IN THE UNITED STATES COURT OF APPEALS
FOR THE FIFTH CIRCUIT

United States Court of Appeals
Fifth Circuit

F I L E D
June 10, 2009

Charles R. Fulbruge III
Clerk

No. 04-60962

BARBARA HUSS; RODNEY HUSS

Plaintiffs - Appellees

v.

JOHN OVERTON GAYDEN, M.D.; MEMPHIS OBSTETRICS AND GYNECOLOGICAL ASSOCIATION PC

Defendants - Appellants

Appeal from the United States District Court for the Northern District of Mississippi

Before HIGGINBOTHAM, DeMOSS, and OWEN, Circuit Judges.

DeMOSS, Circuit Judge:

In this medical malpractice diversity suit, defendants appeal a jury's $3.5 million award to plaintiff Barbara Huss. We reverse and remand for a new trial.

I.

We begin with a brief overview of this litigation. Barbara Huss and her husband Rodney Huss filed this lawsuit on June 30, 2000. The parties consented to have the case heard before a magistrate judge. Trial was held in Greenville, Mississippi on August 17–20, 2004. A jury of eight returned a general verdict in favor of Barbara Huss and awarded her $3,500,000. The jury also returned a verdict in favor of Rodney Huss, but awarded him nothing. A divided panel of

this Court concluded that the applicable Mississippi statute of limitations barred the Husses' claims as a matter of law. *Huss v. Gayden* (*Huss I*), 465 F.3d 201, 208-09 (5th Cir. 2006). The Husses requested rehearing en banc. A poll was taken and a majority of the judges in active service and not disqualified did not vote in favor of granting rehearing en banc. *Huss v. Gayden* (*Huss II*), 2006 WL 5013195, at *1 (5th Cir. Dec. 27, 2006) (per curiam). However, this panel granted rehearing before the panel. In light of the Mississippi Supreme Court's opinion in *Sutherland v. Ritter*, 959 So. 2d 1004 (Miss. 2007), a panel majority *sua sponte* requested that the Mississippi Supreme Court accept a certified question regarding the statute of limitations. *Huss v. Gayden* (*Huss III*), 508 F.3d 240, 245-48 (5th Cir. 2007). The Mississippi Supreme Court accepted the question, and held that defendants' limitations defense fails as a matter of law. *See Huss v. Gayden* (*Huss IV*), 991 So. 2d 162, 165 (Miss. 2008). We now vacate our prior decision and address the remaining issues.

II.

This is a medical malpractice suit against a physician and a professional corporation of physicians. Barbara and Rodney Huss, citizens of Mississippi, allege that defendants John Gayden and Memphis Obstetrics and Gynecological Association PC ("Memphis OB/GYN"), citizens of Tennessee, negligently administered the drug Terbutaline sulfate[1] to Barbara during her pregnancy. The manufacturer of Terbutaline was not sued.

The Husses argued at trial that defendants breached the standard of care by administering subcutaneous Terbutaline to Barbara as a tocolytic (an agent to slow or halt premature labor contractions), the prescription of a tocolytic without physical examination by a physician, the prescription of any tocolytic when Barbara was not actually in labor, and the prescription of Terbutaline for

[1] Terbutaline sulfate is the generic name for Brethine. We refer to the drug throughout as Terbutaline.

four weeks when there was no indication that Barbara was in labor. The Husses also said Barbara would not have consented to treatment with Terbutaline had she been informed of the risks. The Husses say Terbutaline caused Barbara to develop cardiomyopathy,[2] pulmonary edema, and congestive heart failure.

A.

Barbara became the patient of Dr. Andrea Giddens, a member of Memphis OB/GYN, on February 17, 1998. At that time, Barbara was twenty-seven weeks pregnant, and had a due date of May 17. Barbara informed Dr. Giddens that her medical history included one childbirth by Cesarian section, three miscarriages, prior ovarian cysts, and hypertension. Barbara's medical conditions and factors on February 17 included: weight gain of forty to fifty pounds during pregnancy, swelling, near-constant nausea and vomiting, gestational diabetes (i.e., pregnancy-induced diabetes), and continued cigarette smoking throughout pregnancy. Dr. Giddens believed that the "excessive" weight gain was due in part to retention of excess fluid, or edema, as well as excessive eating. Dr. Giddens concluded that Barbara had a "high-risk pregnancy" and directed her to cease working for the remainder of her term.

On March 8, 1998, when Barbara was thirty weeks pregnant, she felt increasing cramping and pressure. She experienced contractions five to ten minutes apart, and she thought she was in labor. She sought treatment from Memphis OB/GYN's emergency room at 11:15 p.m. The on-call physician, Dr. John Albritton, attempted to stop the contractions. He did not personally examine Barbara, but communicated by telephone with a nurse, first ordering intravenous hydration and the drug Stadol. When contractions continued, Dr. Albritton ordered subcutaneous injections of Terbutaline. Barbara was given two

[2] The terms "cardiomyopathy," "postpartum cardiomyopathy," "peripartum cardiomyopathy," and "peripartal cardiomyopathy" all refer to the same condition for purposes of this litigation.

injections, and the contractions ceased within a few hours. The next morning, March 9, 1998, defendant Dr. John Gayden, a Memphis OB/GYN physician, prescribed administration of 2.5 milligram oral Terbutaline tablets. Barbara initially received 30 pills, and was to take a pill every six hours. The prescription was refilled three times, meaning Barbara received 120 pills, or a supply for approximately four weeks. Although contractions had ceased, Dr. Gayden prescribed Terbutaline prophylactically to prevent the recurrence of pre-term contractions and to forestall premature labor and delivery. Barbara was discharged from the hospital on the morning of March 9.

On March 10, 1998, Barbara returned to Memphis OB/GYN for a follow-up examination by Dr. Giddens. Barbara was experiencing occasional contractions at that time. Dr. Giddens concurred in the prophylactic prescription of oral Terbutaline as a tocolytic. At trial, Dr. Giddens was recognized as an expert in obstetrics and gynecology. She testified that she was concerned with Barbara's past Cesarian section. Dr. Giddens said: "I was concerned about her contracting at home and the risk for contractions . . . with a prior section is uterine rupture, which can be devastating. The baby can die. The mother can die. So I did not want her to have contractions regularly." Moreover, Dr. Giddens testified that premature delivery would have severe adverse impacts on the health of the child. Dr. Giddens said she believed it was medically proper, and within the standard of care, to prescribe Terbutaline prophylactically as a tocolytic. Terbutaline is labeled for treatment of asthma, but Dr. Giddens indicated that, when prescribed off-label as a tocolytic, it is safe, effective, and appropriate. Dr. Giddens indicated that because Barbara had not shown any signs of high blood pressure or heart problems, it was not necessary to conduct cardiac tests prior to prescribing the drug.

Aside from her treatment for premature contractions on March 8–10, 1998, Barbara experienced other complications that caused her to seek emergency

treatment on several occasions before her daughter Hannah Marie Huss was delivered on May 6, 1998. Although disputed by defendants at trial, Barbara, members of her family, and an acquaintance testified that Barbara experienced severe shortness of breath. Barbara testified that for two and one-half to three months before delivery, she had severe shortness of breath. On March 20, 1998, during a family outing, Barbara felt leaking and contractions five minutes apart. She thought that her water had broken. She testified that she also experienced shortness of breath. Barbara was placed on oxygen by emergency medical technicians and transported to a hospital. On April 5, 1998, Barbara felt uncontrollable leaking and sought treatment at a local emergency room. On Easter Sunday, April 12, 1998, Barbara experienced shortness of breath during a family dinner and once more sought treatment at an emergency room. In late April, Barbara was prescribed antibiotics for an ear infection. Barbara testified that in the weeks preceding Hannah's birth, she experienced such severe shortness of breath that she had trouble speaking and slept sitting up.

Barbara continued to see Dr. Giddens and the physicians at Memphis OB/GYN until the delivery of Hannah. She testified that she did not remember, however, when she obtained her last Terbutaline refill. When asked whether the date April 6, 1998 was correct, Barbara said: "It was in April sometime. I don't know the exact date." She recalled that she received 30 pills, or a one-week supply. While testifying, Barbara reviewed her own medical records. She was asked whether it was noted that she was still on Terbutaline on April 15. She indicated that the records said as much. When asked if she continued to take Terbutaline after this point, Barbara said yes. When asked whether she was taking Terbutaline on April 28, she also answered yes. Barbara's medical records indicate, however, that the drug was discontinued on April 21, 1998. A record from Barbara's treatment for ear infection, filled out on April 23, 1998, lists the medications Barbara was taking; Terbutaline is not listed. When asked how a

four-week supply that should have run out in mid-April lasted so long, and how the final week's refill lasted well over two weeks, Barbara explained that she did not always take four pills per day as instructed, but skipped a dose if she was sleeping well. But she insisted that this seldom occurred, and she generally took Terbutaline as she was told. Barbara also testified that after Hannah's birth she still had one or two Terbutaline tablets "left over."

By May 5, 1998, Barbara was experiencing severe swelling in her legs. Dr. Giddens testified that at that time, Barbara had toxemia. Toxemia is also known as preeclampsia; this is high blood pressure during pregnancy. Toxemia can lead to eclampsia, a seizure of pregnancy, in which the baby can lose oxygen and suffer retardation, cerebral palsy, or death. Dr. Giddens instructed Barbara to go to the hospital for delivery. Barbara's OB Assessment Record from the date of her admittance, May 5, 1998, does not indicate that she was taking Terbutaline at that time. At the hospital on May 5, attempts were made to induce labor. They were unsuccessful. The next day, May 6, 1998, Dr. Gus Giddens, the husband of Dr. Andrea Giddens, successfully performed a Cesarian section, and Hannah was born healthy. Barbara was discharged from the hospital on May 9, 1998. Her medical records from the four days Barbara spent in the hospital indicate that she was breathing normally and without difficulty.

After returning home on May 9, Barbara experienced shortness of breath. She took one of the Terbutaline tablets that she had "left over." She had heard that Terbutaline is used to open the bronchial tubes of asthma sufferers, and she believed the Terbutaline would ameliorate the shortness of breath. However, at some point later that evening, Barbara leaned back and could not breathe. In the early morning hours of May 10, she was taken to the emergency room of Methodist South in Memphis. This facility is not a defendant and is not affiliated with defendants.

On May 10, 1998, Barbara was diagnosed by three physicians at Methodist South with peripartum cardiomyopathy, pulmonary edema, and congestive heart failure. Cardiomyopathy refers to a weak heart muscle. The condition can be temporary or chronic. Dr. Gary Murray, Barbara's treating cardiologist at the time of trial, testified that peripartum cardiomyopathy "is defined as the development of congestive heart failure in a woman occurring within one month of delivery or by five months after delivery," where there is "no other obvious cause" for the disorder. Dr. Murray said that peripartum cardiomyopathy is a rare condition occurring in one in three thousand to fifteen thousand births. Congestive heart failure is the inability of the heart to contract normally, causing a backup of fluid in the heart and throughout the body. Cardiologists measure its severity by the ejection fraction, which is the measure of the heart's ability to pump. This condition can be temporary or chronic. Pulmonary edema is the presence of fluid seeping from the vessels of the lungs into the air sacs of the lungs. The condition inhibits breathing and can be life-threatening or fatal. It is normally a temporary condition which can be completely remedied. Testimony was presented that congestive heart failure can be associated with pulmonary edema, as the presence of excess fluid in the lungs may inhibit the heart's ability to move fluid throughout the body effectively.

An ER physician, who is not a defendant in this case, and Dr. Albritton, who was a member of Memphis OB/GYN, saw Barbara at Methodist South and each diagnosed her conditions. Dr. Albritton requested that Barbara be transferred to Methodist Hospital in Germantown (also not a defendant) and that Dr. McDonald, a cardiologist, consult with her, which he did. That same day, Dr. McDonald diagnosed Barbara as having cardiomyopathy and congestive heart failure. Her medical records from these admissions reflect severe shortness of breath and Barbara's statement that she had been complaining of shortness of breath for the last three months.

Barbara continued to see Dr. McDonald as her treating cardiologist through the fall of 1998. In October of that year, he released her to return to light work. Barbara testified that she felt worse after this and that her grandparents referred her to another cardiologist, Dr. Murray, whom she consulted in November of 1998. He concurred in the diagnosis of cardiomyopathy and continued to treat Barbara through the time of trial. At the time of trial, Barbara had made some progress, but continued to suffer from cardiomyopathy. Through treatment by Dr. Murray, Barbara's ejection fraction increased from the low range (around 30%) in late 1998, to the low-normal range (50–55%) at the time of Dr. Murray's deposition on July 31, 2004. However, Barbara had developed orthostatic hypotension, which is a drop in blood pressure while the patient is standing. Because of this condition, which Dr. Murray could not say was related to cardiomyopathy, Barbara had to stop taking the drug Coreg. Coreg had helped to raise Barbara's ejection fraction. Dr. Murray testified that, although he had observed "a substantial improvement in her ejection fraction," Barbara's cardiomyopathy and associated congestive heart failure would likely remain life-long problems. Dr. Murray believed that these conditions endangered Barbara's life and necessitated continual medication and frequent treatment. However, Barbara no longer had pulmonary edema at the time of trial.

B.

In June of 1999, Barbara and Rodney Huss sued Dr. Andrea Giddens for medical malpractice. Dr. Giddens was Barbara's primary treating physician at Memphis OB/GYN until Hannah's birth and Barbara's discharge from the hospital on May 9, 1998. The suit against Dr. Giddens was dismissed on jurisdictional grounds.

Barbara testified that it was not until "shortly" or "less than a year" before the present suit was filed on June 30, 2000, that she became aware that her medical records had been reviewed by experts and that those experts had

concluded that the administration of Terbutaline and the course of treatment by the defendants constituted negligence which may have caused or contributed to her development of cardiomyopathy, congestive heart failure, and pulmonary edema. She did not explain why or how she obtained these expert opinions or why she did not or could not have obtained them earlier.

The jury heard conflicting evidence regarding the standard of obstetrical care and whether it was breached. The Husses presented evidence that although Terbutaline is used "off label" by obstetricians to slow or halt preterm contractions, it should not be used when the cervix has not dilated and there is no preterm labor, and that it should not have been administered for four weeks. In contrast, Dr. Giddens testified that it is safe to use Terbutaline for obstetrical patients, and that this was a common and accepted practice among obstetricians in cases like Barbara's.

Whether Terbutaline can cause cardiomyopathy, and whether it did cause Barbara's cardiomyopathy, was heavily disputed at trial. Dr. Murray, Barbara's treating cardiologist, agreed in his deposition, which was submitted into evidence, that peripartum cardiomyopathy is idiopathic, meaning the "pathogenesis is not known." In other words, idiopathic means that the etiology or medical cause of the condition is unknown. Dr. Murray agreed that diagnosis of the condition results from a "diagnosis of exclusion," which he said means that "one can find no other reason for the cardiomyopathy other than the fact that the woman was pregnant." In contrast, the Husses' primary causation expert, Dr. Frederick Carlton, Jr., testified that Terbutaline is known in the medical community to cause cardiomyopathy. Dr. Carlton opined that if Barbara had experienced shortness of breath out of proportion to what a physician would expect in a late-term pregnancy "beginning a couple of months before [delivery]," such a fact "moves it less and less from just the idiopathic peripartum cardiomyopathy" and led him to believe that Terbutaline caused or contributed

to Barbara's heart and lung conditions. It was significant to him that the medical records from Barbara's readmission on May 10, 1998, reflected her statements that she had suffered from severe shortness of breath for about two months before the birth of Hannah.

Other experts testified that, while the causes of peripartum cardiomyopathy are unknown, risk factors include multiple pregnancies, excessive weight gain during pregnancy, smoking, and toxemia. Barbara exhibited all of these by the end of her pregnancy.[3] Defendants sought to elicit testimony from their expert, Dr. Reddix, that medical literature relied upon by Dr. Carlton in forming his opinion does not show a causative relationship between Terbutaline and cardiomyopathy. The magistrate judge did not permit Dr. Reddix to state this opinion, as this was "outside the area of his expertise." On the final day of trial, following the cross-examination of defendants' last expert witness, Dr. Martin Tucker, the magistrate judge quipped in the presence of the jury: "Redirect? His meter is running."

The parties agreed that Tennessee's substantive law of medical malpractice governed. The Husses sought to recover on theories of negligence in administering Terbutaline and a lack of informed consent—reasoning that if Barbara had been informed of the risks of Terbutaline, she would not have consented to treatment with that drug. Defendants objected to the informed consent instruction on the basis that in Tennessee, the theory does not apply between a physician prescribing therapeutic drugs and a patient. The objection was overruled, and the instruction was given to the jury.

During closing argument, the Husses' attorney said the defendants did not produce medical literature to support their arguments. Defendants' counsel objected to this as a mis-characterization of events at trial. The magistrate

[3] Other risk factors which Barbara did not exhibit include age over 30 years, and African-American race.

overruled the objection because "[t]his is counsel's view of the matter." Ultimately, the jury rendered a general verdict. On a hand-written piece of note paper, the jury found for Barbara Huss and awarded her $3,500,000. The jury also found for Rodney Huss but awarded him no damages. The court entered judgment on the verdict. The defendants filed a motion for judgment as a matter of law, or in the alternative, for a new trial. This was denied.

The defendants appealed, arguing that: (1) the Husses' claims are barred by the statute of limitations, (2) there is insufficient evidence to prove that Terbutaline caused Barbara Huss's injuries, (3) the magistrate judge improperly excluded portions of Dr. Reddix's testimony regarding causation, (4) there were errors in the jury charge, (5) the judge's comment about Dr. Tucker's "meter" was prejudicial, and (6) the judge failed to correct a mischaracterization of the evidence by the Husses' counsel during closing arguments.

III.

The basis of the trial court's jurisdiction was diversity of citizenship. The Husses are citizens of Mississippi, defendants are citizens of Tennessee, and the amount in controversy exceeds $75,000. *See* 28 U.S.C. § 1332.[4] In diversity cases, we apply federal procedural and evidentiary rules, and the substantive laws of the forum state. *Erie R.R. Co. v. Tompkins*, 304 U.S. 64, 78 (1938). Under the *Erie* doctrine, federal courts apply the statute of limitations that the forum state would apply. *See Guar. Trust Co. v. York*, 326 U.S. 99, 109-10 (1945). We also apply the forum state's choice of law rules. *See Denman v. Snapper Div.*, 131 F.3d 546, 548 (5th Cir. 1998). This may require applying one state's statute of limitations and another state's substantive law. *See, e.g.*, *Boardman v. United Svcs. Auto. Ass'n*, 470 So. 2d 1024, 1031 (Miss. 1985) ("[T]he law of a single state does not necessarily control every issue in a given case."). This case was tried in

[4] The parties consented to have this case tried by a magistrate judge. *See* 28 U.S.C. § 636(c). We have appellate jurisdiction pursuant to 28 U.S.C. § 1291 and § 636(c)(3).

Mississippi. The court applied Mississippi's medical malpractice statute of limitations, and instructed the jury according to Tennessee medical malpractice law. The parties never objected to this choice of law. On appeal, the parties have briefed limitations under Mississippi law, and briefed sufficiency of the evidence and propriety of the jury instructions under Tennessee law.

Even had either party preserved an objection to this choice of law, which the parties plainly did not, *see Kucel v. Walter E. Heller & Co.*, 813 F.2d 67, 74 (5th Cir. 1987), we are confident that it was proper to apply Mississippi's statute of limitations and Tennessee's law of medical malpractice. Mississippi courts generally treat statutes of limitations as procedural and thus apply domestic limitations periods. *See Allison v. ITE Imperial Corp.*, 928 F.2d 137, 144 (5th Cir. 1991); *cf. Williams v. Taylor Mach., Inc.*, 529 So. 2d 606, 609 (Miss. 1988), *superseded on other grounds by statute*, Miss. Laws, ch. 486, § 17.05 (1987), *as recognized in S. Pac. Transp. Co. v. Fox*, 609 So. 2d 357, 361-62 (Miss. 1992).[5] In matters of substantive tort law, Mississippi follows the "center of gravity" test of the Restatement (Second) of Conflicts of Law, under which a court applies the law of the state with the most substantial contacts with the parties and the subject matter of the action. *See Mitchell v. Craft*, 211 So. 2d 509, 515 (Miss. 1968) (citing Restatement (Second) of Conflicts of Law § 145). A court must consider the place of injury, the place where the negligent conduct occurred, the domicile or residence of the parties, and the place where the parties' relationship is centered. *Price v. Litton Sys., Inc.*, 784 F.2d 600, 603 (5th Cir. 1986) (citing *Mitchell*, 211 So. 2d at 515).

[5] Mississippi courts treat foreign statutes of repose as substantive, and observe limitations imposed by such statutes. *See Wayne v. Tenn. Valley Auth.*, 730 F.2d 392, 400-02 (5th Cir. 1984) (holding that, while Mississippi courts typically apply domestic statutes of limitations, Tennessee's 10-year statute of repose applied to cut off plaintiffs' right of action). Because the Husses filed suit within the three-year period of Tennessee's medical malpractice repose statute, this exception is not implicated. *See* TENN. CODE ANN. § 29–26–116(a)(3) (2006 supp.).

The defendants reside in Tennessee, and the parties' relationship was centered in Memphis. The breach of the standard of care, if any, occurred at the Memphis OB/GYN clinic, where Barbara was administered subcutaneous Terbutaline and prescribed oral Terbutaline. On the other hand, the Husses reside in Mississippi, and Barbara has suffered harm chiefly in that state. On balance, we believe that the "center of gravity" in this case is in Tennessee, and that Mississippi does not have a more significant relationship to the case. *See, e.g.*, *Bledsoe v. Crowley*, 849 F.2d 639, 642-43 (D.C. Cir. 1988) (applying Restatement and holding that where patient-physician relationship was based in Maryland, Maryland law applied to D.C. resident's medical malpractice claim); *cf. Denman*, 131 F.3d at 549 ("Under Mississippi law, the substantive law of the place of injury controls unless another state has a more significant relationship to the occurrence and the parties.") (citation omitted).

IV.

Because the limitations issue was potentially dispositive, this panel initially addressed that issue. A panel majority held that, as a matter of federal procedural law, defendants had preserved the argument that they were entitled to judgment as a matter of law. *Huss I*, 465 F.3d at 205 ("There was no jury question submitted concerning the date the Husses' cause of action accrued; therefore, defendants can prevail on their statute of limitations defense only if the Husses' claims accrued before June 30, 1998 as a matter of law."). The panel then held that, under Mississippi law, Barbara knew or should have known of a connection between the defendants' conduct and her injuries on the day she was diagnosed with cardiomyopathy, May 10, 1998. *Id.* at 207-08 (citing *Wright v. Quesnel*, 876 So. 2d 362, 367 (Miss. 2004)). In light of the fact that the Husses filed suit two years and forty days after this time, the majority held that the Husses' claims were time-barred as a matter of law under Mississippi's medical

malpractice statute of limitations. *Id.*; *see* MISS. CODE ANN. § 15–1–36.[6] The majority vacated the jury's verdict and rendered judgment in defendants' favor. *Huss I*, 465 F.3d at 208-09. Judge Higginbotham dissented.

The Husses requested rehearing en banc. This failed: a majority of the judges in active service and not disqualified did not vote in favor of granting rehearing en banc. *Huss II*, 2006 WL 5013195, at *1. However, the panel *sua sponte* granted rehearing by the panel. *Id.* The Mississippi Supreme Court subsequently issued its opinion in *Sutherland v. Ritter*, 959 So. 2d 1004 (Miss. 2007). A majority of this panel concluded that no case of the Mississippi Supreme Court was clearly controlling. *See Huss III*, 508 F.3d at 245-48. The panel majority requested that the Mississippi Supreme Court accept the following certified question:

> When the alleged negligence is (1) administration of a drug by a physician, or (2) failure to disclose what a reasonable practitioner would have disclosed about the risks of a drug, and experts disagree as to whether the drug caused the plaintiff's injuries, is the date that the alleged act, omission or neglect might, with reasonable diligence, have been first known or discovered by the plaintiff the date her condition or illness is diagnosed by non-defendant physicians or experts, or the date the pertinent facts are available in medical records, or is limitations tolled until one in a series of physicians or other experts the plaintiff consults first tells her that the drug caused her condition or illness?

Id. at 241-42. Judge Higginbotham dissented from certification. *Id.* at 248-55 (Higginbotham, J., dissenting).

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[6] The statute provides in relevant part:

> [N]o claim in tort may be brought against a licensed physician [or] hospital . . . for injuries or wrongful death arising out of the course of medical, surgical or other professional services unless it is filed within two (2) years from the date the alleged act, omission or neglect shall or with reasonable diligence might have been first known or discovered.

§ 15–1–36(1), (2). While a statutory change took effect for claims accruing on or after July 1, 1998, the change does not affect the issues presented in this case. *See id.*

The Mississippi Supreme Court accepted the certified question. The Supreme Court's response—that the Husses' claims are not prescribed a matter of law—has resolved the limitations issue, and we vacate our prior disposition of this and hold that the magistrate judge properly denied defendants' motion for directed verdict on limitations grounds. The panel necessarily retains jurisdiction of the remainder of the issues raised by the defendants in this appeal. The five other points of error asserted by defendants are: sufficiency of evidence to establish causation, the ruling on Dr. Reddix's expert testimony, prejudicial comments by the magistrate judge, the correctness of the jury instructions, and mis-characterization of evidence during closing argument.

V.

We now take up the argument that the magistrate judge erred in striking portions of the testimony of the defendants' causation expert, Dr. Reddix. We hold that the magistrate judge erred in prohibiting Dr. Reddix from expressing opinions on medical causation, and that such error was not harmless.

A.

State law governs the substance of this case, but "the Federal Rules of Evidence control the admission of expert testimony." *Mathis v. Exxon Corp.*, 302 F.3d 448, 459 (5th Cir. 2002).[7] Experts qualified by "knowledge, skill, experience, training or education" may present opinion testimony to the jury. FED. R. EVID. 702. "A party seeking to introduce expert testimony must show '(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.'" *Smith v. Goodyear Tire & Rubber Co.*, 495 F.3d 224, 227 (5th Cir. 2007) (quoting FED. R. EVID. 702). The trial courts act as "gate-keepers" which make a "preliminary assessment of whether the

[7] The parties' briefing of admissibility of expert testimony under Tennessee law is therefore not relevant.

reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue." *Pipitone v. Biomatrix, Inc.*, 288 F.3d 239, 243-44 (5th Cir. 2002) (quoting *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 592-93 (1993)).

Whether an individual is qualified to testify as an expert is a question of law. *Mathis*, 302 F.3d at 459 (citing FED. R. EVID. 104(a)). However, we review the admission or exclusion of expert testimony for an abuse of discretion. *See St. Martin v. Mobil Exploration & Producing U.S. Inc.*, 224 F.3d 402, 405 (5th Cir. 2000). "A district court should refuse to allow an expert witness to testify if it finds that the witness is not qualified to testify in a particular field or on a given subject." *Wilson v. Woods*, 163 F.3d 935, 937 (5th Cir. 1999). Rule 702 does not mandate that an expert be highly qualified in order to testify about a given issue. Differences in expertise bear chiefly on the weight to be assigned to the testimony by the trier of fact, not its admissibility. *See Daubert*, 509 U.S. at 596 ("Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence."); *Holbrook v. Lykes Bros. S.S. Co., Inc.*, 80 F.3d 777, 782 (3d Cir. 1996) (reasoning that "most arguments about an expert's qualifications relate more to the weight to be given the expert's testimony than to its admissibility"). Rulings are subject to harmless error analysis, under which an incorrect ruling will be affirmed unless it affected a substantial right of the complaining party. *See St. Martin*, 224 F.3d at 405.

B.

Defendants designated Dr. Reddix as an expert witness. Dr. Reddix has a medical degree, a master's degree in public health, and is board-certified in internal medicine. At the time of trial he had fifteen years of experience as an internist. He stated that he had knowledge of cardiac conditions and toxicology from medical school and his training as an internist. He had treated pregnant

patients, and had treated patients with heart diseases, cardiomyopathy, and pulmonary edema. Defendants' counsel asked Dr. Reddix whether he had studied Barbara's medical records and the medical literature relied upon by the Husses' experts; Dr. Reddix said he had. Counsel then asked whether he had an opinion, "based upon reasonable medical probabilities and your education, training, and experience as a physician, as well as your review of the materials I just read, as to whether or not Terbutaline caused or contributed to the cardiomyopathy suffered by Barbara Huss?" The Husses' attorney objected on the basis that Dr. Reddix had stated in his Rule 26 report that he did not know the cause of Barbara's cardiomyopathy because the condition is idiopathic.[8]

The magistrate judge requested that the attorneys discuss the objection outside the presence of the jury. In chambers, the following exchange occurred:

> The Court: Now, on what basis is this witness qualified to offer any opinion about whether administering Terbutaline did or did not cause cardiomyopathy here?
>
> Defendants' Counsel: He's an internal medicine physician who treats patients with cardiomyopathies. He has a degree from Harvard in Public Health, including studying statistics. He's reviewed the medical literature. I mean, he has patients all the time who have cardiomyopathy. He knows the drug interactions.
>
> The Court: I don't know about that last statement. I'm inclined to think this is outside the area of his expertise.

Focusing on Dr. Reddix's lack of "experience or training" which would "enable[] him to say that the administration of this drug did or did not probably cause cardiomyopathy," the magistrate judge sustained the objection. The magistrate

[8] Contrary to the objection made by the Husses' counsel, Dr. Reddix said in his expert report that Barbara's cardiomyopathy "cannot be said to have been caused . . . by the administration of oral Terbutaline." The report has detailed criticism of the medical literature on which the plaintiffs' experts relied. Dr. Reddix also attaches a study involving 9,000 patients in which few, if any, had cardiomyopathy.

judge did not focus on whether the opinion was beyond the scope of the opinions set forth in Dr. Reddix's Rule 26 report.

Following this ruling, defendants' counsel asked Dr. Reddix outside of the presence of the jury to state in narrative form the basis for his opinion that Terbutaline did not cause or contribute to Barbara Huss's cardiomyopathy. Dr. Reddix said: "Basically, there's no established evidence that has been tested and published in major journals or the [Physician's Desk Reference] that it causes cardiomyopathy." Counsel then asked "what in the medical records caused you to believe that Terbutaline is not the causative agent?" Dr. Reddix said one could not deduce a causative relationship because the articles relied on by the Husses' experts had very small sample sizes, and additionally, some articles may have confused pulmonary edema with cardiomyopathy. By contrast, Dr. Reddix was prepared to testify based upon a study of 9,000 patients who took Terbutaline and did not develop cardiomyopathy.[9] The thrust of the proffered testimony was that Terbutaline could not be said to be the cause of Barbara's cardiomyopathy, and that the cause of her condition could not be determined, *i.e.*, the condition is idiopathic. Following the proffer, the jury returned to the courtroom. The magistrate judge explained to the jury: "I have sustained an objection to the opinion Dr. Reddix was requested to express on the ground that it was outside the field of his expertise." Defendants then called their next witness.

After trial, defendants moved for a new trial in part due to the allegedly erroneous exclusion of Dr. Reddix's testimony. The magistrate judge denied this motion in a written order, reasoning:

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[9] Dr. Reddix testified in part:

> [M]any of the articles that they talk about were very, very small studies. And the possibility of chance occurrences were very high. When you had four people out [of] 16, where it only occurs in one in 5,000 to 10,000 patients. So a lot of times the journals that were listed [by the Husses' experts] also confused what was said about pulmonary edema as a part of the problem, which would lead to a cardiomyopathy in any of those studies.

> Dr. Reddix's resume . . . reveals the deficiencies in Dr. Reddix's background and experience insofar as a causation expert in this case is concerned. Dr. Reddix has virtually no experience in obstetrics and gynecology and no experience whatsoever with Terbutaline. Since 1991, Dr. Reddix's employment has primarily been as a staff physician for the Job Corp [sic], the Student Health Center of Jackson State University, and the Hinds County Detention Center. There is simply nothing in Dr. Reddix's background which entitled him to express opinions as to whether Terbutaline caused the plaintiff's cardiomyopathy or whether the cardiomyopathy was idiopathic.

Defendants note that Dr. Reddix had a medical degree, was board-certified in internal medicine, practiced internal medicine for fifteen years, treated patients with heart conditions—some of whom were pregnant, was "familiar with the term cardiomyopathy," treated patients with enlarged hearts and cardiomyopathy, and prescribed drugs similar to Terbutaline. Moreover, "Dr. Reddix's anticipated testimony was a natural extension of his medical and public health training and his experience as a practicing physician of fifteen years." Defendants posit that this qualified Dr. Reddix to opine that the medical literature and Barbara's records did not allow one to infer that Terbutaline causes cardiomyopathy, or that it caused it in Barbara's case. Defendants say Dr. Reddix was at least as qualified to give causation testimony as was Dr. Carlton, the Husses' main expert on causation. Defendants argue that the ruling was prejudicial because it prevented them from challenging the Husses' causation testimony and Dr. Carlton's characterization of the medical literature.

The Husses note that Dr. Reddix was neither a cardiologist nor a toxicologist. Relying on *Tanner v. Westbrook*, 174 F.3d 542 (5th Cir. 1999), *superseded in part by rule on other grounds*, FED. R. EVID. 103(a) (2000), *as recognized in Mathis*, 302 F.3d at 459 n.16, the Husses argue that Dr. Reddix could not have provided competent testimony about whether a particular heart condition (cardiomyopathy) can be, or in Barbara's case, was caused by a

particular drug (Terbutaline). The Husses also aver that even if the ruling was wrong, defendants did not suffer prejudice because other experts presented similar opinions to those Dr. Reddix was prepared to express, except for the claim that the studies relied on by Dr. Carlton are illogical.

C.

We believe that the exclusion of Dr. Reddix's opinion testimony was an abuse of discretion. Dr. Reddix reviewed Barbara's records and the medical literature relied on by the Husses. Through Dr. Reddix's testimony, the defendants sought primarily to discredit the contention that Terbutaline is a known cause of cardiomyopathy, and consequently, that Terbutaline more likely than not caused Barbara's cardiomyopathy. Dr. Reddix did not need to be board-certified in cardiology or toxicology to explain that the studies relied on by the Husses do not prove a causative relationship—especially given the very small number of patients in those studies. Dr. Reddix's training and experience as a medical professional qualify him to tell the jury why the literature does not establish a causal link. Moreover, Dr. Reddix identified a study of over 9,000 people which tended to undermine the Husses' claims. In short, Dr. Reddix's education and knowledge allowed him to form a reliable opinion as to whether, as a general matter, Terbutaline causes cardiomyopathy.

We think that the more general nature of Dr. Reddix's conclusions helps to distinguish the present case from *Tanner*. There, all experts agreed as a general matter that birth asphyxia can cause cerebral palsy. 174 F.3d at 548. The issue was more specific: whether the defendants' failure to properly treat a newborn baby's birth asphyxia caused the baby's cerebral palsy, or whether the cerebral palsy was caused by another event. *See id.* at 547-48. We held that it was erroneous to admit an expert's opinion that the defendants' actions led to the baby's cerebral palsy when the medical literature did not support this theory

of causation, the expert had not examined the baby, and the expert also had no personal experience that would validate his theory. *Id*. at 548.

In this case, the parties fought mainly over whether Terbutaline can cause cardiomyopathy. The Husses' expert, Dr. Carlton (who is a toxicologist, not a cardiologist), relied on this general premise when opining that Terbutaline caused Barbara's cardiomyopathy. Dr. Carlton explained that he formed his opinion in part by exclusion. Specifically, he believed Terbutaline was the culprit because he could not identify or think of any other reason that Barbara would develop cardiomyopathy. The main purpose of Dr. Reddix's opinion was to rebut an untenable conclusion. Dr. Reddix's knowledge qualified him to tell the jury that Dr. Carlton's inferential leap was unsupported by medical literature, and that in his judgment, Barbara's peripartum cardiomyopathy was idiopathic. We do not think that Dr. Reddix needed to be specialized in cardiology or toxicology to act as a counterpoint to the Husses' experts.

The magistrate judge focused on the fact that Dr. Reddix had less training and experience with Terbutaline than Dr. Carlton. This missed the purpose for which defendants sought to elicit Dr. Reddix's opinion. Moreover, the *Daubert* standards are flexible, and the most important question is not whether one party's expert is more qualified than the other's, but rather, whether an expert's testimony is reliable. *See id*. at 547. We believe that there were sufficient indicia in this case that Dr. Reddix would provide a reliable opinion in rebuttal to Dr. Carlton's opinion. We disagree with the magistrate judge's conclusion that there is "nothing in Dr. Reddix's background which entitled him to express opinions as to whether Terbutaline caused the plaintiff's cardiomyopathy or whether the cardiomyopathy was idiopathic." *Cf. Holbrook*, 80 F.3d at 782 ("The court's mistaken approach restricted Dr. Carpenter's testimony based on a requirement that the witness practice a particular specialty to testify concerning certain matters."). The ruling was an abuse of discretion.

We also believe that this error prejudiced the defendants. The crux of this case was whether Terbutaline causes cardiomyopathy. The magistrate judge's ruling prevented the defendants from demonstrating that the Husses relied on medical literature which was unreliable, anecdotal, and contradicted by other studies. The Husses insist the defendants were not prejudiced because the defendants' other witnesses disclaimed a causal link between the drug and Barbara's condition. However, none of the other witnesses gave the level of detail that Dr. Reddix would have presented, nor did the witnesses testify about studies showing no link between Terbutaline and cardiomyopathy. The exclusion was not harmless error. In a close case such as this, Dr. Reddix's testimony would "have added information that, if the jurors found it credible, might have been determinative" of the difficult causation questions. *See Battle v. Mem'l Hosp. at Gulfport*, 228 F.3d 544, 553 (5th Cir. 2000). We hold that the exclusion was reversible error, and defendants are entitled to a new trial on this basis.

VI.

We now turn to defendants' argument that they are entitled to judgment as a matter of law or a new trial because the Husses did not establish the causation element of their medical malpractice claim. After trial, defendants moved for judgment as a matter of law, or in the alternative, for a new trial. The magistrate judge denied the motion because the Husses' experts testified that "Terbutaline is reported in some medical literature as a cause of cardiomyopathy." After reviewing the record, we have misgivings about whether the evidence allows a reasonable trier of fact to find that Terbutaline caused or contributed to Barbara Huss's conditions. However, defendants failed to adequately preserve this argument. Because we cannot render judgment on this basis, we pretermit a full discussion of the sufficiency of the evidence. Nevertheless, some observations about the causation evidence are intended to aid the parties and court on retrial.

A.

"A directed verdict is appropriate only if, after considering all the evidence and drawing all inferences therefrom in favor of the non-moving party, the court is convinced that no reasonable jury could find in favor of the non-movant." *Pimental v. LTD Canadian Pac. Bul*, 965 F.2d 13, 15 (5th Cir. 1992); *see* FED. R. CIV. P. 50(a). When reviewing the denial of a motion for a directed verdict or for judgment notwithstanding the verdict, we reverse only if "there was no conflict in substantial evidence such that reasonable minds could differ." *Horton v. Buhrke, Div. of Klein Tools, Inc.*, 926 F.2d 456, 459 (5th Cir. 1991); *see also Daubert*, 509 U.S. at 596 ("[I]n the event the trial court concludes that the scintilla of evidence presented supporting a position is insufficient to allow a reasonable juror to conclude that the position more likely than not is true, the court remains free to direct a judgment[.]"). We review sufficiency differently depending on whether the issue was preserved at trial. *See Polanco v. City of Austin*, 78 F.3d 968, 973 (5th Cir. 1996). If the issue was preserved, we ask whether substantial evidence supported the verdict. *See McCann v. Texas City Refining, Inc.*, 984 F.2d 667, 671 (5th Cir. 1993). If the issue was not preserved, we ask whether any evidence supported the verdict. *See Polanco*, 78 F.3d at 974. Sufficiency of the evidence is preserved by raising the issue in a motion at the close of all of the evidence. *See id.* at 973. "Even if no evidence supports the verdict, this Court lacks the power to enter judgment for the appellant. Instead, appellate relief is limited to ordering a new trial." *McCann*, 984 F.2d at 671.

Defendants failed to raise causation at the close of all of the evidence. The Husses urge us to consider the issue forfeited. Defendants concede that they did not raise the issue at the close of all of the evidence, but argue that we should excuse their failure and determine whether substantial evidence supported the verdict. In the past, we have construed the preservation requirements of Rule 50 liberally—but we have insisted that we may not simply ignore the Rule. *See,*

e.g., *Taylor Publ'g Co. v. Jostens, Inc.*, 216 F.3d 465, 472-73 (5th Cir. 2000). We ask whether the departure from the Rule was "de minimis" and whether the Rule's purposes were fulfilled. *See Polanco*, 78 F.3d at 974-75. The purposes are two-fold: "to enable the trial court to re-examine the sufficiency of the evidence as a matter of law if, after verdict, the court must address a motion for judgment as a matter of law, and to alert the opposing party to the insufficiency of his case before being submitted to the jury." *MacArthur v. Univ. of Tex. Health Ctr. at Tyler*, 45 F.3d 890, 897 (5th Cir. 1995).

Defendants challenged the sufficiency of the evidence at the close of the Husses' prima facie case. The magistrate did not reserve judgment, but immediately denied the motion. Approximately one day elapsed between the close of the Husses' evidence and the close of the defendants' evidence. During that time, defendants elicited causation testimony (albeit with portions of Dr. Reddix's opinion erroneously excluded). At the close of their case, defendants failed to renew the motion for a directed verdict. In similar circumstances, we have not excused non-compliance of this kind as "de minimis." *See McCann*, 984 F.2d at 672. Therefore, defendants would at most be entitled to a new trial. *See id.* at 671. Because we have already concluded that a new trial is necessary due to the erroneous exclusion of testimony, we need not rule on the sufficiency of the evidence. However, some observations about the evidence may aid the parties on retrial.

B.

To establish a claim for medical malpractice in Tennessee, a plaintiff must show, by a preponderance of evidence, that the defendant breached the standard of care, and that the breach proximately caused the plaintiff's injuries. TENN. CODE ANN. § 29–26–115(a) (Supp. 2006); *Kilpatrick v. Bryant*, 868 S.W.2d 594, 598-99 (Tenn. 1993). The Tennessee Supreme Court counsels that causation "is a matter of probability, not possibility, and in a medical malpractice case, such

must be shown to a reasonable degree of medical certainty." *Kilpatrick*, 868 S.W.2d at 602. Thus, a plaintiff must show that: (1) there is a known medical nexus between the conduct and the harm suffered, and (2) the physician's conduct—and not an independent factor—more likely than not caused the injury. *See id*. In toxic tort and negligent prescription cases, these two facets of causation are often referred to, respectively, as general and specific causation. *See McClain v. Metabolife Int'l, Inc.*, 401 F.3d 1233, 1239 (11th Cir. 2005); *Ruggiero v. Warner-Lambert Co.*, 424 F.3d 249, 252 n.1 (2d Cir. 2005) (explaining the distinction between "general" and "specific" causation and recognizing that a failure to prove either undermines a negligence claim).

The Husses relied primarily on the expert testimony of Dr. Carlton to establish causation. *See Stokes v. Leung*, 651 S.W.2d 704, 706 (Tenn. Ct. App. 1982) ("[I]n medical malpractice cases, negligence and causation are ordinarily required to be proved by expert medical testimony."). Dr. Carlton opined that Terbutaline is a "known cause" of cardiomyopathy, and that it more likely than not caused or contributed to Barbara's development of cardiomyopathy. In other words, he testified to both "general" and "specific" causation. This testimony lacked an adequate basis in science or fact.

Major sources of medical literature, *e.g.*, the Physicians' Desk Reference and reports from Terbutaline manufacturers, provide a list of risks associated with Terbutaline; cardiomyopathy is not among them. Dr. Carlton's statement that Terbutaline is a "known cause" of cardiomyopathy relies mainly on a single study. *See* Judith U. Hibbard, M.D., *Chronic Terbutaline Therapy and Peripartum Cardiomyopathy: A Case-Control Study*, 15(2) HYPERTENSION IN PREGNANCY 183 (1996) ("the Hibbard study"). The Hibbard study observed that four out of fifteen peripartum cardiomyopathy patients, or 26.7%, at a Chicago hospital received Terbutaline as a tocolytic. The study shows temporal proximity between administration of Terbutaline and development of cardiomyopathy in

four women. The study compares these four women with a control group of sixty women who did not develop cardiomyopathy. Only three patients in the control group took Terbutaline. The study did not investigate how frequently cardiomyopathy occurred in all Terbutaline users. As Dr. Reddix noted in his proffered testimony, the study's small sample size creates a risk that unjustified conclusions were drawn from scant data and chance occurrences.[10] Dr. Carlton insisted that the Hibbard study's case-control method was "the best way to arrive at an answer." The study concludes that long-term use of Terbutaline is "positively associated with peripartum cardiomyopathy." *Id.* at 189. The study warns: "Caution should be exercised in understanding that the case-control design *does not provide a causative relationship* between the use of oral [Terbutaline] therapy and cardiomyopathy." *Id.* (emphasis added).

Dr. Carlton testified about other reports, none of which say Terbutaline causes cardiomyopathy. Vague statements that a drug led to "cardiovascular complications" or even death do not show general causation for the conditions at issue. Likewise, anecdotes detailing individual patients' experiences when taking the drug, such as chest pain, fall short of providing scientifically reliable evidence applicable to all other patients. Dr. Carlton drew an analogy between Terbutaline and other drugs in its family, called sympathomimetics. Cocaine and amphetamines are in this family, and to some extent, "they all tend in one way or another to rev the individual up." Dr. Carlton said that one "can assume that drugs in a particular class have similar effects and side effects," and that sympathomimetics can lead to cardiomyopathy as a "potential complication."

[10] The women who developed cardiomyopathy were more likely to have smoked, drunk alcohol, abused cocaine, and used narcotics during pregnancy. *Id.* at 185-86. Of the cardiomyopathy patients, 14 of 15 (or 93.3%) were African-American. One was Hispanic. The average age was over 30. While 20.0% of the cardiomyopathy patients had preeclampsia, only 3.3% of the control group did. *Id.* As noted above, smoking, African-American race, age over 30, and toxemia/preeclampsia are recognized risk factors of peripartum cardiomyopathy.

However, Dr. Carlton did not indicate whether this theory has been accepted in the scientific community or tested via the scientific method. On cross-examination he acknowledged that sympathomimetics can have dissimilar effects. Dr. Carlton's theory regarding similarities between cocaine and Terbutaline provides no support for what is in essence a scientifically untenable thesis.

The medical link between Terbutaline and cardiomyopathy is too tenuous to support causation "to a reasonable degree of medical certainty." *See Kilpatrick*, 868 S.W.2d at 602; *cf. Dubois v. Haykal*, 165 S.W.3d 634, 638-39 & n.3 (Tenn. Ct. App. 2004) (holding that defendants were not entitled to summary judgment on causation because plaintiff presented peer-reviewed scientific studies showing that drug prescribed to her reduced efficacy of oral contraceptives). As the Eleventh Circuit's decision in *McClain* cogently explains, courts must not allow evidence of temporal correlation to serve as a substitute for science-based causation evidence:

> [S]imply because a person takes drugs and then suffers an injury does not show causation. Drawing such a conclusion from temporal relationships leads to the blunder of the *post hoc ergo propter hoc* fallacy. The *post hoc ergo propter hoc* fallacy assumes causality from temporal sequence. It literally means "after this, because of this." BLACK'S LAW DICTIONARY 1186 (7th ed. 1999). It is called a fallacy because it makes an assumption based on the false inference that a temporal relationship proves a causal relationship.

401 F.3d at 1243. Here, the Husses presented evidence of statistical correlation between use of Terbutaline and peripartum cardiomyopathy. Any scientist or statistician must acknowledge, however, that correlation is not causation. Moreover, peripartum cardiomyopathy is typically regarded as an idiopathic condition: the medical community has a poor understanding of what causes it. Consequently, a plaintiff who insists that a drug, not another factor, caused the disease faces a high burden in proving general causation. A plaintiff must

present more than a single study showing correlation, accompanied by unrelated anecdotes and quasi-scientific musings about how a class of drugs affects the human body. However, that is what the Husses presented at trial.

It is axiomatic that causation testimony is inadmissible if an expert relies upon studies or publications, the authors of which were themselves unwilling to conclude that causation had been proven. *See, e.g.*, *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 145-46 (1997) (studies did not support experts' conclusion that PCB exposure caused cancer because the doctors who conducted the studies were unwilling to draw that conclusion); *Vargas v. Lee*, 317 F.3d 498, 501-02 (5th Cir. 2003) (two studies did not support conclusion that trauma causes fibromyalgia because authors of both studies determined that causation was not established); *McClain*, 401 F.3d at 1247-48 (studies did not authorize conclusion that combination of ephedrine and caffeine is dangerous because authors of studies indicated that causation was not proven). Strangely, the parties did not request, and the court did not conduct, a *Daubert* hearing. However, *Daubert* "assigned the trial court a gatekeeper role to ensure [expert] testimony is both reliable and relevant." *Hodges v. Mack Trucks, Inc.*, 474 F.3d 188, 194 (5th Cir. 2006). Upon retrial, such a hearing will be essential to the court's "preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue." *See Daubert*, 509 U.S. at 592-93.

The Husses have identified no case, and we have found none, from Tennessee or elsewhere, finding that Terbutaline causes cardiomyopathy.[11]

[11] In *Richardson v. Miller*, 44 S.W.3d 1 (Tenn. Ct. App. 2000), the Court of Appeals declined to direct a verdict in favor of physicians sued for administration of Terbutaline as a tocolytic. *Id.* at 30-31. The plaintiff's expert opined that Terbutaline caused an artery to split in the plaintiff's heart, causing a heart attack. *Id.* at 31. The court accepted this testimony at face value, as it was based on the expert's medical experience and examination of the plaintiff. *Id.* In this case, however, Dr. Carlton did not examine Barbara, and he testified based on medical literature which does not prove the causal link. In the only reported Tennessee case

Courts must be arbiters of truth, not junk science and guesswork. *See id.* at 596-97. The general causation evidence marshaled at trial suggests speculation, not a reasonable degree of medical certainty. The parties and the trial court must carefully consider on retrial whether the Husses' assertions are scientifically reliable, or whether their theory of causation is supported by other evidence which was not presented or was not available at the time of the first trial. The court must also not conflate 'admissible' with 'sufficient': the say-so of an expert is not necessarily grounds to deny judgment as a matter of law. *See id.* at 596; *cf. Guile v. United States*, 422 F.3d 221, 227 (5th Cir. 2005) ("A claim cannot stand or fall on the mere *ipse dixit* of a credentialed witness.") (citation omitted). Had defendants adequately preserved objections to the admissibility and sufficiency of causation evidence, judgment could be entered on this basis. *See Hodges*, 474 F.3d at 193 ("An appellate court, in deciding whether [judgment as a matter of law] should have been awarded, must first excise inadmissible evidence; such evidence 'contributes nothing to a legally sufficient evidentiary basis.'") (quoting *Weisgram v. Marley*, 528 U.S. 440, 454 (2000)). Given the procedural posture of this case, only a new trial is available.

Even if Terbutaline was a "known cause" of cardiomyopathy, there is scant evidence of specific causation, *i.e.*, that Terbutaline caused Barbara's cardiomyopathy and related conditions.[12] *See Kilpatrick*, 868 S.W.2d at 598-99. Dr. Carlton did not personally examine Barbara at any time, but believed that the drug caused her cardiomyopathy because "she was on Terbutaline. Terbutaline is a known cause. And you don't have any other explanation for why

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in which a plaintiff alleged that Terbutaline led to cardiomyopathy, the Tennessee Court of Appeals affirmed the trial court's dismissal on limitations grounds. *Crawford v. Beatty*, 108 S.W.3d 877, 879-80 (Tenn. Ct. App. 2003).

[12] The jury was only asked to return a general verdict. It may make more sense upon retrial to pose separate questions to the jury regarding each of the conditions allegedly caused by Terbutaline: peripartum cardiomyopathy, congestive heart failure, and pulmonary edema.

she would have developed it." *Post hoc ergo propter hoc*. Dr. Carlton also believed that Barbara was taking Terbutaline "basically up until delivery." She actually ceased taking the drug weeks before delivery. Barbara's medical records demonstrate a conspicuous absence of breathing problems in the weeks before delivery and during the four days she spent in the hospital at the time of Hannah's birth. Belabored breathing is a symptom of cardiomyopathy and congestive heart failure, both of which the Husses say Barbara developed weeks or months before Hannah's birth. Moreover, Barbara's history included attributes recognized by medical literature as risk factors for cardiomyopathy: four prior pregnancies, smoking, severe weight gain, gestational diabetes, and toxemia. If Dr. Carlton thought that Barbara did not possess these characteristics, his opinion was based on inaccurate facts. If he disregarded these characteristics and concluded that Terbutaline must have been the sole "culprit," his opinion borders on fantasy.

The observations about general and specific causation are not a part of the holding today. However, it is important to identify problematic aspects in the scientific and factual proof necessary to this case so that any shortcomings can be properly addressed upon retrial.

VII.

We now turn to defendant's argument that the jury should not have been instructed on a theory of lack of informed consent. Because this case must be remanded for a new trial, our resolution of this issue will aid the parties and court in crafting the proper jury instructions. "We review challenges to jury instructions for abuse of discretion." *Battle*, 228 F.3d at 554 (citing *United States v. Monroe*, 178 F.3d 304, 307 (5th Cir. 1999)). "A judgment will be reversed only if the charge as a whole creates substantial and ineradicable doubt whether the jury has been properly guided in its deliberations." *Id.* (citation omitted).

Over defendants' objection, the jury was instructed on the issue of informed consent under Tennessee law. Relying on *Cary v. Arrowsmith*, 777 S.W.2d 8 (Tenn. Ct. App. 1989), defendants aver that the instruction was improper because a "doctor is not liable for lack of informed consent in connection with therapeutic drug treatment." The nature of defendants' objection to this instruction is that the jury likely construed informed consent as a stand-alone claim, instead of focusing on the Husses' medical malpractice claim, which provides a sufficient remedy. The Husses disagreed. In support of the instruction, the Husses' attorney cited at trial *Mitchell v. Ensor*, 2002 WL 31730908 (Tenn. Ct. App. Nov. 18, 2002) (not reported). Defendants insisted that *Mitchell* was not designated for publication and is not binding precedent. Defendants moved post-verdict for a new trial on the basis that the informed consent instruction was prejudicial error. The magistrate judge did not consider *Cary* binding authority, and cited *Burroughs v. Magee*, 118 S.W.3d 323, 332-33 (Tenn. 2003), and *Pittman v. Upjohn Co.*, 890 S.W.2d 425, 430 (Tenn. 1994), in holding that an informed consent instruction is proper in medical malpractice cases. On appeal, the Husses still argue that the informed consent instruction was consistent with their malpractice claim, citing *Ashe v. Radiation Oncology Assocs.*, 9 S.W.3d 119 (Tenn. 1999).

To prevail in a lack of informed consent case, a patient must prove that the doctor "did not supply appropriate information to the patient in obtaining his informed consent to the procedure out of which plaintiff's claim allegedly arose . . . ." TENN. CODE ANN. § 29–26–118 (2006 supp.). The plaintiff must also prove that such failure to disclose constituted malpractice. *See Ashe*, 9 S.W.3d at 121 (citing TENN. CODE ANN. § 29–26–115). In *Cary*, relied on by defendants, a Tennessee Court of Appeals reasoned:

> The doctrine of lack of informed consent is based upon "battery." "If informed consent is not effectively obtained, the defendant's

> departure from the standard care is not negligence but *battery*. . . ." *Cardwell v. Bechtol*, 724 S.W.2d 739, 750 (Tenn. 1987) (emphasis supplied). "[I]f no battery can be shown, then the issue clearly emerges as one of malpractice." *Id.* at 751. A battery necessarily requires an unpermitted touching of the plaintiff by the defendant or by some object set in motion by the defendant.

777 S.W.2d at 21 (citation omitted). The court then discussed a Pennsylvania Superior Court case, *Boyer v. Smith*, 497 A.2d 646 (Pa. Super. Ct. 1985), before concluding that:

> the better rule is that a treating physician must obtain the patient's informed consent for the medical treatment of the patient and not for each component part of the treatment process. The patient has an adequate legal remedy, *i.e.*, a malpractice action sounding in negligence, for the injurious consequence of therapeutic drug treatment.

Cary, 777 S.W.2d at 21.

However, in *Ashe*, the Tennessee Supreme Court more recently clarified that informed consent cases and medical battery cases are not the same:

> A medical battery may typically occur when: (1) a professional performs a procedure that the patient was unaware that the doctor was going to perform; or (2) the procedure was performed on a part of the body other than that part explained to the patient (*i.e.*, amputation of the wrong leg). A lack of informed consent claim typically occurs when the patient was aware that the procedure was going to be performed but the patient was unaware of the risk associated with the procedure.

9 S.W.3d at 121 (citing *Blanchard v. Kellum*, 975 S.W.2d 522, 524 (Tenn. 1998)). The Tennessee Supreme Court noted that the plaintiff contended that she was not apprised of risks inherent in her treatment, and this rendered her consent to treatment invalid. *Id.* The pleading and proffer of such a factual scenario rendered an informed consent instruction proper in that case. *Id.* Notably, the Court did not limit its holding to cases involving surgical procedures, as opposed

to therapeutic drug treatments, *see id.*, nor do we see reason to read a limitation into the Court's holding that is simply not there.

In light of this statement of the law by Tennessee's highest court, we do not believe that it was an abuse of discretion for the magistrate judge to instruct the jury on informed consent along with medical malpractice. The Husses raised lack of consent in the pretrial order. Barbara testified at trial that she was not informed of the risks associated with Terbutaline, and that she would not have consented to tocolysis with Terbutaline therapy had she been apprised of the risks of taking the drug. The instruction also comported with Tennessee's "objective approach" to informed consent. *See id.* at 123. In sum, the physician must warn the patient of "all significant perils." *Id.* at 124. The court may craft the proper instruction to the jury upon retrial.

VIII.

Lastly, defendants argued on appeal that the magistrate judge made a prejudicial comment about their expert's "meter" in the presence of the jury, and that counsel for the Husses made a prejudicial mis-characterization of the evidence during closing argument. We perceive no need to discuss the merit *vel non* of such issues, as the case must be retried.

IX.

We hold that the Husses' claims are not barred as a matter of law on limitations grounds; that the magistrate judge committed reversible error in striking portions of defendants' expert testimony; and that the magistrate judge did not abuse his discretion in instructing the jury on a theory of lack of informed consent. A new trial is ordered.

REVERSED and REMANDED.

PRISCILLA R.OWEN, Circuit Judge, concurring.

I join in all but part VI(B) of the foregoing opinion. While the scientific reliability of the evidence pertaining to causation presented by the Husses would merit scrutiny on remand if challenged, the issue was not pursued in this court.

PATRICK E. HIGGINBOTHAM, Circuit Judge, dissenting.

There is only one real issue in this case—whether the trial judge committed reversible error in excluding a part of the testimony of one of the defendant's expert witnesses.[1]

I cannot agree that the magistrate judge abused his discretion in refusing to allow Dr. Michael Reddix to express his opinion as to whether Terbutaline caused Barbara Huss' cardiomyopathy. Plaintiffs at trial objected that defense counsel's question invited Dr. Reddix to exceed his disclosure filed under Rule 26. Looking to a colloquy with the judge during a proffer of Dr. Reddix's testimony and to a post-verdict denial of a new trial, the majority holds that the ruling rested on a broader assessment of qualifications. Perhaps, but both grounds were sound. There was no abuse of discretion in excluding this particular expression of opinion on either ground, and one solid ground for an evidentiary decision is sufficient for our deferential review.

I

Our decision in *Tanner* binds this panel. It would have been error to allow Dr. Reddix to express an opinion regarding specific causation. The majority flips conformity to *Tanner* into reversible error. In *Tanner* we reversed a judgment for plantiffs where the trial court over objection allowed a medical doctor with general medical training to venture an opinion that doctors attending a childbirth caused the child to contract cerebral palsy.

[1] Two matters may be quickly put aside. Judge DeMoss writing for himself instructs the trial court on remand. I do not think this one judge exegesis is sound. Nor can I join the panel majority's statement that it need not decide the question of sufficiency of the evidence since the case is being remanded. The testimony of the Husses' expert witnesses was admitted without objection at trial. To question the sufficiency, on this record, is inexplicable.

As in *Tanner*, Reddix sought to move in the latter part of his testimony to matters that "hinge[d] on . . . the depth of [his] knowledge of a complicated, specialized medical subject matter."[2] It was this move to which the plaintiff rightfully objected. Under *Tanner* it would have been reversible error to admit Reddix's opinion that Terbutaline was not the cause. After quoting the judge's explanations for excluding this part of Reddix's testimony, the majority repeats defense-supplied protests of Reddix's competence, but these arguments do not undermine the judge's salient observations regarding Reddix's thin training and experience on the relevant subjects. The weakness of the majority's position speaks from the pages of its decision.[3] Even if the matter could be argued both ways, there it must lie.

II

Dr. Reddix's expert report filed under Rule 26 stated that his opinion would be that cardiomyopathy was idiopathic. He gave this opinion to the jury without any objection. This accords with the core defense asserted at trial—that science did not know the cause of cardiomyopathy and hence the prescribing doctors could not have known. The trial court was well within its discretion in not allowing the witness to expand his testimony over plaintiffs' objection, from "it was not knowable" to "it was not a cause of injury." Nor did the objection come as a surprise. Defendants had on the eve of trial sought to expand Reddix's

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[2] *Tanner v. Westbrook*, 174 F.3d 542, 547 (5th Cir. 1999) (reversing on grounds that a doctor's expert testimony was erroneously admitted, when it went beyond general standard of care and into specific causation issues on which he lacked relevant background knowledge or experience). *Tanner* was demanding of qualifications for plaintiffs' expert witnesses. It cannot be relaxed for defendants.

[3] The majority's counter argument to the magistrate judge essentially amounts to pointing out that Reddix was "familiar with the term cardiomyopathy," and had "prescribed drugs similar to Terbutaline." Plainly, these are inadequate challenges to a trial judge's exercise of discretion.

anticipated trial testimony beyond the filed Rule 26 Report but at the start of the trial the judge sustained plaintiffs' objection to the effort. It is not happenstance that defense counsel led the direct testimony first over the ground within the Rule 26 disclosure. This put before the jury Dr. Reddix's opinions that cardiomyopathy is idiopathic, the heart of the defense. Only then did defense counsel push the envelope of the trial court refusal to allow a last minute expansion of the report.

Huss' condition, Reddix's report opined, "cannot be said to have been caused, to a reasonable of [sic] medical certainty/probability, by the administration of oral Terbutaline. Postpartum cardiomyopathy occurs in a small number of women who are pregnant. Such condition is idiopathic in nature." At trial he sought to go further, to bridge the gap by eliciting an opinion that Terbulatine was not the cause. This crucial distinction underlies the ground for the objection, rightly sustained, at trial.

The majority claims that Dr. Reddix's "report has detailed criticism of the medical literature," but the full extent of this criticism is that the studies are "outdated," that they "often confuse pulmonary edema with cardiomyopathy," and that they use data from IV administration of Terbutaline when oral administration was at issue in Huss' case. Important points, but the critique is emphatically not detailed, nor is it damning. Most importantly, the latter two points were abundantly testified to at trial—and the former point was never proffered.[4] Nowhere does Reddix's report mention sample sizes or other statistical challenges to the general causation claims of the plaintiff's articles;

[4] The defense counsel said, in chambers: "Plaintiffs have brought up pulmonary edema and tried to put it in the same intellectual wastebasket as cardiomyopathy and act like they're the same thing. It's important that he explains to the jury that they are not the same thing."

The judge's ruling, in reply, was: "Well, he did so. It took him forever to get around to it. But I'm not going to let him express an opinion as to whether the administration of this drug caused or did not cause the cardiomyopathy here."

as for the "study involving 9,000 patients," it was merely attached to the report, and the report offers no reference to it, commentary on it, or description of it whatsoever.[5]

Further, the defense never offered into evidence the article that Reddix referred to in his proffer, despite many points at which it could have done so. The defense did not even try to seek admission. Defense expert Dr. Tucker, vastly more qualified than Reddix as to peer-reviewed medical literature and testifying immediately after the allegedly erroneous exclusion, was not asked about the article.[6] This despite the fact that Dr. Tucker did testify to a point at which the article would be relevant, if the majority here were correct: "I've never been able to find any relationship, a causal relationship between Terbutaline and cardiomyopathy. Granted, Terbutaline has other side effects, and we've talked about those. But as far as cardiomyopathy, I've never been able to find any causal relationship between the two." The defense never cross-examined plaintiff's witnesses using the article as the basis for challenge, even when it repeatedly would have been appropriate to do so. They did confront them with other articles and other medical literature on the specific causation and standard of care arguments, because these were the sites of actual conflict at trial. The defendant Dr. Gayden was directly challenged on causation, but he too never mentioned this article.

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[5] Even if it had been discussed in the report or in testimony, it would have affected little. The article is by no means a decisive refutation of the causal connection between cardiomyopathy and Terbutaline under the circumstances presented by Huss. The article did not involve a controlled experiment, nor were the factors relevant to Huss' case adequately accounted for in the data analysis.

[6] Dr. Tucker was a manuscript reviewer for the American College of Obstetricians and Gynecologists, and he boasts an extensive list of research publications over the course of his career. He would thus have been imminently more qualified to critique the plaintiff's causation studies, had the defense actually been interested in mounting such a challenge.

In sum, the defense did not offer freestanding statistical challenges, and Reddix's statistical observations were to support a causation conclusion that Reddix was rightly restricted from rendering. Reddix's partial exclusion was not an error, and certainly no abuse of discretion. Even if there were error, any reasonable view of the defense case at trial yields the insight that it was not prejudicial to the defense case, which received ample airing at trial. The proffered testimony lacks coherence sufficient to persuade that its exclusion was prejudicial. The jury was already awash with testimony of both sides regarding specific causation, all admitted without objection and explained at length in direct and cross examination. And Dr. Reddix was followed by another defense expert who testified at length to conclude the case.

III

After erasing the Husses' jury verdict based on the district court's exclusion of a portion of Dr. Reddix's testimony, Judge DeMoss then includes nine pages of dicta "making observations" about the admissibility of the Husses' expert evidence, an issue plainly not before this court; this while finding reversible error in the district court's refusal to admit part of the testimony of a defense expert—which somehow escapes its volunteer *Daubert* examination. Neither Judge Owen nor myself join this part of the opinion on admissibility. Judge DeMoss' opinion itself acknowledges that the defendants waived any challenge to the admissibility of the Huss' expert evidence by not objecting before or during trial, despite the explicit warning in the pretrial order that all objections to depositions not submitted to the trial judge ten days prior to trial—including the video deposition of Dr. Murray that was played for the jury—are waived.[7] It also acknowledges that the defendants failed to preserve

[7] *Pucket v. U.S.*, 556 U.S. ___ (2009) ("If a litigant believes that an error has occurred (to his detriment) during a federal judicial proceeding, he must object in order to preserve the

a challenge to the sufficiency of the evidence, but never mentions that this failure restricts this court's review of the Huss' expert evidence to "whether the plaintiff has presented *any* evidence in support of his claim"[8]—a standard that beyond peradventure the Husses surpassed.

issue. If he fails to do so in a timely manner, the claim for relief from the error is forfeited. . . . If an error is not properly preserved, appellate-court authority to remedy the error (by reversing the judgment, for example, or ordering a new trial) is strictly circumscribed.").

[8] *Polanco v. City of Austin*, 78 F.3d 968, 974 (5th Cir. 1996).

The uniform law of the circuits,[9] the Fifth included,[10] is that without a timely objection to the admission of expert evidence, appellate review is waived absent plain error. The unobjected-to evidence is competent and passes to the jury for credibility and weight determinations.[11]

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[9] *U.S. v. Mornan*, 413 F.3d 372, 379 (3d Cir. 2005) ("Where a defendant fails to object to the admission of evidence (including expert testimony) during trial, this Court reviews the decision to admit that evidence for plain error."); *U.S. v. Gaskin*, 364 F.3d 438, 460 n.8 (2d Cir. 2004) ("Where a party questions whether sound scientific methodology provides a basis for an expert opinion, it may move to preclude the admission of the opinion. Gaskin made no such motion; instead, he stipulated to the admissibility of the expert opinion. Under such circumstances, he cannot complain on appeal that the opinion lacks foundation.") (internal citation omitted); *Mascenti v. Becker*, 237 F.3d 1223, 1231 (10th Cir. 2001) ("[W]e find no plain error such as to excuse a timely *Daubert* objection to plaintiff Mascenti's expert testimony. We are convinced that Defendant forfeited the opportunity to subject the expert testimony of Dr. Sullivan and plaintiff's other experts to a *Daubert* challenge by failure to make a timely objection before that testimony was admitted."); *C.B. Fleet Co. v. Smithkline Beecham Consumer Healthcare, L.P.*, 131 F.3d 430, 437 (4th Cir. 1997) ("Fleet made no *Daubert* objection to admission of the extensive testimony of SmithKline's expert witnesses about the blue-dye tests' methodology, conduct, and results. Fleet contends that it need not have: that its challenge here is not to the admissibility of this evidence but to its insufficiency when tested by *Daubert* principles to support the district court's finding of the tests' scientific reliability. That cannot be right."); *Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1067 (9th Cir. 1996) ("We conclude Pacific Lumber waived its *Daubert* objections to EPIC's scientific evidence of impaired breeding by failing to request a ruling on the admissibility of the evidence in the district court."); *Christopher v. Cutter Labs.*, 53 F.3d 1184, 1192 (11th Cir. 1995) ("If Armour believed that Dr. Robinson's testimony was statistically invalid, it should have objected to that testimony, giving him the chance to explain his answer. . . . Absent an objection, we can review the challenged evidence only for plain error."); *McKnight v. Johnson Controls, Inc.*, 36 F.3d 1396, 1406–07 (8th Cir. 1994) ("We need not reach this issue, however, because JCI failed to object to Jacobson's testimony on the basis that he was not qualified as an expert or that he lacked a scientific basis for his opinions.").

[10] *See H.E. Stevenson v. E.I. DuPont De Nemours and Co.*, 327 F.3d 400, 406–07 (5th Cir. 2003) (DeMoss, J.); *SEC v. Snyder*, 292 F. App'x 391, 400 n.1 (5th Cir. 2008) ("Many of Snyder's arguments appear to be belated attempts to challenge the admissibility of Hoffman's opinions under Fed. R. Evid. 702 and *Daubert*, rather than challenges to the sufficiency of the evidence. Because Snyder did not object to the admissibility of Hoffman's testimony concerning the accounting practices at issue, that issue has been forfeited.") (internal citation omitted); *U.S. v. Bates*, 240 F.3d 1073, *3 (5th Cir. 2000) (unpublished) ("If the defendant fails to object to the expert's testimony, then the defendant 'waives appellate review absent plain error.'").

[11] Consider hearsay which is generally inadmissible on grounds of unreliability. However, if hearsay evidence is admitted into testimony without an objection, it is treated as

IV

This case answers no scientific questions and sheds little of the light of science on its difficult medical problems. Able lawyers tried this case. This jury answered the questions the court and the lawyers put to it.

Defendants have had their day in three courts and, accepting as we do the answer by the Supreme Court of Mississippi to our certified question regarding limitations, have raised no other grounds of error which persuade me to disturb this jury verdict. To these eyes the court today oversteps its judicial role and in doing so produces grave error. In lowering the hurdle of *Tanner* for defendants it fails to treat plaintiffs and defendants with an even hand and in the process perversely invites the junk science it decries.

I would affirm.

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competent evidence for the jury to weigh and on which to rest its verdict. *See Gochicoa v. Johnson*, 118 F.3d 440, 448 n.7 (5th Cir. 1997) ("Otherwise inadmissible hearsay admitted without objection is treated the same as any other evidence, and may be considered by the jury in support of its verdict.") (interpreting Texas law); *U.S. v. Spletzer*, 535 F.2d 950, 955 n.7 (5th Cir. 1976).