IN THE SUPREME COURT OF TEXAS

NO. 15-0509

MARCELA AND JOSE BUSTAMANTE, AS NEXT FRIENDS OF D.B., PETITIONERS,

v.

ENRIQUE N. PONTE, JR., M.D. AND PEDIATRIX MEDICAL SERVICES, INC., RESPONDENTS

ON PETITION FOR REVIEW FROM THE
COURT OF APPEALS FOR THE FIFTH DISTRICT OF TEXAS

Argued December 8, 2016

JUSTICE GREEN delivered the opinion of the Court.

In this case, we must determine whether legally sufficient evidence supports a jury's conclusion that the negligence of a premature infant's treating neonatologist proximately caused her loss of vision. The evidence shows that, despite D.B.'s extreme prematurity, had her retinopathy of prematurity been diagnosed and treated early enough, it is more likely than not that the blood-vessel growth in her eyes would have been slowed to the point that she would have enjoyed a sighted life. We hold that legally sufficient evidence supports the jury's finding that the neonatologist's negligence, more likely than not, caused D.B.'s poor visual outcome. Accordingly, we reverse the judgment of the court of appeals as to the neonatologist and his professional association and remand the case to the court of appeals for consideration of issues not already addressed.

I. Background

D.B. was born prematurely at Del Sol Medical Center in El Paso, Texas, on May 19, 2005. She weighed 600 grams (1.32 pounds). D.B.'s gestational age at birth was estimated between 23 weeks and 1 day and 24 weeks. D.B. was admitted to Del Sol's neonatal intensive care unit (NICU) due to medical problems she suffered related to her premature birth.

Because of her severe prematurity, D.B. had a 90%–100% chance of developing retinopathy of prematurity (ROP), a retinal disorder that afflicts premature infants with low birth weights, causing abnormal blood-vessel growth in the eyes that can cause diminished vision or blindness, often by retinal detachment. Blindness from ROP is usually preventable. As a result of D.B.'s ROP, however, she became totally blind in her right eye, and the vision in her left eye is severely impaired.

D.B.'s parents, the Bustamantes, as next friends of D.B., sued Del Sol Medical Center (Del Sol), Enrique N. Ponte Jr., M.D. (D.B.'s neuroneonatologist, attending physician, and medical director of the NICU at Del Sol), and Jorge Fabio Llamas-Soforo, M.D. (D.B.'s ophthalmologist), claiming that their negligence and gross negligence caused D.B.'s vision loss.[1] Del Sol settled with the Bustamantes before trial, and the remaining claims were tried to a jury.

At trial, Dr. Ponte testified that, based on her severe prematurity, he believed that, at the time of her birth, D.B. had a 100% chance of developing ROP and a significant chance of requiring laser therapy to treat her eyes. He also testified that infants born significantly prematurely tend to develop

[1] The Bustamantes also named Dr. Ponte's employer, Pediatrix Medical Services, Inc., and Dr. Llamas's professional association as defendants but did not submit any independent negligence questions. Rather, the parties stipulated that the doctors were acting in the scope of their employment for those entities.

ROP earlier and that he was concerned D.B. would have early onset ROP, requiring treatment at 29–36 weeks.

In 2001, the American Academy of Pediatrics, the American Association for Pediatric Ophthalmology and Strabismus, and the American Academy of Ophthalmology promulgated a joint statement (the 2001 Statement) regarding guidelines for ROP screening, in which they recognized that timely treatment requires timely screening. Thus, concerned that D.B. would develop ROP early and require treatment, Dr. Ponte claims that he requested an "early" examination of D.B.'s eyes. Accordingly, Dr. Llamas examined D.B.'s eyes on July 4, 2005 (week 29 or 30). Dr. Llamas claims he observed incomplete vascularization in zone II of the retina on July 4,[2] but he did not use the International Classification of Retinopathy of Prematurity (ICROP) terminology as recommended by the 2001 Statement to describe his observations. Instead, his notes state, "There is complete vascularization to 360 degrees. Impression: fetal fundi." Dr. Llamas claims he dictated "incomplete vascularization," but a transcription error resulted in the notes saying "complete vascularization." Dr. Ponte explained that he understood Dr. Llamas's notes to mean that D.B. had incomplete vascularization in zone I,[3] but he also testified that he did not know whether she had zone I or zone II eyes at the first exam. Dr. Llamas and Dr. Ponte were the only witnesses to testify regarding the apparent transcription error.

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[2] ROP is classified in part by the location of abnormal blood vessel development in the retina, and the location is defined as being in one of three zones.

[3] Zone I refers to the area of the retina closest to the head of the optic nerve. Incomplete vascularization in zone I signifies the highest risk for which treating physicians should be "very concerned," whereas incomplete vascularization in zone II signifies an intermediate risk for which treating physicians should be "concerned and watching."

Dr. Llamas recommended a follow-up exam in four weeks, which was contrary to the 2001 Statement's guidelines regarding the scheduling of follow-up exams.[4] Under the 2001 Statement, even if vascularization was actually complete on July 4, which no party contends, there is no circumstance in which D.B.'s follow-up examination should have been scheduled four weeks later. If she had less than "threshold" ROP in zone I,[5] follow-up should have occurred in one week. If she had ROP in zone II, or no ROP but incomplete vascularization in zone I, follow-up screenings should have occurred in one- to two-week intervals. If she had incomplete vascularization in zone II, follow-up screenings should have occurred in two- to three-week intervals. Finally, even if it appeared she had zone III vascular maturation at the first exam, this finding should have been confirmed by at least one repeat examination within two to three weeks.

Four weeks later, at the follow-up exam on August 1 (week 33 or 34), Dr. Llamas determined that ROP had developed and recommended laser treatment as soon as possible. His medical notes reflect that on August 1, D.B. had stage 3 ROP in both her left and right eyes in zone II, as well as plus disease and a vitreous hemorrhage. Based on pictures of D.B.'s eyes taken on August 3, one of the Bustamantes' experts, Dr. Darius Moshfeghi, testified that D.B.'s right eye had stage 3 ROP in zone I, plus disease in four quadrants, and a vitreous hemorrhage. Additionally, Dr. Moshfeghi

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[4] The 2001 Statement does not establish bright-line rules for the diagnosis and treatment of ROP. Rather, it states, "The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate."

[5] At the time of D.B.'s ROP, doctors used the term "threshold" to refer to a point at which ROP treatment is required under the 2001 Statement, meaning that there has been a finding of both stage 3 ROP, covering five consecutive or eight cumulative clock hours of the eye, and "plus" disease. "Plus" disease refers to a change in the vessels in the eye's posterior wall near the optic nerve in which the vessels become tortuous, congested, and engorged because the blood circulating in them encounters resistance.

testified that D.B.'s left eye had eight hours of stage 3 ROP in zone II and plus disease in four quadrants.

Due to difficulty securing the laser necessary for treatment, Dr. Llamas did not perform the laser therapy until three days after his detection of ROP—on August 4, 2015 (week 34 or 35). According to one of the Bustamantes' experts, Dr. William Good, pictures taken after the treatment suggest that Dr. Llamas failed to properly administer the laser treatment because there were "skip lesions"—"areas where the retinal burns either didn't take or were not administered." After treatment, D.B.'s right retina detached, causing her to lose vision permanently in her right eye. In her left eye, she has macular dragging, which often results in reduced central vision and severely impaired vision (20/1200 or 20/1300), and requires her to hold items close to her eye even with glasses.

The parties hired competing expert witnesses to testify regarding whether the doctors' negligence (not screening more frequently, delaying the diagnosis and treatment so that D.B. was not treated at pre-threshold ROP, delaying treatment three days after threshold ROP was observed, and not properly administering the laser treatment), if any, was the proximate cause of D.B.'s impaired vision. Dr. Good testified that if D.B.'s doctors had followed the proper exam schedule, "[b]ased on reasonable medical probability, ROP would have been diagnosed on July 18th," which would have enabled D.B. to receive laser treatment about a week before August 1.[6] He testified

[6] Dr. Good felt uncomfortable giving the jury a more precise date on which D.B. would have been able to receive treatment given that the doctors failed to examine her eyes more frequently, which would have provided more information regarding the ROP progression in her eyes.

further that D.B. was a high-risk infant who should have been treated when she had pre-threshold ROP, rather than threshold ROP. Accordingly, Dr. Good testified:

> Well, if you look at the various places where negligence occurred, in an incremental fashion, each of those contributed to the poor visual outcome that [D.B.] experienced.
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> The delay in screening examinations for four weeks to a probability prevented Dr. Llamas from identifying ROP when it could have been treated earlier. That would have improved the chance of a good visual outcome for her.
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> The delay in laser treatment for three days also in my opinion incrementally increased the chances of a bad outcome for her.
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> And then, finally, the inadequate laser treatment I think really was the coup de grace here, and it basically placed these eyes at extremely high risk and was causally or proximately responsible for blindness in the right eye and poor vision in the left eye.

Dr. Good concluded that if the defendants had acted properly, "[m]ore likely than not, she would have . . . a sighted life." Although Dr. Good conceded that D.B. had risk factors portending a negative outcome, such as vitreous hemorrhage and plus disease, he noted that D.B. lacked others, such as being a twin. Dr. Good also observed that D.B. did not have a vitreous hemorrhage or plus disease when she was first examined and that part of the goal of frequent screening is to provide treatment before those risk factors develop. Therefore, Dr. Good opined that D.B.'s vision loss was more likely attributable to "the fact that she wasn't screened and treated timely," not the other risk factors. Further, based on his physical examination of D.B., Dr. Good testified that her visual impairment stems from her ROP, not from any neurological issues arising from D.B.'s prematurity.

Dr. Dale L. Phelps, another expert for the Bustamantes, similarly testified that the doctors' negligence proximately caused D.B.'s vision impairment. She explained that if the doctors had

examined D.B. more frequently, D.B.'s ROP could have been treated before it became as advanced, and she "more likely than not" would have functional vision. Based on the advanced stage of D.B.'s ROP on August 1, Dr. Phelps believed that ROP would have been visible on July 26.

Much of the expert testimony revolved around a study released in 2003, the Revised Indications for Treatment of Retinopathy of Prematurity (the ETROP study), which many considered to establish new ROP treatment guidelines. Although the ETROP study was discussed at the 2003 and 2004 annual meeting of the American Academy of Ophthalmology, a new joint statement incorporating the ETROP study findings was not issued until 2006. In the ETROP study, the subject group consisted of premature infants believed to be at a high risk of developing ROP that would require treatment. The researchers treated one eye early, but delayed treating the other eye until it reached threshold, which had been the standard practice. According to Dr. Good, who served as chair of both the ETROP executive and writing committees, the ETROP study revealed that treating ROP earlier resulted in a structural and functional benefit for infants with high-risk eyes when compared to treating at the conventional time. Accordingly, earlier screening of high-risk infants was recommended so that they could receive treatment earlier—at pre-threshold ROP rather than threshold ROP. Put another way, Dr. Phelps testified that the conclusion of the ETROP study was that "type 1 eyes—which meant zone I any stage ROP with plus, zone I stage 3 ROP whether or not there was plus disease, and zone II stage 2 or 3 ROP with plus"— should receive early treatment, whereas type 2 eyes should be monitored for progression of ROP to a treatable stage.

Dr. Good, Dr. Phelps, and a defense expert, Dr. Graham Quinn, all agreed that laser therapy is effective in stopping ROP progression in most infants. Dr. Good testified that laser treatment was

successful in over 75% of "all comers," and only 89 eyes (out of 800 eyes) in the ETROP study suffered retinal detachment after receiving laser treatment. Dr. Phelps explained further that the ETROP study concluded that laser treatment at conventional threshold times reduced bad outcomes to around 14% or 16%, and, more significantly, early treatment further reduced negative outcomes to 9%. Even Dr. Quinn conceded that D.B. had high-risk eyes, "[e]arly treatment of high-risk eyes is better," and "[i]t's the high-risk pre-thresholds that benefit from treatment." Furthermore, Dr. Quinn agreed that 91% of high-risk eyes that were treated at pre-threshold ROP in the ETROP study did not have an unfavorable structural outcome.[7] Dr. Quinn additionally agreed that D.B. was treated at threshold ROP rather than pre-threshold ROP and that "pre-threshold ROP almost always precedes threshold ROP." Nonetheless, Dr. Quinn refused to say that D.B. could have been treated at pre-threshold because there are no "exams to document that one way or the other." Dr. Llamas agreed that type 1 eyes benefit from early treatment but claimed he treated D.B. early—when she had pre-threshold ROP/type 1 eyes. Dr. Llamas blamed D.B.'s unfavorable outcome on the vitreous hemorrhage in her right eye, from which excess blood in the vitreous part of the eye enhances the rubber-band effects of the ROP, testifying that "the presence of the vitreous hemorrhage was a very determinative factor in the bad outcome of the right eye."

The jury found that the defendants' negligence caused D.B.'s injuries, concluding that Dr. Ponte was 45% responsible, Dr. Llamas was 45% responsible, and Del Sol was 10% responsible.

[7] At a different point in his testimony, Dr. Quinn agreed that early treatment reduced the occurrence of unfavorable outcomes, but he testified that in the ETROP study, "15 to 19 percent of the conventionally managed eyes had an unfavorable structure, and 10 to 12 percent of the early treated eyes had an unfavorable structure." He also stated that when eyes had zone I, stage 3 ROP, regardless of whether they had plus disease, 53.8% experienced unfavorable outcomes with conventional treatment and 30.8% experienced unfavorable outcomes with early treatment.

The jury awarded total damages of just over $2.1 million. Dr. Llamas filed a motion for new trial and, in the alternative, a motion to modify and a motion for remittitur. Dr. Ponte filed a motion for judgment notwithstanding the verdict. The trial court adjusted the jury verdict to account for Del Sol's settlement credit and rendered judgment holding Dr. Ponte and Pediatrix Medical Services jointly and severally liable for $872,653.19 and Dr. Llamas and his professional association jointly and severally liable for the other $872,653.19. All of the nonsettling defendants appealed, arguing that the evidence was legally insufficient to support the jury's damages and causation findings. The doctors also urged other grounds for reversal, such as improperly admitted evidence and charge error.

A divided court of appeals reversed and rendered judgment that the Bustamantes take nothing, holding that they failed to adduce any non-conclusory evidence of causation. 490 S.W.3d 70, 73 (Tex. App.—Dallas 2015, pet. granted). Evaluating the expert causation testimony adduced at trial, the court of appeals concluded that the experts' testimony was conclusory and constituted no evidence that Dr. Ponte's or Dr. Llamas's negligence was a "but-for" cause of D.B.'s injuries. *Id.* at 77–85, 87. Specifically, the court of appeals criticized Dr. Good for testifying that it was "more likely than not" D.B. would have a sighted life if not for Dr. Ponte's and Dr. Llamas's combined negligence, rather than quantifying the negative impact of each negligent act. *Id.* at 78–79. According to the court of appeals, Dr. Good's testimony was conclusory because he did not explain "how or why the delays in treatment contributed to [D.B.]'s injuries or worsened her chances of a better outcome." *Id.* at 81. Likewise, the court of appeals faulted Dr. Good for "not explain[ing] why or how different performance of the laser surgery, more likely than not, would have overcome [D.B.]'s preexisting adverse risk factors," especially considering the portion of infants in the ETROP

study who suffered detached retinas even with early treatment. *Id.* at 82. The court of appeals similarly rejected Dr. Phelps's testimony because she discussed the doctors' combined negligence and did not "explain the facts justifying a conclusion that a particular patient probably would have been helped by the treatment." *Id.* at 80 (citing *Archer v. Warren*, 118 S.W.3d 779, 787–88 (Tex. App.—Amarillo 2003, no pet.)).

The court of appeals also rejected the Bustamantes' statistical evidence that was premised on the ETROP study, reasoning that they produced no evidence that D.B. was similar to study participants who had favorable results. *Id.* at 84–85 (citing *Merrell Dow Pharm., Inc. v. Havner*, 953 S.W.2d 706, 720 (Tex. 1997)). In sum, the court concluded that the Bustamantes merely showed that a different screening schedule, earlier treatment, and better-performed treatment could have resulted in a better outcome for D.B., not that it more likely than not would have resulted in a better outcome. *Id.* at 87. The court did not address the defendants' other appellate issues.

Conversely, the dissent concluded that the experts sufficiently explained how the doctors' negligence more likely than not caused D.B.'s vision loss. *Id.* at 88–90 (Schenck, J., dissenting). The dissent also concluded that "the plaintiffs have offered some evidence of causation by establishing the probability of a sighted life at 75% or higher, especially in the absence of record evidence suggesting any reason why [D.B.]'s prospects were reduced." *Id.* at 94. Ultimately, the dissent "would not require (1) the plaintiff to prove that each defendant's negligence, standing alone, caused the injury; (2) the plaintiff to disprove all other possible causes of her injury, no matter how unlikely; or (3) proof to a medical certainty that absent defendants' negligence, [D.B.] would have a sighted life." *Id.* at 88.

The Bustamantes filed a petition for review in this Court, urging that the court of appeals erred by reversing the trial court's judgment against Dr. Ponte, Dr. Llamas, and each of their professional associations. After this case was submitted in this Court, but before our decision, Dr. Llamas and his professional association reached an agreement to settle the Bustamantes' claims against them. The trial court approved that settlement agreement in August 2017. Thus, only Dr. Ponte and his professional association remain as respondents in this appeal.

II. Sufficiency of the Proximate Cause Evidence

We now turn to the sole issue raised in this appeal: whether legally sufficient evidence supports the jury's finding that the Dr. Ponte's negligence in assessing and treating D.B.'s ROP proximately caused her vision impairment. Dr. Ponte argues that the evidence is legally insufficient to support the jury's findings that his negligence proximately caused D.B. to suffer any injury.

A. Standard of Review

> Evidence is legally insufficient to support a jury finding when (1) the record discloses a complete absence of evidence of a vital fact; (2) the court is barred by rules of law or of evidence from giving weight to the only evidence offered to prove a vital fact; (3) the evidence offered to prove a vital fact is no more than a mere scintilla; or (4) the evidence establishes conclusively the opposite of a vital fact.

Crosstex N. Tex. Pipeline, L.P. v. Gardiner, 505 S.W.3d 580, 613 (Tex. 2016) (citations omitted). "In determining whether there is no evidence of probative force to support a jury's finding, all the record evidence must be considered in the light most favorable to the party in whose favor the verdict has been rendered," *Havner*, 953 S.W.2d at 711, including evidence offered by the opposing party that supports the verdict, *see City of Keller v. Wilson,* 168 S.W.3d 802, 827 (Tex. 2005) ("Nor can evidence supporting a verdict be identified by which party offered it . . . ."). Courts "must credit

favorable evidence if reasonable jurors could, and disregard contrary evidence unless reasonable jurors could not," *id.*, and "every reasonable inference deducible from the evidence is to be indulged in that party's favor," *Havner*, 953 S.W.2d at 711.

B. Applicable Law

A plaintiff seeking to prevail on a negligence cause of action must establish the existence of a legal duty, a breach of that duty, and damages proximately caused by the breach. *IHS Cedars Treatment Ctr. of DeSoto, Tex., Inc. v. Mason*, 143 S.W.3d 794, 798 (Tex. 2004)). "The two elements of proximate cause are cause in fact (or substantial factor) and foreseeability. . . . Cause in fact is established when the act or omission was a substantial factor in bringing about the injuries, and without it, the harm would not have occurred."[8] *Id.* at 798–99.

To satisfy a legal sufficiency review, plaintiffs in medical-malpractice cases "are required to adduce evidence of a 'reasonable medical probability' or 'reasonable probability' that their injuries were caused by the negligence of one or more defendants, meaning simply that it is 'more likely than not' that the ultimate harm or condition resulted from such negligence." *Jelinek v. Casas*, 328 S.W.3d 526, 532–33 (Tex. 2010) (quoting *Kramer v. Lewisville Mem'l Hosp.*, 858 S.W.2d 397, 399–400 (Tex. 1993)). In other words, "the ultimate standard of proof on the causation issue 'is whether, by a preponderance of the evidence, the negligent act or omission is shown to be a substantial factor in bringing about the harm and without which the harm would not have occurred.'" *Park Place Hosp. v. Estate of Milo*, 909 S.W.2d 508, 511 (Tex. 1995) (quoting *Kramer*, 858 S.W.2d

[8] Dr. Ponte does not contest foreseeability.

at 400). Accordingly, a plaintiff cannot show that a defendant's negligence was more likely than not a cause of injury "where the defendant's negligence deprived the tort victim of only a 50% or less chance of avoiding the ultimate harm." *Kramer*, 858 S.W.2d at 400. Therefore, we examine the record to determine whether the Bustamantes presented legally sufficient evidence that "in reasonable medical probability" Dr. Ponte's negligence caused D.B.'s poor visual outcome.

Importantly, when the evidence demonstrates that "there are other *plausible* causes of the injury or condition that could be negated, the plaintiff must offer evidence excluding those causes with reasonable certainty." *Havner*, 953 S.W.2d at 720 (emphasis added); *see also Jelinek*, 328 S.W.3d at 536 ("When the only evidence of a vital fact is circumstantial, the expert cannot merely draw possible inferences from the evidence and state that 'in medical probability' the injury was caused by the defendant's negligence. The expert must explain why the inferences drawn are medically preferable to competing inferences that are *equally consistent* with the known facts." (emphasis added)). However, in *Transcontinental Insurance Co. v. Crump*, 330 S.W.3d 211 (Tex. 2010), we held that "a medical causation expert need not 'disprov[e] or discredit[] every possible cause other than the one espoused by him,'" *id.* at 218 (quoting *Viterbo v. Dow Chem. Co.*, 826 F.2d 420, 424 (5th Cir. 1987)), absent evidence that "presents 'other *plausible* causes of the injury or condition that *could* be negated,'" *id.* (quoting *Havner*, 953 S.W.3d at 720) (first emphasis added)). Thus, a plaintiff need not "speculate about other possible unknown causes and then disprove them." 490 S.W.3d at 95 (Schenck, J., dissenting).

C. Failure to Apply the Substantial-Factor Test

We begin by addressing whether the court of appeals erred in applying a stringent but-for causation test when there is proof of more than one proximate cause of an injury. Specifically, this case requires that we address whether proof that one defendant's negligence was a substantial factor in the ultimate harm constitutes no evidence of causation when the jury found that multiple actors, through multiple acts, contributed to one injury. The court of appeals concluded that Dr. Good's causation testimony was "no evidence that Ponte's negligence was a but-for cause of the injuries to [D.B.]'s eyes" because he couched his conclusion "on the *combined negligence* of both Ponte and Llamas." *Id.* at 79. The dissenting justice, on the other hand, would not have required the Bustamantes "to prove that each defendant's negligence, standing alone, caused the injury." *Id.* at 88 (Schenck, J., dissenting).

It has long been the law in this state that a defendant's act or omission need not be the sole cause of an injury, as long as it is a substantial factor in bringing about the injury. *See, e.g.*, *Havner v. E-Z Mart Stores, Inc.*, 825 S.W.2d 456, 459 (Tex. 1992). There may be more than one proximate cause of an injury. *See, e.g.*, *Del Lago Partners, Inc. v. Smith*, 307 S.W.3d 762, 774 (Tex. 2010); *see also Bostic v. Georgia-Pacific Corp.*, 439 S.W.3d 332, 344 (Tex. 2014) ("While but for causation is a core concept in tort law, it yields to the more general substantial factor causation in situations where proof of but for causation is not practically possible or such proof otherwise should not be required."). We conclude that the court of appeals improperly applied a stringent but-for causation requirement in a case that should have been resolved under the substantial-factor test.

The jury heard extensive evidence supporting the joint responsibility of Dr. Ponte and Dr. Llamas in scheduling D.B.'s ROP screenings. In fact, essentially all of the evidence at trial was that the screening, diagnosis, and treatment of ROP is a collaborative effort between the neonatologist and the ophthalmologist, implicating the substantial-factor test. For example, according to the 2001 Statement, "Responsibility for examination and follow-up of infants at risk for ROP must be carefully defined by each neonatal intensive care unit. Unit-specific criteria for examination for ROP should be established for each neonatal intensive care unit by consultation and agreement between neonatology and ophthalmology services." Dr. Phelps testified that the guidelines and standards of care are common to both neonatologists and ophthalmologists with respect to the screening, diagnosis, and treatment of ROP because "[t]hey are done jointly." Dr. Phelps explained that Dr. Llamas failed to use the ICROP nomenclature at the July 4 exam and that Dr. Ponte failed to follow up or ask for a clarification, citing an "impaired understanding of what was seen on that first examination." Dr. Phelps went on to explain what should have occurred:

> Q. So what should Dr. Ponte's response have been when he saw that Dr. Llamas wrote "fetal fundi, follow up four weeks" on this baby?
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> A. If he has never had this kind of discussion with his ophthalmologist or -- about how should we go about a zone I baby or if they like to use the term "fetal fundi," they need to have an understanding what they mean by that. What does that mean in relationship to the guidelines. How can we double-check each other to make sure we are not missing it.
>
> If they haven't had that, then there is no safety. There is no backup. There is no -- that level of understanding isn't built up for the baby.

Additionally, Dr. Ponte agreed that "the neonatologist and the ophthalmologist, the eye specialist, share in the obligation of screening premature babies for retinopathy of prematurity." He agreed "it

was [his] responsibility and Dr. Llamas's responsibility to make sure [D.B.] got screened according to the best medical practices existing at the time in 2005." Further, Dr. Ponte's and Dr. Llamas's neonatologist expert, Dr. Donald Null, agreed that the obligation of the neonatologist and the ophthalmologist is to work together in an active role to detect ROP at the earliest possible time. Finally, Dr. Quinn, like all of the other experts, described the process of planning the screening, diagnosis, and treatment of ROP as "a collaborative effort." Thus, the court of appeals should have applied the substantial-factor test in assessing the acts of negligence by Dr. Ponte and Dr. Llamas rather than requiring proof that each independent act by each tortfeasor was a but-for cause of D.B.'s injury.

We understand the court of appeals' concern: given that Dr. Good put part of the blame on Dr. Llamas's inadequate performance of the laser treatment, how could the delay in screening and treatment have caused D.B.'s bad outcome if the surgery was going to be inadequate regardless? However, based on the evidence, the jury could have reasonably determined that the laser treatment did not violate the standard of care. Dr. Good based his opinion that the laser treatment was inadequate on photographs manipulated by the Bustamantes' expert, Dr. Moshfeghi, and Dr. Good admitted that he did not know what Dr. Moshfeghi had done to manipulate or alter the photographs of D.B.'s eyes. Further, Dr. Good admitted that Dr. Llamas was better positioned to see D.B.'s eyes at the time of the laser treatment, explaining, "I think that when you are doing an examination and treatment realtime, you get to see the eye from a lot of different angles and in a lot of different ways than you do on just one montage." Dr. Good went on to admit that, at the time of the treatment, Dr. Llamas could see and evaluate more of the fundus of D.B.'s eyes than Dr. Good could looking

at a photo montage and that Dr. Llamas had "a more complete view" of what he was treating and where the laser needed to go. Dr. Good's testimony on cross-examination also suggests that the laser treatment might not have been inadequate. Dr. Good admitted that the 1,954 shots in the right eye and 1,611 shots in the left eye fell "well within the average range that would be used in eyes like [D.B.]'s." Furthermore, Dr. Good admitted on cross-examination that the August 4 pictures might not have shown the full effect of the August 4 treatment:

> Q. I think I used the example earlier, it is kind of like getting a sunburn. You start a little pink, and even after you get out of the sun, you can still turn red. Is that kind of a similar lay explanation of the [laser treatment] is going to keep going in the retina?
>
> A. Sure.

Dr. Llamas also explained why one cannot see all of the laser shots on the post-treatment images. He testified that there were no skip areas; it was just an effect of the perspective of the photograph. Further, Dr. Llamas's and Dr. Ponte's ophthalmologist expert, Dr. Quinn, testified that the RetCam images provide a different view than one has in person. Dr. Quinn testified that Dr. Llamas's treatment of D.B.'s eyes was reasonable and in compliance with the applicable standard of care. In short, the jury could have disregarded the evidence that the surgery was negligently performed and instead concluded that the delay in screening and treatment caused D.B.'s injury. Given that the jury found Dr. Ponte and Dr. Llamas equally responsible, apportioning 45% of the liability to Dr. Ponte and 45% of the liability to Dr. Llamas, this result is quite plausible.

Dr. Ponte argues that this Court's opinion in *Providence Health Center v. Dowell*, 262 S.W.3d 324 (Tex. 2008), applies in this case. The question in *Dowell* was whether a mental health

care provider's release of a patient was the proximate cause of his subsequent suicide as a matter of law. *Id.* at 328. We held that Dowell's discharge from the emergency room did not proximately cause his death, concluding that his discharge from the hospital was too attenuated to have been a substantial factor in bringing about the suicide. *Id.* at 329–30. According to Dr. Ponte, *Dowell* stands for the proposition that "[u]nquantified evidence that a different course of action would have created a lower risk of harm is legally insufficient to establish but-for causation." Dr. Ponte believes this means that Dr. Good's opinion that earlier screening "would have improved the chance of a good visual outcome for [D.B.]" is insufficient to establish that the lack of additional screening exams was, more likely than not, a but-for cause of her impaired vision. However, *Dowell* is distinguishable from the facts of this case. In *Dowell*, there was evidence that the patient would not have consented to treatment, and there was no evidence he could have been hospitalized involuntarily. *Id.* at 329. Further, there was no evidence that hospitalization, more likely than not, would have prevented the patient's suicide. *Id.* at 330. Rather, the Dowells' expert opined only that the patient was "at high risk for suicide" and that "his discharge from the ER in that condition caused his death." *Id.* at 328. That is not this case. As explained below, there is abundant evidence in the record that Dr. Ponte's and Dr. Llamas's failure to timely diagnose, and therefore failure to timely treat, D.B.'s ROP—a condition a defense expert called "the most treatable cause of blindness in children"—resulted in the retinal detachment in D.B.'s right eye and severely impaired vision in her left.

D. Scope of Evidence to Consider

We now address the court of appeals' conclusions (1) that the ETROP study violated *Havner*'s epidemiological-study rule and was thus no evidence of causation, and (2) that Dr. Good's and Dr. Phelp's causation testimony was conclusory and thus no evidence.

1. The ETROP Study

The court of appeals rejected the Bustamantes' statistical evidence premised on the ETROP study, reasoning that they produced no evidence that D.B. was similar to study participants who had favorable results. 490 S.W.3d at 84–85. Central to the court of appeals' holding was its conclusion that the principles of *Merrell Dow Pharmaceuticals, Inc. v. Havner*, 953 S.W.2d at 720, apply in this case. 490 S.W.3d at 84–85. We disagree.

Havner's analysis of epidemiological principles does not govern this case. *Havner* involved the sufficiency of causation evidence in the context of toxic-substance exposure, not medical malpractice. *Havner*, 953 S.W.2d at 708. There, the plaintiffs could not point to facts showing "specific causation" (i.e., whether exposure to the substance caused the plaintiff's particular injury) and were forced to rely to a considerable extent on epidemiological studies for proof of "general causation" (i.e., whether the toxic substance itself was capable of causing a particular injury in the general population). *Id.* at 714–15. This was necessary because there was no direct proof that the substance was responsible for the plaintiff's injury. *Id.* As a result, the evidence in *Havner* related solely to studies about whether Bendectin exposure doubled the risk of limb-reduction defects; there was no evidence specifically showing that the plaintiff's birth defects were caused by Bendectin exposure. *Id.* at 724–30. We held:

> To raise a fact issue on causation and thus to survive legal sufficiency review, a claimant must do more than simply introduce into evidence epidemiological studies that show a substantially elevated risk. A claimant must show that he or she is similar to those in the studies. This would include proof that the injured person was exposed to the same substance, that the exposure or dose levels were comparable to or greater than those in the studies, that the exposure occurred before the onset of injury, and that the timing of the onset of injury was consistent with that experienced by those in the study.

Id. at 720. We also held that "if there are other plausible causes of the injury or condition that could be negated, the plaintiff must offer evidence excluding those causes with reasonable certainty." *Id.* In short, the point of *Havner* is that even in the absence of direct clinical experience, a plaintiff may still establish causation through an appropriately strong associational finding, but to do so, the plaintiff must show that he or she is similar to those in the studies relied upon and offer evidence to rule out other plausible causes. *Id.*

This case is readily distinguishable. First, the Bustamantes' evidence of causation goes far beyond an isolated study. The jury heard discussions about the 2001 Statement, which was admitted into evidence, and they heard testimony regarding a number of other studies concluding that laser treatment produced positive outcomes at rates well above 75%. For example, Dr. Llamas was asked about the Capone study, which found a favorable outcome in 83.3% of zone I eyes receiving laser treatment. Dr. Llamas was also asked about a 2000 study concluding that laser treatment "yielded a favorable anatomical outcome in 85.4% of the cases." Furthermore, the jury heard testimony that at least four out of five premature infants who develop ROP recover without treatment whatsoever.[9]

[9] The evidence as to this statistic varies. Dr. Null testified that, despite the fact that one can have a 100% likelihood to develop ROP, very few infants actually have a treatable disease or have that disease treated. He later testified that "a small number" actually go on to need treatment—first estimating around 5–10% and then testifying that 20% was "close enough." When Dr. Llamas explained why he does not treat stage 1 ROP eyes, he testified, "most of

And they heard both plaintiff and defense experts testify that ROP is treatable in most cases—including Dr. Quinn's testimony calling ROP "the most treatable cause of blindness in children."

Additionally, Dr. Good and Dr. Phelps did not simply rely on epidemiological studies to establish the probability that delayed or inadequate treatment of ROP would cause blindness in the general population to substantiate his opinion that D.B. might be one of those cases. Dr. Good and Dr. Phelps based their causation opinions on their own clinical experience with ROP and the particular medical procedures at issue, informed by photographs of D.B.'s eyes taken during each step of her screening and treatment, D.B.'s medical records, in-person examinations of D.B., and epidemiological studies in which Dr. Good and Dr. Phelps participated personally. Thus, the ETROP study and the other studies showing that in more than 75% of cases timely and proper laser treatment leads to a successful outcome constitute evidence supporting Dr. Good's and Dr. Phelps's opinion on causation.

The court of appeals also held that the ETROP study was no evidence of causation because "Good specifically denied that the ETROP study could be used to determine whether a delay in treatment actually affected a baby's vision," 490 S.W.3d at 80, and "agreed [it] was not designed 'to determine whether a delay in screening or a delay in treatment actually affected a baby's vision,' and that it would be 'an incorrect use of that study' to 'claim that it was designed to detect or to look at the effect of delay,'" *id.* at 82. This selective quoting misrepresents Dr. Good's testimony. Dr. Good

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the babies get better on their own." Dr. Ponte testified that very few premature babies born at 23 weeks gestational age will need laser treatment, estimating that only "around 10 percent" of babies born at 23 weeks wind up needing laser treatment.

admitted on cross-examination that the "study was never designed to determine whether a delay in screening or a delay in treatment actually affected a baby's vision." First, one could reasonably take this statement to mean that the study was designed to determine the outcome of babies who participated in the study rather than a specific baby outside of the study—a rather obvious fact. Further, the ETROP study was designed to look at the effects of early diagnosis and treatment (i.e., earlier than conventional). Dr. Good had testified previously that the ETROP study changed that standard of care by making ophthalmologists "more vigilant in seeing the babies more frequently, in an effort to catch the ROP disease at the earlier stage or earlier point . . . , thereby offering the baby a better chance of a favorable outcome." Dr. Good had also testified that the "short version" of the ETROP findings is "since earlier treatment is more effective than conventionally timed or conventional management, the baby should be screened in order to pick up the disease at a point earlier in the disease course so that they could be offered the earlier treatment." Similarly, Dr. Phelps, who worked alongside Dr. Good in the ETROP study, testified that "one of the things that was looked at in the course of the ETROP study was how much of a difference did the treatment protocols in that study make in different babies' outcomes who participated in the study." She also testified that the ETROP study was designed "to see [if] there [is] a formula or a classification . . . to decide which, out of all these babies who have ROP, might be at such high risk for needing treatment that we could identify them early." Dr. Quinn similarly testified that the ETROP study was "about treating at high-risk prethreshold eyes . . . not the entire subset of prethreshold eyes" and that the study found that early diagnosis and treatment "did create a better outcome for the babies who were treated at high-risk prethreshold." In fact, Dr. Quinn admitted that "the odds, . . . statistically

speaking, are that if a patient is treated at high-risk prethreshold, they likely will avoid retinal detachment." Moreover, Dr. Llamas admitted that he moved up D.B.'s treatment even though she was not at threshold on August 1 "[b]ecause it was already type 1, and [he] trusted the results or conclusions of the ETROP." Put simply, the court of appeals parsed words to conclude that the ETROP study was no evidence of causation. Because Dr. Good's and Dr. Phelps's opinions on causation were based on more than epidemiological studies, and were informed in part by the results of the ETROP study, the ETROP study is evidence supporting their opinion that the untimely diagnosis and treatment of D.B.'s ROP caused her vision impairment.

2. Dr. Good's and Dr. Phelps's "Conclusory" Testimony

We also disagree with the court of appeals' holding that Dr. Good's and Dr. Phelps's opinions were conclusory and thus no evidence of causation. *See* 490 S.W.3d at 73. An expert's testimony is conclusory if the witness simply states a conclusion without an explanation or factual substantiation. *Nat. Gas Pipeline Co. v. Justiss*, 397 S.W.3d 150, 156–57 (Tex. 2012). If no basis for the opinion is offered, or the basis offered provides no support, the opinion is merely a conclusory statement and cannot be considered probative evidence, regardless of whether there is no objection. *City of San Antonio v. Pollock*, 284 S.W.3d 809, 816–18 (Tex. 2009) (citing and quoting *Coastal Transp. Co. v. Crown Cent. Petroleum Corp.*, 136 S.W.3d 227, 232–33 (Tex. 2004)); *see also Jelinek*, 328 S.W.3d at 536 ("It is not enough for an expert simply to opine that the defendant's negligence caused the plaintiff's injury. The expert must also, to a reasonable degree of medical probability, explain how and why the negligence caused the injury."). Stated differently,

an expert's simple *ipse dixit* is insufficient to establish a matter; rather, the expert must explain the basis of the statements to link the conclusions to the facts. *Pollock*, 284 S.W.3d at 818.

Here, both Dr. Good and Dr. Phelps offered the bases for their opinions. Dr. Good testified that he practices in the area of pediatric ophthalmology and that his practice consists of a great deal of clinical ROP work. He also testified that, in preparation for trial, he reviewed depositions and D.B.'s medical records, and he had personally evaluated her. Further, Dr. Good testified that he was in the courtroom listening to Dr. Ponte's testimony, which focused heavily on D.B.'s treatment and the medical problems she faced as an extremely premature infant. Dr. Good specifically testified that the risk factors from which D.B. suffered did not contribute to her poor outcome, and his testimony showed that he considered these factors in formulating his opinion. Dr. Good also explained "the how and why" supporting his conclusion that Dr. Ponte's and Dr. Llamas's negligence was more likely than not the cause of D.B.'s poor structural (and thus poor visual) outcome in the right eye and poor visual outcome in the left eye. His testimony effectively states that, had Dr. Ponte and Dr. Llamas not delayed the screening examinations for four weeks, Dr. Llamas could have identified her ROP at a time when it was less aggressive (for example, before the vitreous hemorrhage and plus disease developed), increasing the likelihood of a positive visual outcome. Other testimony supports Dr. Good's opinions regarding the delay in screening examinations for four weeks and the delay in laser treatment for three days. Dr. Good testified about the ETROP study, stating that it determined that earlier treatment in high-risk babies had a "statistically significant" beneficial effect compared to conventional management, in both structural and visual function. He also testified that laser therapy is effective in stopping the progression of ROP in most babies with a 75% or higher success

rate for "all comers." Dr. Good went on to testify that he evaluated D.B.'s August 1 findings, explaining that the August 1 RetCam photos show that D.B. was at threshold at that time. Dr. Good opined that D.B. should have been examined on July 11 or July 18 and that those examinations would have resulted in a July 25 follow-up because, in light of the August 1 findings, "ROP would have been diagnosed on July 18th." He explained:

> So the advantage to Dr. Llamas having seen ROP on that date--and let's say it was mild, not in need of any treatment but still obviously in zone I--is that he could have come back the following week and learned a lot more detail about how this baby's eyes were behaving; meaning if there was a lot of rapid progression of the disease during that one-week time period and that zone I disease, that is an ominous finding. And I think it might have pushed him to want to treat this baby sooner than he did.

Dr. Good explained that, had Dr. Ponte and Dr. Llamas observed the correct examination schedule, D.B. would have been treated "about a week before August 1st" (i.e., July 25). Thus, while Dr. Good's testimony was not perfect, he did provide a basis for his opinion, and that basis does provide some support for his opinion. Dr. Good provided specific evidence from D.B.'s medical records, his own subsequent examination of D.B., and his own expertise about the progression and treatment of ROP in general and in D.B.'s case in particular. Of course, he could not pinpoint precisely when D.B. developed ROP, testify to a date on which her ROP became treatable, or quantify exactly the actual delays because D.B. was not examined for four weeks. But there was evidence from which Dr. Good, based on his experience and having observed D.B.'s particular case, could estimate these critical dates beyond mere speculation.

Likewise, the record establishes that Dr. Phelps's testimony was not conclusory. Dr. Phelps testified that she is a practicing neonatologist, is one of the authors of the 2001 Statement, and

worked alongside Dr. Good in conducting the ETROP study. Dr. Phelps testified that she prepared for trial by reviewing the medical treatment Dr. Ponte and Dr. Llamas provided to D.B. during the neonatal period, including her medical records and the deposition testimony of Dr. Ponte and Dr. Llamas. Dr. Phelps ultimately concluded that Dr. Llamas proximately caused D.B.'s poor outcome "[b]ecause a repeat examination was four weeks in an eye that was either zone I or zone II, and also because . . . the original exam was not described in a way that could be understood by the staff that he was working with," and that Dr. Ponte proximately caused D.B.'s poor outcome by failing to develop "a set of written guidelines for his staff to communicate with the ophthalmologist." Dr. Phelps agreed with Dr. Good that D.B. probably would not have had threshold ROP on July 18, but Dr. Phelps explained that "[i]t's hard to tell" when D.B.'s follow-up examinations should have occurred "because the way the results of the first examination were written down are sort of ambiguous." Dr. Phelps reasoned that, based on Dr. Ponte's and Dr. Llamas's deposition testimony offering different definitions for the term "fetal fundi," "not using the ICROP, the classification, impaired [their] understanding of what was seen on that first examination." Dr. Phelps went on to explain how this affected D.B.'s care:

> The risk here -- what happened was that, apparently, Dr. Ponte felt, okay, this is -- this will be okay for waiting four weeks. That seems reasonable.
>
> If it were a zone I eye, waiting four weeks is too long. It gives too long a time for very immature eyes to get very aggressive. So it is worse than you think it is when you finally look, or than it could have been.
>
> Whereas if it had been a zone II eye, then two to three weeks is more reasonable to wait. Four is still long, but it is not as bad as four weeks in a zone I eye.

Dr. Phelps went on to testify about what should have occurred, explaining that if Dr. Ponte and Dr. Llamas never discussed what was meant by the term "fetal fundi" in relation to the 2001 Statement, "then there is no safety. There is no backup. There is no -- that level of understanding isn't built up for the baby." Dr. Phelps then explained that, had Dr. Ponte and Dr. Llamas communicated adequately to comply with the guidelines, Dr. Llamas "would have seen the ROP as it started up . . . and before it became advanced. If it was looking very threatening, they might have moved their schedules . . . to make sure they caught it quickly when it got to the point where it needed surgery." She explained that, had this occurred, "more likely than not [D.B.] would have functional vision." This opinion is supported by Dr. Phelps's other testimony. Dr. Phelps opined that, had an examination occurred on July 26 (which was noted as necessary in D.B.'s medical records), ROP would have been diagnosed on that day: "As bad as it was on 8-1, it would have been visible on the 26th." Thus, like Dr. Good, Dr. Phelps estimated the progression of D.B.'s ROP during the time for which there are no records based on the August 1 images of D.B.'s eyes. She also explained that ROP can progress "really fast. It can go from looking like threshold to being detached in one week." Dr. Phelps testified that, despite the 72-hour period in the 2001 Statement, "You are not supposed to wait for 72 hours just because they should treat at 72 hours. It was, go ahead and treat, but try to get it done before the retina detaches, before 72 hours, which we think would probably cover it most of the time." Finally, Dr. Phelps testified that, based on the images of D.B.'s eyes, D.B. had type 1 ROP on August 1. She testified that the ETROP study revealed a 7% reduction in unfavorable outcomes in type 1 eyes compared to the 14% unfavorable outcomes

in the control group—"so that would have been a 50 percent improvement." Thus, Dr. Phelps provided the factual basis that supports her opinion. *See id.*

We find this case similar to *Arkoma Basin Exploration Co. v. FMF Associates 1990–A, Ltd.*, 249 S.W.3d 380 (Tex. 2008). In that case, we held that an expert's testimony is conclusory if the expert merely gives an unexplained conclusion or asks the jury to "take my word for it" because of his or her status as an expert. *Id.* at 389. We ultimately concluded that the expert's opinions were not conclusory even though the expert's foundational data was not in the record and it was not entirely clear how the expert had reached his conclusions. *Id.* at 389–90. We reasoned:

> [The expert's] testimony could have been a lot clearer; his references to "up here" and "right there" on slides and posters used at trial often make it hard to tell what he is talking about. But we cannot say on this record that his opinions were unreliable or speculative. Nor were they conclusory as a matter of law; [the expert] did not simply state a conclusion without any explanation, or ask jurors to "take my word for it." It is true that without the foundational data in the appellate record, we cannot confirm that "cash off my runs . . . divided by mcf" yielded the $1.62, $1.41, $1.43, and $1.59 prices he calculated as the low range for damages. But experts are not required to introduce such foundational data at trial unless the opposing party or the court insists.

Id. (citing TEX. R. EVID. 705(a) (1998, amended 2015) ("The expert may testify in terms of opinion or inference and give the expert's reasons therefor without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event disclose on direct examination, or be required to disclose on cross-examination, the underlying facts or data.")).

Like the expert in *Arkoma*, Dr. Good's and Dr. Phelps's testimony could have been better. However, they did not simply state a conclusion without any explanation or ask the jurors to take their word for it. Dr. Good and Dr. Phelps testified about the applicable standards of care, how they

applied in D.B.'s case, how Dr. Ponte and Dr. Llamas breached those standards of care and what they should have done to satisfy their duty, and how D.B.'s outcome more likely than not would have been different had Dr. Ponte and Dr. Llamas not been negligent. Dr. Good's and Dr. Phelps's testimony was supported by clinical experience, studies in which Dr. Good and Dr. Phelps personally participated, reviews of D.B.'s medical records, and in-person examinations of D.B. The evidence, on balance, demonstrates that D.B. was more likely than not to be in the overwhelming majority of premature infants who successfully overcome ROP had she received proper screening and treatment. Thus, Dr. Good and Dr. Phelps tied their conclusions to the facts, explaining "to a reasonable degree, how and why the breach caused the injury based on the facts presented." *Jelinek*, 328 S.W.3d at 539–40.

The court of appeals also concluded that Dr. Phelps's and Dr. Good's causation testimony was insufficient because the experts failed to rule out other possible causes of D.B.'s blindness. 490 S.W.3d at 82–83. Specifically, the court of appeals believed that our ruling in *Jelinek*, that "when the facts support several possible conclusions, only some of which establish that the defendant's negligence caused the plaintiff's injury, the expert must explain to the fact finder why those conclusions are superior based on verifiable medical evidence, not simply the expert's opinion," applied in this case. *Id.* (quoting *Jelinek*, 328 S.W.3d at 536). We disagree.

In *Jelinek*, we held that when *equally likely* causes for an injury are present, an expert must explain why one cause and not the other was the proximate cause of the injury. *Jelinek*, 328 S.W.3d at 529. There, the expert testified that "the Hospital's negligence 'in medical probability' caused Casas additional pain and suffering." *Id.* at 535. The expert based this opinion on the presence of

an infection that could have been treated with certain antibiotics. *Id.* Circumstantial evidence of infection existed, but there was no direct evidence of an infection. *Id.* The expert conceded that the circumstantial evidence on which he relied to form his opinion that the patient suffered from the specific infection was "equally consistent with two other infections cultured from" the patient's incision and blood—neither of which were treatable by the antibiotics in question. *Id.* We held that "[w]hen the only evidence of a vital fact is circumstantial, the expert cannot merely draw possible inferences from the evidence and state that 'in medical probability' the injury was caused by the defendant's negligence." *Id.* at 536. Put differently, in *Jelinek*, we concluded that, by conceding that the patient's symptoms were consistent with infections not treatable by the omitted antibiotics, the expert undermined his earlier conclusion that a different, undetected infection was present. *See id.* While it was possible that the patient had such an infection, its presence could be inferred only from facts that were *equally consistent* with the other two infections. *Id.* Therefore, there were three equally likely causes, and the expert failed to explain why his opinion was superior to the opposite view. *Id.* at 537. Those are not the facts here.

Here, the court of appeals and Dr. Ponte cite a number of "other possible causes" for D.B.'s vision loss, such as her extreme prematurity, her zone I disease and plus disease, and the vitreous hemorrhage she had developed. However, the evidence makes clear that these "other possible causes" are not causes at all—they are risk factors making severe ROP more likely, not conditions that could have independently resulted in D.B.'s poor outcome. For example, Dr. Quinn testified that D.B.'s risk factors, particularly her extreme prematurity, put her at high risk for developing severe ROP, but Dr. Quinn did not testify that the risk factors caused D.B.'s vision loss. The

evidence establishes that these conditions put D.B. at a higher risk for developing threshold ROP and demanded more timely screening and treatment. As explained above, the evidence indicates that the presence of these factors should have caused Dr. Ponte and Dr. Llamas to adjust their screening plan. For example, Dr. Good testified about a portion of the 2001 Statement stating that "[t]he timing of the initial screening examination may be adjusted appropriately on the basis of other reliable data, such as local incidence and onset of ROP or the presence of other recognized risk factors." He further explained that:

> in [D.B.]'s case, as we heard this morning, she had a lot of serious and multiple medical problems. She was born very prematurely, really virtually at the limit of viability. That is what Dr. Ponte said. And her birth weight was very low at 600 grams. So she was at extremely high risk for developing not only ROP but significant ROP.
>
> And so in [D.B.]'s case, because of her high risks and her multiple risk factors, she was in a category of child who should have been followed closely.

Further, the Bustamantes offered evidence that part of the reason for frequent screening is to provide treatment before risk factors, like vitreous hemorrhage, zone I disease, and plus disease, can develop. There is at least some evidence that, had D.B. been screened earlier, threshold ROP would have been discovered, and she would have received treatment, before the vitreous hemorrhage, zone I disease, and plus disease developed.

We note that, even to the extent that *Jelinek* applies to these facts such that the experts were required to rule out the cited risk factors, the testimony here satisfies that requirement. Contrary to the court of appeals' interpretation of Dr. Good's testimony, Dr. Good specifically testified on cross-examination that the risk factors from which D.B. suffered, which put her at high risk for ROP,

did not contribute to her poor outcome. This testimony shows that Dr. Good considered these risk factors in formulating his opinion. First, there was no evidence that "plus disease," "extremely low birth weight," or "gestational age" causes blindness. Rather, Dr. Good described these conditions as "factors" indicating an increased risk that a newborn would develop severe ROP. It is ROP that causes blindness. These "factors" are not other plausible causes of D.B.'s vision impairment; they are risk factors for developing ROP, which was the cause of her impaired vision. Further, while Dr. Good testified that "vitreous hemorrhage can be a bad factor," he thought that it was not "a bad negative factor in her case." Although Dr. Good conceded that D.B.'s right eye had zone I disease on August 1, and zone I disease is an "ominous finding," Dr. Good also explained that zone I disease portends an unfavorable outcome when the zone I disease is "posterior," but noted that D.B. suffered from "anterior" zone I disease. As Dr. Good explained, "the goal of screening" is to identify and treat severe ROP before factors such as a vitreous hemorrhage or plus disease develop, and D.B. did not suffer from those aggravating conditions on the date of her first examination. Dr. Good opined that, had Dr. Ponte and Dr. Llamas followed the proper screening schedule, the zone I ROP would have been detected on July 18, and the doctors would have decided to treat D.B. at that time or at the follow-up exam that should have occurred a week later. Dr. Good's testimony thus sufficiently negates the risk factors as a purported alternative cause of D.B.'s poor structural outcome in her right eye.

In summary, while Dr. Good admitted that vitreous hemorrhage, zone I disease, and plus disease are risk factors for the poor outcome that D.B. suffered, he explained that "the goal of screening" is to identify and treat severe ROP before factors such as vitreous hemorrhage, zone I

disease, and plus disease develop, and noted that D.B. did not suffer from these aggravating conditions on the date of her first examination. Dr. Good went on to testify that "the fact that [D.B.] wasn't screened and treated timely" was "more likely" the cause of D.B.'s vision loss, not "the remaining risk factors." Thus, Dr. Good's testimony shows that he considered the risk factors that the court of appeals tried to characterize as "other possible causes" and opined that the risk factors that D.B. suffered were not likely causes of her poor outcome. In fact, based on this testimony, three of the cited risk factors—vitreous hemorrhage, zone I disease, and plus disease—would not have been present had Dr. Ponte and Dr. Llamas satisfied the duties owed to D.B. In short, the evidence supports that these "risk factors" are not "causes" at all, such that *Jelinek* is inapplicable. Rather, the presence of these factors should have caused Dr. Ponte and Dr. Llamas to adjust their screening plan, as required by the 2001 Statement.

Finally, Dr. Good expressly identified and ruled out the neurological damage suggested by the defendants' child neurology expert, Dr. Jerry Tomasovic, as well as Dr. Quinn, that could independently affect D.B.'s use of her left eye. Dr. Tomasevic testified that D.B.'s left eye records images but that her brain does not process them. He explained that D.B.'s extreme prematurity and resulting need for mechanical ventilation because of her immature lungs caused bleeding in her brain, which damaged the connections in the white matter of the brain, as well as the brain stem (affecting parts of the brain that control vision and contain the optic tract). Thus, Dr. Tomasevic believed that D.B.'s problem is not the left eye sending or capturing the image but what the brain does with the visual information. Dr. Quinn also believed that the visual problems in D.B.'s left eye resulted not from any retinal abnormality but from optic nerve atrophy, a condition separate from

ROP that can affect vision. Dr. Quinn explained that optic nerve atrophy, also referred to as paleness of the optic nerve, occurs when light stimulating the retina is not transmitted back to the brain.

Dr. Good expressly addressed these cited causes for the impaired vision in D.B.'s left eye. Dr. Good disagreed with the conclusions of Dr. Tomasevic and Dr. Quinn relating to these other possible causes, testifying that, in his opinion, light was being transmitted to D.B.'s brain through the left eye, but that the conduction time was slowed and the amount of information getting to the brain was diminished. He also testified that when he examined D.B. in his office, D.B. presented herself with eye poking and eyes that fluttered from side to side. Dr. Good testified that eye poking "is a finding that's almost really 100 percent specific to retinal disease," explaining that, based upon his examination of D.B.'s eyes, "she has physical findings in the retina that are entirely consistent with the level of vision that she has in that left eye." He further explained that D.B.'s eye fluttering was caused by D.B.'s "bilateral eye disease" and that "it occurs to a probability with [eye disease], not if there is damage to the brain." According to Dr. Good, if it was a brain injury, D.B. would not have had eye fluttering, she would not have been poking at her eyes, and, more likely than not, she would have been in a wheelchair because for the brain injury to affect the sight, it has to affect a part of the brain that disturbs all motor functions. Thus, to the extent there were other plausible causes of D.B.'s impaired vision in her left eye, the record shows that Dr. Good expressly identified and ruled out those causes.

We reject the contention that our holding in *Wal-Mart Stores, Inc. v. Merrell*, 313 S.W.3d 837 (Tex. 2010) (per curiam), requires experts to exclude all other potential causes when opining on causation. That proposition does not flow from this Court's holding. At issue in *Merrell* was

whether an expert report describing the cause of a fatal fire was sufficient to uphold a judgment against Wal-Mart Stores. *Id.* at 839. Merrell and his girlfriend died of smoke inhalation from a fire in their home. *Id.* at 837. In the subsequent wrongful-death action, Merrell's parents alleged that a halogen lamp purchased at Wal-Mart was the most likely cause of the fire. *Id.* at 838. The Merrells produced a report by an expert in fire science, who determined that the most likely cause of the fire was an exploding halogen bulb, pieces of which smoldered on a recliner next to the lamp. *Id.* Wal-Mart's expert argued that the proliferation of drug paraphernalia and marijuana butts in the living room evidenced that "careless disposal of smoking materials" was the more likely cause of the fire. *Id.* The trial court admitted the Merrells' expert testimony but granted Wal-Mart's motion for summary judgment. *Id.* at 839. We held that the testimony of the Merrells' expert was speculative and conclusory, in part because he failed to rule out other potential causes of the fire—namely, careless disposal of smoking materials. *Id.* at 839–40. Specifically, the expert did not say why smoking materials could not have caused the fire even though the post-mortem toxicology reports revealed that Merrell and his girlfriend had been smoking the night of the fire. *Id.* at 839. We explained that "while [the expert] laid a general foundation for the dangers of halogen lamps, his specific causation theory amounted to little more than speculation. Evidence that halogen lamps can cause fires generally (assuming that the lamp here was a halogen lamp) does not establish that the lamp in question caused *this* fire." *Id.* at 840. Thus, the presence of smoking materials raised a plausible cause that the expert did not rule out. *See id.* While we agree that an expert must exclude other plausible causes, *Merrell* does not require experts to exclude all other potential causes when testifying as to causation. Here, the evidence is that D.B. had a poor visual outcome because

of ROP, not because of a plausible cause that the Bustamantes' experts failed to negate with non-conclusory testimony.

III. Legal Sufficiency Analysis

Having concluded that the substantial-factor test applies in this case and that the ETROP study and Dr. Good's and Dr. Phelps's testimony constituted proper causation evidence, we now consider whether there is legally sufficient evidence to support the jury's finding that Dr. Ponte's negligence caused D.B.'s poor visual outcome.

To establish proximate cause in a medical-malpractice case, there must be "evidence of a 'reasonable medical probability' or 'reasonable probability' that [the plaintiff's] injuries were proximately caused by the negligence of one or more defendants." *Milo*, 909 S.W.2d at 511. In other words, "the ultimate standard of proof on the causation issue 'is whether, by a preponderance of the evidence, the negligent act or omission is shown to be a substantial factor in bringing about the harm and without which the harm would not have occurred." *Id.* (quoting *Kramer*, 858 S.W.2d at 400). Accordingly, a plaintiff cannot show that a defendant's negligence was more likely than not a cause of injury "where the defendant's negligence deprived the tort victim of only a 50% or less chance of avoiding the ultimate harm." *Kramer*, 858 S.W.2d at 400; *cf. Havner*, 953 S.W.2d at 718 ("The use of scientifically reliable epidemiological studies and the requirement of more than a doubling of the risk strikes a balance between the needs of our legal system and the limits of science.").

Dr. Ponte contends that *Havner*'s "doubling of the risk" requirement applies in this case and that the Bustamantes failed to make that showing. *See Havner*, 953 S.W.2d at 718. We disagree. As explained earlier, *Havner* is distinguishable for a number of reasons. Most importantly, in

Havner, the plaintiffs could not point to facts showing "specific causation" and were forced to rely to a considerable extent on epidemiological studies for proof of "general causation." *Id.* at 714–15. This was necessary because there was no direct proof that the substance was responsible for the plaintiff's injury. *Id.* As a result, the evidence in *Havner* related solely to studies about whether Bendectin exposure doubled the risk of limb-reduction defects; there was no evidence specifically showing that the plaintiff's birth defects were caused by Bendectin exposure. *Id.* at 724–30. That is not this case.

Dr. Ponte also argues that the Fifth Circuit's decision in *Young v. Memorial Hermann Hospital Systems*, 573 F.3d 233 (5th Cir. 2009) (per curiam), presents a scenario analogous to the one at issue here and should be followed in this case. In *Young*, the plaintiffs alleged that hospital personnel failed to promptly diagnosis a patient's ischemic stroke and, as a result, failed to timely administer intravenous tissue plasminogen activator (tPA), exacerbating the plaintiff's brain damage. *Id.* at 234–35. Even though epidemiological data showed that tPA therapy benefitted some patients, the district court granted summary judgment for the hospital, concluding that the plaintiffs could not establish a greater than 50% probability of recovery necessary to establish causation. *Id.* at 235. The Fifth Circuit affirmed, observing that the patient's likelihood of a favorable outcome was approximately 42% without tPA treatment, while his likelihood of success with tPA treatment was approximately 59%. *Id.* at 236. Relying on *Havner*, the Fifth Circuit ruled that, because the failure to treat with tPA did not "more than double the risk" of an unfavorable outcome, the plaintiffs could not show that negligence was, more likely than not, the cause of their harm. *Id.*

We conclude that *Young* is not applicable here. The courts in *Young* relied on *Havner*'s doubling of the risk requirement, which we have determined does not apply to the facts of this case.

Like the plaintiffs in *Havner*, the *Young* plaintiffs relied solely on epidemiological studies to establish "general causation." *See id.* at 235. But here, the Bustmantes' experts gave their causation opinions based on their own clinical experience with ROP and the particular medical procedures at issue, informed by photographs of D.B.'s eyes taken during each step of her screening and treatment, D.B.'s medical records, in-person examinations of D.B., and epidemiological studies in which they participated personally. In effect, *Young* does not apply in this case for the same reasons that *Havner*'s "doubling of the risk" requirement does not apply.

We hold that the evidence is legally sufficient to establish that D.B.'s ROP was not detected and treated early enough to avoid retinal detachment in the right eye and severely impaired vision in the left. Dr. Good described ROP as uncontrolled blood-vessel growth in the eyes of premature children, which can result in retinal detachment in advanced stages. As Dr. Phelps explained, "[i]f you can just slow [the blood vessels] down, get them to settle down for a while, then they will catch up, and the retina will stay where it belongs instead of becoming detached." Dr. Quinn apparently agreed with this statement, testifying that the purpose of the laser treatment is to reduce the production of the hormone vascular endothelial growth factor (VEGF) enough to return the eye to an auto-regulated condition. Thus, despite D.B.'s extreme prematurity, the Bustamantes presented evidence that if her ROP had been diagnosed and treated early enough, it is more likely than not that the blood-vessel growth in her eyes would have been slowed to the point that she would have enjoyed a sighted life.

Dr. Ponte testified that infants born more prematurely tend to develop ROP earlier and that he was concerned D.B. would have early onset ROP, requiring treatment at 29–36 weeks. Dr. Llamas apparently observed incomplete vascularization in zone II at D.B.'s first ROP screening

on July 4, 2005, but he failed to use the ICROP terminology as provided by the 2001 Statement to describe his observations. Dr. Phelps testified that Dr. Llamas's failure to use the proper terminology and Dr. Ponte's failure to follow up or ask for a clarification caused an "impaired understanding of what was seen on that first examination." Moreover, despite the fact that Dr. Ponte believed D.B. would develop early onset ROP, and contrary to the 2001 Statement's guidelines regarding the scheduling of follow-up examinations, Dr. Llamas recommended a follow-up exam in four weeks. Although Dr. Phelps testified that it is "hard to tell" when D.B.'s follow-up screening examinations should have occurred "because the way the results of the first examination were written down are sort of ambiguous," at most, D.B.'s follow-up screenings should have occurred in two- to three-week intervals—not four weeks as scheduled and performed by Dr. Ponte and Dr. Llamas.

At the August 1 follow-up examination four weeks later, Dr. Llamas determined that stage 3 ROP had developed and recommended treatment "as soon as possible." However, D.B.'s treatment was further delayed an additional three days due to the failure to secure the laser necessary for treatment. As a result of the screening and treatment received, D.B.'s right retina detached, causing her to lose vision permanently in her right eye, and she has macular dragging and severely impaired vision in her left eye.

Dr. Good agreed that D.B. was a high-risk infant who should have been monitored closely. Relying on D.B.'s medical records, including images of her eyes taken on August 1 showing that she was "at threshold" at that time, Dr. Good testified that if D.B.'s doctors had followed the proper exam schedule, "ROP would have been diagnosed on July 18th," and she would have received laser treatment about a week before August 1. Specifically, Dr. Good opined that D.B. should have been examined on July 11 or July 18 based on the July 4 examination and that those follow-up

examinations would have resulted in a July 25 follow-up because, in light of the August 1 findings, D.B.'s ROP would have been diagnosed on July 18. In fact, Dr. Quinn agreed that D.B. was treated at threshold on August 4 rather than pre-threshold. Dr. Good opined that the four-week delay in screening examinations "to a probability prevented Dr. Llamas from identifying ROP when it could have been treated earlier" and before risk factors, such as vitreous hemorrhage and plus disease, developed. He also testified that the additional three-day delay "incrementally increased" the likelihood of a poor outcome in D.B.'s particular case. Ultimately, Dr. Good concluded that if the defendants had acted properly, "[m]ore likely than not, she would have . . . a sighted life." Thus, Dr. Good's testimony effectively states that, had Dr. Ponte and Dr. Llamas not delayed the screening examinations for four weeks, Dr. Llamas would have identified her ROP at a time when it was less aggressive and would have treated it earlier, and D.B. would have enjoyed a sighted life.

Dr. Phelps similarly concluded that the doctors' negligence proximately caused D.B.'s loss of usable vision. She testified that had the doctors not had an impaired understanding of the results of the July 4 examination, and had D.B.'s follow-up examinations been scheduled according to the guidelines in the 2001 Statement, an examination would have occurred on July 26 (which was noted as necessary in D.B.'s medical records), and ROP would have been diagnosed that day based on the advanced stage of D.B.'s ROP (type 1 ROP) on August 1. Dr. Phelps also testified that had D.B. been treated before her ROP became so advanced, she "more likely than not" would have functional vision. In other words, Dr. Phelps testified that had Dr. Ponte and Dr. Llamas communicated adequately to comply with the 2001 Statement guidelines at the July 4 exam, Dr. Llamas "would have seen the ROP as it started up . . . and before it became advanced." Had this occurred, according

to Dr. Phelps, "more likely than not [D.B.] would have functional vision" because the doctors would have identified ROP closer to "the point where it needed surgery."

Dr. Good, Dr. Phelps, and Dr. Quinn all agreed that properly timed laser therapy is more effective in stopping the progression of ROP in most infants. In fact, Dr. Quinn called ROP "the most treatable cause of blindness in children." The problem, however, is that Dr. Ponte and Dr. Llamas failed to ensure that D.B. received laser therapy at a time when it would have been effective by failing to communicate properly, screen timely, and treat timely. Despite testimony reflecting the rapid progression of ROP in extremely premature infants and the need for surgical intervention within no more than 72 hours of a determination of "threshold" ROP, D.B. went one month from her first examination to her second, at which point Dr. Llamas determined she required laser treatment "as soon as possible." D.B.'s treatment was further delayed for three days because the NICU could not find the laser. Both Dr. Good and Dr. Phelps testified that had these delays in screening and treatment not occurred, D.B. would have enjoyed a sighted life, explaining how and why that negligence resulted in D.B.'s adverse outcome. Thus, we cannot say that the evidence is legally insufficient to support the jury's conclusion that D.B.'s poor visual outcome was more likely than not the result of Dr. Ponte's negligence.

IV. Conclusion

We hold that the court of appeals erred in not applying the substantial-factor test because the jury heard ample evidence supporting the combined negligence of Dr. Ponte and Dr. Llamas. We further hold that the court of appeals erred in rejecting the Bustamantes' statistical evidence premised on the ETROP study as no evidence of causation and in holding that Dr. Good's and Dr. Phelps's opinions were conclusory and thus no evidence of causation. Finally, we hold that legally sufficient

evidence supports the jury's conclusion that Dr. Ponte's negligence more likely than not caused D.B.'s impaired vision. Accordingly, we reverse the judgment of the court of appeals as to Dr. Ponte and his professional association and remand the case to that court so that it can consider the remaining issues not previously addressed.

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Paul W. Green
Justice

OPINION DELIVERED: September 29, 2017