UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF INDIANA
SOUTH BEND DIVISION

DALE RUPPEL,	)	
SHELLEY RUPPEL,	)	
Plaintiffs,	)	
v.	)	**No: 3:08 CV 591**
DRAGAN KUCANIN,	)	
FEDEX GROUND PACKAGE SYSTEM, INC.,	)	
Defendants.	)	

OPINION AND ORDER

Defendant Dragan Kucanin ("Kucanin") a driver for defendant FedEx Ground Package System, Inc. ("FedEx") drove his semi-tractor trailer rig into a semi-tractor trailer rig driven by plaintiff Dale Ruppel ("Ruppel") when Ruppel was stopped in a construction zone. The accident between Ruppel and Kucanin occurred on Interstate 80/94 East in Calumet Township, Lake County, Indiana, on January 8, 2008. Both vehicles were damaged in the collision. (Pls.' Exh. 2, DE # 57-2.) Ruppel and his wife Shelley Ruppel (collectively "the Ruppels") sued FedEx and Kucanin for damages that he allegedly sustained as a result of the accident. (DE # 1.) Defendants have admitted that Kucanin was negligent in operating his semi-tractor trailer rig causing the crash with Ruppel's semi-tractor trailer rig. (Responses to Plaintiffs' Requests to Admit to Dragan Kucanin and FedEx Ground Package system, Inc., Pls.' Exh. 1, DE # 57-1 at 1.) They also admit that Ruppel has no comparative negligence. (*Id.*) Defendants have moved to exclude Ruppel's evidence related to an alleged diffuse axonal brain injury under FEDERAL RULE OF EVIDENCE 702 and for summary judgment on Ruppel's claim for a diffuse axonal injury. (DE ## 54-56.) As explained below, both motions will be denied.

Defendants argue that two pieces of Ruppel's proposed evidence should be excluded under FEDERAL RULE OF EVIDENCE 702. First, they argue that Dr. Christine Pareigis ("Dr. Pareigis") is unqualified to diagnose a diffuse axonal injury because she is not qualified to diagnose an injury. (DE # 56 at 13.) Second, they argue that Dr. Randall Benson's ("Dr. Benson") opinion as to Ruppel's condition of a diffuse axonal injury and its causation is unreliable under RULE 702 because it is based on two controversial methods: diffusion tensor imaging ("DTI") and fractional anisotrophy ("FA") quantification from that imaging and because the wording of his opinion is not sufficiently certain. (*Id.* at 15.) Defendants argue that once this evidence is excluded, Ruppel will have no evidence as to his diagnosis of diffuse axonal injury or to its causation, and therefore, summary judgment should be granted against Ruppel on his claim related to diffuse axonal injury. The court will begin with an analysis of whether the contested evidence should be excluded under *Daubert*.

I. MOTION TO EXCLUDE EVIDENCE

To be admissible, expert testimony must satisfy the conditions of FEDERAL RULE OF EVIDENCE 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). *United States v. Parra*, 402 F.3d 752, 758 (2005). RULE 702 provides:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Under *Daubert,* the court must be satisfied, first, that the expert can testify based on *valid* scientific, technical or specialized knowledge, *i.e.*, whether the expert's testimony is reliable, and second, whether that testimony will be of assistance to the trier of fact. 509 U.S. at 592; *United States v. Welch*, 368 F.3d 970, 973 (7th Cir. 2004); *Ammons v. Aramark Uniform Services, Inc.*, 368 F.3d 809, 816 (7th Cir. 2004). The reliability issue requires the court to determine whether the expert is qualified in the relevant field and used a reliable methodology to arrive at his or her conclusions. *Zelinski v. Columbia 300, Inc.,* 335 F.3d 633, 640 (7th Cir. 2003); *Smith v. Ford Motor Co.,* 215 F.3d 713, 718 (7th Cir. 2000).

A. Dr. Pareigis's qualifications

FEDERAL RULE OF EVIDENCE 702 provides that a witness qualified as an expert "by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." Defendants are correct that under RULE 702, a witness may only offer an expert opinion on an area within his or her field of specialized knowledge. (DE # 56 at 15 (citing *Jones v. Elec. Co.*, 188 F.3d 709, 723 (7th Cir. 1999)).) To determine if a witness is an expert, the court must compare the area in which the witness has superior skill, knowledge, education, or expertise to the area of her proposed testimony. *Jones*, 188 F.3d at 723.

The parties contest whether Dr. Pareigis can testify as to Ruppel's diagnosis of diffuse axonal injury. Defendants argue that Dr. Pareigis cannot testify as to Ruppel's diagnosis because she is an expert in rehabilitation, not diagnosis. (DE # 56 at 16.)

Defendants also submit proposed testimony from their witness, neurologist Dr. John Talbott, that physiatrists normally do not make a diagnosis of diffuse axonal injury in a "neurology field." (John Talbott Dep. 37, Defs.' Exh. R, DE # 56-18.) In response, the Ruppels assert that Dr. Pareigis is "board certified in physical medicine and rehabilitation and is qualified by knowledge, skill, experience, training and education to testify in the form of opinion as to a diagnosis of closed head injury with diffuse axonal damage and the probable cause thereof." (DE # 57 at 4.)

Dr. Pareigis is board certified in physical medicine and rehabilitation, a practice speciality which she stated "includes the evaluation, diagnosis, and treatment of brain injury." (Dr. Christine Pareigis Aff., Pls.' Exh. 4, DE # 57-4 ¶ 5.) She is now the Medical Director of Rehabilitation at the Lakefront Medical Center in St. Joseph, Michigan. (*Id.* ¶ 2.) In that position, which she has held for 21 years, she regularly diagnoses, evaluates, and treats brain injury. (*Id.*) She also maintains a private practice in St. Joseph, Michigan where she regularly evaluates, diagnoses, and treats brain injury. (*Id.* ¶ 4.) Dr. Pareigis stated that she sees an average of ten new cases a year involving injuries like Ruppel's for a total of about two hundred cases over the course of her career. (Dr. Christine Pareigis Dep. 48, Defs.' Exh. D., DE # 56-4.)

She previously served as the Medical Director of Rehabilitation at New Medico / Visitors Hospital in Buchanan, Michigan. (Pareigis Aff. ¶ 3.) This institution is a head injury clinic, affiliated with a national program, that evaluates, diagnoses, and treats head injury patients. (*Id.*) As the Medical Director, 90% to 100% of Dr. Pareigis's practice

involved the evaluation, diagnosis, and treatment of closed head injury. (*Id.*)

First, defendants appear to argue that Dr. Pareigis cannot testify as to Ruppel's diagnosis of diffuse axonal injury because her diagnosis was based in part on the results of DTI and she received help from a radiologist in deciding to run that scan. (Christine Pareigis Dep. 23.) They also take issue with that fact that she used the abbreviations SWY/DTI explaining that she needed to do so because they were radiology terms. (*Id.*) Dr. Pareigis testified that she ordered the magnetic resonance imaging ("MRI") with SWY/DTI because she felt that it would give her "more evidence regarding axonal diffuse injuries." (Pareigis Dep. 23.) At the time of the deposition, she had not received the results of the DTI scan and she did not expect it to change the course of treatment, but she thought it might help her to understand Ruppel's injury a little better. (*Id.*)

Dr. Pareigis's testimony that she consulted with a radiologist in deciding to order the MRI does not disqualify her as an expert because she can base her conclusion on the opinions of others as long as they are the type of materials reasonably relied upon by experts in her field. *United States v. Gardner,* 211 F.3d 1049, 1054 (7th Cir. 2000). RULE 703, the corollary to RULE 702, is instructive on this matter. RULE 703 states that an expert can rely on facts and data not admissible into evidence as long as the facts and data are "of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." The Advisory Committee notes to the 1972 amendments to RULE 703 state that "a physician in his own practice bases his diagnosis on information from numerous sources and of considerable variety including

statements by patients and relatives, reports and opinions from nurses, technicians and other doctors, hospital records and X-rays." Accordingly, the FEDERAL RULES OF EVIDENCE account for the reality that doctors, like Dr. Pareigis, rely on the opinions of other doctors in reaching their diagnoses.

Further, Dr. Pareigis did not rely on the DTI scan alone in making her diagnosis. In fact, she stated that she thought the DTI scan would help her learn more about the injury but that it probably would not change her course of treatment. So her testimony is not unreliable because she consulted with another doctor in deciding the course of treatment for her patient. Instead, evidence that Dr. Pareigis consulted a radiologist to order the MRI would go to the weight that the jury may give her testimony.

Apart from her reliance on the DTI scan, defendants argue that Dr. Pareigis is not qualified to testify at all as to Ruppel's diffuse of axonal brain injury diagnosis because making a diagnosis is outside of her expertise. In making this argument defendants cite to two cases, *Jones* and *Cunningham v. Masterwear, Inc.* In both, the court determined that qualified experts cannot testify on subjects that are outside of their field of expertise. In *Jones*, the United States Court of Appeals for the Seventh Circuit found that the witness, a doctor in metallurgy, the study of metals, was not qualified to testify as to how manganese affects the human body and is processed by the lungs. 188 F.3d at 723. In his testimony, the witness admitted that toxicology and how the body absorbs certain substances was outside of his expertise. *Id.* Similarly in *Cunningham*, the court held that witness medical doctors could not testify as to whether a hazardous chemical caused

the plaintiffs' illnesses because the witnesses did not have any training in epidemiology or toxicology. No. 1:04-cv-1616, 2007 WL 1164832, at *10 (S.D. Ind. Apr. 15, 2007).

In this case, Dr. Pareigis stated that the diagnosis of brain injuries is firmly within her area of expertise. The Seventh Circuit has noted that while "extensive academic and practical expertise" may be sufficient to qualify a witness as an expert, RULE 702 "specifically contemplates the admission of testimony by experts whose knowledge is based on experience." *Smith,* 215 F.3d at 718 (internal quotations and citations omitted). As described above, in her affidavit[1] Dr. Pareigis stated that she has over thirty years of experience in diagnosing brain injuries. This is the type of "extensive hands-on experience over a meaningful period of time" that qualifies someone as an expert under RULE 702. *Jones*, 188 F.3d at 724. Thus the evidence before the court shows that Dr. Pareigis is qualified to testify as to Ruppel's diagnosis of a diffuse axonal brain injury.[2]

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[1] Defendants argue that Dr. Pareigis's affidavit cannot be used to show her qualifications when her qualifications were not established through her deposition. It is true that an "affidavit cannot be used to create a genuine issue of material fact where the affidavit differs from the prior deposition testimony to the point that it is unreliable." *Patterson v. Chicago Ass'n for Retarded Citizens,* 150 F.3d 719, 720 (7th Cir. 1998). However, when "deposition testimony is ambiguous or incomplete . . . the witness may legitimately clarify or expand upon that testimony by way of an affidavit." *Shepherd v. Slater Steels Corp*., 168 F.3d 998, 1007 (7th Cir. 1999). Dr. Pareigis's affidavit does not contradict her deposition testimony. Rather, the deposition testimony did not cover her qualifications and experience related to brain injury diagnosis.

[2] Defendants do not argue that Dr. Pareigis was not qualified to testify as to causation. Accordingly, plaintiffs have not produced much evidence that she is qualified to testify as to causation. However, medical doctors do testify as to the issue of specific causation. *See e.g., Cunningham*, 2007 WL 1164832, at *10-11 (citing Mary Sue Henifin, Howard M. Kipen & Susan R. Poulter, *Reference Guide on Medical Testimony* 444-45, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (2nd ed.2000)). Further, in her deposition, Dr.

B. Dr. Benson's testimony

1. Dr. Benson's reliance on DTI

Defendants assert that Dr. Benson's expert testimony on diffuse axonal injury is unreliable under *Daubert* and RULE 702 because he relies on DTI which defendants argue is an unreliable technology that has not gained acceptance and because his reliance on FA quantification based on DTI comparisons is not the most accurate way to diagnose diffuse axonal brain injuries.

To begin, the court will give a brief overview of diffuse axonal brain injury, closed head injury, DTI, and how Dr. Benson used DTI to diagnose diffuse axonal injury in Ruppel. According to Dr. Benson, brain injury is classified as either focal or diffuse. (Dr. Randall Benson Aff., Pls.' Exh. 7, DE # 58-1 at ¶ 5.) A focal injury is a localized injury, such as that caused by a stroke, a direct blow to the head, or a aneurysm, and is typically a contusion on the surface of the brain, visible by conventional scanning. (*Id.*) On the other hand, a diffuse axonal injury involves scattered damage to the brain substance, particularly the white matter that is comprised of axon fibers. (*Id.*) A closed head (non-penetrating) brain injury, the most common type of traumatic brain injury, can include focal injury, diffuse injury, or both. (*Id.*) A brain

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Pareigis testified that she had seen "a great number of people" who suffered brain injury after motor vehicle accidents. (Christine Pareigis Dep. 47.) Thus her deposition testimony indicated that she does have experience in determining the specific causes of brain injury for her patients. Accordingly, at this time, the court will not exclude Dr. Pareigis's testimony as to the cause of diffuse axonal injury.

injury can include only evidence of diffuse axonal injury when it is a result of "relatively little direct impact to the skull such as during a motor vehicular collision with a restrained passenger and little or no impact to the head." (*Id.*)

According to Dr. Benson:

> Diffuse axonal injury is the hallmark pathology in closed head injury and is not visible on conventional MRI imaging in milder cases. Diffuse axonal injury results from acceleration or deceleration of the head (skull) which causes deformations (stretch and strain) of the brain substance leading to shear injury of white matter fibers.

(*Id.*) A traditional MRI shows the structure of the brain and the majority of people with mild brain injury will have a normal MRI even if they have significant impairment. (*Id.* ¶ 6.) DTI is a more sensitive, three-dimensional type of MRI that examines the microstructure of the white matter in the brain. (*Id.* ¶¶ 7-8.) DTI can show reduction in fractional anisotrophy ("FA") meaning that the white matter in the brain has been damaged. (*Id.* ¶ 12.) Because the reduction in FA caused by a milder traumatic brain injury ("TBI") cannot be seen by looking at a single scan standing alone, a TBI patient's imaging is evaluated for damage by comparing it to images of non-TBI control group's brains. (*Id.* ¶ 13.)

First, defendants cannot exclude Dr. Benson's opinion simply because DTI is not the most reliable way to diagnose a brain injury. They argue, and Dr. Benson testified, that the only definite way to identify a diffuse axonal brain injury is by autopsy. Barring that, they argue, as their expert Dr. Valerie Drnovsek ("Dr. Drnovsek") explains, that

reduced FA may be detected through analysis with fiber-tracking algorithms. (DE # 56 at 10.) As defendants acknowledge, it is not reasonable to expect that Ruppel would have to submit to an autopsy in order to provide proof of his injuries. Contrary to defendants' contentions, expert opinions may be admitted even if they are not stated with absolute certainty. Indeed, in *Daubert* the Court stated,"[o]f course, it would be unreasonable to conclude that the subject of scientific testimony must be 'known' to a certainty; arguably, there are no certainties in science." *Daubert,* 509 U.S. at 590.

It is also unnecessary for Dr. Benson to have used fiber-tracking algorithms. The court's focus is on whether Dr. Benson's opinion is based on a reliable method, not on a method that defendants deem to be most reliable. *See e.g., Cunningham,* 2007 WL 1164832, at *3 (stating "as long as [plaintiffs' proposed witness] used a reliable method to come up with his conclusions, it is not a problem that he did not use the method that Defendants claim is 'useful'"); *cf. Cooper v. Carl A. Nelson & Co.,* 211 F.3d 1008, 1020 (7th Cir. 2000) (stating"[o]ur case law has recognized that experts in various fields may rely properly on a wide variety of sources and may employ a similarly wide choice of methodologies in developing an expert opinion.").

Further, Dr. Drnovsek identified fiber tracking algorithms analysis as a way to address certain deficiencies with FA quantitative analysis. (Dr. Drnovsek Report 4, Defs.' Exh. H, DE # 56-8.) In his affidavit, Dr. Benson stated that is not necessary. But Dr. Benson contends that this is not necessary because the problems addressed by this method are presented by scans that look at gray matter, not those that look only at

white matter such as the ones he employs. (Dr. Benson Aff. ¶ 34.) The difference in opinion between the two experts is something that can be addressed at trial and does not make Dr. Benson's method so unreliable that his opinion need be excluded.

As will be discussed, DTI and FA quantification based on comparative scans appear to be reliable methods for Dr. Benson to arrive at his expert opinion of both Ruppel's diagnosis of diffuse axonal injury and the cause of that injury. A district court has great latitude in determining not only how to measure the reliability of the proposed expert testimony but also whether the testimony is, in fact, reliable. *United States v. Pansier,* 576 F.3d 726, 737 (7th Cir. 2009). The Seventh Circuit has advised that "[t]o determine reliability, the court should consider the proposed expert's full range of experience and training, as well as the methodology used to arrive [at] a particular conclusion." *Id.* Defendants do not take issue with Dr. Benson's qualifications; they focus instead on the reliability of the methods he employed.

The Supreme Court, in *Daubert,* laid out four general criteria for determining the validity of an expert's methodology: (1) whether the theory has been or can be tested or falsified; (2) whether the theory or technique has been subject to peer review and publication; (3) whether there are known or potential rates of error with regard to specific techniques; and (4) whether the theory or approach has general acceptance. *Daubert,* 509 U.S. at 593-94. As "these factors do not establish a definitive checklist" for determining the reliability of expert testimony, the Seventh Circuit has described the *Daubert* test as a "non-exhaustive list of guideposts." *Trustees of Chi. Painters and*

Decorators Pension v. Royal Int'l Drywall & Decorating Inc., 493 F.3d 782, 787 (7th Cir. 2007); *Am. Honda Motor Co., Inc. v. Allen,* 600 F.3d 813, 817 (7th Cir. 2010). Further, the Seventh Circuit has employed other benchmarks which appear in the 2000 Advisory Committee's Notes to RULE 702 to gauge expert reliability, including whether the testimony relates to "matters growing naturally and directly out of research they have conducted independent of the litigation, or whether they have developed their opinions expressly for purposes of testifying"; "[w]hether the expert has adequately accounted for obvious alternative explanations"; and "[w]hether the expert is being as careful as he would be in his regular professional work outside his paid litigation consulting." *Id.* (alterations in *Allen*).

In this case, defendants argue that the DTI and FA quantification used by Dr. Benson are unreliable because 1) DTI is not generally accepted; 2) DTI cannot be tested 3) Dr. Benson has not considered alternative explanations for the comparatively decreased FA quantification found in the images; 4) Dr. Benson did not use proper methods and controls in his use of this imaging, especially considering that FA decreases with age; 5) Dr. Benson did not use the same level of intellectual rigor that is used by a regular expert in his field. (DE # 56 at 14.)

In response, the Ruppels argue that DTI is generally accepted in the relevant scientific community; DTI has been subjected to peer review and publication; DTI and FA quantification have low error rates; DTI and FA quantification was not developed for litigation; and DTI has been admitted by other courts. (DE # 57 at 20-23.) They also

argue that defendants' experts lack the knowledge and qualifications to challenge the scientific reliability of DTI testing. (*Id.* at 25.) The court will now discuss the relevant factors in turn.

a. General acceptance of DTI

The evidence shows that while DTI is a relatively new technology it is gaining general acceptance as a method for detecting TBI. First, as explained in further detail below, there have been numerous validation studies, published in peer reviewed journals, on the use of DTI to detect diffuse axonal injuries. (Dr. Benson Aff. ¶ 14.) Second, DTI is regularly used as a diagnostic tool at the Detroit Medical Center and at other locations throughout the country. (*Id.* ¶ 15.) Third, Dr. Benson, Dr. Pareigis, and Dr. Bradley Sewick, a neuropsychologist, all determined that DTI would be helpful in diagnosing Ruppel. (Dr. Bradley Sewick Aff. ¶ 10.) Fourth, the United States Army Telemedicine and Advanced Technology Research Command ("TATRC") sponsored a "Diffusion MRI TBI Roadmap Development Workshop" at which it was acknowledged: "DTI has detected abnormalities associated with brain trauma at several single centers." (Benson Aff. ¶ 4.) It was also stated that "the workshop seeks to identify and remove barriers to rapid translation of advanced diffusion MRI technology for TBI . . . in order to expedite getting the benefits of diffusion MRI to reach those who need it most, especially injured soldiers and veterans." (*Id.*)

Fifth, in 2001, the Food and Drug Administration ("FDA") approved the product "Diffusion Tensor Imaging Option for MRI" for marketing as a Class II Special Control

device. (Pl.'s Exh. 8, DE # 57-8.) Ruppel, citing to 21 U.S.C. § 360c(a)(3)(A), states that the FDA tested the software for safety and effectiveness before granting marketing permission. (DE # 57 at 21.) The letter from the FDA does not say this specifically. However, 21 U.S.C. § 360c(a)(3)(A) provides that approved Special Control devices are determined to be effective:

> on the basis of well-controlled investigations, including 1 or more clinical investigations where appropriate, by experts qualified by training and experience to evaluate the effectiveness of the device, from which investigations it can fairly and responsibly be concluded by qualified experts that the device will have the effect it purports or is represented to have under the conditions of use prescribed, recommended, or suggested in the labeling of the device.

So although the FDA letter itself does not address the effectiveness of DTI, but its approval for marketing by the FDA indicates that its effectiveness was determined pursuant to 21 U.S.C. § 360c(a)(3)(A). In fact, other courts that have found DTI to be a reliable method have noted that it is "FDA approved, peer reviewed and approved, and a commercially marketed modality which has been in clinical use for the evaluation of suspected head traumas including mild traumatic brain injury." *Hammar v. Sentinel Ins. Co., Ltd.*, No. 08-019984 at *2 (Fla. Cir. Ct. 2010).

Sixth, Ruppel has pointed to several decisions in which trial court judges admitted DTI into evidence. *See e.g., Hammar*, No. 08-019984 at *2 (allowing DTI evidence to be admitted under the *Frye* standard); *Whilden v. Cline*, No. 08-cv-4210 (Col. Ct. Dist. May 10, 2010) (allowing an expert witness to rely on DTI evidence when testifying as to the diagnosis of mild TBI and its possible causation from an automobile

accident as long as the expert's opinion was not based solely on DTI).

On the other side, defendants' argument that DTI is not generally accepted is based primarily upon testimony that Dr. Benson provided in his deposition. (DE # 56 at 13 (citing Dr. Randall Benson Dep. 13, Defs.' Exh. F, DE # 56-6).) Defendants point to this portion of Dr. Benson's deposition:

> Q: I think at the beginning of your question you said some insurance companies would cover [DTI] and some wouldn't. Take your average hundred mild TBI patients, all things being equal, approximately how many of them after one or two regular MRIs showing no abnormalities would be able to get this more advanced MRI?
> A: I think very few, and the reason is that this technique that we're hoping will become a standard operating technique, it is clearly not something that is far enough along. I mean in terms of the commercialization of it, that insurance companies routinely will cover.
>
> Now having said that, we add these sequences onto standard sequences, and insurance companies do pay for it. But if a patient has already had one or two negative MRIs, I think its going to be, it is going to be very very difficult, you know, to convince the insurance company, which is why we're doing this work obviously.

(Dr. Benson Dep. 13-14.) This testimony focuses mostly on insurance companies' acceptance of DTI. Surely insurance companies' willingness to pay for a test is not dispositive of its reliability. Further, Dr. Benson also testified that some insurance companies would pay for DTI after an MRI showing no abnormality and some would not because "that is just kind of a state of where we're at with insurance these days." (*Id.* at 12.) He did not say that insurance companies do not find DTI helpful, but only that they are reluctant to pay for it after a regular MRI shows no problems.

As shown above, DTI has been accepted within the medical community. It is

regularly used at some hospitals even though it is not the regular standard of care at the average hospital. (*Id.* at 24.) Importantly, as discussed below, there are many articles published in peer-reviewed publications that cover the effectiveness of DTI in detecting mild TBI. All of the factors shown above weigh towards a finding that while DTI is a relatively new and developing technology, it is well on its way to gaining general acceptance in the scientific community as a tool for identifying mild TBI. Thus, the evidence shows that DTI and analysis of white matter in DTI images are generally accepted methods for determining mild TBI.

b. Peer review and publication

As of early 2010, there were 3,472 papers on DTI published in peer review journals. (Dr. Benson Aff. ¶ 17.) Eighty-three of these articles involved DTI in relation to TBI. (*Id.*) Of these 83 papers, a control group was used for the statistical analysis of 35 of them. (*Id.*) In the case that defendants rely upon to show the DTI has not been accepted by the courts, the trial judge determined that DTI could not be admitted to show mild traumatic brain injury in large part because the party moving to admit DTI evidence had not pointed to any articles showing that DTI was used for that purpose. *Bowles v. Pennington*, No. 06-cv-11030, at *3-4 (Col. Ct. Dist. Aug. 14, 2009). As just explained, that problem does not exist here because the Ruppels have pointed to many articles that discuss how DTI is effective in detecting mild brain injury. In fact, Dr. Benson's affidavit includes quotes from fourteen peer-reviewed articles that discuss how DTI can help detect TBI. (Dr. Benson Aff. ¶ 18.) Eleven of these excerpts specifically address the

effectiveness of DTI in detecting mild TBI ("mTBI"). (*Id.*) Here is an example:

> Detection of ultrastructural damage by using DT imaging is a major advance in diagnostic imaging. Several studies have supported the capability of FA to help identify white matter abnormalities in patients with traumatic brain injury including mTBI. As confirmed by our findings, abnormal FA is detected even in the absence of other imaging abnormalities.

Michael Lipton, *Diffusion-Tensor Imaging Implicates Prefrontal Axonal Injury in Executive Function Impairment Following Very Mild Traumatic brain Injury,* RADIOLOGY, Sept. 2009, Vol. 252: No. 3. (Dr. Benson Aff. ¶ 18.f.) Another article stated, "Our study shows that DTI can be used to detect differences between patients with cognitive impairment after mild TBI and controls." Calvin Lo, *Diffusion Tensor Imaging Abnormalities in Patients with Mild Traumatic Brain Injury and Neurocognitive Impairment*, COMPUT ASSIST TOMOGR, March/April 2009, Vol. 33, No. 2. (Dr. Benson Aff. ¶ 18.i.) Thus, there are peer-reviewed articles on the effectiveness of DTI and FA quantification based on comparative DTI scans for detecting diffuse axonal brain injury. Accordingly, the concern that drove the judge's decision in *Bowles* does not exist here.

c. Ability of DTI and FA quantification to be tested and their error rate

As to the ability to test DTI and the FA quantification based on it and their reliability, defendants' main arguments are that decreased FA in DTI scans cannot be challenged in an objective sense and cannot be replicated.[3] (DE # 56 at 13.) However, the

[3] Dr. Drnovesk also concludes that Dr. Benson's study of Ruppel is flawed because the DTI scan was performed 27 months after the accident at issue and that decrease in FA caused by mild TBI is not detectable after three months from the date of the cause of an injury. (Dr. Drnovesk Report 5.) Defendants do not appear to address this conclusion in

Ruppels have presented evidence that the DTI scan and resulting FA quantification analysis can be tested and replicated and that the error rate is not higher than other methods commonly relied upon such as MRIs. (Dr. Benson Aff. ¶¶ 34-36.) According to Dr. Benson, DTI has "good test retest reliability." (Dr. Benson Dep. 15.) He stated that DTI scans have shown high reproducibility. (Dr. Benson Aff. ¶ 34.) Dr. Benson explained the numerous steps he took to minimize the error rates in his DTI analysis and he stated: "Statistically speaking, the clusters of abnormal voxels found in areas of Dale Ruppel's brain were there by chance is next to impossible." (Dr. Benson Aff. ¶¶ 29-32.) He also stated that the quantitative analysis of FA is reproducible. (*Id.* ¶ 34.)

As explained above, Ruppel has produced evidence that Dr. Benson's methods can be tested and that the error rate is not higher than that of other commonly used methods. While defendants' expert Dr. Drnovsek disagrees with Dr. Benson (Dr. Drnovsek Report 3), she does not have as much experience in this area as Dr. Benson. Dr. Benson is a behavioral neurologist who has been involved in research using advanced MRI methods for eighteen years. (Dr. Benson Aff. ¶ 4.) He has focused his research on TBI imaging for the past five years and has published a paper on how DTI scans of FA correlate with TBI severity. (*Id.*) On the other hand, Dr. Drnovsek, a

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their motion or reply. Still, the court notes that Dr. Drnovesk's conclusion does not operate to block Dr. Benson's testimony on DTI and FA quantification from coming in all together. Rather it is an argument that defendants can raise at trial as to the weight that the fact-finder should afford to Dr. Benson's opinion.

neuroradiologist, does not do diffusion tensor imaging and before becoming involved in this case her only experience with DTI was a basic familiarity with the literature about DTI and attendance at conferences that "elaborate[d] on [DTI] application in different pathologies, including traumatic brain injury." (Dr. Valerie Drnovsek Dep. 16-17, Pl.'s Exh. 15, DE # 57-15.) She has not done any personal research into DTI. (*Id.* at 17.) Her criticism of Dr. Benson's methods was based on her reading of two articles on the subject. (*Id.* at 42.)

In *Wagoner v. Schlumberger Tech. Corp.*, a proposed expert witness, a neuroradiologist, had never reviewed a DTI scan before analyzing one for the trial and had only read one article on DTI. No. 07-CV-244, 2008 U.S. Dist. LEXIS 118764, at *2 (D. Wyo. June 20, 2008). The trial judge found that the witness did not have any special expertise on DTI and excluded any testimony from the expert about his opinion on the DTI scans. *Id.* Here, the Ruppels have not moved to exclude Dr. Drnovsek's testimony. However, Dr. Drnovsek, like the expert in *Wagoner*, has not been shown to have special expertise in DTI and Dr. Benson has been shown to have this expertise. Therefore, the court will not exclude Dr. Benson's testimony based on conflicting testimony from Dr. Drnovsek as to DTI's error rate, testability, and replicablity. This disagreement can be explored at trial.

d. Alternative explanations for the decreased white matter in the DTI images

Defendants argue that Dr. Benson should not be able to testify as to his

determination that the DTI image indicated that Ruppel had diffuse axonal brain injury because it showed that Ruppel's white matter had decreased in comparison to scans done of control patients because Dr. Benson did not consider alternative explanations, primarily aging, for the decreased white matter. However, this argument is not supported by the evidence. Dr. Benson testified that while Ruppel was 46 at the time of his DTI scan and the mean age of the control group was the 32, the analysis was corrected to account for age. (Dr. Benson Dep. 65.) He also stated that the age effect on FA is well-known and easily accounted for. (Dr. Benson Aff. ¶ 28.) He stated that he normalized the results to account for the effect of age. (Dr. Benson Dep. 36.) The Ruppels have also submitted a chart that shows the amount of FA in Ruppel's scan as compared to a group of 50 controls many of whom are his age or older.
(DE # 58-1 at 18.) The effect of aging is certainly an issue that can be probed at trial, but it is not a basis for excluding Dr. Benson's opinion.

Defendants, pointing to Dr. Drnovsek's report, also argue that Dr. Benson did not account for alternative explanations such as the variations in FA in structures abutting the basal ganglia and thalamic nuclei. (Dr. Drnovsek Report 4.) However, Dr. Benson contends that these problems are presented by scans that look at gray matter, not those that look only at white matter such as the ones he employs. The difference in opinion between the two experts is something that can be addressed at trial and does not make Dr. Benson's method unreliable.

Further, defendants point to Dr. Benson's testimony that other diseases can affect

FA quantification. (Dr. Benson Dep. 67-69.) However, Dr. Benson explains that many of these diseases are rare, and that some of the more common ones, such as stroke and MS, would also come up on a regular MRI scan if they would come up on a DTI scan. (*Id.* at 69.) Defendants also raise the issue that Ruppel's DTI scan could have been affected by the medications he was on. (Dr. Drnovsek Report 3.) This is an issue they can address during cross-examination.

Defendants also point to Dr. Benson's testimony that "So obviously you're going to have variance, okay, with any type of measurement, there is error, there's a number of different sources, some physiologic, some machine, right, and in this case, age is a factor as well." (Dr. Benson Dep. 35.) Defendants present their argument that Dr. Benson attributed this error just to FA quantification, but it appears that he thinks these errors can accompany any type of measurement. He stated: "I am going to always let's say err[ ] on the side of respecting the lack of absolute certainty that we have in our field. I mean it is the nature of medicine, not just science." Dr. Benson also corrected his results for motion during the scan. (*Id.* at 68.) In any case, Dr. Benson's deposition and affidavit testimony show that he was aware of possible alternative explanations of Ruppel's decreased white matter and that both the method and Dr. Benson's application of the method accounted for these possibilities. His conclusion took into account alternative explanations for his results and that the only way to diagnose diffuse axonal injury with complete certainty is autopsy. (*Id.* at 66.) Therefore, the possibility of alternative explanations does not bar Dr. Benson's testimony; rather it

goes toward the weight to be given to his opinion. *See e.g., Cooper v. Carl A. Nelson & Co.,* 211 F.3d 1008, 1021 (7th Cir. 2000).

b. Nature of Dr. Benson's opinion and how careful he was in reaching it

In this case, it appears that Dr. Benson's opinion grew naturally and directly out of the research that he has conducted independently of the litigation and he has been as careful as he would be in his regular professional work outside his paid litigation consulting. First, the evidence shows that DTI and FA quantification is a regular focus of Dr. Benson's work and research. He has focused on TBI imaging for five years at the MR Research Center at Detroit Medical Center. (Dr. Benson Aff. ¶ 4.) He is also an investigator on a fifteen-year project entitled "Utility of MRI Techniques in Prediction of TBI Outcome" funded through a grant by the National Institute on Disability and Rehabilitation Research. (*Id.* ¶ 2.) In 2007, he published an article entitled *Global White Matter Analysis of Diffusion Tensor Images of Injury Severity in Traumatic Brain Injury* in the JOURNAL OF NEUROTRAUMA. (*Id.* ¶ 3.) In 2010, he testified before the United States House Judiciary about how DTI and other advanced imaging methods would improve the diagnosis and management of concussions in sports. (*Id.* ¶ 2.) Thus, the evidence shows that Dr. Benson regularly researches about and uses DTI and FA quantification to detect TBI. This is not a method or area of research that he has adopted just for litigation. It appears that as the Ruppels' retained expert, he only applied his methods to Ruppel and reached his opinion because of his involvement in this litigation. However, because

the methods he employed grew out of and is consistent with his regular work, Dr. Benson's opinion as to Ruppel appears reliable.

Second, without pointing to any evidence, defendants accuse Dr. Benson of not using "the same level of intellectual vigor that characterizes the practice of an expert in the regular field." However, Dr. Benson's expert report, deposition, and affidavit do not show that he was not careful in reaching his conclusion or that he lacked intellectual vigor. Thus, there is no evidence to show that his opinion should not be admitted on this basis. Defendants can use cross-examination and their own witnesses's testimony to raise at trial the issue of the level of intellectual vigor that Dr. Benson employed.

Overall it is important to note that DTI is just one component of Dr. Benson's diagnosis of diffuse axonal injury for Ruppel. In *Whilden*, a Colorado state trial court found that an expert could base his opinion on DTI as long as he also considered the patient's history. No. 08-cv-4210 at 4 (allowing an expert witness to rely on DTI evidence when testifying as to the diagnosis of mTBI and its possible causation from an automobile accident as long as the expert's opinion was not based solely on DTI). Here, Dr. Benson's opinion was based on four components: the patient's history, the neurologic examination of the patient, the patient's neuropsychological results, and the patient's brain imaging including DTI. (Dr. Benson Dep. 69.) Dr. Benson's clinical assessment was based on medically accepted neurological and mental status examination techniques. (Dr. Benson Aff. ¶ 8.) In his affidavit, Dr. Benson stated:

While DTI itself cannot diagnose the cause of white matter damage, the

> history of the motor vehicle accident as described by Dale Ruppel and medical records reviewed provide a solid basis to conclude that the damage shown on diffusion tensor imaging using fractional anisotrophy was caused by the motor vehicle collision of January 8, 2008.

(*Id.* ¶ 33.) Thus, like the expert in *Whilden*, Dr. Benson did not use DTI alone to diagnose diffuse axonal injury. In sum, DTI and comparative FA quantification based on DTI images are reliable methods and Dr. Benson's opinion will not be excluded under RULE 702 and *Daubert*.

2. Wording of Dr. Benson's opinion

Defendants argue that Dr. Benson's opinion is invalid because he says that the evidence "suggests" that Ruppel has a diffuse axonal brain injury and that it was caused by the accident. (DE # 56 at 10-11.) It seems that this argument goes to whether Dr. Benson's testimony is relevant and whether it would assist the trier of fact. Defendants argument appears to be that Ruppel can only present evidence of his injury if he has evidence that shows with one hundred percent certainty that he has a diffuse axonal brain injury. This is not the case. *Daubert,* 509 U.S. at 590; *United States v. Cyphers*, 553 F.2d 1064, 1072-73 (7th Cir. 1977) (stating that there is no requirement that "an expert's opinion testimony must be expressed in terms of a reasonable scientific certainty in order to be admissible" and that the Seventh Circuit "adheres to the rule that an expert's lack of absolute certainty goes to the weight of his testimony, not to its admissibility"). The Seventh Circuit has stated, "we do not require utter certainty in medical opinions, nor would we expect dogmatic diagnoses from a careful scientist."

Amax Coal Co. v. Beasley, 957 F.2d 324, 328 (7th Cir. 1992).

Indeed, courts regularly admit opinion evidence that falls short of a certain conclusion. *See e.g., Coachmen Indus., Inc. v. Kemlite,* 3:06-cv-160, 2008 WL 4858385, at *8 (N.D. Ind. Nov. 10, 2008) (admitting an expert's testimony that "specific changes made to the MA resin values were 'most likely' responsible for the distortions"); *Hardiman v. Davita Inc.*, No. 2:05-cv-262, 2007 WL 1395568, at *6 (N.D. Ind. May 10, 2007) (finding that an expert's opinion that there was a 95% probability of causation was relevant and admissible); *Troutner v. Marten Trans., Ltd.*, No. 2:05-cv-40, 2006 WL 3523542, at *4 (N.D. Ind. Dec. 5, 2006) (admitting an expert's testimony when the conclusion in his expert report was that inadequate maintenance was "the most likely root cause of the failure and injury to" the plaintiff). Further, an expert may meet *Daubert's* relevancy requirement by offering a "hypothetical explanation of the possible or probable causes of an event [that] would aid the jury in its deliberations." *Smith*, 215 F.3d at 719.

In the summary of findings section of his report, Dr. Benson stated that DTI revealed a low FA in the white matter regions of Ruppel's brain "suggesting axonal injury from trauma." (Dr. Randall Benson, "Report of Findings of TBI Research Protocal," Defs.' Exh. I, DE # 56-9.) However, Dr. Benson did not only use the word "suggest" in providing his opinion. He also stated:

> The absence of focal injury (contusion) and the presence of bilaterally symmetric axonal injury to deep white matter structures suggests that the mechanism of injury was acceleration/deceleration rather than direct impact to the skull. His history of motor vehicle accident is consistent with the findings on his MRI study.

(*Id.*) Thus this excerpt of his report, by stating that axonal injury to the white matter of Ruppel's brain was present, more definitively stated Ruppel's injury. Also, in his report Dr. Benson wrote that Ruppel "appears to have suffered a close head injury as a result of being rear-ended." (*Id.*)

Further, in his deposition, Dr. Benson explained that while he used the word "suggest" in his report, at the time he "really felt strongly that all the evidence pointed to diffuse axonal injury." (Dr. Benson Dep. 67.) Dr. Benson's "certainty is an issue for the jury and does not affect admissibility." *Stutzman v. CRST, Inc.*, 997 F.2d 291, 296 (7th Cir. 1993). Thus under federal evidentiary rules, Dr. Benson's opinion may be admitted under RULE 702. Importantly, Dr. Benson's language in presenting his opinion does not render it inadmissible when it is based on reliable methods. The Seventh Circuit has concluded that "the Federal Rules do not contain any threshold level of certainty requirement. As long as a medical expert's qualifications are proper and the expert relies on appropriate types of information under RULE 703, the district court does not abuse its discretion by admitting the medical expert's testimony." *Id*. Dr. Benson's testimony is not speculation because, as determined above, he used scientifically reliable methods to reach his conclusion.

In sum, defendants' motion to exclude Dr. Benson's opinion as to diffuse axonal injury will be denied. Defendants' primary arguments for exclusion of Dr. Benson's testimony were his reliance on DTI to reach his result and his use of the word "suggest" for his diagnosis. As discussed above, DTI is a reliable method especially when used in

conjunction with the other medically accepted methods relied upon by Dr. Benson. Beyond these two issues, defendants have not questioned Dr. Benson's qualifications to testify as to Ruppel's diagnosis and its causation and he appears qualified to do so. (*See* Dr. Benson Aff. ¶ 19; Dr. Benson Curriculum Vitae, DE # 58-1.) Dr. Benson may testify as to Dr. Ruppel's diagnosis of diffuse axonal injury and as to its causation.

II. SUMMARY JUDGMENT

Summary judgment should be granted "if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to a judgment as a matter of law." FED. R. CIV. P. 56(a). The party seeking summary judgment "bears the initial responsibility of informing the district court of the basis for its motion, and identifying" those materials listed in RULE 56(c) which "demonstrate the absence of a genuine issue of material fact." *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

Once the moving party has met its burden, the nonmovant may not rest upon mere allegations. Instead, "[t]o successfully oppose a motion for summary judgment, the nonmoving party must come forward with specific facts demonstrating that there is a genuine issue for trial." *Trask-Morton v. Motel 6 Operating L.P.*, 534 F.3d 672, 677 (7th Cir. 2008). "It is not the duty of the court to scour the record in search of evidence to defeat a motion for summary judgment; rather, the nonmoving party bears the responsibility of identifying the evidence upon which he relies." *Harney v. Speedway SuperAmerica, LLC*, 526 F.3d 1099, 1104 (7th Cir. 2008). Furthermore, when evaluating a motion for summary judgment, the court views the record and makes all reasonable

inferences in a light most favorable to the nonmovant. *Popovits,* 185 F.3d at 731. If the non-moving party cannot establish an essential element of its claim, RULE 56(a) requires entry of summary judgment for that claim. *Massey v. Johnson*, 457 F.3d 711, 716 (7th Cir. 2006) (citing *Celotex*, 477 U.S. at 322-23).

Defendants' summary judgment argument is that because all evidence of Ruppel's diagnosis of diffuse axonal injury and its causation are excluded under *Daubert* or for failure to comply with FEDERAL RULE OF CIVIL PROCEDURE 26(a)(2), he has no evidence to survive a motion for summary judgment.

The court will now address defendants' arguments related to FEDERAL RULE OF CIVIL PROCEDURE 26(a)(2). In their response to defendants' motion for summary judgment, the Ruppels presented affidavits of four physicians, Dr. Robert Ward, Dr. Bradley Sewick, Dr. Patrick Casey, and Dr. Pareigis, who treated Ruppel. (Pls.' Exhs. 3, 5, 6, DE ## 57-3, 57-5, 57-6.) In reply, defendants argue that the first three physicians' proposed testimony, as set forth in their affidavits, extends beyond what the plaintiffs had outlined in their reports and summaries pursuant to FEDERAL RULE OF CIVIL PROCEDURE 26(a)(2). Defendants, citing to *Doe v. Johnson*, 52 F.3d 1448, 1464 (7th Cir. 1995), appear to be arguing that these doctors' testimony should be limited to the statements made in their medical records because anything beyond that was not disclosed under RULE 26 and should be excluded under RULE 37.

RULE 26.2 of the LOCAL RULES OF THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF INDIANA provides that if a party seeks relief under RULE 37,

copies of the portions of the disclosures in dispute "shall be filed with the court contemporaneously with any motion filed under" that RULE. Defendants did not file a copy of plaintiffs' RULE 26 disclosures with their response. While this may not have been required since they did not move under RULE 37 separately, it certainly would have assisted the court in evaluating their argument. Instead defendants argue that Dr. Ward's, Dr. Casey's, and Dr. Sewick's testimony is inconsistent with the statements made in their medical records. In a sur-reply, plaintiffs contend that Dr. Ward, Dr. Casey, and Dr. Sewick, as well as Dr. Pareigis, were "properly disclosed" in their RULE 26 disclosures and their medical charts were provided to defendants with updates sent as Ruppel's treatment continued. (DE # 62 at 2.) They state that Dr. Ward, Dr. Casey, Dr. Sewick, and Dr. Pareigis are all treating physicians and none of them were retained or specially employed for this litigation. (*Id.*)

First, it appears that these witnesses were only required to give statements under RULE 26(a)(2)(C) and not expert reports under RULE 26(a)(2)(B). RULE 26(a)(2)(B) states that the disclosure of expert testimony must be accompanied by a written report when the witness is "one retained or specially employed in the case or one whose duties as the party's employee regularly involve giving expert testimony." Effective December 1, 2010, RULE 26 was amended to add section 26(a)(2)(C). This section provides that expert witnesses who are not required to submit a report under 26(a)(2)(B) must submit a statement that provides a summary of the facts and opinions to which the witness expects to testify. The commentary to this amendment states that it

will frequently apply to "physicians or other health care professionals." They also provide that under this subsection "[c]ourts must take care against requiring undue detail, keeping in mind that these witnesses have not been specially retained and may not be as responsive to counsel as those who have." Defendants do not argue that Dr. Ward, Dr. Pareigis, Dr. Sewick and Dr. Casey were not Ruppel's treating physicians, or more importantly, that they were specially retained or employed for this litigation. Thus, they were only required to comply with RULE 26(a)(2)(C). *See Coleman v. Am. Family Mut. Ins. Co.* No. 2:10-cv-167, 2011 WL 2173674, at *4 (N.D. Ind. June 2, 2011).

Second, the court has no reason to think that the proposed testimony is so inconsistent with the RULE 26(a)(2)(C) disclosures that it should be struck down under RULE 37. Defendants have not pointed to plaintiffs' RULE 26(a)(2)(C) disclosures, so the court cannot compare them to the proposed testimony and has no basis for excluding the testimony for noncompliance with RULE 26. Defendants argue that Dr. Ward, Dr. Pareigis, and Dr. Sewick cannot testify that Ruppel has diffuse axonal injury because in their medical records for Ruppel they only stated that he had closed head injury. Defendants, without pointing to any evidence from their expert medical witnesses or otherwise, assert that what the physicians have done is similar to "a doctor who makes a diagnosis of a broken bone, tenders x-rays and information relative only to a broken foot for 2 or 3 years, then later argues that the diagnosis should have covered diagnosis of a broken hand as well because they are both broken bones." (DE # 61 at 2.)

In contrast, all five of plaintiffs' expert witness physicians offer testimony that a

diffuse axonal injury is a type of closed head injury. (Dr. Robert C. Ward. Aff. ¶ 4, Pls.' Exh. 3, DE # 57-3; Dr. Pareigis Aff. ¶ 7; Dr. Patrick Casey Aff. ¶¶ 5, 8, Pls.' Exh. 5, DE # 57-5; Dr. Bradley Sewick Aff. ¶ 5-6, Pls.' Exh. 6, DE # 57-6; Dr. Benson Aff. ¶ 5). Dr. Sewick's explanation is representative: "A diffuse axonal brain injury is often caused by a closed head injury or traumatic brain injury. A diagnosis of closed head injury and traumatic brain injury without evidence of focal injury is suggestive of diffuse axonal injury." (Dr. Sewick Aff. ¶ 5.) Accordingly, the difference between statements of closed head injury in the medical records and a diagnosis of diffuse axonal injury may not be as stark as defendants suggest. Certainly, it does not appear to provide a basis to exclude the testimony under RULE 37. Rather, this appears to be an argument that defendants can delve into during cross examination at trial. Accordingly, these witnesses can offer testimony related to diffuse axonal injury at trial.

In evaluating whether the Ruppels have sufficient evidence as to his claim of diffuse axonal injury to allow it to survive summary judgment, the court has one remaining, and familiar, argument to address. As discussed above, defendants seem to argue that Dr. Benson's opinions as to the diagnosis and causation of diffuse axonal injury will not help Ruppel survive summary judgment because Dr. Benson uses the word "suggest." While the court has already discussed that this opinion is admissible it must now address whether, under Indiana law, which applies to the substantive law questions in this case, Dr. Benson's testimony has enough probative value that Ruppel can use it towards his burden of proof for causation.

As defendants point out, in Indiana, "[w]hen the issue of cause is not within the understanding of a lay person, testimony of an expert witness on the issue is necessary." *Daub v. Daub*, 629 N.E.2d 873, 877-78 (Ind. Ct. App. 1994). To have probative value, the testimony must go beyond speculation and mere possibility. *Id.* When evaluating an expert's opinion, Indiana courts tend to look at whether the expert can testify to a reasonable degree of medical certainty, but even an opinion that something is "possible" may be admitted if presented with other evidence. *Topp v. Leffers,* 838 N.E.2d 1027, 1033 (Ind. Ct. App. 2005); *Colaw v. Nicholson,* 450 N.E.2d 1023, 1030 (Ind. Ct. App. 1983) ("[E]xpert medical opinion couched in terms less than that of a reasonable degree of medical certainty; such as 'possible,' 'probable,' or 'reasonably certain,' are admissible and do have probative value. However, such medical testimony standing alone, unsupported by other evidence, is not sufficient to support a verdict.") Therefore, an opinion does not need to be stated in terms of "medical certainty," but to be admitted alone, it must be more conclusive than stating a "possibility." *Longardner v. Citizens Gas & Coke Util.*, No. 49A02-511, 2006 WL 3230303, at *7 (Ind. Ct. App. Nov. 8, 2006); *Hardiman,* 2007 WL 1395568, at *15.

Here, Dr. Benson's report stated that Ruppel "appears to have suffered a close head injury as a result of being rear-ended." (Dr. Benson Report.) He also stated in his deposition that although he used the word "suggests" in his report he "really felt strongly that all the evidence pointed to diffuse axonal injury." (Dr. Benson Dep. 67.) Further, his opinion was based on scientifically reliable methods. He based his opinion

on Ruppel's history, his neurologic examination of Ruppel, Ruppel's neuropsychological results, and his analysis of Ruppel's brain imaging including DTI. Dr. Benson's opinion is based on more than speculation and creates an issue of material fact as to both the diagnosis and causation of diffuse axonal injury. *Hardiman,* 2007 WL 1395568, at *17.

Even if Dr. Benson's testimony can not be admitted alone, there is other evidence of Ruppel's diffuse axonal injury. Dr. Pareigis wrote in her initial evaluation of Ruppel on March 28, 2008, that her impression was that Ruppel had "[c]losed head injury with probable diffuse axonal injury." (Physicians Center of Physical Medicine's Medical Records for Dale Ruppel, Defs.' Exh. C, DE # 56-3 at 32.) Dr. Pareigis and the three other treating physicians all indicate that they would testify as to Ruppel's diffuse axonal injury and its causation. Defendants own expert, Dr. Peter Carney has diagnosed Ruppel with post-concussion syndrome which appears to be related to closed head injury. (Dr. Peter Carney Report Sections D and F2.1, Pl.'s Exh. 17,[4] DE # 64-1.) So the Ruppels have sufficient evidence to create a genuine factual dispute as to whether Ruppel suffered diffuse axonal injury and whether that injury was caused by the accident with Kucanin.

[4] The Ruppels cite to and quote from this exhibit in their summary judgment response, but it was inadvertently omitted from that filing. The Ruppels have moved for leave to file this exhibit now. (DE # 64.) The report is from defendants' expert witness, so they have had access to it. Therefore, the motion is **GRANTED,** and the court had considered the parts of the report and deposition that were relied on in plaintiffs' response.

In conclusion, for the foregoing reasons defendants' motion to exclude evidence and motion for summary judgment (DE ## 54-55) are **DENIED**.

SO ORDERED.

Date: June 20, 2011

s/James T. Moody
JUDGE JAMES T. MOODY
UNITED STATES DISTRICT COURT