” Dr. Polavarapu observed “a few old bruise marks, a hemangioma also on the body as well as minimal swelling on the forehead or the scalp area.” Dr. Polavarapu testified that they “followed up the Cat scan,” “touched base with some of our subspecialists,” and performed an EEG to assess brain wave function. An ophthalmology exam and a skeletal survey and blood work were also performed “to rule out other diseases or types of physiology that could present this way.”

¶ 18 Dr. Polavarapu saw Dylan from the time he was admitted through the morning. A CAT scan of Dylan’s head showed “intraparenchymal bleeding, and chronic subdurals.” A skeletal survey showed “bilateral healing, anterolateral rib fractures that were healing.” An eye exam showed extensive bilateral retinal hemorrhages. Dr. Polavarapu explained that Dylan had both intracranial (within the brain itself) and subdural bleeds. He was able to obtain a time line of how old those injuries were. Dylan’s intracranial bleeds were acute, meaning within two days of the CAT scan, and there were chronic subdural bleeds, meaning anywhere from 7 to 14 days before the scan. Dr. Polavarapu testified the EEG showed minimal brain activity but no seizure activity. Dr. Polavarapu testified that because they knew Dylan “would not improve or get worse” they gave his mother an option to enter a DNR DNI (do not intubate) order. Dylan’s

breathing tube was removed and he survived. At the time of Dr. Polavarapu's testimony, Dylan was in a rehabilitation center. He still needed feeding through a tube. Dr. Polavarapu later testified Dylan will never walk, is blind, and he is not sure if Dylan can hear.

¶ 19 Dr. Polavarapu testified he had a diagnosis of what happened to Dylan. He stated: "It's a diagnosis of exclusion, meaning that we rule out other pathophysiological diagnoses and it was non-accidental or inflicted trauma." When asked if he formed an opinion as to the mechanism for this non-accidental trauma to Dylan, Dr. Polavarapu testified that he did not. He clarified:

"As physicians, what we try to do is we come up with a diagnosis, when it comes to suspected child abuse and non-accidental trauma, we don't make any assumptions. It's more of an objective finding. We go with the labs and go with the radiological studies, and if we rule out the other diagnoses that can be suggestive of how the child is presented, we rule that out, and then that is where the diagnosis comes from."

Dr. Polavarapu agreed it is "consistent" with Shaken Baby Syndrome, but testified that term "is going out of phase now."

¶ 20 Dr. Polavarapu was aware of a controversy in the medical community as to whether or not shaking a child could cause the injuries thought to be indicative of Shaken Baby Syndrome. On recross-examination, Dr. Polavarapu agreed with the statement that "[o]ne of the reasons [he] didn't do any more testing is because the history and presentation [he] had was consistent with Shaken Baby Syndrome." The State later elicited testimony that numerous doctors from all of the different fields in the hospital aided in the diagnosis and they all agreed with it.

¶ 21 On cross-examination, Dr. Polavarapu testified that he practices evidence based medicine. He stated: "Evidence based medicine is what we call clinical evidence based medicine, that we follow certain peer reviewed studies, research and guidelines that would direct

us in the type of medicine and care that we provide.” He testified that he has been able to see retinal hemorrhages in infants using a direct ophthalmoscope, if they are severe enough. Dr. Polavarapu’s report says that when he examined Dylan, he did not see any bruises on Dylan’s head, back, or chest. He did not see any grab marks anywhere on Dylan. When asked whether he had an opinion as to whether Dylan had pyloric stenosis, Dr. Polavarapu testified that one of the diagnoses that had to be excluded was whether Dylan vomited and aspirated. He testified the size of Dylan’s pyloric muscle was “at the border of whether he needed to go for surgery or not.” Dr. Polavarapu agreed with defense counsel that if Dylan exhibited bruising on the head when he was delivered, that would indicate “some birth trauma to the head.”

¶ 22 Dr. Polavarapu testified increased intracranial pressure can cause vomiting but he did not know if it would be projectile vomiting or not. Dr. Polavarapu thought that when testing for gestational rickets the mother’s vitamin D level is important. He agreed that there could be significant bone loss before that bone loss shows upon on an X-ray. He did not check to see if Dylan had a viral infection. He also agreed that having a normal calcium level, alone, does not necessarily mean there is not metabolic bone disease. Dr. Polavarapu did not recall Dylan having bronchiolitis. Bronchiolitis can result in apnea, or a cessation of breathing for 20 seconds.

¶ 23 3. Dr. Jose Ramilo

¶ 24 Dr. Jose Ramilo testified as an expert in radiology and pediatric radiology. As part of his consultation on Dylan, Dr. Ramilo was in communication with a team of treating physicians from Christ Hope Children’s Hospital. He reviewed the X-rays and CT scans that were done of Dylan. Dr. Ramilo reviewed a bone survey, and it was his opinion that there was a fracture at the end of Dylan’s tibia, which appears like a spur, and the mechanism of the injury that led to that fracture was “a twisting and a pulling injury of the leg.” The fracture was in Dylan’s left

metaphyseal, located at the end of the tibia in the area of the ankle. Dr. Ramilo testified Dylan's fracture was already healed, and stated that the bone starts to heal from 7 to 10 days, and when it is completely healed, it may be two weeks or more in age. This type of injury could be caused by a traumatic birth, but Dr. Ramilo had never seen one. It would not be usual to see this type of injury in only one bone if there had been a traumatic birth, and Dr. Ramilo had never seen one.

¶ 25 Dr. Ramilo also observed mild swelling in Dylan's left leg that could have been a few days old. Dr. Ramilo viewed an X-ray and testified that Dylan's fracture is at the very end of the tibia in the area of the ankle. He described the fracture as a healed corner fracture of the long bone. Dr. Ramilo noted injuries to Dylan's ribs. It was his opinion that there were "multiple hidden fractures of the ribs" on the left side, whereas on the right side, there were fractures located at the ends of the ribs "anteriorly" where there is cartilage joining the bone. On the left, the fractures were on the fourth rib to the ninth rib, on the side of the rib. The fractures on the right side were at the ends of the ribs on the same level as on the left. Dr. Ramilo estimated the age of the fractures at two weeks. He has seen rib fractures result from traumatic births one or two times in 35 years' experience. You would not be likely to see injury of this type in a nontraumatic C-section birth.

¶ 26 Dr. Ramilo testified it does not appear Dylan has rickets. In a child with rickets the ribs could break without any injury. Dr. Ramilo also reviewed Dylan's CT scan to look for the presence or absence of intracranial bleeds. Dr. Ramilo testified he saw acute, or new, blood along the surface of the brain and a small amount in the tissue of the brain close to the surface, and he saw chronic, or older, subdural fluid underneath the membrane of the inner membrane of the skull above the surface of the brain. The acute blood could be between a few minutes to a week old. He testified chronic bleeding is usually about two weeks old. He did not feel it was necessary to look at an MRI in this case because "it's practically seen in the CT scanner that

there are two types of fluid along the surface of the brain; hence I don't think it's necessary to do that." Dr. Ramilo testified that most brain bleeds are secondary to dropping or hitting the head, but in those cases there would be a fracture. Where there is no fracture, there would be other mechanisms that might produce the bleeding. He stated that in conjunction with the findings in the ribs and in the long bone, "it's the usual way of mechanism that when a child is shaken with the person holding *** the chest and shaking it, then the brain goes into back and forth motion and hence you will break the veins along the surface of the brain and the blood will come out along the surface of the brain." Dr. Ramilo viewed images of Dylan's CT scan. He identified areas where sutures (which he later testified were the plates that make up the skull) in the brain were beginning to separate, which indicates increased pressure in the skull from the older bleeds filling the space in the brain. He testified he saw fresh blood throughout Dylan's brain, as well as some old brain bleeds.

¶ 27 The State asked Dr. Ramilo for his opinion as to the mechanism of injury regarding Dylan's healed rib fractures. He stated: "Generally rib fractures are secondary to a squeezing injury of the chest. When you hold the chest sideways or backwards or in front and you force, you produce a force within the hands, then the ribs will crack." This "usually" includes the shaking of a baby backwards and forwards, "or shaken baby."

¶ 28 On cross-examination, Dr. Ramilo testified he did not actually see a fracture in the leg, but a bone spur. You could have a bone spur without trauma. He agreed the "fracture" was, at minimum, three to four weeks old, and it could be as much as 10 weeks old. Someone could have inadvertently done the twisting that would have caused the fracture, including in childbirth. Dr. Ramilo could point to no research that says that rickets is bilateral and symmetrical, but he stated that all of the textbooks say it is bilateral. He testified that you could see a spur on the distal end of the left tibia in a child with rickets but you would also get a spur on the opposite

side. He testified the rib fractures could be as much as 10 weeks old, but that is unlikely. Dr. Ramilo agreed gestational rickets occurs because the mother's vitamin D level is low and the child receives its vitamin D from the mother; and with regard to rickets you also want to know the vitamin D level of the child and the child's parathyroid hormone because they work together to maintain blood calcium, which influences the rate at which calcium is deposited on a fracture and consequently the rate of healing. Dylan's rib fractures were "more or less" in alignment on the same ribs on each side. Dr. Ramilo did not agree "that is exactly what you see in rickets" because, he testified, "usually in rickets, it involves the ends of the long bones" and on the left side of the chest Dylan's fractures are in the middle of the bone and not the end. Dylan's fractures would be painful during the acute phase, which would last 7 to 10 days or longer if healing were delayed.

¶ 29 Dr. Ramilo opined Dylan did not have pyloric stenosis because the measurement of the pylorus was within normal limits. Dr. Ramilo testified that if Dylan did not have pyloric stenosis then projectile vomiting would not be related to pyloric stenosis. He stated intracranial bleeding is one of the causes of projectile vomiting. He also stated that separation of the sutures in the skull is seen with increased intracranial pressure, and that intracranial bleeding is a cause of increased intracranial pressure. Dr. Ramilo could not say how many episodes that caused intracranial bleeding Dylan had, but he could say there was at least one remote and then at least one more recent episode causing intracranial bleeding. He agreed that it was possible that if Dylan's projectile vomiting on December 13 was caused by intracranial bleeding, the projectile vomiting could have been caused by the acute bleeding Dr. Ramilo observed on the imaging from December 19. The older bleeding could be as old as from when Dylan was born.

¶ 30 Dr. Ramilo agreed that when there is blood beneath the dura and there is fluid between the dura (the first layer after the skull) and the arachnoid (the next layer after the dura), the blood

vessels between the arachnoid and the dura come under tension and it is possible those blood vessels could rupture and cause new bleeds. Dr. Ramilo testified there were also hemorrhages in the surface of the brain (intraparenchymal hemorrhage) and hemorrhages at the cortex, or surface, of the brain. There was also fluid outside the brain tissue. He agreed a parenchymal hemorrhage can be caused by a stroke. It could also be caused by venous thrombosis, or dural or cerebral venous involvement, which requires an MRI to diagnose. Dr. Ramilo testified intracranial bleed would not necessarily be immediately symptomatic. The time frame depends on the size of the bleed.

¶ 31 4. Dr. Alexander Khammar

¶ 32 Dr. Alexander Khammar testified as an expert in ophthalmology and pediatric ophthalmology. Dr. Khammar performed an internal examination of Dylan's eyes and discovered preretinal (in front of the retina and behind the vitreous), subretinal (below the retinal layers), and intraretinal (within the substance of the retina) hemorrhages in both the right and left eyes. Dr. Khammar has performed "thousands upon thousands" of internal examinations of the eye. Dr. Khammar reviewed photographs he took of Dylan's eyes during his testimony. He testified that the photos show multiple areas of hemorrhage covering the entire back portion of both Dylan's left and right eyes. He stated "this is one of the most severe cases of bilateral retinal hemorrhages that I have seen in my professional career." Dr. Khammar testified that he performed a CT scan of Dylan, and the fact the retinal hemorrhages showed up on the CT scan, which is uncommon, "speaks to the extent of the bilateral retinal hemorrhages in this particular case."

¶ 33 The State asked Dr. Khammar if he reached an opinion as to the mechanism of injury in this case. Dr. Khammar responded as follows:

“The patient has a history of intracranial hemorrhage combined with healed rib fractures and the presence of bilateral retinal hemorrhages involving multiple layers of the retina.

In the absence of any identifiable cause, my diagnosis is non-accidental trauma or child abuse. Shaken Baby Syndrome.”

¶ 34 The State asked Dr. Khammar if he could say to a reasonable degree of medical certainty whether this injury involves some type of acceleration/deceleration force. Dr. Khammar testified he believed the mechanism of Dylan’s injury was an accelerations/deceleration force “which caused the bridging blood vessels of his brain to cause a subarachnoid hemorrhage and have shearing injuries to the blood vessels in the retina to cause the findings that we reviewed.” Dr. Khammar testified it was his assertion that Dylan’s retinal hemorrhages were “caused by an acceleration/deceleration injury of the head.” He stated that based on the information presented he believed that “the diagnosis of Shaken Baby Syndrome with the acceleration/deceleration injury that I had described was the mechanism for these injuries.” When asked “mechanically what is it about the acceleration/deceleration that causes the retinal hemorrhaging?” Dr. Khammar responded “That is really up for debate.” He stated that aside from knowing that the retinal hemorrhages are an acceleration/deceleration injury, the actual mechanism is up for debate because “you cannot do prospective studies on these patients cannot [*sic*] be definitely proven.” Dr. Khammar stated that his opinion, that the mechanism of Dylan’s retinal hemorrhaging was acceleration deceleration injury, was based on “the additional findings on examination of intracranial hemorrhage and rib fractures.” He agreed this was what laymen would call Shaken Baby Syndrome. When asked on cross-examination if he was familiar with “the basis upon which the Shaken Baby Syndrome is based” Dr. Khammar testified he is “familiar with the mechanism in [*sic*] which I described to you.” He was “generally familiar”

with efforts to “validate the notion” that shaking an infant can cause the physical characteristics he described.

¶ 35 Defense counsel asked Dr. Khammar if he could cite or refer to any scientific experiments supporting the Shaken Baby Syndrome. Dr. Khammar, referring to what he described as “a comprehensive review of multiple articles written about the subject,” testified as follows:

“[T]here is a policy statement from the American Academy of Pediatrics written by Alex Levin, which was considered state of the art research for Shaken Baby Syndrome.

And in that article, which is considered the standard for the American Academy of Pediatrics, he indicates that acceleration/deceleration injury ***is the mechanism of Shaken Baby Syndrome.”

Dr. Khammar noted that the Levin article cites other articles supporting Levin’s hypothesis and testified that the article supports his testimony. He agreed there is a dispute in the medical community regarding the existence of shaken baby syndrome.

¶ 36 On cross-examination Dr. Khammar testified that he did not believe that an emergency room physician using a direct ophthalmoscope would be able to make an accurate diagnosis of the presence or absence of retinal hemorrhages without dilating the eye. (Dr. Khammar testified he dilated Dylan’s eyes and used an indirect ophthalmoscope to view Dylan’s retinal hemorrhages.) He would not find valid a conclusion that an emergency room physician observed no retinal hemorrhaging if there was no dilation performed at the time the emergency room physician made that conclusion. Dr. Khammar testified that retinal hemorrhages can have myriad causes. In certain instances they can be caused by increased intracranial pressure, resuscitation efforts, and are known to exist at birth, although Dr. Khammar questioned the

assertion they are common at birth. He testified that “[i]t is known that *** there is absence of external findings in patients who have a diagnosis of Shaken Baby Syndrome” so whether there was head bruising at birth or whether there were external symptoms, or not, would not change his opinion in this case.

¶ 37

5. Dr. Mohamed Homsy

¶ 38 Dr. Homsy saw Dylan at Christ on December 28, 2009, “just as a follow-up” after Dylan was admitted to the pediatric ICU. He reviewed Dylan’s medical records and CT scan and examined Dylan. Dr. Homsy’s assessment of Dylan was “two-month old male with Shaken Baby Syndrome and severe hypoxic ischemic encephalopathy.” Hypoxic ischemic encephalopathy “is an injury to the brain especially caused by sudden drop of oxygen supply to the brain.” The State asked Dr. Homsy what led him to the diagnosis of Shaken Baby Syndrome. He testified as follows:

“It’s—when I reviewed the medical record and I reviewed the initial presentation of the patient to the emergency room and the outside hospital and then what we have regarding the EEG result, the brain imaging, CT scan and the MRI and also from the other findings including the eye exam; the funduscopic exam, which showed bilateral hemorrhage and also the rib fractures, so all these constellations give us a group of symptoms; gives us the diagnosis of Shaken Baby Syndrome.”

¶ 39 Dr. Homsy described what he saw on the imaging of Dylan’s head. Dr. Homsy stated the acute bleeding could be only “up to 24 hours” and he stated that “subacute” bleeding could be from one day up to two weeks, while chronic bleeding is more than two weeks old. He testified there was intracranial hemorrhage and subdural hemorrhage that was acute, and chronic subdural hemorrhage. Dr. Homsy testified Dylan could have had the chronic hemorrhage in the morning,

when he saw his pediatrician, and appear normal. He testified Dylan could not have had the acute bleeding and appear normal; therefore, between seeing his pediatrician in the morning and appearing at the hospital at seven o'clock, there was another process of shaking.

¶ 40 On cross-examination, Dr. Homsy agreed that the condition that is causing Dylan to be in his current state is hypoxic ischemic encephalopathy, which is caused by a lack of oxygen to the brain. He also agreed that if a baby were to vomit and choke on vomit, if he aspirated and there was a complete cessation of breathing that could result in hypoxic ischemic encephalopathy. Dr. Homsy testified that when he saw Dylan he already had a diagnosis of Shaken Baby Syndrome and it was not Dr. Homsy's job to diagnose Shaken Baby Syndrome. Dr. Homsy stated that rib fractures are usually one piece of evidence of an episode of shaking. Dr. Homsy testified a child does not always become unresponsive after an episode of shaking. He did not know what the time lag could be until the child became unresponsive. Dr. Homsy testified he is not aware of research that has substantiated the Shaken Baby Syndrome theory. He is not aware of any controversy in the medical community as to whether or not shaking alone can cause the injuries that are thought to be characteristic of Shaken Baby Syndrome. On re-direct examination Dr. Homsy testified he agreed with the diagnosis of Shaken Baby Syndrome based on "the evidence, according to the fundoscopic exam, the hemorrhages, the rib fractures being that there was chronic subdural hemorrhage and acute and intraparenchymal hemorrhage." Dr. Homsy testified that Shaken Baby Syndrome is accepted in the medical community and the American Academy of Pediatrics.

¶ 41 On re-cross examination Dr. Homsy testified that retinal hemorrhages are caused by severe trauma. He agreed that a number of children are born with them, later testifying on re-direct that it could be from a traumatic birth. When asked on cross-examination what causes retinal hemorrhages in cases of Shaken Baby Syndrome, Dr. Homsy testified as follows:

“Especially Shaken Baby Syndrome at age less than three months when the baby cannot hold the head, so with the shaken baby holding his body and shaking him, the head will go forward and backward and this—also the eyeballs it’s connected to the optic nerves and it’s connected to the brain, so they will make the eyeballs very loose and if we say this is the eyeball and this is the optic nerve, so this angle it would be very loose and here this is the side that the retinal hemorrhages occur. It’s the connection between the eyeball and the optic nerve and this would be very loose causing it.”

Dr. Homsy agreed with defense counsel that meant “it’s actually mechanical force that acts on the eye.”

¶ 42 Dr. Homsy agreed that an MRI is a more accurate scan than a CT scan, and he did not remember if one was done on Dylan. He testified that intraparenchymal hemorrhage can result from stroke, hypertension, and excessive cerebral blood flow, cerebral venous thrombosis, and reperfusion injury (an injury resulting from resuscitation after the brain is without oxygen for a period of time). A lack of oxygen can also cause cortical hemorrhage, but Dr. Homsy doubted a lack of oxygen could cause subdural hemorrhage. Dr. Homsy testified he would disagree with the pediatric radiologist if he said the acute bleed was hours to seven days old. But he also said that, generally, if Dr. Ramilo had a different opinion from his own, he would defer to him. Dr. Homsy agreed that a subdural collection would cause the space between the dura and the arachnoid to expand, which theoretically would make the bridging veins more subject to rebleeding.

¶ 43 Dr. Homsy agreed that increased intracranial pressure can cause projectile vomiting. If left untreated, and if severe, increased cranial bleeding can cause “brain herniation and death.” It could also cause seizures and affect the ability to breathe. He agreed that if you stop breathing

you get hypoxic ischemic encephalopathy. He doubted that chest compressions can cause an elevation in intracranial pressure and agreed that resuscitation efforts can increase intracranial pressure, but testified it was unusual. If Dylan were already suffering from increased intracranial pressure and then given vigorous chest compressions, that could cause intracranial bleeding.

¶ 44

6. Dr. Jill Glick

¶ 45 Dr. Glick reviewed Dylan's records at the request of the State. Dr. Glick testified that in coming to a diagnosis of Dylan she reviewed birth records, primary care notes, hospital admissions for his surgery and for his "central injury or head trauma," all of the images, DCFS notes, police notes, the "run sheets," and the 9-1-1 call. She also reviewed the "Retcam photographs of his eye findings in the hospital." Prior to her testimony she also reviewed records of Dylan's admission to the University of Chicago in 2011 or 2012 and opinions of her colleagues and defense experts. Dr. Glick's conclusions upon reviewing the materials were largely consistent with the treating physicians' testimony. Additionally, in part, she reviewed Dylan's spinal tap taken when he was transported to Palos by ambulance on December 19.

¶ 46 Dr. Glick testified Dylan's EEG was compatible with encephalopathy, meaning there is a brain dysfunction. She said that encephalopathy was nonspecific. "It doesn't tell you etiology; that is, the cause. And then there's multiple causes between brain damage." Dr. Glick testified she reviewed the notes of the subspecialties that were consulted on Dylan's case: neurology, ophthalmology, and neurosurgery. Notably, she stated that ophthalmology "was called in because the prevailing diagnosis at the time was non-accidental trauma or if you want to call it inflicted trauma or shaken baby." Dr. Glick testified that after reviewing all of the reports and imaging, her impression was that Dylan's diagnosis was abusive head trauma. Dr. Glick testified that abusive head trauma was manifested by Dylan's clinical picture, his history of acute onset, and his prior history of irritability that substantiates concern for old as well as new injury. She

continued: “The radiographic findings of old and new subdural hematoma, subarachnoid bleeds, cerebral edema, and *** the neurosurgeon even called it maybe contusion, centrally. The bloody tap is consistent with that.” Dr. Glick testified that Dylan’s retinal hemorrhages were “a very unique finding” and added that retinal hemorrhage alone is not diagnostic of anything. She stated, however, in “this pattern and in the context of this child’s clinical condition it substantiates the diagnosis.” She also noted the skeletal trauma, stating “the reason that’s important is that these were noted prior to his acute event on the 19th. So he had old remote as well as new injury which was manifested by the brain trauma that day.”

¶ 47 Dr. Glick testified her opinion as to how the injury was inflicted was, “because of all the medical findings are consistent with cranio-rotations or as we use in laymen’s terms, shaking, violent shaking.” She added: “We see this kind of pattern when forces are applied that cause acceleration/deceleration to the brain.” Dr. Glick also testified that she had seen this pattern in a child or two children in very bad car accidents. “[I]t’s that kind of forces that cause these clinical findings that Dylan had.” Dr. Glick opined that Dylan suffered an episode of shaking after he saw his doctor on the morning of December 19. When asked what her opinion was based on, Dr. Glick testified as follows:

“The opinion is based upon how severe traumatic brain injury presents. Dylan had severe traumatic brain injury when he presented on the 19th. When you have severe brain injury like that you have immediate symptoms.

This was extreme brain injury. I mean, Dylan, when he presented, he had a Glasgow Coma Scale of 3, which is compatible with death. And this was acute onset. He was seen by a doctor as well that morning. *** He was medically well that morning.”

¶ 48 On cross-examination, Dr. Glick testified that she disagrees with Dr. Norman Guthkelch, the author of one of the first articles to bring Shaken Baby Syndrome to the medical community, when Dr. Guthkelch says that Shaken Baby Syndrome and abusive head trauma are hypotheses that have been advanced to explain findings and are not yet fully understood. She also disagrees that it is wrong to fail to advise parents and courts that they are hypotheses and not proven medical or scientific facts. She testified it is not extraordinary to find massive internal injuries, particularly massive traumatic intracranial and intraocular bleedings, without external signs of trauma, “[n]ow that we’ve seen so many children with this, it’s not extraordinary.”

¶ 49 Defense counsel asked Dr. Glick about several studies, including a 1987 study that used models of one-month old infants that found that shaking alone could not produce the angular acceleration that was thought to be required to cause a subdural hematoma. Dr. Glick testified that study “makes it very clear that they could not make a biofidelic model that replicates the infant brain.” Dr. Glick also pointed out a 2005 study that replicated the 1987 study. According to Dr. Glick, the 2005 study “developed a better biofidelic model, and in fact found that shaking alone could reach those angular forces to cause the injury.” She added that the forces were what were considered by a biomechanical engineer to be sufficient to cause cerebral hematoma.

When asked about another study from 2002, which used models and forces greater than those generated by shaking, Dr. Glick stated, in part, “the prevailing understanding is we still have not created a biofidelic model to study this. And people are still searching for that.” At one point in her cross-examination, Dr. Glick stated “we still don’t understand the pathophysiology of the retinal hemorrhages, extensive multiretinal hemorrhages we see associated in the human baby, and they [(referring to a study involving shaking piglets)] couldn’t replicate it in the piglet.”

¶ 50 Testifying about a 2011 article in the Journal of Forensic Biomechanics that found manual shaking of biofidelic mannequins has failed to generate the rotational accelerations

believed necessary to cause intracranial symptoms in human infants, Dr. Glick questioned the validity of that study. She explained she was suspect because the 2011 study quoted an earlier study by an individual who, it was discovered, “made some flaws.” Dr. Glick testified the “idea that’s still quoted makes me suspect of the quality.” Dr. Glick did not agree that all attempts at producing the physical manifestations of Shaken Baby Syndrome by shaking animals had failed because some of those studies demonstrated that shaking can cause brain injury. Dr. Glick did not disagree we cannot “replicate it in the lab to show that the accelerations can cause the brain injury, in the lab” but added “[w]e don’t have a good biofidelic model.” Dr. Glick did reference one individual who she believed had “been able to duplicate the *** forces” but Dr. Glick did not know if that research was published. Dr. Glick thought it was plausible that mechanical traction on the optic nerve can cause retinal hemorrhages, and she agreed that increased intracranial pressure can cause retinal hemorrhages. She also agreed that a re-bleed can increase intracranial pressure, and that pressure could cause the baby to stop breathing.

¶ 51 Dr. Glick testified that you can get a “six nerve palsy” from a cranial nerve impingement that results from increased intracranial pressure. She noted Dylan did not have a history of eye palsy and he was examined by doctors on December 13 and 19. Dr. Glick testified she could not precisely date Dylan’s rib fractures, therefore she did not know if he had them when he saw his pediatrician on October 17. When asked if it was her belief that the fractures were caused by some kind of squeezing motion, Dr. Glick stated: “All I can say is a force applied. It can be direct impact; it can be squeezing.” Dr. Glick could not say with certainty that Dylan’s chronic subdural bleeds were present when he had his pyloric stenosis surgery but she gathered they were.

¶ 52 Dr. Glick testified Dylan’s chronic subdural collections were the result of inflicted trauma that would be consistent with an episode of shaking. Defense counsel asked Dr. Glick if

Shaken Baby Syndrome was a diagnosis of exclusion. She stated “[a]ll diagnoses are a diagnosis of exclusion. We exclude everything else, and we come to a prevailing diagnosis. So it is a diagnosis of exclusion like any other—many, many other disease entities.” Dr. Glick agreed it was a fair statement that the evidence for Shaken Baby Syndrome is “essentially clinical experience, case studies, and confessions. Dr. Glick testified there is not a medical controversy regarding the existence of Shaken Baby Syndrome. “It is a well-established accepted diagnosis.”

¶ 53

Defense Expert Witnesses

¶ 54 The following experts provided testimony for the defense:

1. Dr. Patrick Barnes
2. Dr. Jan Leestma

¶ 55

1. Dr. Patrick Barnes

¶ 56 Dr. Patrick Barnes testified as an expert in pediatric radiology and pediatric neuroradiology. The trial court also allowed Dr. Barnes to offer his expert opinion in the fields of the imaging of children and in recognizing child abuse and mimics of child abuse through imaging. Dr. Barnes explained that the ability has been developed to “uncover a number of conditions that clinically and by imaging can look like abuse but, in fact, can represent accidental traumatic injury as well as a number of medical conditions.” Dr. Barnes reviewed the imaging of Dylan and the “imaging examinations” but not the other radiologists’ reports. Dr. Barnes reached an opinion based on the materials he reviewed. Dr. Barnes opined that Dylan’s chronic subdural or subarachnoid collections were anywhere from two to three weeks old or could be several weeks old or go back to his birth. He testified the imaging showed more recent hemorrhage or clot or thrombosis (which he testified are all different things) that was anywhere from a few hours up to seven to ten days old. But he testified the images do not show any swelling in the brain or any skull fractures. Dr. Barnes testified the images showed “this was

maybe a case of venous thrombosis” and identified the potential causes. The first was trauma, then infection and a bleeding or clotting disorder. (Later in his testimony, Dr. Barnes testified that thrombophilia—an over-clotting of blood that can cause blockages in veins—was more likely.) Dr. Barnes testified what would need to be looked at to determine if one of those potential causes was the cause of what was seen on the imaging. He also stated “the imaging cannot tell you the difference between accidental and nonaccidental injury.”

¶ 57 Dr. Barnes testified the sutures in Dylan’s skull were too wide. He stated that means “there is either increased intracranial pressure from the collection, from the hemorrhage or brain swelling or these wide sutures can also be a sign of rickets ***. So that’s the differential diagnosis¹ for that ***.” Dr. Barnes also testified the images showed Dylan’s skull was incompletely developed, which is a sign of neonatal rickets, and he also said irregularity of the sutures could be caused by increased pressure spreading them or rickets.

¶ 58 Dr. Barnes testified regarding a CT scan taken on December 21. It showed some fluid collections that were getting larger. Dr. Barnes testified that is what happens with rebleeds. He added: “It doesn’t tell us the cause, accidental versus nonaccidental or was it trauma that was long ago with more recent rebleeds and the collecting of these.” He stated this CT was the first to show swelling of the brain, which he stated “is consistent with the evolution of brain swelling that we would see particularly due to a lack of oxygen or lack of blood flow that occurred one to two days earlier.” He testified: “Where as if this were due to direct traumatic injury of the baby’s brain we would expect to see that on the very first CT scan.” Dr. Barnes testified that with the December 21 CT scan, “what we are seeing now is most consistent with what we call a global lack of oxygen or blood flow to this baby’s brain now that we are seeing edema and

¹ A “differential diagnosis” is a list of all possible causes.

swelling.” He added that hemorrhages that are small, as with Dylan, “can occur associate [sic] with hypoxia ischemia only without any trauma accidental or nonaccidental, and the same for venous thrombosis.” Dr. Barnes stated the evolution shown in Dylan’s scans was “most consistent with a lack of oxygen or blood flow.”

¶ 59 Defense counsel asked Dr. Barnes if the images he had reviewed to that point “indicate that the source of the injury was trauma, especially shaking?” Dr. Barnes replied: “Not as the only consideration. We still can’t rule out trauma, *** or accidental versus nonaccidental but we have strong finding now for the doctors to look for other causes and we would be really focusing on why a baby stopped breathing or the baby’s heart stopped beating.” Dr. Barnes testified this pattern (what was shown from the first to the second image) could be seen in a baby who had some block in the airway or was not getting oxygen into the lungs, or “we would be looking at did the baby’s heart stop beating.” He stated you would look for whether the heart stopped “because these particular findings are symmetric in the brain with regard to the edema and swelling,” and they “were not present on the first CT as we would expect if this were direct traumatic injury to the brain.” You would look to other images of the baby to look for those causes.

¶ 60 Dr. Barnes testified using Dylan’s chest X-ray. He stated he noted that on the left side the ribs showed either fractures or pseudo fractures. Fractures are “by definition due to trauma,” while pseudo fractures “imply that the bone is not normal and maybe fractured, with normal handling or other nontraumatic events. And that is a classic sign that we might see in neonatal rickets.” Dr. Barnes testified you cannot really distinguish between the two from just a chest film, but a CT scan is recommended “to get a better idea of what exactly these are.” He added that he saw either fractures or pseudo fractures on the right, and if they are on both sides that is another finding seen with neonatal rickets.

¶ 61 Dr. Barnes testified that rickets is a bone fragility disorder that causes incomplete bone formation “due to lack either of the mineral calcium, another mineral called phosphorous, or that those minerals can’t get there because the baby doesn’t have adequate vitamin D to be able to enable that baby to absorb calcium and phosphorus through what the baby eats or drinks to go to the bones. Dr. Barnes also testified Dylan’s skeletal survey showed signs of possible viral pneumonia. The pneumonia could be seen with a baby who aspirated fluid during a feeding or who regurgitated and then it aspirated into the baby’s lungs. That aspiration could cause the baby to stop breathing leading to hypoxia ischemia.

¶ 62 Dr. Barnes reviewed images of Dylan’s lower extremities taken during the skeletal exam. Dr. Barnes stated he felt Dylan’s bones were incompletely ossified and that is “one of the earliest findings that you will see in a baby of this age for neonatal rickets.” He also noted the bones in the lower extremities were not straight, and he stated that is “another indicator that these bones are incomplete bone formations so they are soft and they will bow instead of being straight.” Dr. Barnes testified the spur in Dylan’s left tibia can be related to accidental or nonaccidental trauma and can be a characteristic finding in rickets. He added the fact it is asymmetric tells us there have been asymmetric forces on the baby’s ankles whether by caretakers or doctors. The bottom of the tibia is “rounder than it should be” and that is “another characteristic finding in neonatal rickets.” Dr. Barnes observed “ulnar cupping” in Dylan’s upper left extremity and “two areas of interruption of the growth center.” He testified those are both findings associated with neonatal rickets.

¶ 63 Defense counsel asked Dr. Barnes if he had an opinion as to whether the imaging he reviewed indicates Dylan was suffering from neonatal rickets. Dr. Barnes testified “I cannot rule out trauma, accidental, including what may have happened at birth ***. I cannot rule out a prior postnatal accidental or nonaccidental injury. However, the findings are entirely consistent, more

probably than not, with neonatal rickets.” Dr. Barnes testified the mother supplies enough calcium to the child before birth to prevent rickets provided the mother’s calcium and phosphorous levels are adequate. He also testified that the mother is the baby’s only source of vitamin D before birth, and if the baby does not get vitamin D from the mother the baby is born vitamin D deficient. Postnatal supplementation may not be enough to get that baby back to normal levels, “and then that’s how we can see it manifest as neonatal rickets.”

¶ 64 On cross-examination, Dr. Barnes testified that as part of a child abuse team, he gives his differential diagnosis—or all the different things that could have happened to cause what he sees on the imaging—to the doctors of different specialties who are part of the team, and those doctors make the diagnosis based on the history, test results, and everything in front of them medically.

¶ 65 Dr. Barnes testified that he saw more acute or subacute hemorrhaging in the earlier images than the later because the blood was being infused. He testified that is “more characteristic of subarachnoid hemorrhage” and subarachnoid hemorrhage “is not the characteristic distribution of hemorrhage for abusive head trauma.” He added some of the blood is subdural. The recent hemorrhages could have been caused by trauma. Dr. Barnes did not agree that the acute hemorrhaging alone could have resulted in the increased intracranial pressure that would have made Dylan’s sutures widen. He agreed the acute and chronic hemorrhaging likely would raise the intracranial pressure. Dr. Barnes testified that his report listed the differential diagnosis “in order of proper consideration for a neonate of this particular age and then in my conclusions I refine that somewhat for the major considerations.” An item of particular importance in Dr. Barnes’ report is “the psychosocial evaluation of the caretaker to see if there is [*sic*] any at risk features for abuse.” He agreed that drug abuse is potentially an accurate feature.

¶ 66 On re-direct examination, Dr. Barnes testified that intracranial bleeding can occur from birth, even birth by C-section. Then, on recross-examination he agreed that in the study he relied on for that proposition, the hemorrhaging resolved in the children born with subdural hemorrhaging who were re-imaged later, but not all of the children in the study were re-imaged. Dr. Barnes further explained that with thrombophilia, blocked veins can cause blood to backup into the brain and cause hemorrhages. He added “that is very commonly reported in this particular age group over the last decade and a half.” Dr. Barnes testified acute bleeding such as he observed in Dylan can occur by spontaneous rebleeding of old subdural collections without trauma. Dr. Barnes testified on re-cross that “in the majority of children” who might have a traumatic birth experience, small subdural hemorrhages resolve quickly without substantial consequences, but up to 5% do not. He also agreed that thrombophilia was another differential diagnosis.

¶ 67

2. Dr. Jan Leestma

¶ 68 Dr. Jan Leestma testified as an expert in pathology and neuropathology. Dr. Leestma testified that neuropathology is a recognized medical specialty relating to how diseases (including physical injury) of the brain and nervous system work and determining the cause of an injury. He studies the mechanical and biomechanical causes of brain injury. Dr. Leestma testified that increased intracranial pressure that cannot be compensated for by changes in the volume of cerebrospinal fluid can result in irritability, vomiting, poor feeding, lethargy, sleepiness, choking, respiratory failure, unconsciousness, and possibly seizures. The symptoms would come in that order as the situation deteriorates. These symptoms are caused by pressure on the brain stem. Dr. Leestma also opined as to how retinal hemorrhages occur. He testified that because the pressure around the optic nerve is the same pressure that is inside the cranial compartment, when intracranial pressure increases “what you end up with is basically a

constriction around the optic nerve which collapses the veins.” Because the veins remove the blood feeding the retina, when there is a constriction there is no way for the blood to get out. Therefore, the blood dilates the smaller vessels in the retina and if the additional pressure is high enough for a long enough time the smaller vessels will rupture and you get bleeding in the retina. Dr. Leestma said this was “a scientifically based robust explanation of how retinal hemorrhages occur.” Specifically, intracranial pressure.

¶ 69 Dr. Leestma opined that Shaken Baby Syndrome most likely does not exist as presently defined. Defense counsel asked Dr. Leestma if he had an opinion as to whether or not vigorous shaking alone causes intracranial bleeding and retinal hemorrhages thought characteristic of an injury caused by shaking alone. Dr. Leestma testified “it probably does not occur that way.” He testified that retinal hemorrhages occur in the way he described: intracranial pressure closing off venous outflow from the retina. Dr. Leestma stated that evidence of Shaken Baby Syndrome based upon case studies, clinical experience, and confessions was “of a low quality level of evidence, which largely is anecdotal case reports. He continued: “It doesn’t conclude with experiments, double blind studies, things like this that escalate the pyramid of veracity ***.” Dr. Leestma testified that intracranial bleeding has been known to occur as a result of childbirth by C-section.

¶ 70 Defense counsel asked Dr. Leestma to describe the course of a subdural hematoma from development to how it evolves. Dr. Leestma testified in part that “[u]sually in response to some physical force *** blood vessels that are either in the dura or pass through it may become injured in which bleeding occurs and it can dissect into *** [the] subdural space.” If healing does not occur you can end up with a collection of subdural blood that “tends to increase incrementally with time.”

¶ 71 Dr. Leestma testified that another way of relieving intracranial pressure is for the sutures in the skull to open to create more space. He observed this in Dylan's imaging. Dr. Leestma also observed collections of fluid that he stated could be as old as from Dylan's birth. He testified the fluid had created a space between the brain and the skull making Dylan susceptible to rebleeding. He also saw newer bleeding on the right side of Dylan's brain that could have been several days old. Dr. Leestma opined that ventricles in Dylan's brain were smaller than they should be in the images, which he stated is caused by intracranial pressure squeezing the ventricles making them smaller. He stated that this would occur over many weeks and perhaps months. He also testified that increased cranial pressure could cause sleepiness and vomiting.

¶ 72 On cross-examination, Dr. Leestma stated he was not diagnosing Dylan with sixth nerve palsy but that was a differential diagnosis for what he saw of Dylan's eyes in photographs (one eye appearing to drift toward Dylan's nose). Dr. Leestma agreed that a study he cited in his report in support of his position that subdural hematomas could rebleed in a child does not demonstrate that proposition because the position of the author of that study was that if new symptoms were seen there must have been a significant new brain injury. He also agreed he extrapolated from a study involving adults (but no children) to reach his conclusions about children. He agreed adult brains and baby brains are different in many ways. Dr. Leestma confirmed he was saying that it was conceivable that some of the old bleeds he saw in Dylan could have come from birth, and he agreed that subdural bleeds in newborns often lie in the back part of the brain. Dr. Leestma wrote a book and a chapter in a book about injuries caused by shaking stating that retinal hemorrhages and subdural hematomas were "red flags" of child abuse. Dr. Leestma agreed the American Academy of Pediatrics (AAP) "is very much in favor of and supportive of the shaken baby concept."

¶ 73 On re-direct examination, Dr. Leestma said the AAP also says it is critical to do a differential diagnosis in cases where Shaken Baby Syndrome is suspected. He also said that “significant numbers of pathologists and neuropathologists and forensic people don’t subscribe” to Shaken Baby Syndrome. Dr. Leestma testified he changed his position on Shaken Baby Syndrome after the publication of the “first biomechanical testing of what goes on if you *** [s]hake babies.” He stated this caused him to reexamine all of the research and led him to change his position. Dr. Leestma testified about biomechanical studies attempting to use models to replicate the forces thought necessary to cause subdural hemorrhaging in infants. The latest study about which he testified, which was conducted in 2011, concluded that shaking does not approach the angular accelerations generally accepted as a minimum threshold for infant subdural hematoma.

¶ 74 The trial court found defendant guilty and sentenced him to ten years’ imprisonment. This appeal followed.

¶ 75 ANALYSIS

¶ 76 In this appeal, defendant argues (1) the trial court erred in refusing to conduct a *Frye* hearing before admitting evidence of “Shaken Baby Syndrome” (SBS) and (2) the State failed to meet its burden to prove he committed the crime charged beyond a reasonable doubt. The admission of incompetent testimony will not constitute reversible error if it appears that such testimony could not reasonably have affected the result. *People v. Oparka*, 105 Ill. App. 2d 158, 164 (1969). See also *People v. McKown*, 226 Ill. 2d 245, 276 (2007). In this case, we cannot say that evidence of SBS could not have reasonably affected the result of defendant’s trial. Therefore, we first address defendant’s argument the trial court should have conducted a *Frye* hearing to determine the admissibility of testimony concerning SBS.

¶ 77 I. *Frye* Hearing

¶ 78 “The *Frye* test holds inadmissible expert testimony based on a scientific technique unless that technique is generally accepted as reliable in the relevant scientific community. [Citation.] The *Frye* test was designed to help courts distinguish the experimental from the demonstrable stages of scientific discovery.” *Porter v. Whitehall Laboratories, Inc.*, 9 F.3d 607, 613 *fn* 3 (7th Cir. 1993). Illinois has codified the *Frye* test in Rule 702 of the Illinois Rules of Evidence. Ill. R. Evid. 702 (eff. Jan. 1, 2011). *In re Detention of New*, 2014 IL 116306, ¶ 25. The rule states as follows:

“Where an expert witness testifies to an opinion based on a new or novel scientific methodology or principle, the proponent of the opinion has the burden of showing the methodology or scientific principle on which the opinion is based is sufficiently established to have gained general acceptance in the particular field in which it belongs.” Ill. R. Evid. 702 (eff. Jan. 1, 2011).

For purposes of continuity, we will continue to refer to the rule as the *Frye* test. “The purpose of the *Frye* test is to exclude new or novel scientific evidence that undeservedly creates a perception of certainty when the basis for the evidence or opinion is actually invalid. [Citation.]” (Internal quotation marks omitted.) *In re Detention of New*, 2014 IL 116306, ¶ 26. When a party challenges the admission of evidence under the *Frye* test, the threshold question for the court is whether the evidence “is the type of scientific evidence subject to the screening function served by the *Frye* test.” *Id.* ¶ 28. “[T]he *Frye* test does not concern an expert’s ultimate conclusion but, instead, focuses on the underlying scientific principle, test, or technique used to generate that conclusion.” *Id.* (citing *Donaldson v. Central Illinois Public Service Co.*, 199 Ill. 2d 63, 77 (2002) (abrogated by *In re Commitment of Stephen E. Simmons*, 213 Ill. 2d 523 (2004) (adopting a dual standard of review with respect to the trial court’s admission of expert scientific testimony))). We review *de novo* both the “trial court’s determination of whether a *Frye* hearing

is necessary and whether there is general acceptance in the relevant scientific community.

[Citation.]” *Id.* ¶ 26. “In conducting such *de novo* review, the reviewing court may consider not only the trial court record but also, where appropriate, sources outside the record, including legal and scientific articles, as well as court opinions from other jurisdictions.” *In re Commitment of Simons*, 213 Ill. 2d 523, 531 (2004).

¶ 79 In *People v. Cook*, 2014 IL App (1st) 113079, ¶ 52, the defendant was convicted of involuntary manslaughter of the four-month-old victim after experts for the State testified that based on their knowledge and experience, the injuries to the victim were caused by blunt trauma and was consistent with the baby being shaken and thrown into a bassinet. This court stated that SBS is not a “methodology,” but instead, “it is a conclusion that may be reached based on observations and medical training ***.” *Cook*, 2014 IL App (1st) 113079, ¶ 52. In *Cook* we found that the challenged expert opinions in that particular case did not implicate *Frye* because the methodology the experts in that case used to reach their conclusions as to what caused the victim’s injuries “was not a test or a new or novel methodology, but their medical training and experience.” *Id.* ¶ 50. Although the experts in *Cook* testified the victim’s injuries were caused by blunt trauma and one expert testified the injuries were consistent with shaking, we held that even to the extent the experts opined the victim was shaken, “those opinions were based on their conclusions reached after an application of their medical training to their observations.” *Id.*

¶ 80 The expert in *Cook* who did testify that the victim’s injuries were consistent with being shaken, Dr. Michael J. Humilier, made that diagnosis based on the existence of subdural hematomas on both sides of the victim’s brain. *Id.* ¶ 11. He testified that the most common cause of subdural hematoma in infants is the tearing of the veins that go from the brain to the top of the skull and that other causes include blunt trauma, certain natural diseases, and the birthing process. *Id.* ¶ 8. Dr. Humilier testified that the subdural hematoma and retinal hemorrhaging in

that case “could be consistent with the baby’s head shaking back and forth in a flopping motion in a violent manner.” *Id.* ¶ 7. Dr. Humilier also testified that the subdural hematomas in that case were *not* caused by “cancer, a clotting disorder, infection, or by [the victim] being born, and [were] not what one would expect to be seen from a normal fall.” (Emphasis added.) *Id.* ¶ 11. Dr. Humilier testified that the injuries could have resulted from shaking alone, without producing other visible injuries, because “the baby’s brain is very soft and very filled with water, unlike an adult’s brain. *** [S]o it is very easy for any type of [blunt] trauma to the head to cause tearing on the veins and causing [*sic*] that subdural blood.” (Internal quotation marks omitted.) *Id.* ¶ 52. We found those opinions were based on “medical knowledge and experience.” *Id.*

¶ 81 In this appeal, defendant argues this court’s holding in *Cook*, that SBS is a conclusion based on observation, medical knowledge, and experience rather than a conclusion based on a new or novel scientific principle, test, or technique, must be reconsidered in light of “more recent developments in both the underlying scientific principles which underpin the SBS hypothesis and case decisions questioning SBS.”

¶ 82 Defendant first argues that a *Frye* hearing has never been held in Illinois on the scientific principles of SBS, for purposes of *Frye*, therefore, SBS is a novel issue in Illinois. Defendant argues that because a *Frye* hearing had never been held on the issue of Shaken Baby Syndrome, the trial court erred when it allowed testimony about SBS without a *Frye* hearing. In support, defendant relies on our supreme court’s decision in *People v. McKown*, 226 Ill. 2d 245 (2007). In *McKown*, the defendant was convicted of driving under the influence of alcohol. At trial the testimony consisted of the testimony of three occurrence witnesses and the testimony of a police officer who administered a horizontal gaze nystagmus (HGN) test on the defendant. Over the objection of defense counsel, the trial court allowed the officer to testify about the results of the HGN test, with the court taking judicial notice of the general acceptance of the reliability of the

HGN test as an indicator of alcohol impairment based on previous Illinois opinions. *McKown*, 226 Ill. 2d at 248. As a result of the HGN test the officer administered to the defendant, the officer opined that the defendant was under the influence of alcohol.

¶ 83 In *McKown*, our supreme court found the trial court erred in taking judicial notice of the reliability of the HGN test because use of the HGN test as an indicator of alcohol impairment was “novel” for purposes of *Frye* despite the fact it had been used by police officers for many years. *Id.* at 257-58. First, the court held that a trial court should only accept evidence of new or novel scientific principles where there are unequivocal and undisputed prior judicial decisions or technical writings on the subject. *Id.* at 254. It is clear that our supreme court’s holding that HGN testing was a novel scientific theory for purposes of *Frye* cannot be attributed solely to the fact that no court in Illinois had held a *Frye* hearing on the matter. While part of our supreme court’s reasoning in finding that the HGN test was novel for purposes of *Frye* was the fact that a *Frye* hearing had never been held in Illinois on the matter, the court also devoted significant attention to the fact that despite numerous legal challenges across the nation to the admissibility of HGN test evidence, the issue remained unsettled; therefore the trial court should not have taken judicial notice of the reliability of the HGN test. *Id.* at 257. The court noted both “our own appellate court has issued divergent opinions on the topic” (*id.*), and “many states have addressed the issue of whether HGN testifying satisfies *Frye* *** [with] varying degrees of success” (internal quotation marks omitted) (*id.* at 258). In *McKown*, our supreme court was faced with the question of the admissibility of scientific evidence where the appellate court was in disagreement and there was no clear guidance from court’s across the nation.

¶ 84 *McKown* does not control the outcome of this case. First, we observe *McKown* did not challenge the officer’s conclusion that the defendant was under the influence of alcohol, but rather challenged the underlying scientific principle (the HGN test as an indicator of alcohol

impairment) that formed the basis of the officer's conclusion. In contrast, defendant in this case challenges the doctors' conclusions (that the victim suffered nonaccidental trauma consistent with Shaken Baby Syndrome) rather than the underlying basis for the conclusion (the doctors' training and clinical experience). We have held that whether testimony regarding Shaken Baby Syndrome is the type of scientific evidence subject to *Frye* depends on the basis of the expert's opinions. *Cook*, 2014 IL App (1st) 113079, ¶ 52. In this case, the experts based their opinions upon their examination of the victim and their medical training and experience, and came to the conclusion that the victim suffered nonaccidental trauma consistent with Shaken Baby Syndrome. The experience and training of the medical experts in this case is not a scientific principle or theory within the meaning of *Frye*, therefore *McKown* is inapplicable.

¶ 85 The fact that no prior *Frye* hearing has been held on Shaken Baby Syndrome does not require a *Frye* test for the conclusions of the experts in this case, which are based on their observations and experience. The *McKown* court required a *Frye* test where the underlying science (the HGN test), which supported the officer's conclusion that the defendant was under the influence of alcohol, was subject to divergent legal opinions. We note that unlike the situation in *McKown*, defendant here challenges the experts' conclusions rather than the underlying medical principles and in any event, defendant cites no conflicting Illinois judicial decision on the admissibility of Shaken Baby Syndrome. We find *McKown* is not controlling or instructive on the question of whether SBS is a "novel" scientific theory.

¶ 86 Returning to the question of the applicability of *Frye* to the expert testimony in this case, defendant next argues that in *In re Detention of New*, 2014 IL 116306, our supreme court "refined" the holding in *Cook* "so that in a proper case a medical diagnosis based on training and experience may be subject to a *Frye* analysis." In *New*, a sex offender was involuntarily committed after a jury found him to be a sexually dangerous person. At trial experts for the State

testified that the defendant suffered from paraphilia, not otherwise specified (NOS), and opined that it was substantially probable that he would commit acts of sexual violence in the future. The issue on appeal was whether the trial court erred in admitting expert testimony regarding a diagnosis of hebephilia² at the respondent's civil commitment trial without first conducting a *Frye* hearing "to determine whether the diagnosis had been generally accepted as a valid mental disorder in the relevant scientific community." *Id.* ¶ 1. In *New* the State argued "a diagnosis is never subject to *Frye* because it is not a scientific technique or test used to diagnose but, rather, an expert's conclusion based on training and experience." *Id.* In this appeal defendant argues the court rejected the State's argument and held that "a diagnosis may be so unsupported by science that it should be excluded from consideration by the trier of fact." (Internal quotation marks omitted.) We disagree with defendant's overly broad analysis of the decision in *New*. The court held that certain *mental diagnoses* "may be so unsupported by science" that they should be excluded from consideration by the trier of fact in civil commitment proceedings. *Id.* See also *Id.* ¶¶ 30, 31.

¶ 87 The *New* court addressed "whether expert testimony involving a purported mental diagnosis is the type of scientific evidence subject to the screening function served by the *Frye* test." *Id.* ¶ 28. The court found that the respondent did "not seek to test the conclusions drawn by the experts *** based on their clinical observation and experience that [the] respondent exhibits the characteristics of [hebephilia,] but rather to test "the science behind the condition" as evidenced by "the supporting documentation presented by [the] respondent regarding flawed methodology" (*id.*) used to establish hebephilia as a diagnosable mental condition. The *New*

² The experts diagnosed the respondent with paraphilia not otherwise specified, sexually attracted to adolescent males, "which is otherwise referred in the academic literature as hebephilia." *In re Detention of New*, 2014 IL 116306, ¶¶ 4, 9, 16.

decision did not go into detail about the methodological flaws in the research, but there was at least some concern as to whether hebephilia was actually a mental condition (or was, as the respondent's expert testified, "statistically normal" (*id.* ¶ 20)), and whether it could be reliably diagnosed. See *id.* ¶¶ 33, 36. The court concluded this was "the type of scientific evidence that the analytic framework established by *Frye* was designed to address." *Id.* ¶ 33.

¶ 88 The holding in *New* is not applicable here because the nature of the expert testimony in *New* is distinguishable from the testimony in this case. In *New*, the experts offered their opinions about the respondent based on the scientific principle that "hebephilia" is a mental disorder. See *Id.* ¶¶ 9, 16 (diagnosing respondent with a mental disorder based largely on sexual attraction to adolescent or early pubescent males). Thus, in *New*, an arguably suspect mental disorder—hebephilia—led the experts to opine that the respondent suffered from a mental condition. Both State experts' opinions that the respondent suffered from hebephilia were purportedly based on the then-current version of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), which did not include hebephilia as a specifically listed mental disorder. *Id.* In reaching its ultimate decision, the *New* court placed emphasis on the fact that at the time, a proposal to add hebephilia to the DSM, "an undisputed authoritative reference manual in the field of psychology and psychiatry," was rejected. *Id.* ¶¶ 42-45, 51.

¶ 89 It was the scientific validity of the underlying diagnosis (hebephilia) that our supreme court subjected to a *Frye* hearing. *Id.* ¶ 53 (finding court has inadequate basis to determine whether the diagnosis of hebephilia has gained general acceptance in the psychological and psychiatric communities). In short, in *New*, the diagnosis of "hebephilia" formed the underlying basis for the experts' conclusion that the defendant suffered from a mental condition. However, that diagnosis was not recognized by the leading authority on the subject—the DSM-IV-TR. In contrast, in this case, defendant challenges the ultimate conclusion of the experts and not the

underlying training and experience which forms the basis for their conclusions. Therefore *New* does not affect the outcome of this case.

¶ 90 The judgment in *New* did not “clarify” the reach of *Frye* when the purported scientific evidence is a medical diagnosis. The inquiry is the same: whether the expert is testifying based on a new or novel scientific principle, or whether the expert opinion is “derived solely based upon observation and experience.” *Id.* ¶ 28 (citing *In re Marriage of Alexander*, 368 Ill. App. 3d 192, 197 (2006)). A *Frye* hearing is only required where an underlying scientific principle leads to the expert’s conclusion. In *New*, the underlying scientific principle was the classification of hebephilia as a mental disorder and the conclusion was that the respondent suffered from that mental condition because he exhibited its characteristics. In *New*, the experts could not have reached their conclusion without relying on the underlying scientific principle; and the court could not determine the principle had gained general acceptance. *Id.* ¶ 51. Here, unlike in *New* and despite defendant’s arguments to the contrary, the existence of Shaken Baby Syndrome did not lead the State’s experts to conclude that Dylan had been shaken. Instead, the State’s experts observed Dylan’s injuries and went through a methodical process of elimination to determine their cause. See *Cook*, 2014 IL App (1st) 113079, ¶ 52 (“Neither of the State’s experts actually ‘diagnosed’ Anthony with SBS. Nor is SBS, had it been diagnosed, a ‘methodology.’ Rather, it is a conclusion that may be reached based on observations and medical training which is not new or novel.”). Further, in this case the State’s experts could have reached their conclusion that Dylan’s injuries were caused by acceleration/deceleration forces absent any “scientific theory” of Shaken Baby Syndrome. Moreover, further distinguishing *New*, to any extent Shaken Baby Syndrome can be called a “diagnosis” it is not in question by authoritative sources of medical information. The United States Centers for Disease Control and Prevention (CDC), the National

Institutes of Health (NIH), and the American Academy of Pediatrics (AAP)³ all acknowledge SBS.

¶ 91 Because we find our supreme court’s decision in *New* is limited to the facts of that case and is distinguishable from the circumstances presented here, *New* is not controlling in this appeal.

¶ 92 A. The Application of *Frye* to the Testimony

¶ 93 As we stated previously, the question this court must answer to address defendant’s argument the experts’ testimony is subject to the *Frye* test is whether the experts’ testimony was based on their own observations, experience, and medical knowledge, or whether they merely adopted a scientific principle that shaking produces certain injuries and applied that principle to their observations of Dylan. We must address that question to their testimony, if they did so testify, that shaking alone produces sufficient force to cause Dylan’s symptoms. Drs. Kampanatkosol and Polavarapu testified Dylan’s injuries were caused by nonaccidental trauma, with Dr. Polavarapu only stating that his injury was “consistent” with Shaken Baby Syndrome. Dr. Ramilo testified that the “usual” mechanism for injuries like Dylan’s was shaking which causes the veins along the surface of the brain to break. Drs. Khammar and Glick testified similarly that the cause of Dylan’s injuries was nonaccidental trauma or what could be called

³ Although the AAP has embraced the term “Abusive Head Trauma” (AHT), it has not expressed any doubt about the existence of SBS: “Shaken baby syndrome is a term often used by doctors and the public to describe abusive head trauma inflicted on infants and young children. While shaking an infant can cause neurologic injury, blunt impact or a combination of shaking and blunt impact can also cause injury. In recognition of the need for broad medical terminology that includes all mechanisms of injury, the new AAP policy statement, ‘Abusive Head Trauma In Infants and Children,’ recommends pediatricians embrace the term ‘abusive head trauma’ to describe an inflicted injury to the head and its contents. Pediatricians should learn to recognize the signs and symptoms of abusive head trauma, including those caused by both shaking and blunt impact, and consult with pediatric subspecialists when necessary.” (<https://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/Abusive-Head-Trauma-A-New-Name-for-Shaken-Baby-Syndrome.aspx> visited July 25, 2016)

Shaken Baby Syndrome. Only Dr. Homsy testified the “diagnosis” was Shaken Baby Syndrome. All of the experts testified that it was their expert opinion that Dylan’s injuries were caused by a force inflicted upon him and described the forces shaking creates in the infant skull that causes injury. However, none of the State’s experts testified that their opinion was based on the existence of a scientific theory that shaking causes the injuries associated with SBS and the fact Dylan had those injuries. Most notably, Dr. Glick testified that the evidence for Shaken Baby Syndrome is “essentially clinical experience, case studies, and confessions.”

¶ 94 Defense counsel elicited testimony that people accused of shaking children might confess for various reasons. Defendant argues on appeal that those facing criminal charges based on SBS might be coerced into a false confession. Defendant also argues “[m]any care givers do shake their children when faced with a non-responsive child” and this “can be contorted into a confession of shaking.” Defendant’s arguments on appeal that “experience” and “case studies” are not “science” actually support finding that *Frye* does not apply in this context, and they fail to demonstrate that a *Frye* hearing was needed in this case. Dr. Glick testified that “if you talk to any ICU doctor in pediatrics in the last five years, they’ll say, oh, I’ve had people confess, and these kids all look alike.” Caregiver reports to doctors that they shook a child can serve as a report of the facts of what happened to a child before arriving at a hospital or presenting symptoms—a commonly understood medical diagnostic tool. Moreover, Dr. Glick testified that those confessions or reports are part of the clinical study undertaken by doctors in this field. Defendant’s argument might go to the weight of the evidence. See *Snelson v. Kamm*, 204 Ill. 2d 1, 26 (2003) (“While Kamm contends that Sarnelle’s opinions were not adequately supported, the basis for a witness’ opinion generally does not affect his standing as an expert; such matters go only to the weight of the evidence, not its sufficiency.”). But defendant has not established the existence of a “scientific principle” of Shaken Baby Syndrome. There was testimony of

attempts to create a scientific principle of SBS through biomechanical studies and there was testimony that results of various experiments both supported and appeared to disprove the clinical observations. That fact is irrelevant because none of the State's experts testified to relying on any of those biomechanical studies in forming their opinions.

¶ 95 This court has held that “[i]f an expert’s opinion is derived solely from his or her observations and experiences, the opinion is generally not considered scientific evidence.” *In re Marriage of Alexander*, 368 Ill. App. 3d at 197. In *Cook*, we stated that testimony as to what caused the victim’s injuries in that case was “a conclusion that may be reached based on observations and medical training.” *Cook*, 2014 IL App (1st) 113079, ¶ 52. The same is true here and as such, *Frye* does not apply. See *Id.* The Florida District Court of Appeal has explained clearly the distinction between the experts’ testimony in this case and expert testimony subject to *Frye*. That court has written as follows:

“Under Florida law, the *Frye* standard is not applicable to ‘pure opinion testimony’ which is based on an ‘expert’s personal experience and training.’ [Citation.] In particular, there is a distinction between an expert’s ‘pure opinion testimony based upon clinical experience’ and testimony which ‘rel[ies] on conclusions based upon studies and tests.’ [Citation.]

Expert testimony which ‘relies on some scientific principle or test *** implies infallibility not found in pure opinion testimony.’ [Citation.] Because of the implication of infallibility, such testimony ‘must meet the *Frye* test’ in order ‘to ensure that the jury will not be misled by experimental scientific methods which may ultimately prove to be unsound.’ [Citation.] Although pure opinion testimony is ‘cloaked with the credibility of the expert, [it] is analyzed by the jury as [the jury] analyzes any other personal opinion or factual testimony by a

witness.’ [Citation.] Since opinion testimony does not have the same aura of infallibility as does testimony which is based on a scientific principle or test, pure opinion testimony does not have the same potential for misleading the jury as does testimony based on a novel scientific methodology.

These general principles have been applied in determining whether expert testimony concerning the issue of causation is subject to analysis under the *Frye* standard. Accordingly, medical expert testimony concerning the causation of a medical condition will be considered pure opinion testimony-and thus not subject to *Frye* analysis-when it is based solely on the expert’s training and experience. And, of course, *Frye* will be applied where particular expert testimony concerning the cause of a medical condition is based on a novel scientific methodology.

[Citations.]

It is also established that use of the technique of ‘differential diagnosis’ by an expert medical witness in determining causation does not raise concerns under *Frye*. ‘Differential diagnosis’ is ‘an established scientific methodology in which the expert eliminates possible causes of a medical condition to arrive at the conclusion as to the actual’ cause of the condition. [Citation.] ‘[T]here is no question that the differential diagnosis technique *** is generally accepted in the scientific community.’ [Citations.]” *Gelsthorpe v. Weinstein*, 897 So. 2d 504, 509-10 (Fla. Dist. Ct. App. 2005) superseded by statute as stated in *Perez v. Bell South Telecommunications, Inc.*, 138 So. 3d 492, 497 (Fla. Dist. Ct. App. 2014) (statute changed Florida “from a *Frye* jurisdiction to a *Daubert* jurisdiction”).

¶ 96 The State’s experts in this case all engaged in a differential diagnosis when forming their opinion as to Dylan’s etiology. They did not rely on a scientific theory then apply their

observations to that theory. *Cf. In re Detention of New*, 2014 IL 116306, ¶ 33. Defendant argues that a “lynchpin of the [prosecution’s] case for conviction is that the extensive retinal hemorrhages observed in Dylan are so characteristic of SBS that they can be relied upon in concluding that Dylan had been shaken.” We disagree. The trier of fact could find from the testimony that the nature and extent of Dylan’s retinal hemorrhages were indicative of severe trauma which served to eliminate other causes from the differential diagnosis. To the extent the State’s experts relied on Dylan’s retinal hemorrhaging to diagnose the cause of his injuries as inflicted trauma or shaking, they did so based on their medical training and experience.

¶ 97 Defendant’s arguments concerning other physical conditions that can result in the physical injuries, which the State’s experts opined, based on their clinical experience, observation, and medical knowledge, resulted from trauma consistent with or caused by manual shaking, are better directed at his claim the evidence was not sufficient to prove his guilt beyond a reasonable doubt. (We note the experts for the State and the defense testified as to the differential diagnosis of Dylan’s condition and the State’s experts testified why other causes were eliminated. “The fact finder is free to accept the opinion of one expert witness over another.” *People v. Tademy*, 2015 IL App (3d) 120741, ¶ 13.)

¶ 98 Defendant’s cited foreign court decisions in this arena are similarly unpersuasive. For example, in *State v. Edmunds*, 308 Wis. 2d 374, 37-78, 746 N.W.2d 590, 592 (Ct. App. Wi. 2008), the Wisconsin court reversed a lower court decision denying a motion for a new trial on the basis on newly discovered evidence. The Wisconsin court found that the newly discovered evidence in that case showed “the emergence of a legitimate and significant dispute within the medical community as to the cause of [the victim’s] injuries.” *Id.* at 391-92, 599. The court found that “[n]ow, a jury would be faced with competing credible medical opinions in determining whether there is a reasonable doubt as to Edmund’s guilt.” *Id.* at 392, 599.

Although the *Edmunds* court did note a “shift in the mainstream medical opinion *** as to the causes of the types of trauma [the victim] exhibited, we note that the *Edmunds* decision did not describe that trauma—so we do not know how it compares to Dylan’s trauma—and in Illinois “[g]eneral acceptance does not require unanimity, consensus, or even a majority.” *In re Detention of New*, 2014 IL 116306, ¶ 39.

¶ 99 In *Del Prete v. Thompson*, 10 F. Supp. 3d 907, 958 (USDC ND IL 2014), the court only held that a procedurally defaulted claim could be considered in a petition for writ of *habeas corpus* because the petitioner in that case demonstrated that in light of new evidence it was more likely than not that no reasonable juror would have found her guilty beyond a reasonable doubt. The *Del Prete* court found that evidence of prior abusive head trauma and testimony concerning the possibility of lucid intervals gave rise to “abundant doubt” of the petitioner’s guilt in that case. In a footnote the court noted that the inability to establish an injury threshold for head injury to an infant as a result of rotational acceleration (shaking back and forth) “arguably suggests that a claim of shaken baby syndrome is more an article of faith than a proposition of science.” *Id.* at 958 *fn* 10. Notably in the same footnote the court first wrote that it was “not persuaded that the experimental testing *** definitively establishes that shaking alone *cannot* cause injuries of the type [the victim] suffered.” (Emphasis added.) *Id.* Thus the only issue addressed in *Del Prete* was the weight of the evidence, not its admissibility. See generally *Tademy*, 2015 IL App (3d) 120741, ¶ 13. Both cases are inapposite to the discussion here. Neither the *Edmunds* court nor the *Del Prete* court held that expert medical testimony on either side of that debate was subject to the *Frye* test. In this case, we find that the testimony in this case constituted “pure opinion testimony based upon clinical experience” to which *Frye* does not apply.

¶ 101 We now turn to defendant’s argument the evidence fails to prove his guilt beyond a reasonable doubt.

“When reviewing a challenge to the sufficiency of the evidence, the relevant question is whether, after viewing the evidence in a light most favorable to the State, any rational trier of fact could have found the essential elements of the crime beyond a reasonable doubt. [Citation.] Under this standard, a reviewing court resolves all reasonable inferences in favor of the State. [Citation.] A criminal conviction will not be set aside on appeal unless the evidence is so improbable or unsatisfactory that it creates a reasonable doubt as to the defendant’s guilt. [Citation.]” *People v. Tuduj*, 2014 IL App (1st) 092536, ¶ 72.

¶ 102 A. The State’s Burden

¶ 103 Defendant first asserts that one of the State’s experts testified that a lack of oxygen to Dylan’s brain resulted hypoxic ischemic encephalopathy (HIE) causing permanent disability, thus, he argues, “[t]o prove guilt, the evidence must show that [defendant] violently shook Dylan on December 19, 2009 thus causing [Dylan’s] HIE.” The State indicted defendant on two counts of aggravated battery of a child charging that he “intentionally or without legal justification and by any means, caused great bodily harm to any child under the age of 13 years, to wit: he shook Dylan Schuit” and that he “intentionally or without legal justification and by any means, caused permanent disability to any child under the age of 13 years, to wit: he shook Dylan Schuit.” The statute defines the offense as follows: “Any person of the age 18 years and upwards who intentionally or knowingly, and without legal justification and by any means, causes great bodily harm or permanent disability or disfigurement to any child under the age of 13 years ***, commits the offense of aggravated battery of a child.” 720 ILCS 5/12-4.3(a) (West 2010). The State was not required to prove that the result of defendant’s conduct was specifically HIE. Even

as to Count II, the State was not required to prove defendant caused HIE. The State was only required to prove that defendant caused Dylan great bodily harm or permanent disability. To prove Dylan is permanently disabled, the State only had to prove that he “is no longer whole such that the injured bodily portion or part no longer serves the body in the same manner as it did before the injury.” *People v. Conley*, 187 Ill. App. 3d 234, 240 (1989). Dylan’s disability is indisputable. To prove defendant caused Dylan’s injury, the State had to establish that a reasonable certainty exists that defendant’s actions caused the disability (*People v. Ikerman*, 2012 IL App (5th) 110299, ¶ 49), not that defendant caused HIE.

¶ 104 B. The Trial Court’s Understanding of the Evidence

¶ 105 Defendant next argues the trial court mischaracterized and misstated the evidence.

“When reviewing a claim of insufficient evidence in a bench trial, we presume that the trial court accurately recalled and considered all the evidence. [Citations.] As a result, its determination is entitled to a great deal of deference on appeal. We will not reverse its determination unless, after viewing the evidence in the light most favorable to the State, we find that no rational trier of fact could have reached the same conclusion as the trial court. [Citation.]

By contrast, with a claim of mistaken recall, the record contains affirmative evidence that the trial court made a mistake in its decision-making process, thereby undercutting the presumption that serves as the very foundation for the deferential standard of review in an insufficient evidence claim—that the trial court accurately recalled and considered all the evidence. [Citations.]

As a result, the claim of mistake must be reviewed under a completely different standard of review. Instead of the highly deferential standard applied to a trial court’s ruling in an insufficient evidence claim, we review *de novo* the

question of whether the record reveals that the trial court made an affirmative mistake in its decision-making process. [Citation.]” *People v. Williams*, 2013 IL App (1st) 111116, ¶¶ 102-104.

¶ 106 First, defendant argues the trial court erroneously rejected Dr. Barnes’ opinion of the likelihood of rebleeding in Dylan’s head on the grounds Dr. Barnes did not address the extent of Dylan’s retinal hemorrhages. Regarding Dylan’s retinal hemorrhages the trial court found, in part: “I don’t find that that is supported by Dr. Barnes’ theory in that he has failed to address to me how those retinal hemorrhages are consistent or inconsistent with his rebleed theory.” On appeal defendant notes that Dr. Barnes testified rebleeding can cause an increase in intracranial pressure that in turn can cause retinal hemorrhages, then defendant goes on to discuss Dr. Barnes’ testimony concerning rebleeding. While defendant notes that Dr. Barnes did offer an explanation for Dylan’s retinal hemorrhages that did not involve inflicted trauma, defendant does not argue, nor do we find, that Dr. Barnes discussed the extensive multilayered retinal hemorrhages in Dylan’s eyes. The trial court did not misstate Dr. Barnes’ testimony.

¶ 107 Next defendant complains the trial court referred to the “sutures in the dura” when in fact sutures are found in the skull. Defendant argues the trial court’s misstatement “demonstrates a fundamental failure to comprehend the evidence in this admittedly medically complex case.” We disagree. The trial court engaged in an extensive discussion of all of the evidence. We agree with the State that with regard to sutures the trial court made nothing more than a minor “slip of the tongue.” We further find this minor misstatement had no affect on the basis of the trial court’s ruling and did not result in a mistake in the decision-making process. The trial court only referenced “sutures in the dura” in passing while addressing the lack of evidence that Dr. Barnes’ rebleed theory was consistent with Dylan’s injuries.

¶ 108 Next, defendant argues the trial court conflated Dr. Leestma's testimony regarding separate medical findings. Specifically, defendant argues the trial court misunderstood Dr. Leestma to testify that Dylan's eye hemorrhages may have been caused by a sixth nerve palsy then erroneously concluded that testimony was directly contradicted by the ophthalmologist. On appeal defendant argues Dr. Leestma did not testify that sixth nerve palsy caused or could have caused Dylan's retinal hemorrhages. Defendant argues Dr. Leestma did testify as to "the medical/scientific mechanism of retinal hemorrhages." The trial judge found "I do not find that the retinal hemorrhages caused in [Dylan's] eyes could have been caused by that sixth nerve palsy condition based upon the extent of those retinal hemorrhages that were testified to by the ophthalmologist."

¶ 109 We find no mistake in the trial court's decision making process. Defendant points out on appeal that Dr. Leestma testified that photographs of Dylan indicated the possibility of sixth nerve palsy "caused by intracranial pressure." Defendant asserts to this court that the "significance of the evidence of sixth nerve palsy in the photos was because it supports the finding of increased intracranial pressure in Dylan's head." However, the significance of increased intracranial pressure in Dylan's head for purposes of the defense is, in part, that it could explain Dylan's retinal hemorrhages. Even if Dr. Leestma did not testify that sixth nerve palsy caused Dylan's retinal hemorrhages, he did testify that retinal hemorrhaging is caused by an increase in intracranial pressure which causes blood entering the vessels in the retina to become trapped and eventually causes the vessels in the retina to bleed, and that sixth nerve palsy indicates increased intracranial pressure; therefore, we reject defendant's argument that one finding has nothing to do with the other. The trial court's statement does not constitute affirmative evidence that it failed to consider "the crux" of defendant's case or failed to consider evidence when entering judgment. *Cf. Williams*, 2013 IL App (1st) 111116, ¶ 89. Instead, we

agree with the State that the trial judge's findings indicate it considered and rejected the defense theory that increased intracranial pressure caused Dylan's retinal hemorrhages due to a lack of evidence to support it in this particular case.

¶ 110 Finally, defendant argues the trial court misstated the evidence for rickets when the trial judge stated that there was no evidence that Dylan's mother had a calcium deficiency where no one claimed that she did. Defendant also argues that including the issue of rickets in the assessment of guilt was improper where defendant "is not connected in any way to any past abuse that could have caused rib fractures." The parties assume, as do we from the trial judge's additional comments on the subject⁴, that the trial judge was actually referring to Jeanette's vitamin D levels. On appeal defendant argues this misstatement denied him a fair trial because testing the mother's vitamin D "is one of the easy, simple tests that you would do to rule out rickets and it was never done by the prosecution witnesses *** again highlighting the failure to follow the 'diagnosis of exclusion' that is central to the prosecution's theory of guilt." The parties dispute whether Jeanette's vitamin D level, taken after Dylan suffered his injuries, is in evidence before the court. Although Dr. Glick read a report of that test and testified it indicated vitamin D deficiency, and defendant's expert opined Jeanette likely had the same vitamin D level when defendant was born, the State argues that report was never admitted into evidence, and defendant responds none of the medical records were entered into evidence.

⁴ In its ruling the trial court stated: "There was some suggestion during the course of the trial that the mother of [Dylan] had a calcium deficiency. I do have to comment on that because I find that that is not supported by the evidence that the court received. It was only brought out as a hypothetical to the doctor, Dr. Barnes, and I believe as to Dr. Glick, as to if that was the evidence would there be any suggestion that it could be transmitted to the baby through a gestational rickets. But I heard no evidence of the mother's actual calcium deficiency at the time of [Dylan's] birth. I heard nothing to support that claim." Defense counsel asked Dr. Glick would Jeanette be considered vitamin D deficient based on a test taken after Dylan sustained his injuries on December 19, 2009.

¶ 111 We have no need to resolve that dispute. It is clear that the crux of defendant’s complaint is that the trial court erroneously rejected evidence of rickets as an alternative cause of some of Dylan’s injuries because the trial court misapprehended the evidence surrounding rickets. That position is affirmatively contradicted by the record where the trial judge made additional findings (other than the erroneous statement about Jeanette’s calcium levels) indicating her understanding of the evidence and the defense argument, and rejecting it. The trial judge stated: “I do have to consider that it’s possible that [Dylan] had rickets. When I do that, I have to look at all the testimony I *** heard to substantiate or not substantiate whether or not he had rickets.” The trial judge stated when she looks at Dr. Barnes’ findings, she also has to “consider the findings of the numerous doctors who personally examined [Dylan] and saw him and reviewed his X-rays and provided their opinion.” The trial judge recounted in detail the testimony of those doctors and concluded “[a]ll the evidence that I heard presented is to the contrary with regards to how [Dylan] appeared upon his birth and to the pediatrician on all visits as well as his growth during those visits, as well as the fact that the radiologist saw no evidence of any type of abnormal bone density and it was not supported by any blood test. I do not find any evidence that [Dylan] had rickets that is supported.” We find that the trial judge accurately considered all of the evidence in reaching her verdict.

¶ 112

C. The Shifting of Burden of Proof

¶ 113 Next, defendant argues the burden of proof was shifted to him because the trial court “found it significant” that the defense experts could not rule out nonaccidental injury. Defendant argues that to comment that the defense failed to exclude nonaccidental injury impermissibly shifts the burden to defendant to prove his innocence rather than for the State to prove his guilt.

“Due process requires that the State bear the burden of proving beyond a reasonable doubt all of the elements of the charged offense. [Citation.] That

burden of proof remains on the State throughout the entire trial and never shifts to the defendant. [Citation.] The defendant is presumed innocent throughout the course of the trial and does not have to prove his innocence, testify, or present any evidence. [Citations.]

The trial court is presumed to know the law regarding the burden of proof and to apply it properly. [Citation.] That presumption, however, may be rebutted when the record contains strong affirmative evidence to the contrary. [Citation.] In ruling upon an allegation such as the one in the present case, the reviewing court must determine whether the record contains strong affirmative evidence that the trial court incorrectly allocated the burden of proof to the defendant.

[Citation.] The trial court's efforts to test, support, or sustain the defense's theories cannot be viewed as improperly diluting the State's burden of proof or improperly shifting that burden to the defendant. [Citation.] The trial court is free to comment on the implausibility of the defense's theories, as long as it is clear from the record that the trial court applied the proper burden of proof in finding the defendant guilty. [Citation.]" *People v. Cameron*, 2012 IL App (3d) 110020, ¶¶ 27-28.

¶ 114 The trial court's comments that the defense experts failed to rule out nonaccidental injury is not strong affirmative evidence that the trial court incorrectly allocated the burden of proof to defendant. The trial court's statements merely demonstrate its careful weighing of the evidence. The trial court noted Dr. Barnes could not rule out nonaccidental trauma when discussing rickets. The court explained its reasons for rejecting Dr. Barnes' conclusion Dylan had rickets, giving more weight to the testimony of the doctors "who personally examined [Dylan] and saw him and reviewed his X-rays." The trial court also noted that Dr. Barnes could not rule out nonaccidental

trauma when discussing the possibility of a rebleed. The trial court found Dr. Barnes' testimony in that regard undermined by the extent of the retinal hemorrhages which Dr. Barnes failed to address with his rebleed theory. Similarly, the trial judge noted "in addition" to her primary findings that Dr. Leestma could not rule out nonaccidental trauma, that her decision was based on finding that Dylan's retinal hemorrhages could not have resulted from the increased intracranial pressure Dr. Leestma described (which she mistakenly called the "sixth nerve palsy condition"). We find that the record is clear that the trial judge commented on the defense theories and evidence, but knew and properly applied the burden of proof.

¶ 115

D. The Sufficiency of the Evidence

¶ 116 Defendant argues the State failed to meet its burden of proof because the State's evidence fell "far short of the reasonable degree of medical certainty necessary to sustain a conviction beyond a reasonable doubt." Defendant argues there is a lack of medical certainty because the State's experts failed to exclude other possible causes for Dylan's symptoms. Defendant argues evidence of his guilt comes "solely from the diagnosis of Shaken Baby Syndrome (SBS);" however, he argues, the "constellation of findings" in Dylan is insufficient to diagnose SBS because natural causes or causes not related to defendant were not excluded as causes of Dylan's condition, and Dylan's healing rib fractures are irrelevant "in the absence of any evidence that [defendant] was responsible for past abuse." Specifically as to other causes defendant argues Dylan's brain edema is "most consistent with a global lack of oxygen or blood flow" indicating the need to look for causes other than trauma focusing on why the baby stopped breathing; nontraumatic causes of intraparenchymal hemorrhages were never excluded; and rickets has not been excluded because the necessary testing was not done—which is also indicative of "the failure of the medical professionals to conduct the 'diagnosis of exclusion' that is central to the prosecution's case."

¶ 117 Defendant's factual contention that the State's experts failed to exclude other causes is contradicted by the record. The State's experts did testify that other possible causes of Dylan's symptoms were excluded. Dr. Kampanatkosol testified Dylan was tested for a clotting disorder or a bleeding disorder and there were no indications of either. There was no indication Dylan had an infection or a metabolic disorder. Dr. Kampanatkosol testified there was no indication of a hydrocephalus, which is "abnormal fluid collection within the brain." He also testified there was no indication the bleeding in Dylan's brain was due to birth trauma because "if you see bleeding within the brain due to birth trauma, that would happen within a couple days of birth, not two months of age." There was no evidence of rickets. Dr. Kampanatkosol explained that with rickets, "typically, you see elevated alkaline phosphatase levels and we didn't see that in this baby."

¶ 118 Dr. Polavarapu testified as to the results of the testing that was ordered. They received the white blood cell count to determine if that was elevated due to some sort of infection, or if there was anemia or blood loss, and what the platelet count—or clotting factors—were. Dr. Polavarapu testified those were all within normal. He also stated they did coagulation profile studies, which would tell them if there was some sort of bleeding disorder, and those were normal as well. They tested electrolytes, and calcium, phosphorus, and magnesium levels, and they were all normal. Dr. Polavarapu testified Dylan's mother requested Vitamin C testing, which was done and the results were normal. He also testified they were able to rule out other disorders. There was no indication Dylan's injuries resulted from a clotting disorder, a bleeding disorder, infection, or a metabolic disorder. There was no indication Dylan's injuries resulted from a nontraumatic Cesarean birth, or any sign of a benign external hydrocephalus. There were no signs of rickets. Dr. Polavarapu testified Dylan was tested "partially" for vitamin D deficiency, explaining that certain lab levels would tell them to follow up and do a more in-depth

study for vitamin D deficiency. Those initial lab levels are calcium, phosphorus, alkaline phosphatase, and if a skeletal survey showed signs of vitamin D deficiency. All of the initial labs were within normal and the skeletal survey did not show signs of vitamin D deficiency. Dr. Polavarapu clarified additional testing for rickets was not necessary because of the history and the way Dylan presented with the labs that were done. He did testify, however, that if trying to rule out metabolic bone disease, a parathyroid hormone test is one of the things you would do, and an MRI was not performed, nor was a CV venogram or an MR venogram. He testified he knew Dylan's birth was nontraumatic because the residents did not get a history from the mother that the birth was traumatic.

¶ 119 On re-direct examination, Dr. Polavarapu testified there was no indication this was a viral infection, or that Dylan's condition was caused by bronchiolitis. He stated he did not find it necessary to order a CT venogram or an MR venogram, which are more sensitive exams, because that would be ordered if the brain bleed was "within the ventricles or certain areas of the brain that the neurosurgeons and neurologists feel that could be caused by some sort of venous malformation or arterial malformation" or if the brain bleed is "not consistent with the history." There was no evidence of vomiting upon Dylan's admission to the hospital. Dr. Polavarapu never learned of any trauma to the mother during the C-section when he was treating Dylan. He only ordered the vitamin C test because Dylan's mother requested it after doing research on the internet. Dr. Polavarapu would not have ordered the test otherwise because there was no indication that there was any vitamin C deficiency and the history and presentation did not lead them in that direction. However on re-cross, Dr. Polavarapu agreed with the statement that "[o]ne of the reasons [he] didn't do any more testing is because the history and presentation [he] had was consistent with Shaken Baby Syndrome" and he agreed with defense counsel that if Dylan exhibited bruising on the head when he was delivered, that would indicate "some birth

trauma to the head.” The State later elicited testimony that numerous doctors from all of the different fields in the hospital aided in the diagnosis and they all agreed with it.

¶ 120 Dr. Ramilo testified Dylan’s injury did not appear to be any type of bone deformity. He testified the injury in Dylan’s tibia could not have been caused by neonatal or gestational rickets. Dylan’s bone density appeared normal. Dr. Ramilo testified that with rickets, the most common areas for this type of injury are in the area of the knee, wrist, and in the area of the ankle.

Injuries with rickets are usually symmetric. Dr. Ramilo opined that Dylan’s ultrasound taken before the pyloric stenosis surgery was “a normal study.” He also stated that a thickening in Dylan’s lung was in the normal range, and Dylan did not have rickets. He did not believe Dylan had bronchiolitis, but instead the images from December 16 (from which a different doctor opined Dylan had bronchiolitis) could indicate that he could have aspirated, meaning something went down his lungs, or could indicate normal collapse from lying down. Aspiration could cause one to stop breathing. It did not appear to Dr. Ramilo that Dylan’s brain bleeds were from birth.

¶ 121 Dr. Khammar testified he did not believe CPR could bring on this extent of hemorrhaging, nor could a Cesarean delivery that was nontraumatic. Dr. Homsy testified that choking on vomit would not cause bilateral retinal hemorrhaging. Dr. Homsy stated it would not be common to see such massive bilateral retinal hemorrhages from a baby that had a C-section ten and a half weeks ago.

¶ 122 Dr. Glick reviewed Dylan’s spinal tap taken when he was transported to Palos by ambulance on December 19. The fluid was very bloody. Dr. Glick testified that Dylan was mildly anemic, the platelets were normal, and the white blood cell count (which is used to look for infection) was also normal at the time of the spinal tap. At that point, there was no laboratory evidence of any bleeding problems. Dr. Glick also testified “there was no real indication of an acute large hemorrhage anywhere either.” Based on testing for sodium, potassium, chloride,

dehydration, and “alk phosphatase,” Dr. Glick “did not have any concerns about any metabolic bone disease.” She added that with regard to Dylan’s fractures, “he also had normal calcium levels.” Dr. Glick testified it was not possible Dylan had rickets because he was full term, and calcium and mineral deposits to the baby are highest in the third trimester; rickets is not seen in babies who are formula-fed; and rickets is seen in third-world countries where there is severe malnourishment. She also testified that congenital rickets, a genetic disease, is “extremely, extremely rare” and it is “blatantly obvious” when those babies are born that their bones are abnormal at birth. Dr. Glick explained that even with a vitamin D deficient mother, the placenta will take calcium out of her bones and deposit it in the baby. “So regardless of the vitamin D status, if she is replete in calcium, then the baby gets plenty of calcium even if she’s deficient.” Dr. Glick testified that you can get a “six nerve palsy” from a cranial nerve impingement that results from increased intracranial pressure. She noted Dylan did not have a history of eye palsy and he was examined by doctors on December 13 and 19. On re-direct examination Dr. Glick testified that rebleeding could be a part of the acute bleeding discovered in Dylan on December 19, 2009, but “it doesn’t explain the whole picture of why he was so catastrophically ill.”

¶ 123 Given the State’s experts’ testimony as to the bases for their opinions, including the exclusion of other causes of Dylan’s injuries, we reject defendant’s argument that the State’s case is “devoid of support” and that there was a failure to perform the testing necessary to determine what happened to Dylan. The State’s experts opined the additional tests about which defendant complains were not indicated by Dylan’s symptoms or initial test results. Regardless, defendant’s argument goes to the strength of the State’s case, and the weight to be assigned to an expert opinion is for the trier of fact to determine in light of the expert’s credentials and the factual basis of the opinion. *People v. Swart*, 369 Ill. App. 3d 614, 633 (2006). The evidence can be found insufficient “only where the record evidence compels the conclusion that no

reasonable person could accept it beyond a reasonable doubt.” *Id.* at 634. Defendant’s argument would require this court to find that the record evidence compels a finding that no reasonable person could accept beyond a reasonable doubt the State’s experts’ testimony that additional testing was not indicated in this case. We find that the record evidence does not compel that finding.

¶ 124 Defendant argues that the evidence is “suspect” and that “the only competent medical cause that is substantiated by the medical records is increased intracranial pressure from chronic conditions that could advance and cause the symptoms that Dylan exhibited on December 19, 2009.” Defendant also argues there was no explanation of how to differentiate a cessation of breathing caused by shaking from all other causes; there is no support for Dr. Glick’s testimony that Dylan had new subarachnoid bleeding or axonal injury; and multilayered extensive retinal hemorrhaging is not diagnostic of SBS. On appeal defendant speculates Dylan’s appearance with his pediatrician on the morning of December 19 was misinterpreted as improvement when in reality the symptoms from his increased intracranial pressure from his chronic subdural hematomas were progressing from crying to lethargy “signaling a possible imminent collapse.” Although there was testimony as to the progression of symptoms from intracranial pressure, defendant cites no evidence to support the conclusion of “imminent collapse.” We reject defendant’s other arguments as an improper attempt to have this court retry this case on appeal.

“[T]he trier of fact is not required to disregard inferences which flow normally from the evidence and to search out all possible explanations consistent with innocence and raise them to a level of reasonable doubt. [Citation.]

*** Accordingly, this court is not required to search out all possible explanations consistent with innocence ***. On the contrary, we must ask, after considering all of the evidence in the light most favorable to the prosecution, whether the

record evidence could reasonably support a finding of guilt beyond a reasonable doubt.” (Internal quotation marks omitted.) *People v. Wheeler*, 226 Ill. 2d 92, 117-18 (2007).

¶ 125 Defendant complains that the State’s experts relied on evidence of healed or healing fractures to support their opinions. As noted above defendant argued there was no evidence defendant was involved in prior abuse of Dylan, therefore the healing rib fractures are irrelevant to the question of whether defendant shook Dylan on December 19. We disagree. A reasonable trier of fact could infer that Dylan was shaken on a prior occasion and that defendant shook him. “[T]he trier of fact need not *** be satisfied beyond a reasonable doubt as to each link in the chain of circumstances.” *Id.* ¶ 117. Further, defendant specifically wrote: “The prosecution claimed that Dylan’s skeletal findings were indicative of inflicted fractures from past abuse. The defense asserted that these same findings were indicative of rickets.” Defendant then proceeded to summarize the competing testimony. The finder of fact believed the prosecution. Stating the witnesses disagreed does not establish the improbability of one witness’s testimony, or the unsatisfactory nature of another’s; it states the reason for having a trial.

¶ 126 Defendant also argues the State failed to prove beyond a reasonable doubt that Dylan’s injury “could only have occurred during the short window of time [defendant] was alone with his children.” Dr. Glick opined that Dylan suffered an episode of shaking after he saw his doctor on the morning of December 19. When asked what her opinion was based on, Dr. Glick testified as follows:

“The opinion is based upon how severe traumatic brain injury presents. Dylan had severe traumatic brain injury when he presented on the 19th. When you have severe brain injury like that you have immediate symptoms.

This was extreme brain injury. I mean, Dylan, when he presented, he had a Glasgow Coma Scale of 3, which is compatible with death. And this was acute onset. He was seen by a doctor as well that morning. *** He was medically well that morning.”

¶ 127 Dr. Glick’s testimony was positive and credible. “It remains the firm holding of this court that the testimony of a single witness, if positive and credible, is sufficient to convict.” *People v. Siguenza-Brito*, 235 Ill. 2d 213, 228 (2009). We also find Dr. Glick did not base her testimony on a “constellation of injuries.” “In *Yohan K.*, this court held that ‘relying on a “constellation” theory when there is no preponderance of evidence proving abusive causation as to each separate injury is akin to relieving the State of its burden of proof.’ [Citation.]” *In re Audrey B.*, 2015 IL App (1st) 142909, ¶ 34 (quoting *In re Yohan K.*, 2013 IL App (1st) 123472, ¶ 113). In *Audrey B.*, the respondent argued that a finding of abuse and neglect was against the manifest weight of the evidence where the trial court relied on an expert’s testimony, and that expert’s opinion was based on a “constellation of injuries.” *Id.* ¶ 33. This court found the expert had not relied on a “constellation of injuries” because she did not opine the child’s injuries resulted from abuse *because* a non-abusive cause could not explain all of the injuries, nor did the expert ignore a non-abusive cause for one injury because the non-abusive cause could not explain other injuries. *Id.* ¶ 38. We found the expert did not base her opinion entirely on the existence of multiple injuries, but on the unusual nature of the injuries and the absence of a reported incident to which the injuries could be attributed. *Id.* ¶ 37.

¶ 128 In this case, when defense counsel asked if Shaken Baby Syndrome was characterized by a triad of symptoms (because the animal studies that produced brain injury had failed to produce retinal hemorrhaging—a statement with which Dr. Glick did not disagree) Dr. Glick again disagreed, stating that “is a legal definition.” Defense counsel asked Dr. Glick what the physical

manifestations of Shaken Baby Syndrome were. She testified: “it’s not just physical.” Dr. Glick continued:

“We diagnose in medicine. A diagnosis is made. Review of history. We look at complaints, past medical history, clinical examination, physical findings. And then at that point subsequent tests and laboratory. A differential diagnosis is made, and then a diagnosis is made. We rule out.”

¶ 129 Defense counsel asked again what are the physical manifestations of Shaken Baby Syndrome and Dr. Glick replied “[t]he clinical manifestations to provoke a diagnosis. *** It provokes a diagnosis which needs to be substantiated.” Dr. Glick further stated:

“But if we have a child that has brain injury manifested clinically by brain dysfunction, a child who has intrahemispheric bleeding, the child has parenchymal injury that we see on MRI or clinically, a diffuse axonal injury, we see cerebral edema, an absence of any other manifestation to explain those findings, plus extensive multilayered retinal hemorrhaging now takes you [*sic*] brain injury plus the retinal findings and skeletal trauma; we now have abusive injuries.

* * *

Again, it’s a very complicated involved process, but in the literature and clinical experience and personal experience in terms of people confessing to me of shaking children, I have to tell you it’s not done down to a triad.”

¶ 130 We find that in this case the State’s experts did not rely on Dylan’s constellation of injuries for any opinions that he was shaken. Most illustrative is the testimony of Dr. Glick, who relied on the extent and unusual nature of Dylan’s injuries, the history of acute onset, and the fact other causes for those individual injuries were eliminated from the differential diagnosis. There

is nothing in any of the testimony to suggest that the opinions that Dylan suffered inflicted trauma were based on the inability of a single alternative cause to explain all of Dylan's symptoms. *Cf. Yohan K.*, 2013 IL App (1st) 123472, ¶ 147 ("the trial court erred in disregarding the parents' medical experts' diagnoses because a single, uniform medical condition could not explain every medical finding Yohan presented"). This case is further distinguishable from *Yohan K.* This court wrote in *Yohan K.* that "[t]he trial court erred by relying on the proponents' 'constellation of injuries' theory to issue a judicial finding of child abuse in the absence of any evidence of an abusive action by either of the children's only caretakers and a lack of evidence proving abusive causation as to each separate injury, particularly in light of the substantial evidence that Yohan had a preexisting medical condition known to mimic the signs of abuse." *In re Yohan K.*, 2013 IL App (1st) 123472, ¶ 156. Not only did the State's experts not rely on a "constellation of injuries" theory, the State elicited evidence of abusive causation as to each separate injury and offered evidence to refute that Dylan suffered from any preexisting medical conditions that could explain those injuries. The State elicited evidence Dylan did not have a traumatic birth and regardless birth trauma would have resolved before December 19, rebleeding would not explain his injuries, he did not have rickets, and the State's experts opined that both the bleeding in Dylan's brain and the retinal hemorrhaging were caused by inflicted trauma. The trier of fact was not required to accept defendant's evidence of alternative causes of Dylan's symptoms. The evidence was sufficient to prove defendant's guilt beyond a reasonable doubt.

¶ 131

CONCLUSION

¶ 132 For the foregoing reasons, the circuit court of Cook County is affirmed.

¶ 133 Affirmed.