****

The "officially released" date that appears near the beginning of each opinion is the date the opinion will be published in the Connecticut Law Journal or the date it was released as a slip opinion. The operative date for the beginning of all time periods for filing postopinion motions and petitions for certification is the "officially released" date appearing in the opinion. In no event will any such motions be accepted before the "officially released" date.

All opinions are subject to modification and technical correction prior to official publication in the Connecticut Reports and Connecticut Appellate Reports. In the event of discrepancies between the electronic version of an opinion and the print version appearing in the Connecticut Law Journal and subsequently in the Connecticut Reports or Connecticut Appellate Reports, the latest print version is to be considered authoritative.

The syllabus and procedural history accompanying the opinion as it appears on the Commission on Official Legal Publications Electronic Bulletin Board Service and in the Connecticut Law Journal and bound volumes of official reports are copyrighted by the Secretary of the State, State of Connecticut, and may not be reproduced and distributed without the express written permission of the Commission on Official Legal Publications, Judicial Branch, State of Connecticut.

****

ERIC KLEIN ET AL. *v.* NORWALK HOSPITAL
(SC 18395)

Katz, Palmer, McLachlan, Eveleigh and Vertefeuille, Js.

Argued September 20—officially released December 21, 2010

Brenden P. Leydon, with whom, on the brief, was *Patrick J. Filan*, for the appellant (named plaintiff).

Frank W. Murphy, with whom was *Kara A. T. Murphy*, for the appellee (defendant).

Opinion

KATZ, J. The named plaintiff, Eric Klein,[1] appeals, following our grant of his petition for certification, from the judgment of the Appellate Court affirming the trial court's judgment, rendered after a jury verdict in a medical malpractice action, in favor of the defendant, Norwalk Hospital. The plaintiff claims that the Appellate Court, without reaching the merits of his individual claims, improperly concluded that it constituted harmless error when the trial court: (1) on the basis of what it considered to be inadequate disclosure, precluded testimony by one of the plaintiff's expert witnesses to refute the defendant's theory of causation; and (2) admitted testimony from one of the defendant's expert witnesses as to this alleged cause without establishing the reliability of the basis of that opinion pursuant to a *Porter* hearing.[2] We reverse the judgment of the Appellate Court.

The Appellate Court opinion recites the following facts and procedural history pertinent to the plaintiff's appeal. "On February 27, 2003, the plaintiff, a dentist, was admitted [by the defendant] because of a perforated appendix and infectious abscesses. Later that day, he underwent emergency surgery to remove his burst appendix as well as a portion of his large intestine that had a cyst on it. The plaintiff recuperated during the immediate postoperative period as a patient in the hospital. Part of his postoperative treatment was intravenous antibiotic therapy to address the infection that resulted from his appendix bursting. On March 3, 2003, as part of her duties as a registered nurse employed by the [defendant] on its intravenous team, Patricia DePaoli inspected the plaintiff's existing intravenous lines to determine if they required changing or other treatment. Morton Klein, the plaintiff's father, was in the room visiting his son when DePaoli entered. Upon inspection, DePaoli discovered, on the back of the plaintiff's left hand, around an existing intravenous site, an area of low grade phlebitis.[3] She began to replace the existing intravenous line in his left hand with a new intravenous line farther up his arm. During this procedure, Morton Klein testified, his son shouted out in pain on three occasions and that after the third incident, DePaoli terminated her attempt at inserting an intravenous line into the plaintiff's left arm. Morton Klein, however, did not see any of the procedure performed by DePaoli on his son's left arm.

"The plaintiff testified that during the procedure to place a new intravenous line into his left arm, he felt a distinct and sharp pain shooting down his arm just after DePaoli inserted the needle. He exclaimed in pain but allowed DePaoli to keep going with the procedure. He felt another sharp pain and again exclaimed, telling DePaoli that she had hit a nerve. DePaoli continued with the procedure until the plaintiff exclaimed in pain

for a third time, complaining that his entire left hand had gone 'dead' and telling DePaoli to remove the needle. After applying a dry sterile dressing to the area of the unsuccessful attempt, DePaoli then, without incident, inserted another intravenous line in the plaintiff's right arm.

"After his release [by the defendant], the plaintiff asserted that he was having ongoing difficulties using his left hand and saw many medical specialists, including neurologists and a hand surgeon. These lingering effects were diagnosed, according to the plaintiff, as anterior interosseous[4] nerve palsy caused by an improper attempted intravenous line insertion and had a negative impact on his dental practice and overall quality of life. He brought this action against the [defendant], alleging medical malpractice on its part for the alleged improper insertion of the intravenous line by its employee, DePaoli, which resulted in the diagnosis of anterior interosseous nerve palsy.

"On January 11, 2006, the plaintiff, pursuant to Practice Book § 13-4 (4), disclosed Clifford Gevirtz, an anesthesiologist specializing in pain management, as an expert witness. According to the disclosure, Gevirtz was to testify on matters concerning the standard of care to which the defendant was held, departures from the standard of care, causation and damages. [The defendant thereafter disclosed Robert Strauch, an orthopedic surgeon, as an expert to testify that the plaintiff's alleged injury was caused by a condition called Parsonage Turner Syndrome.][5] [Gervirtz] was not specifically disclosed as an expert on Parsonage Turner Syndrome nor was it disclosed that he would be testifying [specifically] about the disease. During his direct examination of Gevirtz, Patrick J. Filan, counsel for the plaintiff, asked [Gevirtz] if he was 'familiar with the condition known as Parsonage Turner Syndrome.' The court sustained the defendant's objection on the ground that the plaintiff's disclosure did not encompass Gevirtz' testifying on the syndrome because the plaintiff was not 'in compliance with the Practice Book requirement with respect to disclosure in order to use this expert witness for [that] purpose.' The court allowed Filan, outside of the jury's presence, to make a proffer as to what Gevirtz would have testified to in regard to Parsonage Turner Syndrome. [In that proffer, Gevirtz described Parsonage Turner Syndrome, established his familiarity and expertise with that syndrome, stated his opinion that this syndrome was not the cause of the plaintiff's alleged injury, and explained the basis for that conclusion.][6]

* * *

"Later in the trial, Frank W. Murphy, counsel for the defendant, called [Strauch] . . . to testify as an expert witness on the requisite standard of care and causation. The court, upon Filan's objection, conducted a *Porter*

hearing to determine whether, and if so, what scientific methodology would allow [Strauch] to diagnose, within a reasonable degree of medical certainty, without examination, the plaintiff's [alleged] injury as being caused by Parsonage Turner Syndrome. After voir dire examination by both Murphy and Filan, the court allowed Strauch to testify that, on the basis of his review of the plaintiff's medical records and deposition testimony, the plaintiff's alleged injury was caused by Parsonage Turner Syndrome." *Klein* v. *Norwalk Hospital*, 113 Conn. App. 771, 773–77, 967 A.2d 1228 (2009).

The record reveals the following additional facts. After the conclusion of evidence, closing arguments, and the instructions to the jury, the trial court submitted the case to the jury for deliberation, along with special interrogatories. The jury answered the first interrogatory in the negative: "Did the plaintiff . . . prove by a preponderance of the evidence that [the] defendant . . . in its care and treatment of [the plaintiff] breached the standard of care for registered nurses in any of the ways alleged in the complaint?" Along with their answer, the jury returned a verdict for the defendant, which subsequently was accepted by the trial court. The plaintiff thereafter filed a motion to set aside the verdict and a motion for a new trial, both of which were denied by the trial court. The plaintiff thereafter appealed to the Appellate Court from the judgment rendered in accordance with the verdict.

In the Appellate Court, the plaintiff claimed that the trial court improperly had excluded Gevirtz' testimony about Parsonage Turner Syndrome and that the trial court improperly had permitted Strauch's testimony about the same subject. The Appellate Court did not reach the propriety of either of the trial court's rulings, but instead concluded that any impropriety that may have existed was harmless. In doing so, the Appellate Court relied on the standard this court had articulated in *Kalams* v. *Giacchetto*, 268 Conn. 244, 842 A.2d 1100 (2004), that "[i]n the absence of a showing that the [excluded] evidence would have affected the final result, its exclusion is harmless." (Internal quotation marks omitted.) *Klein* v. *Norwalk Hospital*, supra, 113 Conn. App. 778, quoting *Kalams* v. *Giacchetto*, supra, 250. Accordingly, the Appellate Court affirmed the judgment of the trial court. This certified appeal followed.[7]

In the present appeal, the plaintiff claims that: (1) the trial court's exclusion of Gevirtz' testimony about Parsonage Turner Syndrome was improper; (2) the trial court's admission of Strauch's testimony about the same subject was improper; and (3) the Appellate Court improperly concluded that these decisions, even if they were improper, were harmless. We agree that the evidentiary rulings of the trial court were improper and that the plaintiff is entitled to a new trial.

I

The plaintiff first claims that it was both improper and harmful for the trial court to exclude Gevirtz' testimony regarding Parsonage Turner Syndrome. Specifically, the plaintiff contends that the trial court improperly concluded that his initial disclosure that Gevirtz would testify regarding the cause of the plaintiff's injuries was not adequate to comply with the rules of practice and that, to do so, the plaintiff would have needed to file a supplemental disclosure specifically stating that Gevirtz would offer an opinion that the plaintiff's injuries had not been caused by Parsonage Turner Syndrome. The plaintiff further contends that his disclosure was sufficient to apprise the defendant in light of the fact that the testimony the plaintiff attempted to elicit from Gevirtz related to its own defense. Finally, the plaintiff contends that the exclusion of this evidence was harmful because it addressed the central issue in the case and undermined the credibility of his key expert witness' methodology. In response, the defendant claims that the exclusion of Gevirtz' testimony was proper because he had not been adequately disclosed, or, in the alternative, that any evidentiary impropriety arising from the exclusion of Gevirtz' testimony was harmless. We agree with the plaintiff.

A

We begin with the appropriate standard for this court's review for determining whether the exclusion of Gevirtz' testimony was improper. The trial court's exclusion of Gevirtz' testimony was based on that court's interpretation of the disclosure requirements under Practice Book § 13-4 (4),[8] specifically, the trial court's determination that testimony regarding the possible causes that are excluded during differential diagnosis of an alleged injury does not fall within an expert disclosure of "causation."[9] "[T]he proper construction of a Practice Book section involves a question of law, [over which] our review . . . is plenary." (Internal quotation marks omitted.) *Wexler* v. *DeMaio*, 280 Conn. 168, 181–82, 905 A.2d 1196 (2006).

Practice Book § 13-4 (4) "plainly requires a plaintiff to disclose: (1) the name of the expert witness; (2) the subject matter on which the expert is expected to testify; (3) the substance of the facts and opinions to which the expert is expected to testify; and (4) a summary of the ground for each opinion." Id., 180. To determine whether the plaintiff's disclosure of Gevirtz was sufficiently detailed to satisfy these requirements and allow him to testify about Parsonage Turner Syndrome, we turn to the content of that disclosure. The disclosure provides in relevant part: "Gevirtz will testify concerning the standard of care to which the defendant and its employees, agents, servants and apparent agents were held, and the departures from the standard of care. In addition, [Gevirtz] will testify concerning proximate causation and damages. . . . He will testify that the

placement of the intravenous line caused the plaintiff nerve injury . . . . Without limitation to the foregoing, [Gevirtz] will testify concerning the allegations in the plaintiff's complaint and the plaintiff's medical course in general. . . . It is [Gevirtz'] opinion . . . that the aforesaid departures from the standard of care [the needle stick] caused and resulted in the injuries and damages alleged by the plaintiff." The disclosure also included a list of the various bases for Gevirtz' opinions.

Our review of the plaintiff's disclosure of Gevirtz leads to the conclusion that it adequately complied with these requirements. The disclosure obviously identifies Gevirtz' name and provides, inter alia, that he would be testifying regarding the cause of the plaintiff's nerve injury. Insofar as the plaintiff's disclosure of Gevirtz made clear that he would testify as to what *was* the cause of the plaintiff's alleged injury, the disclosure implicitly indicated that Gervitz also could be expected to testify about what was *not* the cause of the plaintiff's alleged injury. "Critical to establishing specific causation is exclusion of other possible causes of symptoms." *Mancuso* v. *Consolidated Edison Co. of New York*, 967 F. Sup. 1437, 1446 (S.D.N.Y. 1997). As this court recently acknowledged, "differential diagnosis is a method of diagnosis that involves a determination of which of a variety of possible conditions is the probable cause of an individual's symptoms, often by a process of elimination." *DiLieto* v. *County Obstetrics & Gynecology Group, P.C.*, 297 Conn. 105, 114 n.13, 998 A.2d 730 (2010). In the present case, Gevirtz was permitted to testify that, in his expert opinion, the plaintiff's alleged injury "can only happen as a result of negligence as a result of deviating from the standard of care." To the extent that this conclusion was the result of Gevirtz' differential diagnosis, it necessarily was based on his consideration and elimination of the other possible causes for the alleged injury, including the theory of causation advanced by the defendant. This court never has articulated a requirement that a disclosure include an exhaustive list of each specific topic or condition to which an expert might testify as the basis for his diagnosis; disclosing a categorical topic such as "causation" generally is sufficient to indicate that testimony may encompass those issues, both considered and eliminated, necessary to explain conclusions within that category.

On a more fundamental level, a disclosure generally complies with the requirements of Practice Book § 13-4 (4) so long as it adequately alerts the defendant to the basic nature of the plaintiff's case. See, e.g., *Vitone* v. *Waterbury Hospital*, 88 Conn. App. 347, 353–55, 869 A.2d 672 (2005); *Menna* v. *Jaiman*, 80 Conn. App. 131, 135–36, 832 A.2d 1219 (2003); see also *Wexler* v. *DeMaio*, supra, 280 Conn. 187 (approvingly citing these cases for principle that "a disclosure fails to comply with § 13-4 [4] only when the disclosure fails to apprise the

defendant of the basic details of the plaintiff's claim"). Of course, in the present case, it was the defendant that claimed that Parsonage Turner Syndrome was the cause of the plaintiff's injury, whereas the plaintiff claimed it was not. The plaintiff contends, and the defendant does not dispute, that Strauch had informed the defendant of Strauch's conclusion that this syndrome was the cause of the plaintiff's injury well in advance of the defendant's deposition of Gevirtz. Indeed, as the record reflects, the defendant had notice not only of the "basic details" of the plaintiff's case, but it also anticipated the possibility of testimony from the plaintiff's experts excluding Parsonage Turner Syndrome as the cause of the plaintiff's alleged injury. At Gevirtz' deposition, defense counsel undertook the following examination as set forth in the plaintiff's brief to this court:

"Q. Are there any diseases or infections that can impair the functioning of the [anterior interosseous] nerve regardless of the needle stick or aside from the needle stick?

"A. There are a multitude of neurologic diseases that can affect individual nerves.

"Q. Are there any neurological diseases that can occur after surgery that could impair the functioning of the [anterior interosseous] nerve?

"A. Only in the most extreme cases—if a patient has a stroke, or the patient has an embolism, things like that; but there is absolutely, absolutely no indication that that happened here."

This examination by the defendant's counsel clearly was designed to elicit Gevirtz' opinion on the feasibility of neurological diseases, one of which is Parsonage Turner Syndrome, as a possible cause of the plaintiff's alleged injury. Further, in the plaintiff's opening statement to the jury, six days before Gevirtz testified, counsel said: "[Y]ou are going to hear about a condition . . . called Parsonage Turner Syndrome. . . . There will be a claim that this injury is totally unrelated to this needle stick and is due to this Parsonage Turner Syndrome. . . . Gevirtz will tell you . . . that the cause of the nerve injury was the [intravenous] needle stick and nothing else, and specifically not Parsonage Turner Syndrome." There is no question, considering this evidence, that the defendant was apprised adequately of the details of the plaintiff's claim, the general substance of Gevirtz' testimony that would be offered to attempt to prove that claim, and his rejection of any neurological diseases, including Parsonage Turner Syndrome, as a cause of the plaintiff's alleged injury. There was, accordingly, no need for the plaintiff to file a supplemental disclosure. Accordingly, the trial court improperly precluded the plaintiff from offering Gevirtz' testimony as to his exclusion of Parsonage Turner Syndrome as a

possible cause of the plaintiff's alleged injury.

B

"[B]efore a party is entitled to a new trial because of an erroneous evidentiary ruling, he or she has the burden of demonstrating that the error was harmful." (Internal quotation marks omitted.) *Kalams* v. *Giacchetto*, supra, 286 Conn. 249. "In other words, an evidentiary ruling will result in a new trial only if the ruling was both wrong and harmful. . . . Moreover, an evidentiary impropriety in a civil case is harmless only if we have a fair assurance that it did not affect the jury's verdict. . . . A determination of harm requires us to evaluate the effect of the evidentiary impropriety in the context of the totality of the evidence adduced at trial."[10] (Citations omitted; internal quotation marks omitted.) *Hayes* v. *Camel*, 283 Conn. 475, 488–89, 927 A.2d 880 (2007). Our review of the Appellate Court's conclusions of law, including the determination that any evidential improprieties were harmless, is plenary. *State* v. *Rigual*, 256 Conn. 1, 6, 771 A.2d 939 (2001).

In those instances wherein a party claims that the trial court improperly excluded testimony, we undertake a review of the relationship of the excluded evidence to the central issues in the case and whether that evidence would have been merely cumulative of admitted testimony. *Sullivan* v. *Metro-North Commuter Railroad Co.*, 292 Conn. 150, 162, 971 A.2d 676 (2009). Our review of the entire record in the present case in light of these considerations compels the conclusion that there is no fair assurance that the evidentiary impropriety did not affect the jury's verdict because the improperly excluded testimony was essential to the central issue in this case and was not wholly cumulative of other testimony or evidence.

In the present case, the first interrogatory asked the jury: "Did the plaintiff . . . prove by a preponderance of the evidence that [the] defendant . . . in its care and treatment of [the plaintiff] breached the standard of care for registered nurses in any of the ways alleged in the complaint? . . . If you answered 'No' complete [the] defendant's verdicts forms with respect to [the defendant] and proceed no further." Because the jury answered this interrogatory in the negative, disregarded the other interrogatories and immediately entered a verdict for the defendant, it is clear, that the issue of breach was essential to the case, as it was wholly dispositive of the outcome. See also *Sturm* v. *Harb Development, LLC*, 298 Conn. 124, 139, 2 A.3d 859 (2010) ("[t]he essential elements of a cause of action in negligence are well established: duty; *breach of that duty*; causation; and actual injury" [emphasis added; internal quotation marks omitted]).

The defendant claims that because Gevirtz' excluded testimony about Parsonage Turner Syndrome would

have been irrelevant to the issue of breach, but instead, would have dealt *only* with the question of causation, the impropriety was harmless. This argument fails, however, to account for the nature of a differential diagnosis. Because the present case essentially presented a choice as to the causation of the plaintiff's alleged injury between the defendant's theory of Parsonage Turner Syndrome and the plaintiff's theory of an intravenous needle stick, breach of the standard of care and causation were intertwined not only in Gevirtz' differential diagnosis, but also in the framing of the case generally. The determination of whether the defendant had breached the standard of care could be reduced to the question of what caused the plaintiff's alleged injury, and the only possible causes presented to the jury were Parsonage Turner Syndrome or the defendant's alleged breach of the standard of care. Consequently, whether Parsonage Turner Syndrome could have caused the plaintiff's alleged injury was therefore central to the question of not only causation, but breach as well. This centrality was underscored in the jury summations, when the plaintiff's counsel noted that "hitting that [anterior interosseous] nerve is a violation of the standard of care."[11]

Although Gevirtz' testimony ruling out Parsonage Turner Syndrome as the cause of the plaintiff's injury went to both breach and causation, the central issues in the case, if that evidence would have been merely cumulative of other testimony, its exclusion might well have been harmless. Gevirtz, however, was the plaintiff's only witness who testified that the defendant's employee had "deviated from the standard of care," and his reasons for that conclusion provided the only evidence offered by a physician that the defendant had breached the standard of care. Because that conclusion rested on a differential diagnosis of the plaintiff's alleged injury, that diagnosis and its component exclusions of other possible causes were uniquely important to the issue of breach, and accordingly, were not replicated by any other evidence at trial. The other expert testimony excluding Parsonage Turner Syndrome addressed only causation, and did not address the question of breach.[12] See *Sullivan* v. *Metro-North Commuter Railroad Co.*, supra, 292 Conn. 163–64 (concluding that testimony was crucial when witness was "the only expert proffered to testify on the issue; his testimony would thus not have been cumulative of other validly admitted testimony" [internal quotation marks omitted]).

Additionally, it is significant, in our view, to consider that Gevirtz' excluded testimony also would have aided in establishing his credibility as an expert and the reliability of his ultimate conclusions in the eyes of the jury. In other words, but for the trial court's improper exclusion, Gevirtz could have explained not only that he had rejected the defense theory of Parsonage Turner

Syndrome as a cause, but also why he had done so. See *In re Paoli Railroad Yard PCB Litigation*, 35 F.3d 717, 759 n.27 (3d Cir. 1994) ("where a defendant points to a plausible alternative cause and the [physician] offers no explanation for why he or she has concluded that was not the sole cause, that [physician's] methodology is unreliable").[13] By precluding Gevirtz from addressing what had, since opening statements, been the clear defense theory, the trial court necessarily undermined, in the eyes of the jury, the reliability of Gevirtz' methodology and his testimony as a whole. Furthermore, in light of Strauch's concededly extensive experience with treating Parsonage Turner Syndrome, the exclusion of Gevirtz' testimony eliminating that syndrome as a cause concomitantly "affected the jury's perception of the remaining evidence." (Internal quotation marks omitted.) *Rhode* v. *Milla*, 287 Conn. 731, 745, 949 A.2d 1227 (2008). Accordingly, we conclude that the trial court's impropriety in precluding Gevirtz' expert testimony was harmful, and that the plaintiff is entitled to a new trial.

II

Although we have concluded that this case must be remanded for a new trial, it is appropriate that we address issues that are likely to recur on retrial. See *State* v. *Gupta*, 297 Conn. 211, 234, 998 A.2d 1085 (2010); *Burns* v. *Hanson*, 249 Conn. 809, 828–30, 734 A.2d 964 (1999). We therefore will address the plaintiff's additional claim that the trial court improperly admitted expert testimony by Strauch, one of the defendant's witnesses, regarding the cause of the plaintiff's alleged injury. As we previously have noted, Strauch was permitted to testify, solely on the basis of his review of the plaintiff's medical records and deposition testimony, that the plaintiff's injury had been caused by Parsonage Turner Syndrome. The plaintiff contends that, under our decision in *State* v. *Porter*, 241 Conn. 57, 698 A.2d 739 (1997), cert. denied, 523 U.S. 1058, 118 S. Ct. 1384, 140 L. Ed. 2d 645 (1998), the defendant did not sufficiently demonstrate that Strauch's opinion was based on reliable methodology. We conclude that the trial court's admission of that portion of Strauch's testimony was improper.

The record reveals the following additional facts. During Strauch's testimony, the plaintiff objected and requested a *Porter* hearing, which the trial court held to evaluate the reliability of Strauch's conclusion that, to a reasonable degree of medical certainty, Parsonage Turner Syndrome caused the plaintiff's alleged injury. During the defendant's voir dire in the *Porter* hearing, Strauch testified as to his familiarity with Parsonage Turner Syndrome, the nature of that syndrome, his review of the plaintiff's medical records, and his opinion that reviewing such records could allow him to diagnose Parsonage Turner Syndrome. During the plaintiff's voir

dire, Strauch acknowledged that diagnosis by review of medical records would not be his normal method of diagnosis, that the only peer review of the method he used was a single article that considered diagnoses made *both* by examination and by consideration of medical records, and that he could not speculate as to the rate of error in diagnoses by this method. Following the *Porter* hearing, the trial court allowed Strauch to testify that, to a reasonable degree of medical certainty, the plaintiff's alleged injury was caused by Parsonage Turner Syndrome.

"In *Porter*, this court followed the United States Supreme Court's decision in *Daubert* v. *Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469 (1993), and held that scientific evidence should be subjected to a flexible test, with differing factors that are applied on a case-by-case basis, to determine the reliability of the scientific evidence." (Internal quotation marks omitted.) *Maher* v. *Quest Diagnostics, Inc.*, 269 Conn. 154, 168, 847 A.2d 978 (2004). Under *Porter*, the proponent of scientific evidence and any testimony that depends on that evidence bears the burden of demonstrating that the methodology underlying the evidence is reliable and that any testimony purportedly reliant upon that evidence is in fact based on that methodology. See *State* v. *Outing*, 298 Conn. 34, 92–93, 3 A.3d 1 (2010) ("[T]here is a further hurdle to the admissibility of expert testimony when that testimony is based on . . . scientific [evidence]. In those situations, the scientific evidence that forms the basis for the expert's opinion must undergo a validity assessment to ensure reliability." [Internal quotation marks omitted.]). To carry this burden, the proponent must "provide a sufficient articulation of the methodology underlying the scientific evidence. Without such an articulation, the trial court is entirely ill-equipped to determine if the scientific evidence is reliable upon consideration of the various *Porter* factors." *Prentice* v. *Dalco Electric, Inc.*, 280 Conn. 336, 345, 907 A.2d 1204 (2006), cert. denied, 549 U.S. 1266, 127 S. Ct. 1494, 167 L. Ed. 2d 230 (2007).

"The factors a trial court will find helpful in determining whether the underlying theories and techniques of the proffered evidence are scientifically reliable will differ with each particular case." (Internal quotation marks omitted.) *State* v. *Porter*, supra, 241 Conn. 84. Nevertheless, we have approvingly "recognized the following considerations: general acceptance in the relevant scientific community; whether the methodology underlying the scientific evidence has been tested and subjected to peer review; the known or potential rate of error; the prestige and background of the expert witness supporting the evidence; the extent to which the technique at issue relies upon subjective judgments made by the expert rather than on objectively verifiable criteria; whether the expert can present and explain

the data and methodology underlying the testimony in a manner that assists the jury in drawing conclusions therefrom; and whether the technique or methodology was developed solely for purposes of litigation." (Internal quotation marks omitted.) *State* v. *Foreman*, 288 Conn. 684, 723 n.27, 954 A.2d 135 (2008), quoting *Prentice* v. *Dalco Electric, Inc.*, supra, 280 Conn. 344.

Although the trial court in this case conducted a *Porter* hearing to consider the admissibility of Strauch's testimony, the defendant did not demonstrate at the hearing the reliability of the methodology upon which Strauch relied. Notably, the defendant made no showing that Strauch's methodology had been subjected to peer review, nor was Strauch able to identify a likely rate of error for his chosen methodology. While neither of these determinations is a talismanic requirement for satisfaction of the *Porter* requirements, their absence is, in this case, determinative of the inadequacy of the defendant's proof of the methodology's reliability. See also *Maher* v. *Quest Diagnostics, Inc.*, supra, 269 Conn. 178 (concluding that requirements of *Porter* are not met, even when expert has "sufficient background and prestige" if offering party "adduced no evidence on whether [the expert's] methodology: [1] can be, and has been tested; [2] has been subjected to peer review; [3] has a known or potential rate of error; and [4] has garnered general acceptance in the relevant scientific community"). Without these or any other meaningful indicia of reliability, Strauch's conclusion was without basis in an assuredly reliable methodology; without any stated support for its reliability other than his own personal expertise, it was nothing more than his ipse dixit. See Merriam-Webster's Collegiate Dictionary (10th Ed. 1995) (defining "ipse dixit" as "an assertion made but not proved: dictum"). "Nothing . . . requires a . . . court to admit opinion evidence that is connected to existing data only by the ipse dixit of the expert." *General Electric Co.* v. *Joiner*, 522 U.S. 136, 137, 118 S. Ct. 512, 139 L. Ed. 2d 508 (1997).

In response to this claim, the defendant points out that neither *Porter* nor *Daubert* requires courts to determine the reliability of well established methodologies. In support of his claim that Strauch's testimony was based in well established methodology, the defendant points to Strauch's concededly extensive experience with treating Parsonage Turner Syndrome. That experience, however, is insufficient to qualify Strauch's methodology in reaching his conclusions as reliable. It may be sufficient to allow him to testify as to the nature of the syndrome, but it does not provide a basis for concluding that the precise methodology employed by Strauch—namely the ex post review of treating physicians' records for diagnostic purposes—is itself reliable. As this court noted in *Maher* v. *Quest Diagnostics, Inc.*, supra, 269 Conn. 172: "[O]ur exclusion of scientific evidence from the ambit of *Porter* when such evidence,

and its underlying methodology, is well established is reserved for those scientific principles that are considered so reliable within the relevant medical community that there is little or no real debate as to their validity and it may be presumed as a matter of judicial notice. As we stated in *State* v. *Porter*, supra, 241 Conn. 85 n.30, [w]e . . . acknowledge . . . that a very few scientific principles are so firmly established as to have attained the status of scientific law, such as the laws of thermodynamics, [and that such principles] properly are subject to judicial notice . . . .'' (Internal quotation marks omitted.) We disagree that Strauch's methodology rises to the level of such principles.

We do not, however, make a determination as to whether Strauch's potential future testimony and conclusions ultimately may comport with the requirements of *Porter*. To the contrary, like the trial court, we have insufficient information about the methodology employed by Strauch to enable us to reach such a decision. Some of the information that the defendant could have sought to provide that would have bolstered the reliability of Strauch's methodology includes: the rate of error of the methodology; the frequency of the medical community's use of the methodology; the unique applicability of the methodology to the specific characteristics of Parsonage Turner Syndrome; greater information regarding the peer review of the methodology; or even an explanation, beyond Strauch's ipse dixit, of why he felt that the methodology was sufficiently reliable so as not to require an examination of the plaintiff.[14] Our decision with regard to Strauch's testimony is limited to our conclusion that, if Strauch's testimony as to his diagnosis is to be offered again at a new trial, the defendant first must make a showing, not limited to the possibilities we have set forth herein, of the reliability of the methodology that underlies the testimony.

The judgment of the Appellate Court is reversed and the case is remanded to that court with direction to reverse the trial court's judgment and to remand the case to that court for a new trial.

In this opinion the other justices concurred.

[1] Jamie Klein, the named plaintiff's wife, also was a plaintiff in the trial court, asserting a claim for loss of consortium. She is not a party to this appeal. For convenience, we refer to Eric Klein as the plaintiff.

[2] See *State* v. *Porter*, 241 Conn. 57, 698 A.2d 739 (1997), cert. denied, 523 U.S. 1058, 118 S. Ct. 1384, 140 L. Ed. 2d 645 (1998).

[3] ''Phlebitis is [defined as] '[i]nflammation of a vein.' Stedman's Medical Dictionary (27th Ed. 2000) p. 1368.'' *Klein* v. *Norwalk Hospital*, 113 Conn. App. 771, 774 n.4, 967 A.2d 1228 (2009).

[4] ''[I]nterosseous'' is defined as ''lying between or connecting bones; denoting certain muscles and ligaments.'' Stedman's Medical Dictionary (28th Ed. 2006).

[5] Also known as brachial plexopathy, Parsonage Turner Syndrome is ''a rare neurological disorder which can cause pain, weakness or numbness in the arm and shoulder.'' *Benson* v. *Northwest Airlines, Inc.*, 62 F.3d 1108, 1110 (8th Cir. 1995).

[6] Gevirtz' direct testimony during the proffer, as questioned by Filan, was as follows:

''Q. . . . [A]re you familiar with the syndrome called Parsonage Turner

Syndrome?

"A. Yes, sir.

"Q. And what is it?

"A. It is a neurologic syndrome comprising pain in—usually abrupt onset of pain in the shoulder. Weakness of the girdle, the muscle girdle of the upper extremity. The pain is very severe, usually described from a pain management point of view as eight over ten or greater. And it gradually decreases over time. You are left with muscle wasting.

"Q. And what role, if any, does an acute injury play in allowing one to make a conclusion that a given neurological condition is Parsonage Turner Syndrome?

"A. It has been—Parsonage Turner Syndrome, the etiology has been attributed to various traumas, to various surgical issues. In other words, it can happen postoperatively and things like that.

"Q. And in this case what opinion do you have concerning whether or not this was due—the plaintiff's injury was due to Parsonage Turner Syndrome?

"A. It is not due to Parsonage Turner Syndrome.

"Q. What is the basis for that opinion?

"A. Because the injury is entirely compatible with a needle injuring the anterior interosseous nerve. The pain that . . . [the plaintiff] experienced the night before is most compatible with either a minor pulmonary embolism or some minor cardiac event.

"Q. What is the significance of having pain as a general matter the night before—prior to Parsonage Turner Syndrome?

"A. Well, that is the heralding event, is that you get shoulder pain.

"Q. Okay. So shoulder pain is the heralding event. Okay. And have you studied Parsonage Turner Syndrome?

"A. Yes, sir.

"Q. Have you treated Parsonage Turner Syndrome?

"A. Yes, sir.

"Q. Have you published on Parsonage Turner Syndrome?

"A. Yes, sir.

"Q. Is this within your area of expertise?

"A. I believe so. Yes, sir."

[7] We granted the plaintiff's petition for certification to appeal limited to the following issue: "Whether the Appellate Court properly affirmed the judgment on the ground of harmless error?" *Klein* v. *Norwalk Hospital*, 292 Conn. 913, 914, 973 A.2d 662 (2009).

[8] At the relevant time of the proceedings in the present case, Practice Book (2006) § 13-4 (4) provided: "In addition to and notwithstanding the provisions of subdivisions (1), (2) and (3) of this rule, any plaintiff expecting to call an expert witness at trial shall disclose the name of that expert, the subject matter on which the expert is expected to testify, the substance of the facts and opinions to which the expert is expected to testify, and a summary of the grounds for each opinion, to all other parties within a reasonable time prior to trial. Each defendant shall disclose the names of his or her experts in like manner within a reasonable time from the date the plaintiff discloses experts, or, if the plaintiff fails to disclose experts, within a reasonable time prior to trial. If disclosure of the name of any expert expected to testify at trial is not made in accordance with this subdivision, or if an expert witness who is expected to testify is retained or specially employed after a reasonable time prior to trial, such expert shall not testify if, upon motion to preclude such testimony, the judicial authority determines that the late disclosure (A) will cause undue prejudice to the moving party; or (B) will cause undue interference with the orderly progress of trial in the case; or (C) involved bad faith delay of disclosure by the disclosing party. Once the substance of any opinion or opinions of an expert witness who is expected to testify at trial becomes available to the party expecting to call that expert witness, disclosure of expert witness information shall be made in a timely fashion in response to interrogatory requests pursuant to subdivision (1) (A) of this rule, and shall be supplemented as required pursuant to Section 13-15. Any expert witness disclosed pursuant to this rule within six months of the trial date shall be made available for the taking of that expert's deposition within thirty days of the date of such disclosure. In response to any such expert disclosure, any other party may disclose the same categories of information with respect to expert witnesses previously disclosed or a new expert on the same categories of information who are expected to testify at trial on the subject for that party. Any such expert or experts shall similarly be made available for deposition within thirty days of their disclosure. Nothing contained in

this rule shall preclude an agreement between the parties on disclosure dates which are part of a joint trial management order."

[9] While evidentiary determinations are usually reviewed for abuse of discretion; see *State* v. *Popeleski*, 291 Conn. 769, 774, 970 A.2d 108 (2009); the type of decision made by the trial court does not, in isolation, determine the appropriate standard for appellate review. To the contrary, "[r]ather than invoke a rule based strictly on a category, we conclude that the better approach is . . . [to] examine the nature of the ruling at issue in the context of the issues in the case." *State* v. *Saucier*, 283 Conn. 207, 217, 926 A.2d 633 (2007). In the present case, the trial court's exclusion of Gevirtz' testimony regarding Parsonage Turner Syndrome was not based on the individual facts of the case, but, rather, on the fact that the trial court did not "buy [the] logic" that "if he is disclosed on causation and he can say what caused it, he should be able to say what didn't cause it." On the basis of that legal conclusion, the trial court ruled that the plaintiff was not "in compliance with the Practice Book requirement with respect to disclosure in order to use this expert witness for this purpose." The trial court's conclusion ultimately resulted from the selection of a principle for interpreting and evaluating testimony in light of the terms of a disclosure, and in no way depended on the specific testimony offered or disclosure made in the present case.

[10] Because the Appellate Court did not apply the fair assurance standard in the present case, the plaintiff has urged us to clarify the harmless error requirements, both in terms of the showing required and in terms of who bears the burden of proving harmfulness. We acknowledge that our own jurisprudence and that of the Appellate Court have not been entirely consistent in stating the standard for determining harmlessness of nonconstitutional error. Since we unified our approach to harmlessness in *State* v. *Sawyer*, 279 Conn. 331, 904 A.2d 101 (2006), stating that the appellant has the burden of demonstrating that there is not a fair assurance that the improper ruling did not affect the verdict, we have twice cited to one of the standards that was in place prior to our decision in *Sawyer*, but which has been supplanted by that decision. See, e.g., *Smith* v. *Andrews*, 289 Conn. 61, 959 A.2d 597 (2008); *Desrosiers* v. *Henne*, 283 Conn. 361, 926 A.2d 1024 (2007). In *Desrosiers*, this court reached its decision on unrelated grounds, and in *Smith*, the court found no impropriety in the evidentiary decisions by the trial court; accordingly, in neither case did this court's decision rely on the incorrect standard for harmlessness review. To the extent that a clarification is appropriate, it is only to reinforce that the standard for determining whether error is harmful is the standard laid out in *Sawyer* and applied in the present case.

[11] The plaintiff's claim that, if the intravenous needle struck a nerve, the needle stick was a de facto violation of the standard of care was not disputed by the defendant. To the contrary, the defendant's trial strategy strongly suggests that the defendant recognized that striking a nerve would constitute a breach of the standard of care, and consequently, the defendant never adduced evidence suggesting that a needle stick could strike a nerve if administered in accordance with the standard of care. Instead, in addition to positing Parsonage Turner Syndrome as a potential alternative explanation for the plaintiff's alleged injury, the defendant's evidence showed that the needle stick was significantly lower on the plaintiff's arm than the plaintiff claimed. In short, the defendant's case had two principal prongs: first, that Parsonage Turner Syndrome had caused the alleged injury, and second, that DePaoli, when moving the intravenous line on the plaintiff, complied with the standard of care, which, as described by the defendant's counsel in his summation, directed her to "work up the arm . . . [not to] immediately go up to the top of the arm to the elbow area," as the plaintiff had claimed. Throughout the presentation of evidence and the summation to the jury, the plaintiff's counsel focused on the placement of the needle and the corresponding compliance with the standard of care, to the complete exclusion of any claim that the needle could have been inserted properly and still struck the plaintiff's nerve, even noting that "[i]n order to credit the plaintiff's position, you'll have to find that the needle was inserted in a place where a nurse is unlikely to insert it . . . . You would have to find that it was placed at a location where an [intravenous needle] is not likely to be placed . . . . And I suggest to you that there simply is no reason to accept that."

[12] The plaintiff's other expert, Richard Lechtenberg, a neurologist, did not testify about whether the defendant had breached the standard of care.

[13] The Appellate Court relied on our decision in *Kalams* v. *Giacchetto*, supra, 268 Conn. 244, in reaching the conclusion that Gevirtz' inability to

address Parsonage Turner Syndrome as the cause of the plaintiff's injury did not detrimentally impact his credibility with the jury. In *Kalams*, the plaintiff's expert testified that the defendant had breached the standard of care, but the trial court precluded that expert from testifying about causation. Id., 247–48. As in this case, the jury in *Kalams* reached a verdict in favor of the defendant on the issue of breach of the standard of care. Id., 249. The plaintiff in *Kalams* claimed that "the exclusion of testimony on causation was harmful because [the witness'] failure to testify on an essential element of the medical malpractice claim was bound to have undermined his credibility in the eyes of the jurors," and we affirmed the trial court's decision as harmless, without reaching the question of its propriety. Id., 250. *Kalams* is inapposite in the present case. In *Kalams*, however, the court concluded that a lack of testimony on one element of a claim could not be presumed to undermine a witness' credibility as to another separate and distinct element of a claim because we would not presume that the jury speculated as to why the expert had not been asked about a different element of the claim. Id., 250–51. In the present case, the excluded testimony was *part* of Gevirtz' opinion as to an element about which he was permitted to testify, namely, causation; its exclusion therefore undermines the reliability of Gevirtz' testimony on that specific element, as it ultimately leaves the jury with an incomplete version of that testimony.

[14] We note that the diagnosis by an expert based only upon medical records can, and frequently does, satisfy the requirements of *Porter*. See, e.g., *Poulin* v. *Yasner*, 64 Conn. App. 730, 742–43, 781 A.2d 422, cert. denied, 258 Conn. 911, 782 A.2d 1245 (2001). Indeed, diagnosis on the basis of record review can be established as reliable even in the absence of a *Porter* hearing when the testimony deals with a common and indisputable medical condition. See *Hayes* v. *Decker*, 263 Conn. 677, 688–89, 822 A.2d 228 (2003). In the present case, however, the trial court properly determined that, due in part to the rare nature of Parsonage Turner Syndrome, and Strauch's consequently infrequent experience in diagnosing it, a *Porter* hearing was necessary to determine the reliability of his diagnostic methodology.

Finally, nothing in our opinion today alters the fact that ex post diagnoses are often based in sufficiently reliable methodologies to obviate the need for a *Porter* hearing, nor does anything in our opinion today change the fact that such diagnoses are, quite frequently, properly determined to be reliable after a *Porter* hearing. To the contrary, our opinion with regard to Strauch's testimony concludes two things: first, that Strauch's specific methodology was not so well established as to favor judicial notice of its reliability, thus eliminating the need for a *Porter* hearing; and second, that at the *Porter* hearing actually held in this specific case, no evidence of the reliability of Strauch's methodology was adduced by the defendant.