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ADVANCE SHEET HEADNOTE
MARCH 21, 2011

No. 09SC229, Estate of Ford v. Eicher, Evidence -- admission of expert testimony

The supreme court affirms the court of appeals' judgment and holds that the trial court applied an incorrect legal standard when it determined the admissibility of expert testimony by requiring that an expert express his opinion to a reasonable medical probability. Further, the court holds that the admissibility of scientific expert testimony is governed by CRE 702 and the factors articulated in People v. Shreck, 22 P.3d 68 (Colo. 2001). Finally, the court concludes that the expert testimony of Dr. Joseph G. Ouzounian and Dr. Theodore A. Cooper regarding the intrauterine contraction theory generally and as applied to this case meet the criteria of CRE 702 for admissibility.

SUPREME COURT, STATE OF COLORADO 101 West Colfax Avenue, Suite 800 Denver, Colorado 80202 Certiorari to the Colorado Court of Appeals Court of Appeals Case No. 06CA1625	Case No. 09SC229
<p>Petitioner:</p> <p>The Estate of Catherine Ford,</p> <p>v.</p> <p>Respondents:</p> <p>Danny J. Eicher, M.D. and Consultants in Obstetrics and Gynecology, P.C.</p>	
<p>JUDGMENT AFFIRMED EN BANC March 21, 2011</p>	

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JUSTICE RICE delivered the Opinion of the Court.

We granted certiorari in this case to review the court of appeals' decision that overturned the trial court's exclusion of two medical experts' testimony.¹ The court of appeals held that the trial court abused its discretion when it applied an incorrect legal standard -- the reasonable medical probability standard -- as a preliminary matter in its reliability analysis to determine the admissibility of the medical expert causation testimony of Dr. Theodore A. Cooper and Dr. Joseph G. Ouzounian. Estate of Ford v. Eicher, 220 P.3d 939, 947-48 (Colo. App. 2008). It also found that the trial court applied an incorrect legal standard in evaluating the reliability of Dr. Ouzounian's causation testimony. Id. Finally, the court of appeals found that the doctors' testimony was admissible under CRE 702 and that the exclusion was not harmless error. Id. at 947. Accordingly, the court of appeals reversed the trial court and remanded for a new trial. Id. at 948.

We conclude that the trial court applied the wrong legal standard as a preliminary matter. Applying the Colorado Rules of Evidence to this case, we conclude that Dr. Cooper's and Dr.

¹ We granted certiorari on the issue of: Whether the court of appeals properly applied People v. Shreck, 22 P.3d 68 (Colo. 2001), and People v. Ramirez, 155 P.3d 371 (Colo. 2007), in its review of the trial court's exclusion of expert testimony when it concluded that the causation testimony of two medical experts was reliable and therefore admissible and reversed the trial court's exclusion of that testimony.

Ouzounian's testimony is reliable and relevant, and thus admissible. Accordingly, we affirm the court of appeals.

I. Facts and Procedural History

The Estate of Catherine Ford ("the Estate") brought a medical malpractice claim against Dr. Danny Eicher and Consultants in Obstetrics and Gynecology, P.C. arising from injuries that Catherine Ford ("Catherine") suffered prior to or during birth. Dr. Eicher, an obstetrician, performed the delivery. As Catherine descended the birth canal, she was facing her mother, Mrs. Ford's, left leg such that her left shoulder was anterior and her right shoulder was posterior. After Catherine's head had delivered, her anterior left shoulder became wedged in the birth canal resulting in a medical condition known as shoulder dystocia. Because the baby can be deprived of oxygen in this situation, it is considered an obstetrical emergency.

Dr. Eicher applied downward traction to Catherine's head to free the shoulder, but the shoulder still did not deliver. Dr. Eicher then employed two emergency maneuvers -- the McRobert's maneuver in which the mother's thighs are flexed against her abdomen, and suprapubic pressure applied by an assisting nurse. Dr. Eicher then applied downward traction once again and the baby delivered. The parties dispute the amount of traction applied.

After delivery, Catherine was diagnosed with brachial plexus palsy to the right shoulder. The brachial plexus is a group of nerves originating from the spinal cord in the neck which are responsible for movement and sensation in the shoulder and arm. Specifically, she suffered two nerve ruptures and an avulsion in her right shoulder resulting in permanent impairment to her right arm.

Before trial, the parties endorsed experts to provide competing theories on the cause of the injury. The Estate's expert opined that the injury was the result of excessive traction. The excessive traction theory postulates that, when accompanied by shoulder dystocia, a brachial plexus injury is the result of excessive traction applied to the baby's head during delivery. In contrast, Dr. Eicher's experts, Dr. Ouzounian and Dr. Cooper, were endorsed to provide the opinion that Catherine's injury was caused by maternal intrauterine forces. This theory, known as the intrauterine contraction theory, intrauterine forces theory, or maternal expulsive force theory, posits that, in some circumstances, the internal forces of labor and delivery cause brachial plexus injuries.

The Estate filed a pretrial motion to preclude Dr. Eicher's experts from testifying about the intrauterine contraction

theory.² The trial court held a Shreck hearing at which it reviewed the depositions of Dr. Cooper and Dr. Ouzounian and heard arguments from counsel, but neither expert appeared at the hearing. The trial court held that both experts were precluded from testifying that Catherine's brachial plexus injury was caused by intrauterine forces.

The trial court provided separate and distinct reasoning as to the exclusion of each expert's causation testimony. Regarding Dr. Cooper's testimony, the trial court determined as a threshold matter that Dr. Cooper did not hold his causation opinion to the required degree of reasonable medical probability. As a result, it excluded Dr. Cooper's causation testimony and did not conduct a Shreck analysis. With respect to Dr. Ouzounian's testimony, the trial court found that he held his causation opinion to a reasonable degree of medical probability. The trial court then conducted a Shreck analysis and found that, while Dr. Ouzounian was qualified and the testimony was helpful and sufficiently probative, the scientific principles underlying the intrauterine contraction theory were not reasonably reliable. The trial court rested its decision on

² In addition, the Estate sought to exclude expert testimony that, if Dr. Eicher performed the delivery as he had testified at deposition (namely, in the McRobert's position and without any excess traction), his actions could not have caused Catherine's right brachial plexus injuries. The trial court admitted the testimony and that admission is not challenged by the parties.

the inability to test the theory and rejected the argument that Dr. Ouzounian's differential diagnosis was a well-accepted practice that was sufficient in this case.

Dr. Eicher submitted a motion for reconsideration of the Shreck motion and provided Dr. Ouzounian's supporting affidavit to address the trial court's causation testimony concerns. The trial court denied that motion. Dr. Eicher then submitted an offer of proof.

At trial, as a result of the exclusion of the causation testimony, the trial court declined to allow Dr. Eicher's experts to answer questions posed by the jury about the most likely cause of Catherine's injuries, the likelihood that causes other than excessive traction were at play, and the probability that traction could have worsened the injury. In closing arguments, counsel for the Estate highlighted the fact that Dr. Eicher's experts did not provide an alternative probable cause of Catherine's injuries. The jury found Dr. Eicher negligent.

Dr. Eicher appealed the trial court's exclusion of Dr. Cooper's and Dr. Ouzounian's testimony that intrauterine forces caused Catherine's injuries. The court of appeals determined that the excluded testimony of both experts was admissible and remanded for a new trial. Estate of Ford, 220 P.3d at 948. Regarding Dr. Ouzounian, the court of appeals held that the trial court applied an incorrect legal standard in its

reliability analysis and thereby abused its discretion when it excluded the doctor's testimony as scientifically unreliable. Id. at 946-47. It concluded that the trial court's error in excluding Dr. Ouzounian's testimony was not harmless given the unanswered jury questions and in light of the Estate's closing argument that took advantage of the gap in testimony as to causation. Id. at 947.

The court of appeals also held that the trial court abused its discretion in precluding Dr. Cooper's causation testimony. Id. The trial court excluded Dr. Cooper's causation testimony because it held that he did not hold his opinion to the required degree of medical probability. The court of appeals, relying on People v. Ramirez, 155 P.3d 371 (Colo. 2007), held that the trial court applied an incorrect legal standard when it required that Dr. Cooper express his opinion with reasonable medical probability to determine admissibility rather than CRE 702. Id. As Dr. Cooper's excluded opinion was the same as Dr. Ouzounian's, and as the court of appeals found Dr. Ouzounian's opinion to be reliable, the court of appeals concluded that Dr. Cooper's testimony was similarly admissible. Id.

The court of appeals determined that the exclusion of the experts' causation testimony was not harmless error and remanded

for a new trial.³ Id. It is the court of appeals' reversal of these rulings that is before us now.

II. Standard of Review

Trial courts are vested with broad discretion to determine the admissibility of expert testimony. Ramirez, 155 P.3d at 380. Therefore, we will not overturn a trial court's decision absent an abuse of discretion. Id. A trial court abuses its discretion when its decision is manifestly erroneous. Id.

III. Analysis

CRE 702 governs the admissibility of scientific expert testimony and requires that the testimony be reliable and relevant. People v. Shreck, 22 P.3d 68, 77 (Colo. 2001). A trial court determines whether the testimony is reliable and relevant by considering whether: (1) the scientific principles underlying the testimony are reasonably reliable; (2) the expert is qualified to opine on such matters; (3) the expert testimony will be helpful to the jury; and (4) the evidence satisfies CRE 403. Id. at 77-79.

The inquiry to determine the admissibility of expert testimony should be broad in nature and consider the totality of the circumstances of each specific case. Id. at 77. This broad inquiry allows trial courts to consider a wide range of factors

³ The harmless error determination is not an issue raised on appeal to this Court.

pertinent to the case before it and to disregard factors that do not further the inquiry. Id. To balance the inquiry, the trial court must apply its discretionary authority under CRE 403 to ensure that the probative value of the evidence is not substantially outweighed by unfair prejudice. Id. at 78-79. When the trial court makes a determination of relevance and reliability under CRE 702, it is required to issue specific findings regarding its analyses. Id. at 70, 79.

Under CRE 702, the standard for admissibility is relevance and reliability, not certainty. Ramirez, 155 P.3d at 378; People v. Martinez, 74 P.3d 316, 322-23 (Colo. 2003); Shreck, 22 P.3d at 70. In People v. Ramirez, this Court held that expert medical testimony need not be rendered with reasonable medical probability or certainty. 155 P.3d at 378. We determined that the rigid reasonable medical probability standard did not comport with the broad inquiry mandated by the Colorado Rules of Evidence and our decision in Shreck. Id. Under CRE 702, concerns about the degree of certainty to which the expert holds his opinion are sufficiently addressed by vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof rather than exclusion. Shreck, 22 P.3d at 78 (citing Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 596 (1993)). Accordingly, expert medical testimony need not be rendered with "reasonable medical

probability or certainty" to be admissible. Ramirez, 155 P.3d at 378; see Shreck, 22 P.3d at 77 (requiring reliability and relevance for admissibility).

A. The Trial Court Applied the Wrong Legal Standard

In this case, the trial court applied the wrong legal standard when determining the admissibility of Dr. Cooper's and Dr. Ouzounian's testimony. The trial court approached the admissibility question under the old standard examining whether Dr. Cooper and Dr. Ouzounian expressed their opinions to the required degree of reasonable medical probability.⁴ The trial court treated the degree of reasonable medical probability query as a threshold question that it must consider prior to its CRE 702 analysis. We hold that the trial court applied the wrong legal standard by evaluating the admissibility of expert testimony through the lens of the reasonable medical probability standard. Instead, the trial court should have analyzed the admissibility of the experts' testimony under CRE 702.

⁴ Although the trial court did not have the guidance of Ramirez because that opinion was released after the trial court's Shreck ruling and the jury trial in this case, we review the admissibility of Dr. Cooper's and Dr. Ouzounian's testimony pursuant to Ramirez.

B. CRE 702 Analysis

Having determined that CRE 702 represents the proper standard, we now turn to the issue of whether Dr. Ouzounian's and Dr. Cooper's expert testimony regarding the intrauterine contraction theory generally and as a potential cause of the injuries in this case is admissible under that standard. Because the record in this case is sufficient for a determination of admissibility under CRE 702,⁵ we need not remand the case to the trial court. See Shreck, 22 P.3d at 79. We conclude that, under CRE 702's standard for admissibility, Dr. Cooper's and Dr. Ouzounian's testimony regarding the intrauterine contraction theory and the application of the theory to this case as a possible cause of Catherine's injuries is admissible.

1. Application of CRE 702 to Dr. Ouzounian's Causation Opinion

As discussed above, scientific expert testimony is properly admitted under CRE 702 when: (1) the scientific principles at issue are reasonably reliable; (2) the witness is qualified to opine on such principles; (3) the testimony is useful to the jury; and (4) the probative value of the evidence outweighs any potential prejudice. Id. at 77-79.

⁵ The trial court based its determination wholly on the briefs, the doctors' depositions and affidavits, and counsel's arguments at hearing. Neither Dr. Cooper nor Dr. Ouzounian testified at the hearing, thus the trial court did not have a unique opportunity to assess the credibility of the doctors.

In this case, the trial court conducted a Shreck analysis of Dr. Ouzounian's proffered testimony. In that analysis, the trial court found that testimony about the intrauterine contraction theory generally and as applied to this case to determine causation was extremely helpful to a jury and that the highly probative value of an alternative explanation for this injury far outweighed any undue prejudice. The trial court also found Dr. Ouzounian qualified to opine on the theory generally and to opine that Catherine's brachial plexus injuries were caused by intrauterine forces prior and unrelated to her shoulder dystocia. The record supports these findings and we agree with the trial court's analysis of these factors. The record does not, however, support the trial court's analysis of the reliability of the intrauterine contraction theory or its application to this case.

The reliability analysis under CRE 702 hinges on whether the scientific principles the expert employed are grounded in the methods and procedures of science. Ramirez, 155 P.3d at 378. If so, the testimony meets the reliability requirement. In contrast, scientific expert testimony that relies on bare assertions, subjective belief, or unsupported speculation will not satisfy the reliability requirement. Id.

Like each prong of the CRE 702 analysis, the reliability inquiry is both flexible and broad in nature. Shreck, 22 P.3d

at 77. And the inquiry must consider the totality of the circumstances of a given case. Id. Accordingly, the trial court may consider, or exclude from consideration, a variety of factors to determine whether the expert's opinion is grounded in the methods and procedures of science and thereby reliable. Id.

In Shreck, we articulated a non-exhaustive list of factors that a trial court may consider in its reliability analysis.

Those factors include:

- (1) Whether the technique can and has been tested;
- (2) Whether the theory or technique has been subjected to peer review and publication;
- (3) The scientific technique's known or potential rate of error, and the existence and maintenance of standards controlling the technique's operation;
- (4) Whether the technique has been generally accepted;
- (5) The relationship of the proffered technique to more established modes of scientific analysis;
- (6) The existence of specialized literature dealing with the technique;
- (7) The non-judicial uses to which the techniques are put;
- (8) The frequency and type of error generated by the technique; and
- (9) Whether such evidence has been offered in previous cases to support or dispute the merits of a particular scientific procedure.

Id. at 77-78 (citing Daubert, 509 U.S. at 593-94; United States v. Downing, 753 F.2d 1224, 1238-39 (3d Cir. 1985)). The trial court is not bound by this list and may determine which factors are applicable to the case before it. Id. at 78.

In the case before us, the trial court excluded as unreliable Dr. Ouzounian's testimony that intrauterine forces caused Catherine's injuries. The parties disagree about whether

the trial court's analysis of the intrauterine contraction theory resulted in a finding that the theory itself was unreliable or the theory as applied to this case was unreliable.⁶ This Court shares the parties' uncertainty because the trial court order conflates the analysis of the two issues.

a. Reliability of the Intrauterine Contraction Theory Generally

In its order, the trial court enumerated the factors it employed in its reliability analysis, listing the factors as outlined in Shreck. First, the trial court noted that it must consider the totality of the circumstances of the case. Next, the trial court looked at the relationship of the intrauterine contraction theory to the excessive traction theory. It found that the established medical thinking was that excessive traction was the presumptive cause of brachial plexus injury in newborns suffering shoulder dystocia until the late 1990s or early 2000s. The trial court further noted that relatively newer research and documentation has resulted in a body of peer-reviewed literature that challenges the theory that

⁶ The trial court found that "Dr. Ouzounian's opinion that Catherine Ford's brachial plexus injury was caused by intrauterine contractions [was] not scientifically reliable." Thus, he could not testify to that opinion. The trial court did not "preclude evidence about whether brachial plexus injuries can happen in the absence of excessive clinically applied traction. Drs. Cooper and Ouzounian [we]re precluded only from testifying that in their opinion this injury to Catherine Ford was caused by intrauterine contractions unrelated to her shoulder dystocia."

excessive traction is the sole or primary cause of brachial plexus injuries in deliveries involving shoulder dystocia. This research and documentation included retrospective studies of brachial plexus injury in non-shoulder dystocia cases, as well as modeling of the forces involved in child birth and comparing them to the smaller forces involved in clinically-applied traction during shoulder dystocia. The literature has been criticized for its retrospective nature and for the fact that medical charts often do not record shoulder dystocia or excessive traction, both factors that potentially affect the accuracy of research results. The trial court also noted that the theory is recognized by the American College of Obstetricians and Gynecologists. The record supports these findings and we agree with the trial court's analysis of the reliability factors to this point.

The trial court rested its exclusion of Dr. Ouzounian's testimony that intrauterine forces caused the injuries in this case on the fact that the theory was not testable and error rates could not be assessed. The trial court summarized its reasoning by stating:

Perhaps most troubling to me, there is virtually no way for me -- or for the jury -- to test causation or assess error rates. That is, in a given case, like this one, there is simply no way to tell, from all the available data in the records, whether a particular brachial plexus injury was caused by intrauterine contraction or excessive clinical

traction, or both, and no way to judge the confidence rates of those choices. In other words, the intrauterine contraction theory is not testable, and Dr. Ouzounian's opinion as to causation really boils down to offering a possible alternative explanation without giving the jury the tools to decide whether that explanation is more likely than not the correct one.

We are not persuaded by the trial court's analysis. First, excluding testimony because the theory cannot be tested and error rates cannot be assessed focuses the reliability analysis too narrowly. The nature of the intrauterine forces theory makes it impossible and unethical to test. It follows that error rates cannot be assessed. While the testability and error rates of a scientific theory are factors a trial court may consider in assessing reliability, the trial court may give these factors less weight or disregard them altogether if the case so requires. The CRE 702 inquiry is designed to be flexible to accommodate precisely this type of situation. A theory's inability to satisfy some of the suggested reliability factors will not automatically render the theory unreliable.

Here, ethics prevent testing the intrauterine contraction theory. Such testing would subject mothers and their infants to potential injury. Instead, the theory is supported by research, clinical study, and a body of peer-reviewed literature spanning almost twenty years. It is accepted in the scientific community

as illustrated by the fact that it has been adopted in authoritative texts and in the medical practice guidelines.

Moreover, testability and error rate concerns should not exclude the intrauterine contraction theory as a possible cause of the injuries when one considers the totality of the circumstances in this particular case. Here, the record shows that each party intended to present experts on causation who would offer untestable theories. The Estate's expert testified that excessive traction caused the injuries. That theory, like the intrauterine contraction theory, is not ethically subject to testing or error rate assessment. Concerns raised by the trial court regarding the inability to test the intrauterine contraction theory or assess error rates are the same issues inherent in the excessive traction theory. These concerns are adequately addressed by vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof. Shreck, 22 P.3d at 78 (quoting Daubert, 509 U.S. at 596). Concerns about the reliability of the theory go to the weight of the expert testimony. Thus, we do not share the trial court's concern and would not exclude the theory as unreliable simply because the intrauterine contraction theory cannot be tested and error rates cannot be ascribed.

Finally, a variety of jurisdictions around the country have

admitted expert testimony about the intrauterine forces theory.⁷ We find these opinions instructive and persuasive in analyzing whether the intrauterine forces theory is sufficiently reliable. Furthermore, in this state, a division of the court of appeals held that expert testimony concerning intrauterine forces as a cause of brachial plexus injury was sufficiently reliable and admissible in Luster v. Brinkman, 205 P.3d 410, 415 (Colo. App. 2008). The parties have cited no case, and we are aware of none, holding that such expert testimony is unreliable or inadmissible. For the foregoing reasons, we determine that the intrauterine contraction theory is reasonably reliable under CRE 702.

⁷ See Clark ex rel. Clark v. Heidrick, 150 F.3d 912, 915 (8th Cir. 1998) (the intrauterine forces theory was a scientifically valid method to determine the cause of brachial plexus injuries and differential diagnosis was a scientifically valid way to apply that theory); Silong v. United States, No. CVF06-0474 LJODLB, 2007 WL 2535126 (E.D. Cal. Aug. 31, 2007) (permitting expert testimony regarding a computer simulation to demonstrate the forces of intrauterine contractions in causing brachial plexus injury because the study had been published in peer-reviewed journals and had gained acceptance in the medical and biomedical communities); Potter ex rel. Potter v. Bowman, No. 05CV00827 REBPAC, 2006 WL 3760267 (D. Colo. Dec. 18, 2006) (admitting expert testimony regarding the intrauterine forces theory and finding the theory reliable); Salvant v. State, 935 So. 2d 646, 656-57 (La. 2006) (holding that there was ample evidence in the record that a brachial plexus injury can occur for unknown reasons); D'Amore v. Cardwell, No. L-06-1342, 2008 WL 852791 at ¶ 64 (Ohio Ct. App. Mar. 31, 2008) (unpublished) (holding that the theory of intrauterine forces as a likely causation theory was properly admitted); Taber v. Roush, 316 S.W.3d 139 (Tex. App. 2010) (holding the intrauterine forces theory reliable despite the inability to perform prospective testing).

b. The Reliability of the Intrauterine Contraction Theory as Applied to this Case

We now turn to whether Dr. Ouzounian's application of the theory to this case is grounded in the methods and procedures of science and thereby reliable. The trial court excluded Dr. Ouzounian's causation testimony because it found that Dr. Ouzounian could not have employed a differential diagnosis method to exclude excess traction as a cause without "simply . . . assuming what Dr. Eicher says is true." As a result, it held that the causation testimony was unreliable and therefore inadmissible. We disagree.

The record shows that Dr. Ouzounian based his causation opinion on clinical information and medical literature. He used that information and literature to make a differential diagnosis which connected the intrauterine contraction theory to the facts of this case. Dr. Ouzounian explained that the medical literature and many experts in the field have adopted the view that, based on anatomic relationships, brachial plexus injuries to the posterior shoulder cannot result from an anterior shoulder dystocia. Catherine's brachial plexus injury was to her posterior shoulder, but her shoulder dystocia occurred in her anterior shoulder. Based on this clinical information, Dr. Ouzounian explained that his differential diagnosis was that mechanical forces of labor caused an impaction of Catherine's

posterior shoulder on the mother's sacral promontory, an anatomical structure inside the mother. While the shoulder was stuck, the internal compressive forces of labor caused the injury to Catherine's posterior shoulder. This was, in his opinion, the only mechanism for a brachial plexus injury in the posterior shoulder with an anterior shoulder dystocia. Dr. Ouzounian also ruled out excessive lateral traction explaining that such traction could cause injury to the anterior shoulder with an anterior shoulder dystocia, but could not cause injury to the posterior brachial plexus. Then, Dr. Ouzounian ruled out upward traction based on Dr. Eicher's testimony that he did not apply upward traction and the fact that the medical literature does not substantiate that upward traction applied during delivery could cause brachial plexus injury. Finally, Dr. Ouzounian noted that peer-reviewed studies show that maternal forces of labor are four to nine times greater than the force applied by delivering clinicians.

Based on the foregoing, we conclude that Dr. Ouzounian's causation testimony is reliable because it is grounded in the methods and procedures of science. Our review of the record shows that Dr. Ouzounian based his opinion that Catherine's injury resulted from intrauterine forces on his differential diagnosis. Differential diagnosis, or diagnosis by exclusion, is a reliable method of diagnosis which is taught to doctors in

training and used in practice. Farmland Mut. Ins. Cos. v. Chief Indus., 170 P.3d 832, 836 (Colo. App. 2007). Dr. Ouzounian used this reliable scientific methodology to link the intrauterine contraction theory as a cause of brachial plexus injury generally to this case specifically. He did so by linking the specific clinical facts of the delivery and the mechanism of labor with the literature and his experience and arrived at the opinion that Catherine's injury could only have resulted from intrauterine forces.

Thus, based on the record and after considering the totality of the circumstances in this case, we conclude that: (1) the intrauterine contraction theory is reliable under CRE 702, Shreck, and its progeny; and (2) Dr. Ouzounian's application of the intrauterine contraction theory to this case is reliable. Accordingly, we conclude that Dr. Ouzounian's testimony regarding the intrauterine forces theory in general and his causation testimony applying the theory to this case is admissible under CRE 702 because: (1) the theory is reliable in general and the methodology used to apply the theory to this case is reliable; (2) Dr. Ouzounian is qualified to opine on the theory; (3) testimony about the intrauterine forces theory generally and as applied to determine causation in this case is extremely helpful to a jury; and (4) the highly probative value

of an alternative explanation for this injury far outweighs any undue prejudice.

2. Application of CRE 702 to Dr. Cooper's Causation Testimony

As discussed above, the trial court applied an incorrect legal standard to determine the admissibility of Dr. Cooper's testimony. Because it found Dr. Cooper did not express his opinion with reasonable medical probability, it excluded his causation testimony without conducting a Shreck analysis.⁸

A CRE 702/Shreck analysis governs the admissibility of Dr. Cooper's causation testimony. Like Dr. Ouzounian's testimony, Dr. Cooper's testimony concerns the intrauterine forces theory. Therefore, our foregoing analysis of the reliability of the theory, the helpfulness to the jury, and potential prejudice applies equally to Dr. Cooper's testimony. Accordingly, our CRE 702 analysis need only examine whether Dr. Cooper is qualified to opine on the intrauterine forces theory and whether the theory as applied to this case is reliable.

a. Expert Qualification

Under CRE 702, an expert may be qualified by any one of the five factors specified in the rule: knowledge, skill, experience, training, or education. CRE 702; Golob v. People, 180 P.3d 1006, 1012 (Colo. 2008). After reviewing the record,

⁸ The trial court allowed Dr. Cooper's testimony that, if the delivery happened as Dr. Eicher described, Dr. Eicher could not have caused the brachial plexus injuries to Catherine.

we conclude that Dr. Cooper is qualified by knowledge, skill, experience, training, and education to opine on the intrauterine forces theory. He was Chief Resident at the University of Colorado Health Sciences Center and Rose Medical Center, where he completed his residency in obstetrics and gynecology. Dr. Cooper has been board certified in obstetrics and gynecology since 1977 and has been an attending physician at Rose Medical Center. For more than 30 years, Dr. Cooper has served as an assistant clinical instructor at the University of Colorado Health Sciences Center. He has also been the Vice Chairman of Obstetrics and Gynecology at Rose Medical Center, a member of the OB-GYN audit and department committees, Chairman of the Medical Executive Committee, and President of the medical staff at Precedent Medical Center. He is a fellow of the American College of Obstetricians and Gynecologists, the American Fertility Society, and the Colorado Gynecology and Obstetrics Society. We conclude that Dr. Cooper has the knowledge, skill, experience, training, and education to express opinions concerning the injuries a baby can sustain during gestation and delivery including those caused by intrauterine forces.

b. The Reliability of the Intrauterine Contraction Theory as Applied to this Case

We further conclude that Dr. Cooper's application of the intrauterine contraction theory to this case is reliable. In

his deposition, Dr. Cooper opined that sometime prior to the onset of delivery of the head, the injured shoulder became blocked in its descent by the sacral promontory, though he does not know whether that occurred just prior to the delivery of the head or before that time. He based this opinion on a number of facts. First, he stated that the "conduct of the labor" itself supports the conclusion. The "conduct of the labor" included the steps taken by Dr. Eicher during the delivery to relieve the shoulder dystocia and the fact that the shoulder easily released. Second, Dr. Cooper cited the ease of delivery following the release of the anterior shoulder. He went on to testify that the delivery was appropriate and that the anterior shoulder dystocia was relatively brief. He used this information together with the medical literature to reach his differential diagnosis that intrauterine forces were a probable cause of Catherine's injuries.⁹ He is qualified to make this differential diagnosis based on his review of literature on the

⁹ The trial court made much of the fact that Dr. Cooper did not express his opinion with reasonable medical certainty. Dr. Cooper did, however, express an opinion that intrauterine forces were a possible mechanism of Catherine's injuries and that it was a reasonable supposition that intrauterine forces caused the injuries. As discussed above, less than certain opinions may still be reliable when, as here, they are supported by the methods and procedures of science. Ramirez, 155 P.3d at 378. And these concerns can be alleviated by vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof. Shreck, 22 P.3d at 78 (quoting Daubert, 509 U.S. at 596).

subject and his decades of experience as a practicing and teaching obstetrician. Accordingly, we conclude that Dr. Cooper's causation testimony is reasonably reliable. Thus, considering the totality of the circumstances, we conclude that Dr. Cooper's causation testimony is admissible under CRE 702 because: (1) the theory is reliable in general and the methodology used to apply the theory to this case is reliable; (2) Dr. Cooper is qualified to opine on the theory; (3) testimony about the intrauterine forces theory generally and as applied to determine causation in this case is extremely helpful to a jury; and (4) the highly probative value of an alternative explanation for this injury far outweighs any undue prejudice.

IV. Conclusion

The trial court applied an incorrect legal standard when it determined the admissibility of expert testimony by requiring that an expert express his opinion to a reasonable medical probability. Instead, admissibility is governed by CRE 702 and the factors articulated in Shreck. Applying the correct legal standard, Dr. Ouzounian's and Dr. Cooper's testimony regarding the intrauterine contraction theory generally and as applied to this case meet the criteria of CRE 702 for admissibility. Accordingly, we affirm the court of appeals.