United States Court of Appeals
For the First Circuit

No. 11-1480

ANTON K. SAMAAN,

Plaintiff, Appellant,

v.

ST. JOSEPH HOSPITAL AND DAVID KAPLAN, M.D.,

Defendants, Appellees.

APPEAL FROM THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF MAINE

[Hon. John A. Woodcock, Jr., U.S. District Judge]

Before

Lynch, Chief Judge,
Torruella and Selya, Circuit Judges.

John P. Flynn, III, with whom Richard D. Tucker and Tucker Law Group were on brief, for appellant.

Elizabeth A. Germani, with whom James F. Martemucci and Germani Martemucci Riggle & Hill were on brief, for appellee St. Joseph Hospital.

Teresa M. Cloutier, with whom Phillip M. Coffin III and Lambert Coffin were on brief, for appellee David Kaplan, M.D.

January 9, 2012

SELYA, Circuit Judge. After extensive motion practice, the district court ended this medical malpractice case by granting summary judgment for the defendants. The ensuing appeal requires us to unravel a jurisdictional tangle, clarify the status of Maine law concerning causation, and answer a series of questions regarding the admissibility of scientific evidence. Having run this gauntlet, we affirm the judgment.

I. BACKGROUND

Plaintiff-appellant Anton K. Samaan is an Egyptian native who resides in Brooklyn, New York. He enjoys dual citizenship in Egypt and the United States.

On January 14, 2006, the plaintiff flew from Cairo to Milan, where he boarded a connecting flight bound for New York. Toward the end of his journey, he repaired to the galley in search of a cup of tea. A flight attendant thought that he looked sick, sat him down, and recruited health-care professionals from among the passengers.

A second-year medical resident examined the plaintiff and concluded that he was probably experiencing an ischemic stroke or transient ischemic attack brought on by the stoppage of blood flow to part of his brain. The pilot detoured to the nearest airport: Bangor, Maine. An ambulance took the plaintiff to St. Joseph Hospital (the Hospital). In all, less than two hours elapsed

between the time of the flight attendant's intervention and the plaintiff's arrival at the Hospital.

The record is sparse in regard to how the plaintiff was treated at the Hospital's emergency room. One thing is clear: no intravenous shot of tissue plasminogen activator (t-PA) was administered. The drug is a form of thrombolytic therapy that works by dissolving clots that are occluding arteries. Its efficacy in any given patient is uncertain but its goal is to reduce neurologic injury caused by a stroke.

Not every stroke patient is a candidate for t-PA. First, t-PA is not a panacea. Second, it has to be used within a relatively short period of time after the onset of symptoms (a three-hour window was generally regarded as appropriate at the time of the plaintiff's stroke). Third, t-PA has the potential to cause intracranial hemorrhaging, serious systemic bleeding, a new stroke, and sometimes death. Last — but far from least — accepted protocol dictates that it should be withheld in many circumstances, including but not limited to cases where the stroke is severe, the time of onset is unknown, the patient experienced a seizure at the onset, or the patient had another stroke or underwent major surgery in the preceding three months. If used when contraindicated, t-PA

is not only likely to be ineffective but also may increase the chances of adverse effects.[1]

During his time at the Hospital, the plaintiff's condition deteriorated and then stabilized. When he did not improve, an ambulance transported him to an institution in New York. He went from there to a series of other rehabilitation facilities and eventually returned home (albeit still partially paralyzed and unable to work).

On December 16, 2009, the plaintiff sued the Hospital and his attending physician there, Dr. David Kaplan, in a Maine state court. His complaint alleged professional negligence (medical malpractice) and negligent infliction of emotional distress, both relating to a failure to administer t-PA. Fifteen days later Dr. Kaplan, citing the existence of diversity jurisdiction, removed the case to the United States District Court for the District of Maine. See 28 U.S.C. §§ 1332(a), 1441(a). The Hospital neither signed the removal papers nor otherwise manifested its written consent to the change in forum. Dr. Kaplan answered the complaint in the federal court on January 11, 2010, and the Hospital followed suit within the next couple of days.

[1] We include this information for the sake of completeness. Because this case is resolved on grounds not implicating the question of whether the plaintiff was a suitable candidate for t-PA, we need not probe this point.

The plaintiff moved to remand the action to the state court on the sole ground that the Hospital had failed to join the notice of removal. Finding that the Hospital had impliedly consented to removal, the district court denied the motion. Samaan v. St. Joseph Hosp. (Samaan I), 685 F. Supp. 2d 163, 165-67 (D. Me. 2010).

Near the conclusion of discovery, Dr. Kaplan filed both a motion to exclude the testimony of Dr. Ravi Tikoo and a motion for summary judgment. The plaintiff had designated Dr. Tikoo as his expert witness on causation (to establish that the negligence in failing to administer t-PA proximately caused the plaintiff's injuries).

The district court initially denied the defendants' motions. Samaan v. St. Joseph Hosp. (Samaan III), No. CV-09-656, 2010 WL 4135287 (D. Me. Oct. 14, 2010) (denying summary judgment); Samaan v. St. Joseph Hosp. (Samaan II), 744 F. Supp. 2d 367 (D. Me. 2010) (denying motion to exclude). Dr. Kaplan moved for reconsideration or, in the alternative, a Daubert hearing. See Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 592-93 (1993). The court scheduled the requested hearing for December 9, 2010.

At the Daubert hearing, both Dr. Tikoo and the defendants' expert, Dr. Paul Nyquist, testified. Though the cornerstone of each doctor's opinion was the definitive study of the efficacy of t-PA — a 1995 study conducted by the National

Institute of Neurological Disorders and Stroke (NINDS) — a vast gulf separated their views. For now, it suffices to say that the two men, though using the same data, strongly disagreed about whether the failure to administer t-PA proximately caused the plaintiff's injuries.

In addition to presenting different interpretations of the data through their experts, the parties argued for different interpretations of Maine law. The defendants posited that Maine requires a medical malpractice plaintiff to prove that the allegedly negligent act was "more likely than not" a substantial cause of the injury; the plaintiff demurred, arguing that Maine would recognize the "lost chance" doctrine, which permits recovery when a patient's chances are diminished to some degree by a doctor's acts or omissions.

The district court concluded that the applicable standard for causation was "more likely than not" and that Maine had not adopted the "lost chance" doctrine. Samaan v. St. Joseph Hosp. (Samaan IV), 755 F. Supp. 2d 236, 246-48 (D. Me. 2010). The court then proceeded to analyze Dr. Tikoo's testimony and determined that his statistical calculations were not responsive to the question of whether the failure to administer t-PA more likely than not caused the plaintiff's injuries. Id. at 248-49. The court therefore excluded Dr. Tikoo's testimony.

This ruling prompted the defendants to move for reconsideration of the court's earlier denial of summary judgment, see Samaan III, 2010 WL 4135287, at *1, contending that the plaintiff's case evaporated with the exclusion of the testimony of its only causation expert. The plaintiff opposed this motion on various grounds, arguing among other things that two other expert witnesses could provide competent evidence that the failure to treat the plaintiff with t-PA proximately caused his injuries. Finally, he posited that his claim for negligent infliction of emotional distress survived the exclusion of Dr. Tikoo's testimony.

After pausing to exclude a "to whom it may concern" letter (to which we shall return shortly), Samaan v. St. Joseph Hosp. (Samaan V), 764 F. Supp. 2d 238, 239-40 (D. Me. 2011), the district court denied the defendants' renewed motion for summary judgment, Samaan v. St. Joseph Hosp. (Samaan VI), 764 F. Supp. 2d 240, 249 (D. Me. 2011). The court predicated this ruling on a tentative finding that the descriptions of the new experts' expected testimony appeared sufficient to defeat summary judgment on the question of causation. Id. at 247-49. But the court warned that there might be "other reasons to exclude the[] testimony." Id. at 249 n.4. On a related topic, the court's rescript made clear that, with respect to proof of causation, it viewed medical malpractice and negligent infliction of emotional distress as peas in a pod. Id. at 246-47.

The defendants responded by moving to exclude the testimony of the newly identified causation "experts" and for reconsideration of summary judgment in light of that anticipated exclusion. They offered both procedural and substantive reasons for excluding the testimony. The plaintiff opposed these motions but the district court granted them.

The court's principal basis for excluding the newly identified testimony was its determination that neither of the two physicians who were the source of that testimony had been designated as an expert witness with respect to causation. Samaan v. St. Joseph Hosp. (Samaan VII), 274 F.R.D. 41, 45-50 (D. Me. 2011). The entry of summary judgment followed from that exclusion: without any expert opinion evidence of causation, the plaintiff's claims necessarily failed. Id. at 53. This timely appeal ensued.

II. ANALYSIS

In this venue, the plaintiff raises a gallimaufry of issues. His most loudly bruited claims of error relate to the denial of his motion to remand the case to state court, the formulation of the standard for causation under Maine law, the exclusion of expert witness testimony, and the entry of summary judgment vis-à-vis his claim of negligent infliction of emotional distress. We address this asseverational array piece by piece.

A. The Motion to Remand.

A motion to remand usually presents a question of federal subject matter jurisdiction. See BIW Deceived v. Local S6, Indus. Union of Marine & Shipbuilding Workers of Am., 132 F.3d 824, 830 (1st Cir. 1997). When, as in this case, the pertinent facts are not in dispute, the district court's denial of such a motion engenders de novo review. See id.

In a diversity case, the rule of unanimity requires that, within a specified time frame, all defendants must consent in writing to the removal. See 14C Charles A. Wright, Arthur R. Miller, Edward H. Cooper & Joan E. Steinman, Federal Practice and Procedure § 3730, at 440-59 & n.11 (4th ed. 2009) (collecting cases). The plaintiff says that the removal here offended this rule because the Hospital neither signed the removal papers nor otherwise consented in writing to removal.

Congress has prescribed the framework for removal. The statutory scheme provides that a defendant may remove a civil action from a state court to a federal court sitting in that state only if the federal court has "original jurisdiction" over the action. 28 U.S.C. § 1441(a). This case meets that rudimentary benchmark: the parties are of diverse citizenship and the amount in controversy exceeds $75,000, thus satisfying the criteria set out in 28 U.S.C. § 1332(a).

Removal, however, must sometimes satisfy other requirements as well. In a diversity case, unanimity is one such requirement. But before turning to that requirement, we must iron out a wrinkle that neither the parties nor the district court spotted.

The defendants, though diverse from the plaintiff, are citizens of Maine (the forum state). The removal of a diversity case by an in-forum defendant transgresses 28 U.S.C. § 1441(b), which provides that unless the action is one "arising under" federal law, removal is permissible only if "none of the . . . defendants is a citizen of the State in which such action is brought." In light of this prohibition, it is readily apparent that the instant action — which is not one arising under federal law — was improperly removed.

Withal, the statutory scheme creates a safety valve: "[a] motion to remand the case on the basis of any defect other than lack of subject matter jurisdiction must be made within 30 days after the filing of the notice of removal" or else it is waived. 28 U.S.C. § 1447(c). After this 30-day period, only if "the district court lacks subject matter jurisdiction" must the case be remanded to state court. Id.

The pivotal question, then, is whether removal in contravention of the prohibition against removal by an in-forum defendant is jurisdictional in nature or merely a procedural defect

that may be waived. See Grubbs v. Gen. Elec. Credit Corp., 405 U.S. 699, 702 (1972) ("[If] after removal a case is tried on the merits without objection and the federal court enters judgment, the issue in subsequent proceedings on appeal is not whether the case was properly removed, but whether the federal district court would have had original jurisdiction of the case had it been filed in that court."). We hold that removal in contravention of the prohibition against removal by an in-forum defendant creates a procedural defect that is subject to waiver under 28 U.S.C. § 1447(c).

This holding echoes the holding in Farm Construction Services, Inc. v. Fudge, 831 F.2d 18 (1st Cir. 1987) (per curiam). There, the defendants had improperly removed the case to their home-state federal court. Id. at 22. We concluded that the plaintiff's "continued prosecution of the case in federal court for approximately one year, and its failure to object to removal until after judgment had been rendered, constitue[d] implicit consent to federal court jurisdiction and waiver of its right to object to removal." Id. Because all the requirements for diversity jurisdiction were satisfied, the improper removal had no effect on the federal court's capacity to hear the case. Accord In re 1994 Exxon Chem. Fire, 558 F.3d 378, 392-93 (5th Cir. 2009); Lively v. Wild Oats Mkts., Inc., 456 F.3d 933, 939-40 (9th Cir. 2006); Hurley v. Motor Coach Indus., Inc., 222 F.3d 377, 379 (7th Cir. 2000);

Handelsman v. Bedford Vill. Assocs. Ltd. P'ship, 213 F.3d 48, 50 n.2 (2d Cir. 2000); Moores v. Greenberg, 834 F.2d 1105, 1106 n.1 (1st Cir. 1987). But see Horton v. Conklin, 431 F.3d 602, 605 (8th Cir. 2005).

We need not tarry over the question of whether a waiver transpired here. The plaintiff did not raise the defendants' Maine citizenship in support of his motion to remand. He has litigated the case for years (first in the district court and presently in this court) without advancing any argument based on the defendants' in-forum citizenship. Consequently, any objection to removal based on that citizenship has been waived. See, e.g., Moores, 834 F.2d at 1106 n.1; Fudge, 831 F.2d at 22. The fact that the plaintiff objected to removal on a different basis does not avert this waiver. See Hartford Accident & Indem. Co. v. Costa Lines Cargo Servs., Inc., 903 F.2d 352, 358-60 (5th Cir. 1990) (finding objection to removal on different ground insufficient to preserve objection to violation of in-forum defendant rule).

We now move from the objection that the plaintiff did not make to the one that he did make: his plaint that the defendants failed to comply with the rule of unanimity. On this point, the case before us is controlled by our decision in Esposito v. Home Depot U.S.A., Inc., 590 F.3d 72 (1st Cir. 2009).

In Esposito, we explained that the driving forces behind the rule of unanimity are the desire to prevent duplicative

litigation and the desire to protect one defendant from seizing a tactical advantage at the expense of a fellow defendant. Id. at 75. With these concerns in mind, we eschewed a "wooden rule" for demonstrating unanimity, holding that, at a minimum, an apparent lack of unanimity could be remedied by a non-signing defendant's timely opposition to a motion to remand. Id. at 77. Such a course of conduct adequately evinces the non-signing defendant's willingness to remain in the federal forum and, thus, satisfies the concerns that inform the rule of unanimity.

To be sure, the better practice is for all defendants to sign the notice of removal. Under our precedent, however, effective consent to the removal can be manifested in other ways. Here, the Hospital did not sign the notice, but it filed an answer in the federal court and vigorously opposed the plaintiff's motion to remand. In the words of the Esposito court, it thereby "clearly communicat[ed] its desire to be in federal court." Id. No more was exigible to cure the technical defect in the notice of removal. See id. Accordingly, the court below did not err in denying the plaintiff's motion to remand.

B. The Causation Standard.

Maine state law prescribes the substantive rules of decision in this diversity case. See Erie R.R. v. Tompkins, 304 U.S. 64, 78 (1938). In Maine, causation is an element of a

negligence-based cause of action.[2] See Baker v. Farrand, 26 A.3d 806, 811 (Me. 2011); Dickey v. Vermette, 960 A.2d 1178, 1185 (Me. 2008). Maine's highest court has held that an examination of causation requires a two-part inquiry, which asks whether the negligent act played a "substantial part in . . . causing the injury" and, if so, whether the injury was a "reasonably foreseeable" result of the act. Crowe v. Shaw, 755 A.2d 509, 512 (Me. 2000). This case centers on what the plaintiff must prove to meet the "substantial part" requirement of causation under Maine law.

The district court determined that Maine requires a medical malpractice plaintiff to prove a probability of harm; that is, that the alleged negligence more likely than not brought about the plaintiff's injuries. Samaan IV, 755 F. Supp. 2d at 246-48. Because this determination rests on the court's assessment of the law and not on its assessment of the facts, our review is plenary. See Salve Regina Coll. v. Russell, 499 U.S. 225, 239-40 (1991); United States v. Gifford, 17 F.3d 462, 472 (1st Cir. 1994).

The crux of the plaintiff's argument is that the Maine Supreme Judicial Court (the Law Court) has left the door open for

[2] Because this case turns on causation, we assume, without deciding, that the failure to administer t-PA occurred in circumstances that satisfy the other elements of the tort of professional negligence (medical malpractice). Thus, we need not address whether the plaintiff was a proper candidate for t-PA, or whether the failure to give him t-PA was in fact a departure from the standard of care.

Maine to embrace the "lost chance" doctrine. He asserts that this doctrine should be applied here and that his proof is adequate to establish a trialworthy issue thereunder. The district court disagreed with the proposition that Maine law encompasses the lost chance doctrine, and so do we.

As the Law Court recognized in Phillips v. Eastern Maine Medical Center, 565 A.2d 306 (Me. 1989), the "more likely than not" standard and the "lost chance" doctrine are the two prevailing approaches to causation in medical malpractice cases. The "more likely than not" standard requires a showing of probability: in jurisdictions following this approach, by "show[ing] a better than even chance of avoiding harm in the absence of medical negligence," a plaintiff proves that the negligence played a substantial part in causing the injury. Id. at 308. By contrast, in jurisdictions following the "lost chance" doctrine, the plaintiff need only "show that he was deprived of a significant chance of avoiding harm" to meet the "substantial part" requirement. Id. A showing of probability is not required.

The plaintiff's argument that Maine has left the door open for the lost chance doctrine starts with this discussion in Phillips. However, the Phillips court mentioned the lost chance doctrine in that context only to present an overview of the approach. The court stopped at this point; it neither approved nor rejected the doctrine.

That is the high-water mark of the plaintiff's argument, and his singular reliance on Phillips ignores the remaining corpus of Maine malpractice law. Going beyond Phillips, we find valuable guidance in the Maine Health Security Act (MHSA), which governs professional negligence actions against health-care providers. See Me. Rev. Stat. Ann. tit. 24, §§ 2501-2987. The case at hand rests on claims of professional negligence and, thus, falls within the compass of the MHSA. See id. § 2502(6); see also Saunders v. Tisher, 902 A.2d 830, 832-35 (Me. 2006) (explaining that negligence and negligent infliction of emotional distress claims against doctors, arising out of medical treatment, are covered).

In the MHSA, the Maine legislature required a medical malpractice plaintiff to show "a reasonable medical or professional probability that the acts or omissions complained of constitute a deviation from the applicable standard of care." Me. Rev. Stat. Ann. tit. 24, § 2502(7)(A). The plaintiff also must show "a reasonable medical or professional probability that the acts or omissions complained of proximately caused the injury complained of." Id. § 2502(7)(B) (emphasis supplied). This formulation of the causation standard is clear and unambiguous. It admits of only one interpretation: the phrase "reasonable medical probability" demands that the injury be a probable or likely result of the negligent act or omission. See, e.g., Harvey v. H.C. Price Co., 957 A.2d 960, 968 n.5 (Me. 2008); see generally Black's Law

Dictionary 1380 (9th ed. 2009) (defining "reasonable medical probability" as "a standard requiring a showing that the injury was more likely than not caused by a particular stimulus, based on the general consensus of recognized medical thought"). It is, therefore, beyond serious question that the standard of causation articulated in the MHSA is incompatible with the lost chance doctrine.

This understanding of the Maine standard of causation is buttressed by the Maine case law which, though scanty, indicates that the more likely than not standard controls. For example, in Merriam v. Wanger, 757 A.2d 778 (Me. 2000), the Law Court stated that in medical malpractice cases, "[t]he mere possibility of . . . causation is not enough, and when the matter remains one of pure speculation or conjecture, or even if the probabilities are evenly balanced, a defendant is entitled to a judgment." Id. at 781. Although the court did not discuss the lost chance doctrine, it held that because the plaintiff had failed to present evidence that her injury would "more likely than not[] have been avoided" in the absence of negligence, judgment for the defendant necessarily followed. Id. Other cases are similar in tenor. See, e.g., Cyr v. Adamar Assocs. Ltd. P'ship, 752 A.2d 603, 604-05 (Me. 2000); Champagne v. Mid-Me. Med. Ctr., 711 A.2d 842, 845 (Me. 1998); Spickler v. York, 566 A.2d 1385, 1390 (Me. 1989).

That ends this aspect of the matter. The standard for causation in medical malpractice actions in Maine is more likely than not, and that standard is satisfied only when the plaintiff can show a reasonable probability that, absent the negligent act, the injury would have been avoided. The Maine legislature has prescribed this standard, the Maine cases are consistent with it, and there is simply no room for judicial interpolation of the lost chance doctrine into Maine medical malpractice law.

As a fallback, the plaintiff invites us to certify to the Law Court the question of the applicability of the lost chance doctrine. We decline the invitation. "[W]e have held with monotonous regularity that certification is inappropriate when the course that the state courts would take is reasonably clear." González Figueroa v. J.C. Penney P.R., Inc., 568 F.3d 313, 323 (1st Cir. 2009) (collecting cases). So it is here.[3]

C. The Daubert Hearing.

With the proper causation standard in place, we turn to the plaintiff's failed attempt to make out a trialworthy issue on causation. Courts in Maine typically require expert testimony to establish that a physician's acts or omissions in the course of diagnosis or treatment proximately caused a patient's injuries. See, e.g., Cox v. Dela Cruz, 406 A.2d 620, 622 (Me. 1979). This

[3] At any rate, the clear language of the MHSA makes it likely that the causation standard can only be altered by the legislature, not by the courts.

requirement is ironclad where, as here, causation is not within the realm of common knowledge or experience. See id.; Cyr v. Giesen, 108 A.2d 316, 318 (Me. 1954).

Recognizing the need to bridge this gap, the plaintiff offered Dr. Tikoo's testimony. The district court convened a Daubert hearing to screen that proffer and ultimately rejected it based on a determination that the testimony failed to cross the Daubert threshold. Samaan IV, 755 F. Supp. 2d at 248-49. We review this determination for abuse of discretion. Ruiz-Troche v. Pepsi Cola of P.R. Bottling Co., 161 F.3d 77, 81 (1st Cir. 1998).

We begin with an overview of the principles that govern the admissibility of scientific evidence. We then explain why we uphold the district court's determination that Dr. Tikoo's testimony falls short.[4]

> A qualified expert may testify in the form of an opinion or otherwise if: (a) the expert's . . . knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based upon

[4] We agree with the district court's conclusion that the expert's testimony failed the relevancy or "fit" requirement for admissibility of scientific evidence. See Samaan IV, 755 F. Supp. 2d at 248. But our explanation differs in some respects from that of the district court. For example, we think that it overstates the matter to say that Dr. Tikoo's opinion "[was] not supported by sound science or reliable methodologies." Id. We also struggle with the notion that proof of causation always requires particular statistical evidence, either of absolute benefit or relative risk. See id. at 248, 249. We do not dwell on these discrepancies, however, because we may affirm the district court's decision on any valid basis that is made manifest by the record. Polyplastics, Inc. v. Transconex, Inc., 827 F.2d 859, 860-61 (1st Cir. 1987).

> sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702. The Daubert Court explained that this rule requires district courts to act as gatekeepers, ensuring that an expert's proffered testimony "both rests on a reliable foundation and is relevant to the task at hand." 509 U.S. at 597. These two requirements — a reliable foundation and an adequate fit — are separate and distinct.

The reliable foundation requirement necessitates an inquiry into the methodology and the basis for an expert's opinion. To perform the required analysis, the district court must consider a number of factors, including but not limited to "the verifiability of the expert's theory or technique, the error rate inherent therein, whether the theory or technique has been published and/or subjected to peer review, and its level of acceptance within the scientific community." Ruiz-Troche, 161 F.3d at 81. Given the nature of this analysis, the expert's methodology is commonly the "central focus of a Daubert inquiry." Id.

The second requirement has attracted less attention. This requirement seeks to ensure that there is an adequate fit between the expert's methods and his conclusions. See Daubert, 509 U.S. at 591. This prong of the Daubert inquiry addresses the problem that arises when an expert's methods, though impeccable,

yield results that bear a dubious relationship to the questions on which he proposes to opine. See id. at 591-92.

Seen in this light, the scope of a Daubert hearing is not limited to an appraisal of an expert's credentials and techniques but also entails an examination of his conclusions to determine whether they flow rationally from the methodology employed. See Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997); Heller v. Shaw Indus., Inc., 167 F.3d 146, 153 (3d Cir. 1999). If perscrutation reveals "that there is simply too great an analytical gap between the data and the opinion proffered," the expert's testimony should be excluded. Joiner, 522 U.S. at 146.

The plaintiff attacks both the mechanics and the outcome of the Daubert hearing. His claims of procedural error are patently meritless and do not warrant extended discussion. Instead, we adopt the well-articulated reasoning of the lower court in regard to these points. See Samaan VI, 764 F. Supp. 2d at 244-46; see also Vargas-Ruiz v. Golden Arch Dev., Inc., 368 F.3d 1, 2 (1st Cir. 2004) (declining to expound on issues cogently dispatched by district court).

By the same token, we need not linger over the plaintiff's suggestion that the district court impermissibly shifted the summary judgment burden by opting to hold an antecedent Daubert hearing. It is settled in this circuit that a Daubert hearing appropriately may be held at the summary judgment stage.

See, e.g., Cortés-Irizarry v. Corporación Insular de Seguros, 111 F.3d 184, 188 (1st Cir. 1997).

This leaves the plaintiff's principal plaint: that the district court abused its discretion in excluding Dr. Tikoo's testimony. In support, he argues that Dr. Tikoo's qualifications were impressive and that his statistical methods were comfortably within the realm of acceptable science. These arguments miss the mark.

The district court did not seriously question either Dr. Tikoo's credentials or the reliability of his methods; the problem, as the court saw it, was that the results produced through that methodology left an analytical gap. In other words, those results did not sufficiently ground his conclusion that the plaintiff's condition likely would have improved had t-PA been administered. See Samaan IV, 755 F. Supp. 2d at 248. This is a finding about the inadequacy of the fit; and in reviewing it, we can for the most part leave to one side the expert's qualifications, his numerical calculations, and the scientific community's acceptance of the study on which he relied.

Refined to bare essence, Dr. Tikoo presented two analyses of statistical data drawn from the NINDS study, peer-reviewed articles, and the European Cooperative Acute Stroke Study (ECASS-III Study). His first analysis examined odds ratios between a group of patients who had received t-PA and a placebo group. He

concluded from these ratios that a person's chances of improvement increase by 50% with administration of the drug. Dr. Tikoo's second analysis used absolute efficacy rates, in some instances exceeding 50%, which he asserted were sufficient to prove that the plaintiff's injuries likely derived from the defendants' failure to administer t-PA. Using these analyses, Dr. Tikoo concluded that had the plaintiff been given a timely injection of t-PA, he likely would not have suffered the stroke-related injuries.

There is simply too great a divide between the numbers that Dr. Tikoo employed and the conclusions that he tried to wring from them. We elaborate below.

Dr. Tikoo's first analysis depended upon odds ratios drawn from the literature. These odds ratios are, as the term implies, ratios of the odds of an adverse outcome, which reflect the relative likelihood of a particular result.[5] Observing that some of the odds ratios exceeded 1.5, Dr. Tikoo sought to testify that the chances of a patient in the treated group recovering increased by over 50%. Building on this foundation, Dr. Tikoo opined that the plaintiff more likely than not would have recovered had he received the drug.

---

[5] For example, if the chances of an outcome are 50% (one in two) with treatment and 33⅓% (one in three) without treatment, the odds ratio for the treated group would be ½ divided by ⅓, or 1.5 (signifying a 50% greater chance of recovery in the treated group). The odds ratio is, therefore, a metric that provides insight only on relative benefit or relative risk.

As the district court recognized, this reasoning is structurally unsound and leaves a wide analytical gap between the results produced through the use of odds ratios and the conclusions drawn by the witness. When a person's chances of a better outcome are 50% greater with treatment (relative to the chances of those who were not treated), that is not the same as a person having a greater than 50% chance of experiencing the better outcome with treatment. The latter meets the required standard for causation; the former does not.

To illustrate, suppose that studies have shown that 10 out of a group of 100 people who do not eat bananas will die of cancer, as compared to 15 out of a group of 100 who do eat bananas. The banana-eating group would have an odds ratio of 1.5 or a 50% greater chance of getting cancer than those who eschew bananas. But this is a far cry from showing that a person who eats bananas is more likely than not to get cancer. Even if we were to look only at the fifteen persons in the banana-eating group who did get cancer, it would not be likely that any particular person in that cohort got it from the consumption of bananas. Correlation is not causation, and a substantial number of persons with cancer within the banana-eating group would in all probability have contracted the disease whether or not they ate bananas.[6]

[6] This is not to say that the odds ratio may not help to prove causation in some instances. See, e.g., Milward v. Acuity Specialty Prods. Grp., Inc., 639 F.3d 11, 13-14, 23-25 (1st Cir.

We think that this example exposes the analytical gap between Dr. Tikoo's methods and his conclusions. Although he could present figures ranging higher than 50%, those figures were not responsive to the question of causation. Let us take the "stroke scale" figure from the NINDS study as an example. This scale measures the neurological deficits in different parts of the nervous system. Twenty percent of patients who experienced a stroke and were not treated with t-PA had a favorable outcome according to this scale, whereas that figure escalated to 31% when t-PA was administered. Although this means that the patients treated with t-PA had over a 50% better chance of recovery than they otherwise would have had, 69% of those patients experienced the adverse outcome (stroke-related injury) anyway.[7]

The short of it is that while the odds ratio analysis shows that a t-PA patient may have a better chance of recovering than he otherwise would have had without t-PA, such an analysis does not show that a person has a better than even chance of

---

2011) (reversing exclusion of expert prepared to testify as to general rather than specific causation using in part the odds ratio). Indeed, it is theoretically possible that a particular odds ratio calculation might show a better-than-even chance of a particular outcome. Here, however, the odds ratios relied on by Dr. Tikoo have no such probative force.

[7] Dr. Tikoo noted that the figures used to measure recovery in his analyses only accounted for patients who were fully rehabilitated. He surmised that including those who made partial recoveries would increase the recovery percentages. But he offered nothing to quantify this surmise and, therefore, the district court properly disregarded it.

avoiding injury if the drug is administered. The odds ratio, therefore, does not show that the failure to give t-PA was more likely than not a substantial factor in causing the plaintiff's injuries. The unavoidable conclusion from the studies deemed authoritative by Dr. Tikoo is that only a small number of patients overall (and only a small fraction of those who would otherwise have experienced stroke-related injuries) experience improvement when t-PA is administered.

Nor can Dr. Tikoo's reliance on efficacy rates salvage his testimony. Although certain of the efficacy rates in the NINDS study and/or the ECASS-III Study break a 50% barrier, the question remains: "50% of what?" Looking at those rates in a vacuum ignores the substantial number of stroke patients who would improve anyway (that is, without receiving t-PA).

Once again, an example is useful. Dr. Tikoo, relying on numbers derived from the ECASS-III Study, stated that 52.4% of patients receiving t-PA recovered as measured by a particular scale. Based on this percentage, he suggested that had the plaintiff received t-PA, he more likely than not would have avoided stroke-related injuries. But this suggestion completely overlooks the 45.2% of people who recovered even without the benefit of t-PA. For a small number of patients who would not otherwise have recovered, t-PA would offer some advantage, but for the majority of

patients whose conditions would not improve on their own, the administration of the drug would make no difference.

Experts may present epidemiological statistics in different ways to indicate causation. Either absolute or relative calculations may suffice in particular circumstances to achieve the causation standard. See, e.g., Smith v. Bubak, 643 F.3d 1137, 1141-42 (8th Cir. 2011) (rejecting relative benefit testimony and suggesting in dictum that absolute benefit "is the measure of a drug's overall effectiveness"); Young v. Mem'l Hermann Hosp. Sys., 573 F.3d 233, 236 (5th Cir. 2009) (holding that Texas law requires a doubling of the relative risk of an adverse outcome to prove causation), cert. denied, 130 S. Ct. 1512 (2010). But the testimony here left too many unanswered questions, and it would serve no useful purpose for us to guess about what statistical measures Dr. Tikoo might have used in an alternate universe. The methods that Dr. Tikoo employed and the data that he presented were simply too distant from the conclusion that he drew, thus negating an adequate fit.

Daubert demands relevancy, and Dr. Tikoo's testimony falls short of this requirement. As a result, it does not support a finding of causation under Maine law. The testimony was, therefore, inadmissible under Daubert and Rule 702.

Many aspects of science are a mystery to laymen without the aid of experts. In the world of the blind, the one-eyed man is

king; and Daubert relevancy is the sentry that guards against the tyranny of experts. As the gatekeeper, the trial judge has the duty to insulate the jury from expert testimony when reliance on authoritative studies and methods threatens to mask the lack of an adequate fit. An expert might be able to testify on the phases of the moon to prove that it was dark by a particular time, but he could not offer the same testimony to prove that a person was likely to act in an unusual manner on that night. Daubert, 509 U.S. at 591-92.

This is a hard case. When the harm alleged is a failure to treat and the causation standard is more likely than not, a plaintiff must vault over a higher bar in order to prove that the failure to treat a condition in a particular way — rather than the underlying condition itself — caused the adverse outcome. We understand that the plaintiff, given the benefit of hindsight, may wish that he was given any treatment offering even a tiny chance of preventing the adverse outcome that he experienced, regardless of the risk. But that is not the question that the district court was duty-bound to answer. Instead, the court was tasked with determining whether the evidence could support the expert's conclusion that there was causation, and it fulfilled that responsibility.

D. The Other Evidence.

After the district court excluded Dr. Tikoo's testimony, the plaintiff claimed to have identified two alternate causation experts: Dr. Maryann Walsh (an employee of the Hospital) and Dr. Elsayed Hussein (his treating physician in Brooklyn). The court precluded this testimony primarily as a sanction for the plaintiff's failure seasonably to designate either physician as a causation expert. Samaan VII, 274 F.R.D. at 45-50. The plaintiff assigns error to this ruling. He argues that he properly designated both doctors as causation experts; that in all events, preclusion was too severe a sanction; and that the testimony should have been allowed on independent grounds, regardless of any discovery violation.

We review the district court's exclusionary order for abuse of discretion. Santiago-Díaz v. Laboratorio Cliníco y de Referencia del Este & Sara López, M.D., 456 F.3d 272, 275 (1st Cir. 2006). "This standard of review obtains both as to the finding that a discovery violation occurred and as to the appropriateness of the sanction selected." Id.

The Civil Rules require litigation adversaries to disclose to each other the identity of proposed expert witnesses and the subjects on which their testimony will be offered. Fed. R. Civ. P. 26(a)(2)(A)-(C). Time is of the essence, and the disclosures must be made well in advance of trial. See generally

Fed. R. Civ. P. 26(a)(2)(D). In this case, the district court entered a pretrial order requiring the reciprocal disclosure of experts by specified deadlines. In response, the plaintiff designated Dr. Tikoo "to testify that the defendants' failure to administer t-PA to Mr. Samaan, more likely than not, was a proximate or legal cause" of his injuries. By contrast, he designated unnamed "medical treatment providers" (a blanket term that he now asserts included Drs. Walsh and Hussein) to "testify regarding their treatment of [the plaintiff], the cost of such treatment . . . , the level of disability that they have assessed him with, [and] the reasonably foreseeable medical treatment he will require into the future." This designation further recited that those anonymous physicians would "testify consistent with their medical reports." Words such as "causation" and "t-PA" were conspicuously absent from this designation.

Taking the plaintiff's designations in context and crediting his assertion that Drs. Walsh and Hussein were within the penumbra of "medical treatment providers," it is nose-on-the-face plain that these two physicians were intended to be fact witnesses who would testify only as to the nature of the plaintiff's condition and the extent of his damages. The plaintiff knew how to designate a causation expert — his designation of Dr. Tikoo was direct and to the point — and he did not make even a semblance of such a designation with respect to Drs. Walsh and Hussein. We

agree with the district court that the plaintiff did not adequately identify either one as a causation expert.

In an attempt to salvage the disputed testimony, the plaintiff adverts to a sentence in the "medical treatment providers" designation, which states that the physicians would testify "consistent with their medical reports." This reference cannot carry the weight that the plaintiff loads upon it. The designation declares that medical treatment providers, presumably including Drs. Walsh and Hussein, will be called as witnesses on four subjects: past treatment rendered by them, the cost of that treatment, the level of disability, and anticipated future treatment. It goes on to limit this designation by averring that the providers will testify on these subjects "consistent with their medical reports." Viewed in this light, the reference to "medical reports" cannot plausibly be read to enlarge the scope of the designation.

In an effort to change the trajectory of the debate, the plaintiff cites Dr. Hussein's retrospective note in a July 5, 2007 "to whom it may concern" letter, which was intended to help the plaintiff obtain insurance benefits. The letter remarks that "[t]he patient should have received a TPA shot which if given 3 hours window before 2:20 a.m. should have saved his left side from paralysis." He argues at great length about the admissibility of this statement and suggests that Dr. Hussein should have been

permitted to testify about it. This suggestion puts the cart before the horse.

The district court found that Dr. Hussein had not been properly designated as a causation expert (and, therefore, could not offer expert opinion evidence on causation). The admissibility vel non of the letter is not material to that determination. The relevant question is whether the record supports the district court's finding that Dr. Hussein was not properly designated to speak to causation. It does. That is the end of the matter.

The plaintiff has another string to his bow. The district court sanctioned the plaintiff for the discovery violation by excluding the witnesses' opinion testimony on causation. See Fed. R. Civ. P. 37(c)(1) (empowering district courts to impose this type of sanction). The plaintiff insists that even if his failure to designate Drs. Walsh and Hussein constituted a discovery violation, the sanction that the district court selected was too severe.

A district court has wide discretion in choosing sanctions for discovery violations. See Santiago-Díaz, 456 F.3d at 275. Even so, when "[a] sanction carrie[s] the force of a dismissal, the justification for it must be comparatively more robust." Esposito, 590 F.3d at 79. In evaluating whether a specific sanction is appropriate in a given case, we take into account "a multiplicity of pertinent factors, including the history

of the litigation, the proponent's need for the challenged evidence, the justification (if any) for the late disclosure, and the opponent's ability to overcome its adverse effects," including "[s]urprise and prejudice." Macaulay v. Anas, 321 F.3d 45, 51 (1st Cir. 2003). We may also take into account "what the late disclosure portends for the court's docket." Id.

In this situation, some factors weigh in favor of the plaintiff. He did not have a history of noncompliance with the district court's orders and his need for causation evidence was great. Those factors, however, comprise only part of the story.

The plaintiff offered absolutely no justification for the late designation. In addition, the district court pushed back the trial date more than once in a painstaking attempt to determine whether the plaintiff could make out a triable issue on causation. Throughout this process, the plaintiff gave no hint that he believed he had designated any causation expert other than Dr. Tikoo. Although he knew for many months that the defendants were challenging the admissibility of Dr. Tikoo's testimony, he took no steps to designate either Dr. Walsh or Dr. Hussein as a backup. A party who knowingly chooses to put all his eggs in one basket is hard-pressed to complain when the basket proves inadequate and the trial court refuses to allow him to substitute a new and previously undisclosed basket for it.

The sockdolager, of course, is the extreme prejudice that would have attended an eleventh-hour decision to allow the plaintiff to convert two fact witnesses into experts on causation. The deadline for designating the plaintiff's experts expired on March 30, 2010, and discovery closed on August 16 of that year. From that date forward, the defendants pursued litigation strategies based on their justifiable understanding that Dr. Tikoo was the plaintiff's only causation expert. Their strategic direction was made manifest by the filing in tandem of a motion to exclude Dr. Tikoo's testimony and a motion for summary judgment premised on the plaintiff's inability, without that testimony, to prove causation.

It was not until March of 2011 — nearly a year after the deadline for designating experts, seven months after discovery closed, three months after the exclusion of Dr. Tikoo's testimony, and a mere month before the scheduled start of trial — that the plaintiff for the first time claimed that Drs. Walsh and Hussein had been designated all along to provide expert testimony on causation. It strains credulity to explain the plaintiff's actions as anything other than a Hail Mary pass to resurrect a case fatally wounded by Dr. Tikoo's exclusion.

The district court dealt with this complicated case for several years. When faced with an egregious discovery violation, it weighed the relevant factors and made a sensible (though not

inevitable) choice of sanctions. We cannot, from the remote vista of an algid appellate record, second-guess that choice. We hold, therefore, that the sanction imposed, though severe, was within the realm of the district court's discretion.

There remains the plaintiff's optimistic assertion that Drs. Walsh and Hussein should have been allowed to testify on causation regardless of whether they were designated as experts with respect to that subject. He offers a different rationale for each of those physicians. Dr. Walsh worked for the Hospital, and the plaintiff argues that her views regarding the effectiveness of t-PA are admissions of a party-opponent, see Fed. R. Evid. 801(d)(2), and admissible on that basis. As to Dr. Hussein, the plaintiff suggests that the statement about causation contained in the "to whom it may concern" letter and other statements should be admitted because they come within the class of statements made for the purpose of medical diagnosis or treatment. See Fed. R. Evid. 803(4).

These assertions are problematic on their face, but we need not inquire into them. In a medical malpractice case, Maine law requires expert testimony on causation unless the causal connection is a matter of common knowledge and experience. See Cox, 406 A.2d at 622. Given the complex medical question that underlies the issue of causation in this instance, expert testimony was essential. See Cyr, 108 A.2d at 318. Thus, witnesses who were

not designated to speak as experts on causation, such as Drs. Walsh and Hussein, could not supply competent proof of causation. Consequently, the district court did not abuse its discretion in excluding the proffered evidence.

E. The Emotional Distress Claim.

It cannot be gainsaid that, absent proof of causation, the plaintiff's medical malpractice claim failed. Hence, the defendants were entitled to summary judgment on that claim.

Here, however, the plaintiff advanced a second claim — for negligent infliction of emotional distress — and he insists that this claim should have been allowed to go forward. We think not.

We review a district court's entry of summary judgment de novo, considering the facts and all inferences therefrom in the light most hospitable to the non-moving party (here, the plaintiff). Houlton Citizens' Coal. v. Town of Houlton, 175 F.3d 178, 184 (1st Cir. 1999). Affirmance is warranted if the record demonstrates "that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a).

Maine law requires a plaintiff to prove causation as an element of a claim for negligent infliction of emotional distress. See Curtis v. Porter, 784 A.2d 18, 25 (Me. 2001). When such a claim arises in a medical setting, the Law Court has made it

pellucid that the claim falls within the ambit of "professional negligence" under the MHSA. Saunders, 902 A.2d at 832-33; see Me. Rev. Stat. Ann. tit. 24, § 2502(6). This ensures that form will not triumph over substance.

The plaintiff in this case had the burden of proving causation to a reasonable medical probability. Me. Rev. Stat. Ann. tit. 24, § 2502(7). The only damages alleged by the plaintiff incident to his claim for negligent infliction of emotional distress relate to the emotional suffering and depression resulting from his failure to recover from the incipient stroke.[8] As we already have explained, the plaintiff could not prove to a reasonable medical probability that his injuries were caused by the defendants' failure to administer t-PA. See supra Part II(C). It follows inexorably that he could not carry his burden of proof on the issue of whether the wholly congruent failure to administer t-PA caused the emotional damages he suffered as a result of those injuries.

[8] At oral argument in this court, plaintiff's counsel asserted that his client had suffered emotional damages as a result of the "fact that [the doctors] failed to even discuss with him the treatment that was . . . required." The plaintiff has neither pleaded nor adequately briefed this theory of damages. Accordingly, we will not entertain it here. See United States v. Gertner, 65 F.3d 963, 971 n.7 (1st Cir. 1995); United States v. Zannino, 895 F.2d 1, 17 (1st Cir. 1990).

III. CONCLUSION

We need go no further. The district court handled this difficult case with commendable skill and, for the reasons elucidated above, we uphold the judgment that it entered.

Affirmed.