



# A Medical & Legal Preview

## of Cranial Compression Ischemic Encephalopathy (CCIE)

by Charles Mendez

### INTRODUCTION

Alice<sup>1</sup> is seven years old and severely disabled. Unlike other children her age, she cannot sit, stand, or even crawl. She is unable to talk, hold her head up without support, or feed herself. She has ongoing, daily seizures. From the time she was an infant, she has required twenty-four-hour care. She is not expected to improve.

Alice suffered a hypoxic-ischemic brain injury during labor and delivery that could have been avoided with appropriate care. She has since been diagnosed with cerebral palsy (CP). However, rather than an obvious case of asphyxia, with clinical and imaging features consistent with standard hypoxic ischemic encephalopathy (HIE), Alice's case was different. Her injuries could only be explained by two different mechanisms, head compression – referred to as cranial compression ischemic encephalopathy (CCIE) – and blunt force trauma.

For reasons this article will identify and explore, the first mechanism of injury, head compression or CCIE, has produced a unique though increasingly common challenge in similar birth injury litigation. The defense bar, bolstered by the efforts of the American College of Obstetricians and Gynecologists (ACOG) and a handful of

experts, have derisively and summarily concluded that CCIE is a novel, litigation-driven theory, neither supported by the medicine nor rooted in the methods and procedures of science. Accordingly, proffered expert testimony relying on CCIE as a cause of injury almost always faces a legal challenge. Namely, that the testimony does not meet the admissibility requirements of Rule of Evidence 702 and the reliability factors identified in *Daubert v. Merrell Dow Pharm., Inc.*<sup>2</sup>

In Alice's case, it was no different. Defendants moved to exclude the causation testimony of Plaintiff's experts, arguing that CCIE was inadmissible "junk" science. While the defendants were successful at the district court level, the Colorado Court of Appeals recently ruled that CCIE is admissible expert testimony. At least for now, Alice, and many children like her, will be able to seek some justice in the courts. One should not presume, however, the issue to be resolved. In Colorado, it may ultimately be decided by the Supreme Court, and the issue remains open in the vast majority of other jurisdictions. Yet, by all appearances, CCIE continues to gain traction as an important, if previously less understood, mechanism of injury that can cause global brain injury during labor and delivery.

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<sup>1</sup> In order to preserve confidentiality and anonymity, the name of the child has been changed to Alice.

<sup>2</sup> The seminal Supreme Court case of *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) established that expert testimony would be governed by Federal Rule of Evidence 702.

Colorado, like many states, has similarly established that Rule 702 governs expert testimony, noting the factors identified in *Daubert* are useful when an inquiry into the admissibility of expert testimony is made. *People v. Shreck*, 22 P.3d 68 (Colo. 2001).

Alice represents just one child whose injuries were partly explained by the forces of CCIE, and who, absent a long, and at times discouraging, fight, would have been robbed her day in court. Knowing other child advocates may be faced with a similar struggle, this article gives a brief overview of the theory of cranial compression ischemic encephalopathy, its legal landscape, and one small example of success.

## CRANIAL COMPRESSION ISCHEMIC ENCEPHALOPATHY (CCIE)

The term cranial compression ischemic encephalopathy, short-handed by the acronym CCIE, was formally introduced by Barry S. Schifrin, M.D., *et. al.*,<sup>3</sup> with the hopes of drawing attention to a mechanism of fetal neurological injury that had been overlooked. There is general consensus that severe asphyxia during birth accounts for a significant amount of neurological injury, including cerebral palsy (CP).<sup>4</sup> Consequently, an extensive amount of intrapartum fetal surveillance has been dedicated to monitoring and preventing the occurrence of asphyxia during labor and delivery.<sup>5</sup> However, while these efforts have reduced the amount of stillbirths and asphyxia-related complications, the amount of CP cases, neonatal seizures, and neonatal encephalopathy has remained virtually unchanged.<sup>6</sup> In fact, the majority of babies with perinatal brain injury do not exhibit signs of severe asphyxia, including moderate to severe acidosis, are not severely

compromised at birth, and do not have the typical presence of ischemic lesions, hemorrhagic lesions, or ischemic stroke on their neuroradiologic findings.<sup>7</sup> This discrepancy in the data has led clinicians and researchers to investigate other potential mechanisms causing neurological injury in fetuses. From this, CCIE emerged.

In short, CCIE explains that fetal neurological injury can result from the mechanical forces of labor alone. More specifically, during maternal contractions, the pressure exerted by a mother's uterus compresses the fetal skull, which in turn raises intracranial pressure in the fetus. If these intrauterine forces become excessive, the continued rise in fetal intracranial pressure will eventually result in cerebral ischemia and injury, even without severe asphyxia, multiorgan failure, or acidosis.<sup>8</sup> In other words, through excessive head compression, the fetal brain will endure hypoxic-ischemic insults that are purely mechanical in nature, and, importantly, largely undetectable through the standard forms of intrapartum fetal surveillance.<sup>9</sup> To put this within a legal context, CCIE is a mechanism of injury that can cause preventable global brain damage in an infant different from acute profound asphyxia, perinatal stroke, or cerebral sinus thrombosis. Moreover, the clinical features and characteristics of CCIE may not entirely match the stereotypical patterns of prolonged partial asphyxia.<sup>10</sup> CCIE provides a medical and scientific cause of birth injury

<sup>3</sup> Schifrin, BS, *et. al.*, *Cranial Compression Ischemic Encephalopathy: Fetal Neurological Injury Related to the Mechanical Forces of Labor and Delivery in STRESS AND DEVELOPMENTAL PROGRAMMING OF HEALTH AND DISEASE: BEYOND PHENOMENOLOGY*, pp. 651-688 (2014).

<sup>4</sup> *Id.* at 652

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*, citing Foley, *et. al.*, *Term Neonatal Asphyxial Seizures and Peripartum Deaths: Lack of Correlation with a Rising Cesarean Delivery Rate*, AM. J. OBSTET. GYNECOL., 192, 102-8 (2005); Perlman, J. M. *Intrapartum Asphyxia and Cerebral Palsy: Is There a Link?* CLIN.

PERINATOL., 33, 335-53 (2006); Walsh, C. A., *et. al.*, *Trends in Intrapartum Fetal Death, 1979-2003*, AM. J. OBSTET. GYNECOL., 198, 47, e. 1-7 (2008).

<sup>7</sup> Schifrin, *supra* note 3, at 652; Laugesaar, R., *et. al.*, *A Cutely and Retrospectively Diagnosed Perinatal Stroke: A Population-based Study*, STROKE, 38, 2234-40 (2007); Takenouchi, T., *et. al.*, *Changing Pattern of Perinatal Brain Injury in Term Infants in Recent Years*, PEDIATR. NEUROL., 46, 106-10 (2012).

<sup>8</sup> Schifrin, *supra* note 3, at 655-56.

<sup>9</sup> *See id.*

<sup>10</sup> *See id.*

in children like Alice, when other explanations are not supported by the evidence.

For this reason, more than a theory, CCIE is a way of evaluating various mechanical factors that can contribute to fetal cerebral ischemia.<sup>11</sup> It thus clarifies an important gap in the research and understanding of birth injury. The factors commonly associated with mechanical injury include fetal head molding and decreased venous return in response to the compressive forces of the uterus, maternal bearing-down efforts, occiput posterior position, operative vaginal delivery, excessive uterine activity, and fetal heart rate patterns.<sup>12</sup> Any one, and certainly all, of these factors can contribute to cerebral ischemia and injury during labor and delivery.<sup>13</sup> More importantly, they can be monitored with the intent of recognizing and reducing the risk of mechanical injury. For clinicians, researchers, and child advocates, these factors lay the groundwork for explaining the cause of global neurological injury in infants, when classic causes, such as acute profound HIE and perinatal stroke, fall short.

The primary goal of researching and developing CCIE as an overlooked mechanism of birth injury is prevention of injury, including CP and neonatal encephalopathy. The widespread assumption in obstetrics is that ischemic injury is mostly the result of asphyxia, not the mechanical forces of labor.<sup>14</sup> Because the role of mechanical forces in fetal injury is underappreciated, very little is done to evaluate, measure, or record it.<sup>15</sup> Even less is done to prevent it. By examining, identifying, and classifying these mechanical

factors, the non-classical presentations of cerebral ischemia in fetuses can be better understood.

Considering all this, there may be a tendency to presume that CCIE is a novel and underdeveloped concept. That is the position of the defense bar. This is misguided. While CCIE is a new name, the concepts and scientific principles are actually centuries old. As one of many examples, a mid-19<sup>th</sup> century physician, William Little, surveyed and recorded that “many cases of deformity, mental and physical, [were] traceable to potentially dangerous forces of labor and delivery including an increased intrauterine pressure attendant to contractions.”<sup>16</sup>

These same insights have not been negated by medical innovation and modern development. Contemporary scholarship recognizes that mechanical factors can and do result in adverse effects on a fetus during labor and delivery.<sup>17</sup> It is well-established that “perinatal mechanical insults may result in primarily hypoxic-ischemic cerebral injury, probably secondary to disturbances of placental or cerebral blood flow.”<sup>18</sup> In the recently published textbook, *Birth Trauma and Perinatal Brain Damage*, Pathologist Vasily Vasilievich Vlasyuk explains, “The compression of the brain in labor can occur without any ruptures and hemorrhages, causing hypoxia and ischemia of the brain tissue...Only the brain suffers from ischemia caused by the birth injury—its compression.”<sup>19</sup>

Notwithstanding CCIE, injuries of this nature were, and still are, called head compression. It is widely-accepted that

<sup>11</sup> See generally *id.* at 666-77.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* at 677.

<sup>15</sup> *Id.*

<sup>16</sup> Little, W. J., *On the Influence of Abnormal Parturition, Difficult Labors, Premature Birth, and Asphyxia Neonatorum, on the Mental and Physical Conditions of the Child, Especially in*

*Relation to Deformities*, TRANS. OBSTET. SOC. LAND, 3, 293-344 (1862) (Republished in CLIN. ORTHOP. RELAT. RES., 46, 7-22, (1966)).

<sup>17</sup> Volpe, J.J. NEUROLOGY OF THE NEWBORN, 5th ed. (2008).

<sup>18</sup> *Id.*

<sup>19</sup> Vasily Vasilievich Vlasyuk, BIRTH TRAUMA AND PERINATAL BRAIN DAMAGE, 82 (2019).

excessive head compression during birth is a mechanical injury that can interrupt blood supply to the fetal brain. Even among medical-legal experts, none will deny that head compression is a valid and sound cause of hypoxic-ischemic injury in infants, though they still refuse to accept CCIE in its entirety. Part of this is due to disagreement over whether head compression injuries are strictly focal, rather than global, but part of it also seems to simply be an issue of semantics.

In medicine, like law, terminology is important. It is also, at times, problematic. Unfortunately, both disciplines make the mistake of using terms inconsistently or defining them so elastically that the meaning becomes lost. This is particularly true within the context of birth injury, where, for example, terms like HIE and neonatal encephalopathy (NE) are sometimes used interchangeably, despite HIE having strict characteristics and NE being vague and nonspecific.<sup>20</sup> Much of the intent behind the introduction of CCIE was to help specify a type of mechanical injury that occurs during parturition in a more detailed, precise way.<sup>21</sup> Yet, as an unintended consequence, the term CCIE has become a buzz word in the medical-legal world, tantamount to motion practice. This is important to appreciate because excessive head compression and the dangers of increased fetal intracranial pressure are common topics in the literature, while the name CCIE often cannot be found. In other words, the lack of CCIE's name in the medical world is inaccurately used in the courtroom as an argument against its validity. To speak anecdotally, sometimes an expert will agree that head compression is a scientifically valid and generally-accepted mechanism of injury, but adamantly deny the same is true of CCIE. Judges, lawyers, and physicians all get hung up on terms.

CCIE offers a promising pathway to better understanding and preventing birth injury.



It further helps explain the cause of fetal neurological injury in non-stereotypical cases of hypoxic-ischemic insult. As a final matter, while the term is new, the concepts of excessive head compression are not. Therefore, CCIE is not a new and novel mechanism of injury; rather, it is a mechanism of injury that hasn't yet been given adequate attention in the study and prevention of birth injury.

## LEGAL PERSPECTIVE

The legal response to CCIE is perhaps not surprising. The theory has potential to better understand, explain, and prevent overlooked causes of fetal neurological injury. Equally, it has the potential to expand liability against medical providers whose failures during labor and delivery may contribute to this type of injury. With this in mind, it is safe to assume that any birth injury case involving CCIE, whether identified by name or not, will face a Rule 702 challenge. Child advocates must therefore be prepared to respond to these arguments, as well as advise their clients of the consequences if orders are entered in favor of the defense. As for the preparation part, this article can provide some empirical guidance.

To provide a little background, *Daubert* established that Rule 702 of the Federal Rules of Evidence governs the admissibility of expert testimony.<sup>22</sup> States followed suit. For expert testimony to be admissible under

<sup>20</sup> Schiffrin, *supra* note 3, at 666.

<sup>21</sup> *See id.*

<sup>22</sup> *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993).

Rule 702, the expert must be qualified, the testimony must be useful and relevant to the trier of fact, and the reasoning or methodology underlying the testimony must be scientifically valid and properly applied to the facts of the case.<sup>23</sup> In assessing whether the methodology behind the testimony is scientifically valid and reliable, the *Daubert* court identified several, nonexclusive factors a court may consider.<sup>24</sup> These include whether the technique can and has been tested, whether it has been subjected to peer review and publication, its known or potential rate of error, and whether the technique is generally accepted in the medical community.<sup>25</sup> Other courts have expanded the list of reliability factors, but also noted that such factors do not necessarily apply in every situation.<sup>26</sup>

As it relates to CCIE, it is not likely that either the qualifications of the expert or the relevance of the testimony will be challenged, and less likely still that such challenges would be successful. Certainly, these arguments have not been the focal point in prior cases so far. Instead, the issue turns on whether the reasoning and methodology underlying CCIE is scientifically valid. Even though every case is different, the legal arguments are not. While there might be some variance between states and cases, the arguments against CCIE all seem to rely on the following three factors taken from *Daubert*: (1) whether the theory or technique has been tested, (2) whether it has been subject to peer-review and publication, and (3) general acceptance within the medical community. A summary of the main argument, as well as a response, to each of these has been provided below.

### ***(1) Whether the theory or technique has been tested***

As a theory, CCIE has not, and cannot, be tested in the traditional sense. This has been used as ammunition by the defense to argue the theory is not rooted in scientifically valid methods. This argument is both irrelevant and misleading.

It is irrelevant because an inquiry into the admissibility of expert testimony must be flexible, consider the totality of circumstances, and the reliability factors do not constitute a definitive checklist.<sup>27</sup> As noted by the Supreme Court in *Kumho Tire Co. v. Carmichael*, the reliability factors are not always pertinent to every analysis.<sup>28</sup> To rule a theory is inadmissible simply because it cannot be tested construes *Daubert's* reliability factors too narrowly. This is especially true when a theory cannot be ethically tested. Obviously, attempted studies that mimic excessive uterine pressure on a human fetal skull in the hopes of measuring its injurious impact on the brain have not been conducted. Among numerous other problems with such a study, it would be unethical to intentionally inflict harm on a human fetus. For this reason, the fact that CCIE is untested should have no bearing on its reliability. This particular factor is not applicable in the analysis.

The argument that CCIE is untested is also misleading. Even though the effects of intracranial pressure on human fetuses cannot be tested prospectively, it has been studied in various ways. For example, over forty years ago, scientists measured the impact of extracranial pressure on cerebral blood flow in near-term fetal lambs.<sup>29</sup> The results demonstrated that compression of

<sup>23</sup> *Id.*

<sup>24</sup> *Id.* at 593-95.

<sup>25</sup> *Id.*

<sup>26</sup> *United States v. Downing*, 753 F.2d 1224, 1238-39 (3d Cir. 1985) (listing additional reliability factors courts may consider); *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999) (cautioning that the factors do not apply to all experts in every case).

<sup>27</sup> *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150-51 (1999).

<sup>28</sup> *Id.*

<sup>29</sup> Newton, T, *et al.*, *Compression of the Sagittal Sinus by Neonatal Calvarial Molding*, *Radiology* 115, 635 – 369 (June 1975); Mann, L. *The Effect of Head Compression on FHR, Brain Metabolism and Function*, *OBSTET. GYNECOL.*, 39(5), 721 (1972).

the head resulted in corresponding decreases of cerebral blood flow in the sheep.<sup>30</sup> When extrapolated to human fetuses, these studies strongly support the hypotheses of CCIE. Additionally, post-mortem, observational studies confirm that intracranial pressure during labor and delivery can result in brain damage. In his book *Birth Trauma and Perinatal Brain Damage*, Dr. Vlasjuk describes a post-mortem study that concludes “fetal cerebral compression during labor results in increased compression of the fetal brain that can cause hypoxia and ischemia of brain tissue – even without focal ruptures, hemorrhages, or global fetal hypoxia.”<sup>31</sup> Clearly, arguing that CCIE is unreliable because it is untested lacks merit.

### ***(2) Whether it has been subjected to peer-review and publication***

It is also argued that CCIE is unreliable because it has not been subjected to peer-review and publication. Previously, this argument was misleading. Now, it is altogether wrong. As noted above, while one might struggle to locate the acronym CCIE in the database of peer-reviewed literature, the underlying principles, building blocks, and even the same concepts by a different name, can be found throughout the scholarship, dating back to the 19<sup>th</sup> century. At the very least, no one can deny that excessive fetal head compression, intracranial pressure, cerebral ischemia, and the relation between these, are widely discussed and documented in the literature.

Furthermore, Dr. Vlasjuk’s book, published in 2019, while never mentioning it by name, has an entire chapter that precisely and comprehensively covers the exact

mechanism of injury that constitutes CCIE. No reliability factor is entirely dispositive, but if a court deems the presence of peer-reviewed publications to be persuasive, then it should favor admissibility.

### ***(3) General acceptance within the medical community***

Finally, the defense bar argues that CCIE is not generally accepted within the scientific community. This is misleading for two reasons. First, similar to the arguments above, it is a play on semantics. CCIE is a newer and unfamiliar term, but medical-legal experts will admit (and have admitted) that the perilous effects of excessive head compression during labor are taught in medical school.<sup>32</sup> It is well-known, recognized, and discussed in the medical literature that early fetal heart rate decelerations, which may represent cord occlusion, can be the result of head compression.<sup>33</sup> Clinicians know and understand that head compression can cause brain injury in an infant during labor and delivery. Therefore, it is inaccurate to suggest these concepts do not have general acceptance within the medical community.

Second, the Supreme Court in *Daubert* was careful to specify that a Court’s inquiry should focus “solely on principles and methodology, not on the conclusions that they generate.”<sup>34</sup> In other words, the reliability factors are not an excuse for the trial court to decide which expert’s conclusions are more persuasive. The gatekeeping function starts and ends with determining whether the underlying data is scientifically valid. General acceptance, therefore, does not mean that CCIE must be a conclusion accepted by all clinicians and

<sup>30</sup> Newton, T, *et al.*, *Compression of the Sagittal Sinus by Neonatal Calvarial Molding*, *Radiology* 115, 635 – 369 (June 1975); Mann, L. *The Effect of Head Compression on FHR, Brain Metabolism and Function*, *OBSTET. GYNECOL.*, 39(5), 721 (1972).

<sup>31</sup> Vlasjuk, *supra note* 19, at 81-93.

<sup>32</sup> The well-respected textbook, *Williams Obstetrics*, used both by students and clinicians, discusses the impact of fetal head compression during labor. See Cunningham, F. G., *et al.*, *WILLIAMS OBSTETRICS*, 25th ed., 465-68 (2018).

<sup>33</sup> *Id.*

<sup>34</sup> *Daubert*, 509 U.S. at 595.

researchers. Instead, the issue is whether the medical community generally accepts the underlying principles and methodology governing CCIE. By all accounts, it does.

As a final matter, the defense may point to the fact that the American College of Gynecology's ("ACOG") does not recognize CCIE in their published task force materials and has specifically rejected the theory in amicus briefs. There are good reasons to be suspect of ACOG's objection, however. ACOG is a professional trade organization that represents the interests of physicians. Its materials are not peer-reviewed medical literature. To the contrary, they are often litigation driven. In 2000, ACOG's then president, Dr. Franklin Miller, stated that one of the goals for ACOG during the next decade was to "reduce medico legal risks for obstetrician-gynecologists" by developing evidence that could be "used to defend against unwarranted claims and challenge false testimony by expert witnesses and others."<sup>35</sup> ACOG's materials are therefore not good evidence that CCIE has been rejected by the medical community.

In addition to the responses above, another effective argument in favor of admitting testimony on CCIE is whether it has been admitted in other jurisdictions. At the moment, research into this area reveals only a handful of states have addressed it. However, there is likely more litigation currently underway. For the jurisdictions

where CCIE has been challenged, the majority have found CCIE to be reliable and admissible. These include Alice's case in Colorado<sup>36</sup>, as well as cases in Ohio<sup>37</sup>, New York<sup>38</sup>, and Michigan<sup>39</sup>. Georgia<sup>40</sup> and a federal district court in Nebraska<sup>41</sup> are the only jurisdictions to preclude evidence of CCIE. By all appearances, CCIE is here to stay.

## ALICE'S STORY

Alice was born on September 9, 2013. The prenatal care was routine and normal, and there was nothing in the medical records to suggest any form of injury. Alice, however, was born neither breathing nor moving. Her mother endured 26-hours of labor, tragically characterized by excessive uterine activity, insufficient recovery time between contractions, the over-administration of Pitocin (to such an extent that it violated the black-box warning), cephalopelvic disproportion, malpresentation in the occiput posterior position, and an ominous five-hour second stage of labor. The most striking part of Alice's birth was her appearance. The physician that assumed her care in the NICU stated the following in his contemporaneous notes:

I have never seen anything remotely like this. The most remarkable feature of her head moulding, scalp swelling, erythema and bruising, was the sharp border between normal and affected skin. This border was clean and straight, as if it had

<sup>35</sup> Miller, F., "Ten Goals for ACOG for the First Decade of the Next Millennium," OB&GYN, 94(1):1 at 4 (2000).

<sup>36</sup> *Dean v. Catholic Health Initiatives Colo., et. al.*, 19CA0987 (unpublished opinion); see also *Trujillo v. Vail Clinic, Inc.*, 2020 COA 126 (ruling CCIE was admissible expert testimony)

<sup>37</sup> *Pierce v. Upper Valley Med. Ctr.*, No. 14CV567 (Ohio C.P. Sept. 2016) (order denying motion to exclude CCIE); *McClure v. Good Samaritan Hosp., Inc.*, No. A1104796 (Ohio C.P. Sept. 19, 2013) (order denying motion to limit CCIE testimony); *Grow v. Good Samaritan Hosp.*, No. A0200425 (Ohio C.P. Sept. 18, 2007) (order denying motion to exclude CCIE testimony).

<sup>38</sup> *Tavares v. N.Y. City Health & Hosps. Corp.*, No. 45757/00, 2003 WL 22231534 (N.Y. Sup. Ct. June 23, 2003) (order denying motion to preclude CCIE testimony).

<sup>39</sup> *Figurski v. Trinity Health-Mich.*, No. 318115, 2016 WL 4069459 (Mich. Ct. App. July 28, 2016) (unpublished opinion); *Vanslebrouck v. Halperin*, No. 309680, 2014 WL 5462596 (Mich. Ct. App. Oct. 28, 2014) (unpublished opinion).

<sup>40</sup> *Smith v. Braswell*, 804 S.E.2d 709 (Ga. Ct. App. 2017).

<sup>41</sup> *S.S. v. Bellevue Med. Ctr. L.L.C.*, No. 8:13CV143, 2015 U.S. Dist. LEXIS 68387 (D. Neb. May 27, 2015).

been drawn with a ruler, and ran uninterrupted in a perfect circle around Alice's head.

It is my assessment that Alice's head had had been stuck, with enough pressure to hurt her brain, but not enough pressure to kill her, in Mom's pelvic outlet for quite a long time.

Despite lacking the classic signs of severe asphyxia, Alice was diagnosed with global hypoxic-ischemic brain damage and CP. Plaintiffs' experts in obstetrics, neurology and neuroradiology reached the same conclusions as Alice's treating provider. The cause of Alice's injuries were head compression and blunt force trauma to the head that occurred during a long, worrisome second stage of labor.

The defendants moved to exclude causation testimony reading head compression/CCIE. Unfortunately, the Colorado district court agreed. Worse, despite plaintiff being adamant that CCIE was only part of the cause of Alice's injury, blunt force trauma being the other, the court ruled these were the same. Summary judgment was then entered on the grounds that plaintiff could not establish the element of causation in her case. Alice appealed.

On appeal, the appellate court reversed. Not only did the court of appeals rule that the second mechanism of injury, blunt force trauma, was not considered by the lower court, it also ruled that CCIE was reliable. Relying on the qualifications of the experts, the widely-accepted principles and methodology underlying CCIE, and considering the other jurisdictions admitting it, the court ruled CCIE was admissible.

It is important to recognize that Alice's case was not the only one of her kind being addressed by the Colorado Court of Appeals. A similar case, *Trujillo v. Vail Clinic, Inc.*, 2020 COA 126, with evidence of CCIE but not the extensive head trauma, was concurrently reviewed by a different panel of the appellate court. That panel reached the

same conclusion regarding the admissibility of CCIE.

## CONCLUSION

As child advocates, inspiration comes from stories. Of course, Alice's story is not yet finished. Her case may ultimately be decided by the Supreme Court of Colorado. Taking on a case with similar medical issues means, with the exception of the few states listed above, there will be legal challenges. But there is reason to be optimistic both for Alice's outcome and for the future recognition of CCIE. Colorado, like a handful of other states, has recognized that CCIE is a reliable scientific theory that deserves its place in the courtroom. As the concepts of CCIE continue to be studied and developed, so will the potential to better understand and prevent birth injury from occurring.

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