

**FIRST DIVISION**

June 25, 2008

No. 1-06-3437

TANISHA RUFFIN, by Her Mother and	)	Appeal from the
Next Friend, Sonya R. Sanders; and	)	Circuit Court of
SONYA R. SANDERS, Individually,	)	Cook County.
	)	
Plaintiffs-Appellees,	)	
	)	
v.	)	No. 00 L 6049
	)	
LEO BOLER, JR.,	)	The Honorable
	)	John E. Morrissey
Defendant-Appellant.	)	and
	)	Bill Taylor,
	)	Judges Presiding.

JUSTICE GARCIA delivered the opinion of the court.

The plaintiffs, Tanisha Ruffin, by her mother and next friend, Sonya R. Sanders, and Sonya R. Sanders individually, sued the defendant, Dr. Leo Boler, Jr., for medical malpractice. At the time of Tanisha's delivery, her shoulder became impacted with Ms. Sander's pelvic bone, a condition known as shoulder dystocia. At birth, Tanisha was diagnosed with an injury to the brachial plexus nerve network located at the shoulder area.

The plaintiffs' theory of the case was that Dr. Boler caused Tanisha's injury by using excessive lateral traction when freeing her impacted shoulder. Dr. Boler's theory was that Tanisha's injury was caused by the natural "propulsive forces" of labor. To

No. 1-06-3437

support his theory, Dr. Boler sought to present expert testimony from Dr. Michele Grimm, a biomedical, biomechanical engineer. After holding a hearing pursuant to Frye v. United States, 293 F. 1013 (D.C. Cir. 1923), the Honorable John E. Morrissey allowed Dr. Grimm's testimony.

The jury found for Dr. Boler. The plaintiffs moved for a new trial, arguing Dr. Grimm's testimony should have been barred. The plaintiffs also contended Dr. Boler improperly read from material in medical journals to introduce the opinions of doctors that did not testify at trial and improperly used medical textbooks that were not established as authoritative. Because Judge Morrissey had retired by the time the motion was argued, the Honorable Bill Taylor presided. Judge Taylor agreed with the plaintiffs' contentions and granted a new trial.

Dr. Boler petitioned this court pursuant to Supreme Court Rule 306(a)(1) (210 Ill. 2d R. 306(a)(1)) for leave to appeal. We allowed the petition and now reverse and remand.

#### BACKGROUND

On July 20, 1996, Sonya Sanders went into labor. She went to Mount Sinai Hospital, where she was treated by Dr. Boler, a board-certified obstetrician/gynecologist. At the hospital, Ms. Sanders' cervix was dilated to eight or nine centimeters, meaning her labor was proceeding rapidly. She was also experiencing

No. 1-06-3437

"hypercontractile" labor, an unusual pattern where contractions occur every minute. Tanisha was delivered in 4 hours, whereas normal labor usually takes 10 to 12 hours.

During the delivery, Dr. Boler recognized shoulder dystocia, a condition that can compromise the infant's oxygen supply. Dr. Boler was able to free the shoulder and deliver Tanisha. Dr. Boler informed Ms. Sanders that Tanisha suffered from Erb's palsy in her left arm, a condition resulting in weakened arm muscles.

On October 18, 2005, the plaintiffs filed a four-count first-amended complaint alleging Dr. Boler improperly applied a vacuum extraction cup and excessive traction to free the shoulder dystocia, causing Tanisha's injury. The trial court granted Dr. Boler's request to answer the first-amended complaint by the following day. Trial commenced on October 21, 2005.

Dr. Leo Boler

Dr. Boler, called as an adverse witness in the plaintiffs' case, testified there were several techniques or maneuvers used to free shoulder dystocia, including the "McRoberts maneuver," where the mother's thighs are pushed against her abdomen, and "suprapubic pressure," where pressure is applied to the mother's abdomen. Although Dr. Boler did not specifically recall Tanisha's birth, his custom and practice was to first use the McRoberts maneuver, followed by suprapubic pressure. He also identified his attending

No. 1-06-3437

note in the medical record, which indicated he applied a vacuum extractor cup and "gentle" traction to Tanisha's head.

According to Dr. Boler, gentle traction is the only type of traction the standard of care permits a doctor to apply during the delivery of an infant. In Dr. Boler's opinion, he complied with the standard of care by not applying excessive lateral traction when he delivered Tanisha.

Dr. Boler also explained there are two forces at play during normal labor: (1) the contraction forces from the uterus; and, (2) the voluntary labor pushing of the mother. In his view, Tanisha's injury was caused by a combination of these forces, which he believed are strong enough to injure a fetus during labor.

Dr. Stuart Edelberg

The plaintiff presented expert testimony from Dr. Edelberg, a board-certified obstetrician/gynecologist. Dr. Edelberg testified that Dr. Boler breached the standard of care by applying excessive lateral traction. According to Dr. Edelberg, Tanisha's injury was permanent.

On direct examination, Dr. Edelberg concluded Dr. Boler applied excessive lateral traction because that is the only way in which Tanisha's injury could have been caused, based on the medical record. Dr. Edelberg based his opinion in part on "all of the essential or standard textbooks that are in our field" which

indicate "the most common injury to the brachial plexus occurs during shoulder dystocia." According to Dr. Edelberg, the literature he referenced did not contain any examples of cases where the doctor admitted to applying excessive lateral traction. Pursuant to Dr. Boler's request, the trial court instructed the jury that Dr. Edelberg's reference to books and literature not in evidence was for the limited purpose "of deciding what weight, if any, you will give the opinions testified to by this witness." Illinois Pattern Jury Instructions, Civil, No. 2.04 (1995).

As evidence of his expertise in this field, Dr. Edelberg testified that he has written on the subject of shoulder dystocia with Dr. Allen, from John Hopkins University, "who has done extensive publications on shoulder dystocia."<sup>1</sup> Dr. Edelberg explained that he and Dr. Allen co-authored three letters to the editor critiquing published articles about shoulder dystocia.

On cross-examination, counsel for Dr. Boler sought to question Dr. Edelberg about his letters. Counsel asked Dr. Edelberg whether his first letter, written in November 2000, was in disagreement with an article authored by Drs. Sandmire and DeMott concerning the

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<sup>1</sup> Dr. Edelberg's testimony does not further explain Dr. Allen's qualifications. However, material in the record reveals Dr. Allen is an engineer, not a medical doctor.

No. 1-06-3437

cause of brachial plexus injuries. The plaintiffs objected, arguing Drs. Sandmire and DeMott's writings had not been established as authoritative. The trial court overruled the objection.

Dr. Edelberg acknowledged the first paragraph of his November 2000 letter indicated Sandmire and DeMott "opine that brachial plexus injury is probably caused by propulsive forces of labor rather than external traction." Another objection by the plaintiffs was overruled. The examination continued,

"Q. Do you agree or disagree with this statement, Doctor, in that very same page that your letter to the editor appears on, further evidence for the propulsive nature of the stretching of the involved nerves comes from Gonic--that's Dr. Gonic, correct?"

A. That is correct.

Q. --et al., that means and his other authors, correct?

A. Correct.

Q. Who, using engineering principles, recently concluded the endogenous forces--that means the internal forces?

A. Correct.

No. 1-06-3437

Q. Are four to nine times greater than the value calculated for clinician-applied forces?

A. That's what they said."

Defense counsel next questioned Dr. Edelberg whether his second letter to the editor, written in 2001 and stating he disagreed with "the fact that propulsive and contractile forces of labor caused these injuries," was in response to the opinion of Dr. Bernard Gonik, an obstetrician/gynecologist, and Dr. Michele Grimm, a biomedical engineer. Dr. Edelberg agreed. Defense counsel then questioned whether Dr. Edelberg's third letter expressed disagreement with another article by Drs. Sandmire and DeMott in which they "reviewed and supplied 22 citations to the literature that supported the opinion that brachial plexus injuries have causes other than traction." The plaintiffs again objected. The court initially overruled the objection but subsequently asked counsel for the parties to approach the bench. The court explained its request:

"Obviously [defense counsel] may cross-examine the doctor about the content of his letters to the editor which tends to impeach him. But you're referring to several doctors in the field of OB/GYN. And as you refer to

those doctors, you--the foundation that's required for impeachment in this area is that the author is a reliable authority or is a reliable piece of literature from the field on which you're cross-examining him.

\* \* \*

The way you're doing this is unusual. And it is causing--you're using letters that he wrote disagreeing with the opinions that others in the field have. And you are--without asking him, do you recognize the people you disagree with as being authoritative in this field and the follow-up from there and these are the opinions they hold, you are referring to his letter to show that there is an opinion out there that is different from his own. And the way you're doing it, it's almost as if you are trying to use the letters to the editor as substantive evidence of the credibility of the doctors."

Counsel for the plaintiffs argued that defense counsel was attempting to "introduc[e] and suggest[]" that Dr. Grimm, one of Dr. Boler's expert witnesses, is an "accepted--a realized

authority." The plaintiffs moved for a mistrial, contending the testimony elicited during the improper cross-examination was significantly prejudicial. After considering further arguments, the court denied the motion for a mistrial, deciding instead to strike the objected-to testimony. The court instructed the jury "to disregard questions and answers put to the doctor about the person[s] named in Dr. Edelberg's letters to the editor referred to by [defense counsel] on cross-examination. The names used in the doctor's letters and the opinions in the \*\*\* letters that he, Dr. Edelberg, disagrees with are not relevant. They're stricken from the evidence at this trial."

Continuing his cross-examination testimony, Dr. Edelberg acknowledged that there is a body of literature that supports his opinion that brachial plexus injuries are traction-related, as well as a body of literature that disagrees with his position. Dr. Edelberg testified he is familiar with the publication "Precis," a teaching textbook published by the American College of Obstetrics and Gynecology. He testified Precis contained "errors" but acknowledged it is a good and reliable source of information on how to handle shoulder dystocia. Over the plaintiffs' objections, Dr. Edelberg testified he disagreed with the statement in Precis that "the exact sequence of events that leads to brachial plexus trauma has not been clearly elucidated." However, Dr. Edelberg agreed

No. 1-06-3437

with Precis' statement that "[o]ther factors such as intrauterine maladaptation and endogenously exerted expulsion forces may contribute to this type of injury," as that statement included the word "may." Over the plaintiffs' objections, Dr. Edelberg also testified he disagreed with the notation in Precis that "in a recent study of a mathematical model for shoulder dystocia, reflex, uterine and maternal expulsive forces were found to exert significant compression over the site of fetal impaction behind the symphysis-pubis [bone]."

Dr. Edelberg also acknowledged the textbook "Williams Obstetrics" (Williams) is "reliable," but stated there were sections of it with which he disagreed. Dr. Edelberg agreed with Williams' statement that "the propulsive efforts of normal delivery may cause brachial nerve stretching and damage," because the text said "may." Dr. Edelberg, over the plaintiffs' objection, also agreed with Williams' statement that "with achievement of full cervical dilation, the great majority of women cannot resist the urge to bear down or push each time the uterus contracts. Typically, a laboring woman contracts her abdominal musculature repetitively with vigor to generate increased intra-abdominal pressure through the contractions. The combined force creates contractions of the uterus and abdominal musculature propelling the fetus downward."

After Dr. Edelberg completed his testimony, the trial court, outside the presence of the jury, added to his ruling on the plaintiffs' motion for mistrial.

"I want to add to the record that all of the matters discussed at sidebar during Dr. Edelberg's testimony concerning learned treatises eventually was properly brought out on further cross-examination of the doctor. So the portion of his testimony about letters that he wrote to the editor, which I struck, becomes harmless and moot. Those are further reasons for me to have denied plaintiffs['] motion for a mistrial."

The plaintiffs' objected, stating no testimony established *Precis* and *Williams* as authoritative. Counsel unsuccessfully renewed his motion for a mistrial.

Dr. Thomas Carver

Dr. Thomas Carver, an obstetrician/gynecologist expert witness on behalf of Dr. Boler, testified that Dr. Boler complied with the standard of care to alleviate Tanisha's shoulder dystocia. In his opinion, Tanisha's injury was not caused by excessive lateral traction, because the medical records failed to indicate that Dr. Boler applied excessive traction. Although Dr. Carver did not know

No. 1-06-3437

what caused Tanisha's injury, he opined that maternal forces of labor can lead to a brachial plexus injury before shoulder dystocia is recognized by the doctor.

Dr. Michele Grimm: Frye Hearing

Dr. Boler next sought to present testimony from Dr. Michele Grimm. Outside the presence of the jury, the trial court held a hearing pursuant to Frye v. United States, 293 F. 1013 (D.C. Cir. 1923). Under Frye, novel scientific evidence may be admitted at trial if the principles upon which the evidence is based are shown to be generally accepted in the relevant scientific community.

Dr. Grimm was the only witness to testify at the Frye hearing. Dr. Grimm testified she is a biomedical engineer, an associate professor of biomedical engineering at Wayne State University, and a co-author of three articles published in the American Journal of Obstetrics and Gynecology, a peer-reviewed journal, concerning the forces of labor and shoulder dystocia.

Dr. Grimm was contacted by Dr. Gonik about conducting research in the area of the forces of childbirth. Drs. Grimm and Gonik developed a two-dimensional mathematical model that looked at contact forces between an infant's shoulder and the maternal pelvis during delivery. In 2000, the doctors published their findings in their first article: Bernard Gonik, MD, et al., Mathematic Modeling of Forces Associated with Shoulder Dystocia: A Comparison of

No. 1-06-3437

Endogenous and Exogenous Sources, Am. J. Obstetrics & Gynecology, Mar. 2000, at 689.

The doctors continued their research, developing a more detailed three-dimensional model to mimic brachial plexus injuries using the Mathematical Dynamic Model, "a commercially available software program," used in biomedical research, known by its acronym, "MADYMO." MADYMO is used in automobile crash tests, "designed to take rigid bodies and look at how they interact with their environment." The basic scientific principles behind MADYMO are Newton's laws of equilibrium of forces and conservation of momentum. The development of the MADYMO model led to the publication of the doctors' second article: Bernard Gonik, MD, et al., Defining Forces that are Associated with Shoulder Dystocia: The Use of a Mathematic Dynamic Computer Model, Am. J. Obstetrics & Gynecology, Apr. 2003, at 160. They also published a third article: Bernard Gonik, MD, et al., Prediction of Brachial Plexus Stretching During Shoulder Dystocia Using a Computer Simulation Model, Am. J. Obstetrics & Gynecology, Oct. 2003, at 154.

The doctors' MADYMO model seeks to describe the contact forces that are experienced between the infant's shoulder and the maternal pelvis during labor and the forces required to deliver the infant when shoulder dystocia occurs. According to Dr. Grimm, "It was recognized that more contact force was seen between the shoulder

No. 1-06-3437

and the pelvis through maternal forces than resulted through physician-applied traction." The model "indicated that significant stretch occurs in the brachial plexus, both through maternal forces and through physician-applied forces, with the maternal forces actually causing more stretch in the nerve than physician-applied forces if those forces are applied along the axis of the baby's neck."

Like all models, the MADYMO model made several assumptions. Dr. Grimm explained it is "standard practice in the biomedical community to look for surrogates." The MADYMO model used a goat's neck to mimic the neck of a fetus because it was "next to impossible to get actual data from human fetuses." According to Dr. Grimm, a goat's neck has been widely accepted in peer-reviewed literature as a "good estimate of the properties of a juvenile neck." To assume the properties of the brachial plexus, Dr. Grimm looked at rabbit tibial nerves. She also based the anatomy of the fetus on the "95th percentile anthropology measurements that are documented in the medical literature." The fetus model was developed from a crash dummy modeled on a nine-month-old infant.

Abstracts of the articles were presented at two conferences of the Society of Maternal Fetal Medicine, where they received awards for research excellence, and at a conference sponsored by the American Society of Mechanical Engineers. The 2000 article was

No. 1-06-3437

referenced in *Precis*, while the 2003 articles were referenced in Williams. According to Dr. Grimm, the research models are based on generally accepted methodology and principles in the fields of engineering and obstetrics. Dr. Grimm explained:

"The conclusions that we've drawn are based on solid principles that have been understood and accepted in the biomechanic[,], biomedical engineering communities for a long time.

The model has been validated to the greatest extent possible against other works of literature in terms of the forces that we expect to occur compared to forces that have been measured experimentally.

And it has been accepted for presentation at conferences both in the clinical area and in the engineering area."

Dr. Grimm also acknowledged that her opinions and conclusions had been professionally criticized by others in the fields, specifically through letters to the editor authored by Drs. Edelberg and Allen.

The trial court concluded Dr. Grimm was qualified to testify under Frye, reasoning: "the doctor's principles are sound and that

No. 1-06-3437

her scientific data or method is directly related to the conclusions hypothesized in this case."

Dr. Michele Grimm: Trial Testimony

At trial, Dr. Grimm testified she has a Ph.D., she is not a medical doctor, and that biomedical engineering is the science of "using engineering to look at the human body, to look [at] how things interact with the human body." She explained that in pursuing her degrees, she took the same anatomy and physiology classes as first-year medical students. Dr. Grimm testified that her three articles were published in the American Journal of Obstetrics and Gynecology, and that her work had been referenced in *Precis and Williams*.

Dr. Grimm listed the three forces involved in childbirth: (1) the internal forces from the uterus; (2) the forces of the voluntary "pushing" of the mother; and, (3) physician-applied forces. Dr. Grimm testified that in her opinion, within a reasonable degree of biomedical engineering certainty, the vacuum extractor applied by Dr. Boler did not cause or contribute in any way to Tanisha's injury. She testified that excessive traction did not cause Tanisha's injury because maternal forces caused more stretch in the brachial plexus nerve network based on the medical record that spoke only of gentle traction application. To a reasonable degree of biomedical engineering certainty, Dr. Grimm's

opinion was that the maternal forces of labor were sufficient to cause Tanisha's injury. Dr. Grimm explained Ms. Sanders had a rapid labor, indicating "strong uterine contractions." According to Dr. Grimm, these forces "were the predominant cause of the injury in this case."

The jury returned a verdict for Dr. Boler, and the trial court entered judgment on the verdict.

#### Posttrial Proceedings

The plaintiffs filed a motion for a new trial, arguing (1) Dr. Grimm should have been barred from testifying, and (2) defense counsel improperly relied on medical literature to introduce the opinions of doctors who did not testify at trial and improperly read from textbooks that had not been established as authoritative.

The motion was argued before Judge Taylor on November 6, 2006, after Judge Morrissey retired. The plaintiffs argued Dr. Grimm should have been barred from testifying in this case, as she was barred from testifying by another Cook County circuit court judge in a then-pending medical malpractice case involving shoulder dystocia.<sup>2</sup> The plaintiffs argued that Dr. Grimm was a "mechanical

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<sup>2</sup> As a point of information, the unpublished decision in the appeal in that case did not reach whether Dr. Grimm was qualified

engineer" and that her model was based on "basically a crash dummy model of a nine-year-old."<sup>3</sup> The plaintiffs argued Dr. Grimm's methods were unreliable and not generally accepted to establish admissibility under Frye.

The trial court granted the motion, stating:

"After careful consideration, even reading the transcripts of the trial that I was not a party to, I[] find that the limitations by introducing the medical opinions of doctors who cannot be cross-examined, that its experts were [im]properly bolstered by the testimony of the defendant's expert engineer and that the defendant improperly read from literature which had not been established as authoritative, and also for failure to--based upon the acceptability of the scientific community on the Frye standards."

#### ANALYSIS

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to testify under Frye, issued under Supreme Court Rule 23.

<sup>3</sup> Counsel's argument inaccurately described Dr. Grimm as a "mechanical engineer" and was wrong in his reference to the use of a crash model based on a nine-year-old child.

No. 1-06-3437

On appeal, Dr. Boler contends the trial court erred in granting the plaintiffs' motion for a new trial.

Generally, a trial court's ruling on a motion for a new trial is reviewed for an abuse of discretion. Redmond v. Socha, 216 Ill. 2d 622, 642, 837 N.E.2d 883 (2005). The trial court's decision is subject to this deferential standard because the trial judge " ' " has the benefit of his previous observation of the appearance of the witnesses, their manner in testifying, and of the circumstances aiding in the determination of credibility." ' " Redmond, 216 Ill. 2d at 632-33, quoting Maple v. Gustafson, 151 Ill. 2d 445, 456, 603 N.E.2d 508 (1992), quoting Buer v. Hamilton, 48 Ill. App. 2d 171, 174, 199 N.E.2d 256 (1964), quoting Hulke v. International Manufacturing Co., 14 Ill. App. 2d 5, 47, 142 N.E.2d 717 (1957).

In this case, because Judge Morrissey retired, Judge Taylor was placed in the position of reviewing the claimed errors based on the transcripts of the trial, as a court of review would. Judge Taylor found each of the claimed errors warranted a new trial. According to Judge Taylor, Judge Morrissey erred in allowing Dr. Grimm's testimony under Frye and allowing certain impeachment of Dr. Edelberg. Each of the alleged errors is subject "to its own standard of review." Redmond, 216 Ill. 2d at 633.

"The trial court's Frye analysis \*\*\* is now subject to de novo

No. 1-06-3437

review." In re Commitment of Simons, 213 Ill. 2d 523, 531, 821 N.E.2d 1184 (2004).

Regarding the claimed improper impeachment of Dr. Edelberg as an independent basis for granting a new trial, we question whether an abuse of discretion standard ought to apply because it is doubtful that Judge Taylor's ruling involved an exercise of discretion. See Redmond, 216 Ill. 2d at 634 (an issue "is reviewed under an abuse of discretion only when the trial court actually engages in an exercise of discretion"). Nonetheless, we look first to the ruling by Judge Morrissey to determine whether impeachment error occurred. If no error occurred, it necessarily follows that Judge Taylor abused his discretion in ordering a new trial on this basis. See Najas Cortes v. Orion Securities, Inc., 362 Ill. App. 3d 1043, 1046, 842 N.E.2d 162 (2005), quoting Koon v. United States, 518 U.S. 81, 100, 135 L. Ed. 2d 392, 414, 116 S. Ct. 2035, 2048 (1996) (" 'The abuse-of-discretion standard includes review to determine that the discretion was not guided by erroneous legal conclusions' ").

#### I. The Admissibility of Dr. Grimm's Testimony

Dr. Boler contends Judge Morrissey properly allowed Dr. Grimm to testify and that Judge Taylor erred in "overruling" that determination. As Dr. Boler correctly notes, the admissibility of

No. 1-06-3437

a causation opinion of a biomedical engineer in a medical malpractice action has not been previously addressed in an Illinois published opinion.

Before expert testimony will be admitted at trial, the proponent of the evidence must persuade the trial court to make three preliminary determinations: (1) the witness may be of assistance to the trier of fact; (2) the witness is qualified to give the testimony sought; and, (3) the testimony sought is supported by adequate facts, data, or opinions. M. Graham, Cleary & Graham's Handbook of Illinois Evidence §702.1, at 610 (7th ed. 1999); see Snelson v. Kamm, 204 Ill. 2d 1, 24, 787 N.E.2d 796 (2003) ("[e]xpert testimony is admissible if the proffered expert is qualified by knowledge, skill, experience, training, or education, and the testimony will assist the trier of fact in understanding the evidence"). Where the expert testimony concerns a novel scientific methodology, the proponent must show the methodology upon which the proposed evidence is based meets the standard enunciated in Frye: general acceptance in the relevant scientific community. In re Commitment of Simons, 213 Ill. 2d 523, 529-30, 821 N.E.2d 1184 (2004). The trial court's determination to admit expert testimony is reviewed for an abuse of discretion. In re Commitment of Simons, 213 Ill. 2d at 530-31. The trial court's

Frye analysis, however, is reviewed de novo. In re Commitment of Simons, 213 Ill. 2d at 531.

In this case, Dr. Boler argues Judge Morrissey properly allowed Dr. Grimm's testimony because (1) Dr. Grimm was qualified to testify as to a possible cause of Tanisha's injury, and (2) Dr. Grimm satisfied Frye because her methodology and conclusions derived therefrom are generally accepted within the scientific community.

*A. Need for a Medical Expert on Causation*

Independent of the Frye-related issues, the plaintiffs contend Dr. Grimm should have been barred from testifying as to causation because the question before the jury requires an assessment of the causation evidence to "a reasonable degree of medical certainty" and Dr. Grimm is not a medical doctor. The plaintiffs contend that the expert in a medical malpractice case "must be a licensed member of the school of medicine about which he seeks to render an opinion, and the expert must show she is familiar with the methods, procedures and treatments ordinarily observed by other physicians, in either the defendant[']s community or a similar community."

This "same school of medicine" rule was first announced in Dolan v. Galluzzo, 77 Ill. 2d 279, 285, 396 N.E.2d 13 (1979): "[I]n order to testify as an expert on the standard of care in a

No. 1-06-3437

given school of medicine, the witness must be licensed therein." The plaintiffs, however, read this rule too broadly. The restriction as to who may serve as an expert applies to testimony "concerning the standard of care." (Emphasis added.) Greenberg v. Michael Reese Hospital 83 Ill. 2d 282, 291-92, 415 N.E.2d 390 (1980), citing Dolan v. Galluzzo, 77 Ill. 2d 279, 283, 396 N.E.2d 13 (1979).

In Greenberg, it was the defendant hospital that took the position the plaintiffs take in this case. The defendant hospital argued that allowing the plaintiffs to withstand the hospital's motion for summary judgment with a counteraffidavit by a "health physicist," who gave an opinion as to the standard of care and its deviation, "contravenes this court's holding in Dolan v. Galluzzo, 77 Ill. 2d 279, 396 N.E.2d 13 (1979)." Greenberg, 83 Ill. 2d at 291. The defendant hospital argued "that inasmuch as [the health physicist] is not a practitioner of any school of medicine he should not be permitted to testify concerning conduct which involves a medical judgment." Greenberg, 83 Ill. 2d at 292. The high court determined "that the rule of Dolan is inapplicable to the facts of this case," as the claim against the defendant hospital was one of institutional negligence as recognized by Darling v. Charleston Community Memorial Hospital, 33 Ill. 2d 326,

No. 1-06-3437

211 N.E.2d 253 (1965). Greenberg, 83 Ill. 2d at 293.

While this case involves professional negligence, we likewise conclude the Dolan rule is inapplicable to the facts of this case. Our reason is simple: Dr. Grimm's testimony did not concern the standard of care applicable to Dr. Boler; it was not offered to explain a medical judgment. Dr. Grimm's testimony goes solely to an independent cause defense.

It is beyond contention that generally, in medical malpractice actions, the plaintiff must establish the causation element "to a reasonable degree of medical certainty." Krivanec v. Abramowitz, 366 Ill. App. 3d 350, 357, 851 N.E.2d 849 (2006). The reasonable degree of certainty showing follows from the need for medical expert testimony to establish the standard of care and its deviation. It is logical that causation be shown to a reasonable degree of medical certainty because if the plaintiff believed something other than the medical provider's alleged negligence proximately caused the injury, the plaintiff's cause of action would not sound of medical malpractice. However, because the plaintiff's burden as to proximate cause must be established by medical expert testimony, it does not necessarily follow that the defendant is constrained to challenge the plaintiff's proximate cause evidence by medical expert testimony as well.

It is true that in virtually every medical malpractice case where the defendant presents medical expert testimony as to the standard of care and its alleged deviation, that expert directly or indirectly addresses causation. A malpractice defendant, however, is not limited to a medical expert where an independent cause defense is asserted. It is the nature of the defense that dictates the defendant's choice of field of expertise for his expert witness.

A hypothetical example illustrates this point. An individual is in an automobile accident while on his way to the hospital for an operation to be performed by Dr. Jones. The individual does not believe he is injured in the accident, does not mention the accident to Dr. Jones, and goes ahead with the surgery. While recovering from the surgery, the individual dies from an abdominal injury. In the resulting medical malpractice action, the plaintiff sues Dr. Jones, alleging her negligence during the surgery caused the abdominal injury. Dr. Jones's theory is that the abdominal injury was caused by the force of the individual's seatbelt in the automobile accident. It is undisputed that the abdominal injury was the cause of death. To prove her case, the plaintiff has the burden of establishing the standard of care, Dr. Jones's deviation from that standard, and causation. To establish causation, the

No. 1-06-3437

plaintiff must present medical expert testimony to show, within a reasonable degree of medical certainty, that it was more likely than not that Dr. Jones's deviations from the standard of care caused the abdominal injury, resulting in the patient's death.

On the defense side, because the amount of force a seatbelt imposes on the abdomen in an accident is beyond the common knowledge of the jury, Dr. Jones may present expert testimony to support her defense that something other than her alleged negligence caused the patient's death. However, a medical doctor would not have the expertise to support her theory that the force imposed by a seatbelt caused the injury. Rather, such an expert would be a biomechanical engineer, who is competent to testify that the abdominal injury was caused by the impact of the seatbelt. See Moehle v. Chrysler Motors Corp., 93 Ill. 2d 299, 308, 443 N.E.2d 575 (1982) (plaintiff's proximate cause expert, a biomechanical engineer, testified the impact from the seatbelt caused the decedent's abdominal injuries).

In this case, Dr. Grimm's testimony was offered to show that the injury suffered by Tanisha was the result of a cause other than Dr. Boler's alleged negligence. Because Dr. Grimm's testimony did not address the standard of care applicable to Dr. Boler's actions, there is no basis to exclude Dr. Grimm's testimony merely because

No. 1-06-3437

she is not a medical doctor. See Miller v. Eldridge, 146 S.W.3d 909 (Ky. 2004) (in a medical malpractice case, biomedical engineer found qualified to refute plaintiff's theory that a portion of a blood clot, negligently treated, traveled against blood flow, causing the decedent's death; biomedical engineer testified theory was "impossible").

*B. Need for Dr. Grimm's Testimony*

Regarding Tanisha's injury, it is undisputed that Tanisha's shoulder became impacted during her birth and that she suffered an injury to her brachial plexus nerve network. What is disputed is whether the injury occurred because Dr. Boler breached the standard of care by using excessive traction in delivering Tanisha or as a result of the natural forces of labor. The former theory must be supported by expert medical testimony, which Dr. Edelberg provided, challenged by the medical testimony of Drs. Boler and Carver. The "natural forces of labor" theory does not require medical expert testimony; it was as to this theory that Dr. Boler sought to introduce Dr. Grimm's testimony.

The plaintiffs do not challenge Dr. Grimm's qualifications as an expert in biomedical engineering. Dr. Grimm testified she has a Ph.D. in biomedical engineering and that she was an associate professor of the subject. She also testified she had done

No. 1-06-3437

extensive research in the forces at play during childbirth and that her findings had been published in peer-reviewed literature, including the American Journal of Obstetrics and Gynecology, and presented at engineering conferences.

Because the amount of force occurring during normal labor is beyond the common knowledge of the jury, an expert witness, qualified to explain labor-generated forces, was required to testify in support of this theory. Through Dr. Grimm's testimony, Dr. Boler sought to show "evidence that negates causation." Leonardi v. Loyola University, 168 Ill. 2d 83, 94, 658 N.E.2d 450 (1995).

To the extent Dr. Grimm qualifies under Frye, it is clear her testimony as to the forces working within the body during labor would assist the jury's understanding of the forces at work during the shoulder dystocia. Dr. Grimm's field of training of biomedical engineering, the science of "using engineering to look at how things interact with the human body," was precisely the field of expertise that would assist the jury in understanding Dr. Boler's causation defense based on the natural forces of labor.

Judge Morrissey did not abuse his discretion in making his preliminary determinations under Snelson that Dr. Grimm was qualified to testify as an expert witness in the field of

biomedical science and that her testimony would be of assistance to the jury. Judge Morrissey was correct to then address the question whether Dr. Grimm's proposed testimony also satisfied Frye.

C. *Satisfied Frye Test*

The rule for admissibility of novel scientific evidence in Illinois is based on Frye: " 'scientific evidence is admissible at trial only if the methodology or scientific principle upon which the opinion is based is "sufficiently established to have gained general acceptance in the particular field in which it belongs." ' " People v. McKown, 226 Ill. 2d 245, 254, 875 N.E.2d 1029 (2007), quoting In re Commitment of Simons, 213 Ill. 2d at 529-30, quoting Frye, 293 F. at 1014. Because Dr. Grimm's principles and methodology had not previously been established as generally accepted, Judge Morrissey conducted a Frye hearing. See, e.g., McKown, 226 Ill. 2d at 254 (a court may determine the general acceptance of scientific testimony in two ways: (1) by holding a Frye hearing; or, (2) "by taking judicial notice of unequivocal and undisputed prior judicial decisions or technical writings on the subject").

Dr. Boler contends Dr. Grimm's methodology is generally accepted within the field of engineering because it is based on such established theories as Newton's law of equilibrium and forces

No. 1-06-3437

and conservation of momentum. Dr. Boler points out MADYMO is a commercially available software program that has been used in the engineering community for over 20 years and that it is common within the biomedical engineering community to base studies on animal parts, such as a goat's neck and rabbit tibial nerves.

The plaintiffs contend Dr. Grimm's methodology is not generally accepted because of the "assumptions" her computer model makes, including her reliance on animals and on a model fetus developed from a crash dummy representing a nine month-old infant. According to the plaintiffs, "[Dr. Boler] fails to provide any evidence or testimony, besides that of [Dr.] Grimm herself, which supports the claim that biomedical engineer practices and methods are accepted within the applicable scientific community in investigating how a human fetus reacts to pressures and forces during the medical procedure of child labor." (Emphasis in original.)

Both parties point our attention to Mitchell v. Palos Community Hospital, 317 Ill. App. 3d 754, 740 N.E.2d 476 (2000). In that case, the plaintiff sued the defendant hospital and doctors, alleging their failure to properly treat her for a placental abruption caused her infant's cerebral palsy. The defendants' theory was that the injury to the infant occurred at

the time the plaintiff first experienced her symptoms. By the time she arrived at the hospital, the damage was irreversible. To support their theory, the defendants sought to present expert causation testimony from Dr. Jeffery Phelan. The trial court conducted a Frye hearing where numerous witnesses testified for both parties by deposition. It was established at the hearing that Dr. Phelan had developed a method to evaluate neurological injury to an infant by looking at the level of nucleated red blood cells (NRBCs) and other enumerated factors to determine the timing of the placental abruption. Several doctors testified that Dr. Phelan's testimony was generally accepted in the medical community based upon articles Dr. Phelan had written that were published in numerous "highly prestigious" obstetric and gynecological journals. Mitchell, 317 Ill. App. 3d at 762.

On review, this court held that the defendants sufficiently established that Dr. Phelan's theory had gained general acceptance in the scientific community.

"There are several ways a proponent of evidence subject to Frye can prove the 'general acceptance' of the proffered evidence. The proponent may use scientific publications, prior judicial decisions,

practical applications, as well as the testimony of scientists as to the attitudes of their fellow scientists. [Citation.]

Plaintiff has pointed out that Dr. Phelan's studies on NRBCs are new and have not been tested. However, as professor Graham has written:

'Newness alone is not a bar to admissibility, for every scientific technique that is eventually accepted must have its first day in court. Moreover, neither lack of absolute certainty nor lack of uniformity of expert opinion precludes a court from finding on the basis of expert witness testimony and other evidence admitted at trial that \*\*\* the scientific test's reliability is, or clearly would be when brought to the attention of the appropriate experts, generally accepted in the

particular scientific field in which  
the test belongs.' "

Mitchell, 317 Ill. App. 3d at 762, quoting M. Graham, Clearly & Graham's Handbook of Illinois Evidence §702.4, at 563 (6th ed. 1994).

As recognized in Mitchell, the newness of the theory is not an automatic bar to the admissibility of testimony supporting that theory. While the admissibility of Dr. Grimm's theory is a matter of first impression in an Illinois court of review, her articles concerning the forces of labor and shoulder dystocia, published in a peer-reviewed journal, date back a number of years: her first article was published in 2000, followed by the articles published in 2003. The articles themselves were published in the American Journal of Obstetrics and Gynecology, one of the same "highly prestigious medical journals" noted in Mitchell. Dr. Grimm's research has gained such prominence as to be referenced in two medical textbooks, Precis and Williams. The plaintiffs presented no direct evidence to challenge Dr. Grimm's methods, relying instead to cast doubt on her methodology and principles during cross-examination. Dr. Grimm's claim that her model had been generally accepted in both the engineering and obstetric

communities is amply supported by evidence at the Frye hearing.

But our de novo review of Judge Morrissey's Frye analysis is not limited to the evidence presented at the Frye hearing. We may also consider, "where appropriate, sources outside the record, including legal and scientific articles, as well as court opinions from other jurisdictions." In re Commitment of Simons, 213 Ill. 2d at 531.

The plaintiffs note Dr. Grimm was barred from testifying in a subsequent case in the circuit court of Cook County. Dr. Boler, however, in his motion to cite supplemental authority, points to a recent decision by a federal district court that found Dr. Grimm's methods, techniques, and opinions "reliable and admissible" in a shoulder dystocia medical malpractice case. Silong v. United States, No. CV F 06-0474 LJO DLB (E.D. Cal. August 31, 2007). Because that case arose in federal court, the court analyzed the issue pursuant to Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 589-92, 125 L. Ed. 2d 469, 480-82, 113 S. Ct. 2786, 2794-96 (1993), the focus of which is whether the expert's opinions are based on scientific knowledge. A factor in this determination, however, is "whether the theory is generally accepted in the relevant scientific community." Silong, slip op. at \_\_\_\_\_. The court rejected the plaintiff's challenges to Dr. Grimm's testimony,

No. 1-06-3437

which, like those raised by the plaintiffs in this case, attacked the use of animals and Dr. Grimm's other assumptions. The court held:

"The evidence further shows that Dr. Grimm's work has gained acceptance in the medical and biomechanical communities. She has received multiple awards for research excellence based on her research on fetal brachial plexus strain during shoulder dystocia. Dr. Grimm has been asked to present her findings on this issue at several international biomedical and biomechanical conferences. Additionally, Dr. Grimm's maternal labor force theory is supported by other existing literature. Finally, Dr. Grimm presents evidence that her scientific techniques were based on accepted scientific methodologies and learned treatises." Silong, slip op. at \_\_\_.

The federal court's analysis in Silong is consistent with our supreme court's pronouncement in In Re Commitment of Simons, 213 Ill. 2d at 532: "Under the Frye standard, the trial court is not

asked to determine the validity of a particular scientific technique. Rather, the court's responsibility is to determine the existence, or nonexistence, of general consensus in the relevant scientific community regarding the reliability of that technique."

We conclude that Dr. Grimm's methodology is generally accepted within the relevant scientific communities. Accordingly, Dr. Grimm's testimony was properly admitted at trial by Judge Morrissey, and Judge Taylor erred in granting a new trial on this basis.

## II. Impeachment of Dr. Edelberg

Judge Taylor found reversible error based on improper impeachment during cross-examination of Dr. Edelberg regarding letters to the editor and texts not conceded to be authoritative. During the course of the trial, Judge Morrissey struck much of the objected-to testimony elicited during cross-examination regarding the letters and instructed the jury accordingly. Judge Morrissey also ruled Dr. Edelberg was properly cross-examined on passages in the medical texts of *Precis* and *Williams* that covered much of the same subject as the cross-examination that was stricken.

We preface our discussion of this issue with comments by Justice Schaefer as to the importance of expert testimony in the

attainment of justice.

"An individual becomes an expert by studying and absorbing a body of knowledge. To prevent cross-examination upon the relevant body of knowledge serves only to protect the ignorant or unscrupulous expert witness. In our opinion expert testimony will be a more effective tool in the attainment of justice if cross-examination is permitted as to the views of recognized authorities, expressed in treatises or periodicals written for professional colleagues." Darling, 33 Ill. 2d at 336.

This reminder is necessary because of our concern over the reluctance of witnesses, carrying the mantle of "expert" before juries, to acknowledge certain texts as authoritative.

It goes without saying that a witness does not become an "expert" based on his own view on a particular subject. A person becomes an expert by "studying and absorbing a body of knowledge." The body of knowledge exists independent of the view of any individual expert. We see no reason for reluctance on the part of an expert witness (or counsel) to acknowledge a treatise as

No. 1-06-3437

authoritative, even if there exists disagreement on a particular point of knowledge contained in the text. As noted, it is often these treatises, known to every well-trained professional in the field, that serve as the fountain of knowledge for the acquired expertise of the witness.

Regarding the reversible error found by Judge Taylor, based on our review of the record, Dr. Edelberg did acknowledge, with perhaps some reluctance, that both Precis and Williams are authoritative texts in the field of obstetrics (see, e.g., People v. Johnson, 206 Ill. App. 3d 875, 879, 564 N.E.2d 1310 (1990) (witness's testimony that she was familiar with text and had used it in the past was sufficient to establish its reliability, even though witness did not specifically state she relied upon it)), as he was professionally compelled to do. See Roach v. Springfield Clinic, 223 Ill. App. 3d 597, 585 N.E.2d 1070 (1991), rev'd in part, 157 Ill. 2d 29, 623 N.E.2d 246 (1993) (Precis III authoritative as used by obstetricians to prepare for board exams); Renslow v. Mennonite Hospital, 67 Ill. 2d 348, 367 N.E.2d 1250 (1977) (Williams Obstetrics authoritative as information contained therein probative on foreseeability issue). Consequently, we find no error in the cross-examination of Dr. Edelberg based on the passages in Precis and Williams.

We also agree with Judge Morrissey that any error, which may have occurred by the cross-examination of Dr. Edelberg as to the substance of the exchanges in the letters to the editor, to the extent the claimed error was not cured by the striking of the examination coupled with the instruction to disregard to the jury, was rendered harmless when proper cross-examination was conducted on the same subjects based on the passages in *Precis* and *Williams*. See *People v. Sims*, 167 Ill. 2d 483, 512, 658 N.E.2d 413 (1995) ("It is well established that the trial court's decision to sustain a defense objection, and the trial court's instruction to the jury to disregard the remark, will cure any prejudicial impact").

Because any error resulting from any improper impeachment of Dr. Edelberg was cured by the actions of Judge Morrissey and no prejudice lingered because subsequent proper cross-examination occurred, a new trial based on these claimed errors is unwarranted. Consequently, Judge Taylor abused his discretion when he ordered a retrial on this basis as well.

#### CONCLUSION

For the reasons stated, the order of the circuit court of Cook County granting a new trial is reversed. The cause is remanded to the circuit court with instructions to reinstate the jury's verdict for Dr. Boler.

No. 1-06-3437

Reversed and remanded.

\_\_\_\_\_CAHILL, P.J., and WOLFSON, J., concur.

**REPORTER OF DECISIONS - ILLINOIS APPELLATE COURT**

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**TANISHA RUFFIN, by Her Mother and Next Friend, Sonya R. Sanders; and  
SONYA R. SANDERS, Individually,**

**Plaintiffs-Appellees,**

**v.**

**LEO BOLER, JR.,**

**Defendant-Appellant.**

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**No. 1-06-3437**

**Appellate Court of Illinois  
First District, First Division**

**Filed: June 25, 2008**

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**JUSTICE GARCIA delivered the opinion of the court.**

**CAHILL, P.J., and WOLFSON, J., concur.**

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**Appeal from the Circuit Court of Cook County  
Honorable John E. Morrissey and Bill Taylor, Judges Presiding.**

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