STATE OF MICHIGAN

COURT OF APPEALS

WILLIAM GARCIA, personal representative of the Estate of BEVERLY KAY GARCIA, Plaintiff-Appellant, v WEST SHORE MEDICAL CENTER, RICHARD A. SCHARP, JR., M.D., and RAYMOND E. SCHMOKE, M.D., Defendants-Appellees, and MUNSON HEALTHCARE and MANISTEE COUNTY, Defendants.	UNPUBLISHED July 21, 2015 No. 320781 Manistee Circuit Court LC No. 11-014339-NH

Before: GLEICHER, P.J., and K. F. KELLY and SERVITTO, JJ.

PER CURIAM.

Can an inadequately treated skin infection caused by *streptococcus pneumoniae* lead to fatal pneumococcal pneumonia? That is the scientific issue presented in this medical malpractice lawsuit. Plaintiff's expert witness, Dr. David Goldstein, testified that under the unusual circumstances presented in this case, Beverly Garcia's incompletely treated skin infection progressed to fatal pneumococcal pneumonia. The circuit court found Dr. Goldstein's opinion unreliable under MRE 702 and MCL 600.2955 and excluded it. Because plaintiff lacked alternative causation evidence, the court granted summary disposition to defendants.

In reaching its reliability conclusion, the circuit court misunderstood the medical literature produced by Dr. Goldstein and misconstrued the legal principles underlying MRE 702 and MCL 600.2955. More fundamentally, by weighing the credibility of plaintiff's causation

theory against the defense experts' testimony, the circuit court improperly usurped the role of the factfinder, thereby abusing its discretion. We reverse.

I.

Beverly Garcia was admitted to defendant West Shore Medical Center with swelling of her left ear and redness of the skin on the left side of her face. Her white blood cell count was elevated, signaling an infection. According to Dr. Richard Scharp, Garcia's skin condition had worsened despite outpatient treatment with Cipro, an oral antibiotic. Dr. Scharp diagnosed erysipelas, the medical term for a bacterial skin infection. Erysipelas is an uncommon disorder. When it occurs, the offending bacteria most commonly belong to a species called Group *A streptococcus*. *Streptococcus pneumoniae*, a different bacterial strain, accounts for a much smaller number of erysipelas cases.[1]

Streptococcus pneumoniae bacteria normally inhabit the throat and the nose and are the most common bacterial cause of middle ear infections. Erysipelas due to *streptococcus pneumoniae* has been reported in peer-reviewed medical literature as an uncommon variant of the disease, sometimes associated with chronic middle ear infections, immunosuppression, or connective tissue disorders. Garcia's medical records indicate that she had frequent left middle ear infections and had been diagnosed with Raynaud's disease (a connective tissue disorder), rheumatoid arthritis (an autoimmune disease), and was taking Medrol when seen in the emergency room (Medrol is a steroid which may cause immunosuppression). Defendant Raymond Schmoke, M.D., who examined Garcia in the emergency room, noted that her erysipelas was "most likely . . . caused by a streptococcal infection."

Defendants concede that *streptococcus pneumoniae* can cause erysipelas. If untreated or treated incorrectly, erysipelas can develop into cellulitis, a deeper infection of the skin and underlying soft tissues. This, too, the defense admits. The defense further acknowledges that worsening cellulitis can progress to bacteremia, which means the presence of bacteria in the blood.

Defendants treated Garcia's erysipelas with intravenous Kefzol, an antibiotic. The infection worsened. Dr. Schmoke decided that Garcia's infection was due to the *herpes zoster* virus rather than to bacteria, and stopped the intravenous Kefzol. Instead, Dr. Schmoke prescribed antiviral therapy. Garcia's condition improved and Dr. Schmoke discharged her from the hospital. Defendants' infectious disease expert, Dr. Michael McIlroy, admitted that herpes zoster almost always presents with characteristic blisters called vesicles. None of the physicians who examined Garcia detected any vesicles. Dr. McIlroy agreed that "a very low number" of patients with herpes zoster present without the hallmark rash. Whether Garcia had erysipelas

[1] The italicized term *streptococcus pneumoniae* refers to the bacterial species involved in this case. Streptococcal or streptococcus pneumonia refers to the disease which took Garcia's life.

and cellulitis (plaintiff's view) or herpes zoster (defendants' claim), the parties agree that hers was an unusual case.

Four days after she went home from the hospital, Garcia returned to the emergency room complaining of nausea, vomiting, dry heaves, and headache. She told the emergency room physician, "I can't breathe, I think I've got pneumonia." The emergency physician diagnosed "nausea" precipitated by the antiviral drugs and sent Garcia home with additional medication. Within a week, Garcia was admitted to the hospital in septic shock. Blood cultures revealed the presence of *streptococcus pneumoniae*, and chest x-rays demonstrated extensive pneumonia. Garcia rapidly succumbed to multiorgan failure caused by septic shock and pneumonia.

Plaintiff alleges that defendants incorrectly diagnosed herpes zoster instead of cellulitis or worsening erysipelas and negligently discontinued Garcia's antibiotic treatment. As a consequence, plaintiff asserts, Garcia's cellulitis progressed to bacteremia and to sepsis (a severe inflammatory reaction caused by bacteremia), and then to pneumonia. Dr. David Goldstein served as plaintiff's primary causation expert. Dr. Goldstein is board certified in internal medicine and pulmonology. He received most of his training at Harvard Medical School, has practiced his medical specialties for more than two decades, and teaches internal medicine, pulmonology, and hospital medicine at Florida State University Medical School. Defendants have not challenged Dr. Goldstein's qualifications to offer causation testimony in this case.

Defendants' experts asserted at their depositions that an inadequately treated skin infection could not have caused Garcia's fatal sepsis and pneumonia, as they believe that streptococcus pneumonia cannot be acquired through hematogenous spread.[2] The defense experts admitted that *streptococcus pneumoniae* can cause erysipelas and cellulitis, and that a patient inadequately treated for a *streptococcus pneumoniae* skin infection can develop bacteremia and sepsis. Defendants' experts took issue with the third and final link in the causation chain: that *streptococcus pneumoniae* bacteremia can spread through the bloodstream and infect the lungs, causing pneumonia. According to Dr. Stanley Sherman, a pulmonologist retained by the defense, *streptococcus pneumoniae* are capable of hematogenous travel to the lungs only in patients with "right-sided endocarditis, where you have bacteria going right into the distal portions of the lung," or in patients with septic emboli. Dr. Sherman opined: "pneumococcal pneumonia does not stem from a skin infection; that doesn't happen." Defendants successfully moved for a *Daubert*[3] hearing.

Plaintiff redeposed Dr. Goldstein, eliciting in greater detail the scientific basis for his causation conclusion. Dr. Goldstein explained that although *streptococcus pneumoniae* bacteria rarely cause skin infections such as erysipelas, the medical literature confirms "it does occur." Garcia was at particular risk for infection caused by this bacterial species because she suffered from recurrent middle ear infections, Dr. Goldstein explained, which often involve *streptococcus*

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[2] Hematogenous means "disseminated by the circulation or through the blood stream." *Dorland's Illustrated Medical Dictionary* (25th ed, 1974), p 689.

[3] *Daubert v Merrell Dow Pharm, Inc*, 509 US 579; 113 S Ct 2786; 125 L Ed 2d 469 (1993).

pneumoniae. Proper treatment of Garcia's erysipelas, Dr. Goldstein continued, required 10 days of intravenous antibiotic therapy. Dr. Goldstein maintained that defendants' decision to prematurely stop the antibiotics led to a deeper skin infection (cellulitis), and then to bacteremia. "[B]acteremia with strep pneumonia can seed any organ in the body and can cause pneumonia," he opined.

Dr. Goldstein produced several medical articles supporting that *streptococcus pneumoniae* is a known cause of erysipelas and cellulitis, and that patients with erysipelas and cellulitis can develop bacteremia. As to the final link in the causation chain, that *streptococcus pneumoniae* bacteremia can cause fatal pneumonia, Dr. Goldstein primarily relied on three articles published by Medscape. The first, *Pneumococcal Infections*, states in relevant part, "*S pneumoniae* can cause a wide variety of clinical symptoms, either by direct extension from the nasopharynx or by invasion and hematogenous spread." The article identifies "[o]titis media" as a condition that can develop with "direct extension . . . from the nasopharynx," and "[b]acteremia," "[j]oint and bone infections," "[c]ardiac infections (endocarditis and pericarditis)" and "[s]oft tissue infections (eg, cellulitis, myositis, periorbital cellulitis, and abscess)" as conditions that "may develop with invasion and hematogenous spread of *S pneumoniae*[.]" The article further explains, "pneumococci may reach normally sterile areas, such as the blood, peritoneum, cerebrospinal fluid, or joint fluid, by hematogenous spread after mucosal invasion."

A second Medscape article, *Bacterial Pneumonia*, instructs that "[b]acteria from the upper airways or, less commonly, from hematogenous spread, find their way to the lung parenchyma. Once there, a combination of factors (including virulence of the infecting organism, status of the local defenses, and overall health of the patient) may lead to bacterial pneumonia."[4] A third article, *Erysipelas in Emergency Medicine Follow-up*, lists "pneumonia" as a possible complication of erysipelas. The articles note that immunocompromised patients are at heightened risk for the development of bacteremia. At his *Daubert* deposition, Dr. Goldstein emphasized that Garcia's skin infection and its progression to pneumonia were unusual medical events, but scientifically both plausible and likely given the facts of this case.

The defense experts reiterated that streptococcus pneumonia cannot be contracted through bacteremia triggered by a skin infection caused by *streptococcus pneumoniae*. Dr. McIlroy, a defense expert, characterized Dr. Goldstein's theory as "bordering on ludicrous." Notably, none of the defense experts produced any medical literature refuting Dr. Goldstein's analysis. Instead, the defense experts contended that the Medscape articles cited by Dr.

[4] We must consider the evidence, including inferences, in the light most favorable to plaintiff. Given that pneumococcal pneumonia is one of the most common causes of bacterial pneumonia, it logically follows that this article encompasses pneumonias caused by *streptococcus pneumoniae* among those that can spread hematogenously. The inference that we have drawn from the article is entirely reasonable. See *Debano-Griffin v Lake County*, 493 Mich 167, 181-182; 828 NW2d 634 (2013).

Goldstein were not "reliable" or "peer reviewed," although the latter claim is manifestly incorrect.[5]

Analyzing the factors listed in MCL 600.2955(1), the circuit court found that plaintiff failed to demonstrate that Dr. Goldstein's testimony had "been subjected to scientific testing and replication," and made no showing that Dr. Goldstein's specific opinion had been subjected to "direct peer review or publication." The defense experts' disagreement with Dr. Goldstein, the court continued, evidenced that the latter's opinion is not generally accepted in the relevant medical community. Nor was "the basis" for Dr. Goldstein's opinion reliable, the court found, as other experts in his field would not use it to reach the type of opinion Dr. Goldstein proffered. As to the final factor, MCL 600.2955(g), the court summarized:

> And the last factor is factor (g) Whether the opinion or methodology is relied upon by experts outside of the context of litigation. And, of course, there is some publication that talks about the occurrence here and that publication is general and generic. And as [defense counsel] points out, if you step back you can see that there are articles that say that the infection in the blood, the circumstances in the blood can cause the pneumonia that's caused here, bacteremia that's there. However, I can't find that factor (g) supports admission of the testimony.

Having determined that every § 2955 factor it considered weighed against admissibility, the court granted defendants' motion to exclude Dr. Goldstein's testimony. Because plaintiff could not prove proximate causation without Dr. Goldstein's assistance, the circuit court granted summary disposition to defendants pursuant to MCR 2.116(C)(10).

II.

This Court reviews for an abuse of discretion a circuit court's evidentiary rulings. *People v Farquharson*, 274 Mich App 268, 271; 731 NW2d 797 (2007). A circuit court's interpretation of the requirements of Rule 702 and MCL 600.2955, however, is subject to de novo review. *Elher v Misra*, 308 Mich App 276, 288; 863 NW2d 722 (2014). Thus, de novo review is appropriate when this Court assesses whether the circuit court performed its gatekeeping role in conformity with the legal principles articulated in *Gilbert v DaimlerChrysler Corp*, 470 Mich 749; 685 NW2d 391 (2004), in which our Supreme Court adopted the *Daubert* framework.

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[5] Medscape is an "open access" medical journal, which means that it "provide[s] access to trusted articles and data at no cost." *The End of Peer Review and Traditional Publishing as We Know It*, The Medscape Journal of Medicine, November 24, 2008, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2605128/> (accessed July 9, 2015). The articles cited by Dr. Goldstein identify the physicians who reviewed them. The reviewing physicians are listed at the end of the articles. For example, the *Pneumococcal Infections* article was reviewed by Thomas E. Herchline, M.D., a Professor of Medicine at Wright State University, Burke A. Cunha, M.D., a Professor of Medicine at the State University of New York School of Medicine at Stony Brook, and others.

Elher, 308 Mich App at 288. If the circuit court correctly executed its gatekeeping role, its ultimate decision to admit or exclude scientific evidence is evaluated for an abuse of discretion. *Craig v Oakwood Hosp*, 471 Mich 67, 76; 684 NW2d 296 (2004). When a circuit court excludes evidence based on an erroneous interpretation or application of law, it necessarily abuses its discretion. *Kidder v Ptacin*, 284 Mich App 166, 170; 771 NW2d 806 (2009).

We review de novo a circuit court's summary disposition ruling, considering the evidence submitted by the parties in the light most favorable to the non-moving party. *Walsh v Taylor*, 263 Mich App 618, 621; 689 NW2d 506 (2004).

III.

MRE 702 governs the admission of expert testimony:

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

The aspects of MRE 702 at issue here are whether Dr. Goldstein's testimony draws upon "reliable principles and methods," and whether he "applied the principles and methods reliably to the facts of the case."

MRE 702 incorporates the admissibility parameters set forth in *Daubert*. *Gilbert*, 470 Mich at 782. *Daubert* focuses on the reliability of an expert's methodology, not his or her conclusions. To assist judges in performing the requisite analysis, the Supreme Court outlined four factors that might assist judges in gauging reliability: 1) whether the expert's theory "can be (and has been) tested"; 2) whether the theory "has been subjected to peer review and publication"; 3) the theory's "known or potential rate of error" and the existence of "standards controlling the technique's operation"; and 4) the extent to which the methodology or technique employed by the expert is generally accepted in the scientific community. *Daubert*, 509 US at 593-594.

The analysis required under MRE 702 does not hinge on discovering "absolute truth" or resolving "genuine scientific disputes." *Chapin v A & L Parts, Inc*, 274 Mich App 122, 127; 732 NW2d 578 (2007). "[I]t would be unreasonable to conclude that the subject of scientific testimony must be 'known' to a certainty; arguably, there are no certainties in science." *Daubert*, 509 US at 590. Rather, the trial court is tasked with filtering out unreliable expert evidence. "The inquiry is into whether the opinion is rationally derived from a sound foundation." *Chapin*, 274 Mich App at 139. "The standard focuses on the scientific validity of the expert's methods rather than on the correctness or soundness of the expert's particular

proposed testimony." *People v Unger*, 278 Mich App 210, 217-218; 749 NW2d 272 (2008). The United States Supreme Court emphasized in *Daubert*:

> The inquiry envisioned by Rule 702 is . . . a flexible one. Its overarching subject is the scientific validity—and thus the evidentiary relevance and reliability—of the principles that underlie a proposed submission. The focus, of course, must be solely on principles and methodology, not on the conclusions that they generate. [*Daubert*, 509 US at 594-595.]

In *Kumho Tire Co, Ltd v Carmichael*, 526 US 137, 152; 119 S Ct 1167; 143 L Ed 2d 238 (1999), the United States Supreme Court revisited *Daubert* and clarified its teachings. One question presented in *Kumho* was whether a trial court evaluating proposed engineering expert testimony "*may* consider several more specific factors that *Daubert* said might 'bear on' a judge's gatekeeping determination." *Id.* at 149 (emphasis in original). The listed factors included:

- Whether a "theory or technique . . . can be (and has been) tested";
- Whether it "has been subjected to peer review and publication";
- Whether, in respect to a particular technique, there is a high "known or potential rate of error" and whether there are "standards controlling the technique's operation"; and
- Whether the theory or technique enjoys "general acceptance" within a "relevant scientific community." [*Id.* at 149-150 (alteration in original, citation omitted).]

The Supreme Court resolved the inquiry in the following manner: "Emphasizing the word 'may' in the question, we answer that question yes." *Id.* at 150.

The Court accented that the inquiry under Rule 702 is " 'a flexible one' " in which the factors cited "do *not* constitute a 'definitive checklist or test.' " *Id*. (emphasis in original, citation omitted). Using language especially relevant to the case before us, the Supreme Court continued: "And *Daubert* adds that the gatekeeping inquiry must be 'tied to the facts' of a particular case." *Id.* This means that the *Daubert* factors "may or may not be pertinent in assessing reliability, depending on the nature of the issue, the expert's particular expertise, and the subject of the testimony." *Id*. The Court stressed that the applicability of the *Daubert* factors necessarily varies case by case, expert by expert. "Too much depends upon the particular circumstances of the particular case at issue" to impose hard and fast rules. *Id*. Thus, when screening scientific evidence under MRE 702, a court must determine which factors reasonably measure reliability within a case-specific factual context.

Along with its MRE 702 gatekeeping duties, a trial court must also consider the factors listed in MCL 600.2955(1). *Clerc v Chippewa Co War Mem Hosp*, 477 Mich 1067, 1068; 729

NW2d 221 (2007). The Legislature dictated that the following factors inform a trial court's analysis under MRE 702:

> (1) In an action for the death of a person or for injury to a person or property, a scientific opinion rendered by an otherwise qualified expert is not admissible unless the court determines that the opinion is reliable and will assist the trier of fact. In making that determination, the court shall examine the opinion and the basis for the opinion, which basis includes the facts, technique, methodology, and reasoning relied on by the expert, and shall consider all of the following factors:
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> (a) Whether the opinion and its basis have been subjected to scientific testing and replication.
>
> (b) Whether the opinion and its basis have been subjected to peer review publication.
>
> (c) The existence and maintenance of generally accepted standards governing the application and interpretation of a methodology or technique and whether the opinion and its basis are consistent with those standards.
>
> (d) The known or potential error rate of the opinion and its basis.
>
> (e) The degree to which the opinion and its basis are generally accepted within the relevant expert community. As used in this subdivision, "relevant expert community" means individuals who are knowledgeable in the field of study and are gainfully employed applying that knowledge on the free market.
>
> (f) Whether the basis for the opinion is reliable and whether experts in that field would rely on the same basis to reach the type of opinion being proffered.
>
> (g) Whether the opinion or methodology is relied upon by experts outside of the context of litigation.
>
> (2) A novel methodology or form of scientific evidence may be admitted into evidence only if its proponent establishes that it has achieved general scientific acceptance among impartial and disinterested experts in the field.

> (3) In an action alleging medical malpractice, the provisions of this section are in addition to, and do not otherwise affect, the criteria for expert testimony provided in [MCL 600.2169]. [MCL 600.2955.][6]

Four of the seven factors identified in MCL 600.2955 [subparts (a)-(d)] derive directly from *Daubert*, 509 US at 593-594, and overlap with MRE 702. This Court has held that each of the statutory factors need not favor the proposed expert's opinion. *Chapin*, 274 Mich App at 137 (opinion by DAVIS, J.). It suffices that "the opinion is rationally derived from a sound foundation." *Id*. at 139. A similar approach governs the application of FRE 703: "*Daubert* . . . made clear that its list of factors was meant to be helpful, not definitive. Indeed, those factors do not all necessarily apply even in every instance in which the reliability of scientific testimony is challenged." *Kumho*, 526 US at 151.

We turn to the factors discussed by the court.

A.

MCL 600.2955(1)(a) asks whether an expert's "opinion and its basis have been subjected to scientific testing and replication." The circuit court found Dr. Goldstein's testimony deficient because the conclusions Dr. Goldstein expressed in this case have never undergone scientific testing. We are unsure how Dr. Goldstein's case-specific causation theory could *ever* be "subjected to scientific testing and replication." No reputable physician or scientist we can imagine would infect a patient's skin with *streptococcus pneumoniae*, fail to treat the resulting erysipelas or cellulitis, and watch to see what happened next. Nor can we envision a study that would allow untreated erysipelas to progress even to cellulitis. Given the rarity of the conditions at issue, "replication" of the case facts is at best impractical, and at worst dangerous. This factor was irrelevant and should not have informed the circuit court's judgment.

B.

The circuit court next relied on MCL 600.2955(1)(b), which addresses whether an "opinion and its basis have been subjected to peer review publication." In its bench ruling, the court rejected that plaintiff had met this guidepost, reasoning: "Certainly the individual steps that have taken place throughout the progression of the plaintiff's theory have been subjected to that, but no direct peer review or publication with respect to the causation that is attempted to be linked here."

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[6] According to the statute's plain terms, the trial court's task is to "consider" the factors in assessing reliability. To "consider" means to "1. to look at carefully; examine 2. to think about in order to understand or decide; ponder [to consider a problem] 3. to keep in mind; take into account . . . ." *Webster's New World Dictionary of the American Language* (2d College Ed), p 303. The language of § 2955 supports that the listed factors are adjuncts to the gatekeeping process, and not a definitive checklist that must be tallied.

We confess some confusion regarding the circuit court's meaning. By using the term "direct peer review" was the circuit court's focus on whether Dr. Goldstein's specific opinion in *this* case was subjected to peer review? Or did the court intend to convey that in general, Dr. Goldstein's causation theory lacked peer review support? Either way, the court erred.

That Dr. Goldstein failed to publish an article setting forth the particular causation theory propounded here is hardly surprising. Garcia's skin infection and its consequences are unlikely to be of interest to the medical community, given the rarity (one hopes) of inadequately treated erysipelas. Nor is it even remotely likely such a case report would have been published and peer reviewed before Dr. Goldstein gave his deposition testimony. See *Daubert v Merrell Dow Pharm, Inc*, 43 F3d 1311, 1318 n 9 (CA 9, 1995) (*Daubert II*) ("There may well be good reasons why a scientific study has not been published. For example, it may be too recent or of insufficiently broad interest."). Furthermore, anecdotal case reports do not suffice to prove cause and effect. See *McClain v Metabolife Int'l, Inc*, 401 F3d 1233, 1253-1254 (CA 11, 2005); *Jones v United States*, 933 F Supp 894, 899 (ND CA, 1996).

In cases involving whether exposure to a marketplace drug or an environmental chemical caused injury, peer-reviewed studies testing causation theories may separate the scientifically-reliable wheat from the statistically-unproven chaff. Here, we deal with an issue more closely akin to pure science than to epidemiologically-proven relationships. Accordingly, as applied in this case, factor (b) contemplates whether peer-reviewed medical literature *generally* corroborates the scientific principles and methods advanced by an expert. And this record substantiates that it does.

The inquiry mandated by § 2955(1)(b) assists a court in assessing reliability by requiring an examination of whether the proponent of a causation theory can cite "objective, verifiable evidence that the testimony is based on 'scientifically valid principles.'" *Daubert II*, 43 F3d at 1317-1318. "One means of showing this is by proof that the research and analysis supporting the proffered conclusions have been subjected to normal scientific scrutiny through peer review and publication." *Id*. In *Edry v Adelman*, 486 Mich 634, 641; 786 NW2d 567 (2010), our Supreme Court observed that "peer-reviewed, published literature is not always a necessary or sufficient method of meeting the requirements of MRE 702[.]" In that case, "the lack of any supporting literature, combined with the lack of any other form of support" for the expert's opinion rendered it unreliable and inadmissible. *Id.* Notably, in *Edry*, the challenged expert's opinion "was contradicted by both the defendant's oncology expert and the published literature on the subject that was admitted into evidence[.]" *Id* at 640. "Moreover," the Supreme Court continued, "no literature was admitted into evidence that supported [the challenged expert's] testimony." *Id*.

It bears emphasis that this case involves a highly unusual constellation of facts. Bacterial skin infections are not rare, but skin infections so advanced that they require hospital admission for intravenous therapy are decidedly uncommon. *Streptococcus pneumoniae* skin infections that develop into bacteremia are even more unusual, as most skin infections successfully resolve with antibiotic therapy. Thus, the universe of patients akin to Garcia is small indeed, and it is hardly surprising that Dr. Goldstein could cite no studies discussing or describing identical

patients. Rather, the salient question is whether the medical literature supports that the methodology Dr. Goldstein employed in reaching his opinion is scientifically sound.

Dr. Goldstein pointed to three articles published in a widely-read medical resource (Medscape) substantiating that when *streptococcus pneumoniae* bacteria enter the bloodstream, infection may result in the joints and bones, the heart, and the lungs. Hematogenous spread of *streptococci pneumoniae*, one article pointed out directly, can cause pneumonia, albeit rarely. See Kamangar, *Bacterial Pneumonia*, Medscape Reference: Drugs, Diseases & Procedures, October 12, 2012, p 1 ("Bacteria from the upper airways or, less commonly, from hematogenous spread, find their way to the lung parenchyma. Once there, a combination of factors . . . may lead to bacterial pneumonia."). Practicing physicians authored the Medscape articles, and other practicing physicians reviewed and edited them.[7] The articles demonstrated that Dr. Goldstein's theory rested on an accepted scientific foundation; in other words, he did not simply fabricate a causal link between pneumococcal bacteremia in the bloodstream and lung infection. The literature he cited supports that it happens, although rarely.

Rather than viewing this literature and the inferences reasonably drawn from it in the light most favorable to plaintiff, the circuit court gave credence to the defendants' experts' opinion that pneumonia caused by *streptococcus pneumoniae* bacteremia cannot occur, except in two circumstances not pertinent here. This was error not only because the literature says otherwise, but also because in rejecting Dr. Goldstein's opinion the circuit court weighed the experts' credibility rather than objectively analyzing the science they presented. The court discounted Dr. Goldstein's view based on the defense experts' testimony that Dr. Goldstein was wrong, rather than on an independent examination of the evidence plaintiff presented. Doing so contravened MRE 702 and MCR 2.116(C)(10).

The defense experts, primarily Dr. Sherman, opined that lung infection due to streptococcus pneumonia can occur through hematogenous spread only by way of septic emboli and right-sided endocarditis. Dr. Sherman produced no literature to support this *ipse dixit* pronouncement. Nor did Dr. Sherman offer any reasoned explanation as to how or why septic emboli or right-sided endocarditis involving *streptococcus pneumoniae* can cause pneumonia, but hematogenous spread cannot. Defendants insist that because plaintiff bears the burden of demonstrating that Dr. Goldstein's theory is reliable, defendants were under no obligation to produce any literature contradicting Dr. Goldstein. As a general proposition, we agree that the proponent of scientific evidence shoulders the burden of proving its reliability. However,

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[7] Defendants assert that the medical literature produced by Dr. Goldstein "is not peer-reviewed and fails to provide an evidence-basis for the statements made." This statement is incorrect, as the Medscape articles that we have cited specifically state the names of the reviewers, and include citations to other articles. Dr. Kamangar, who authored the article referencing hematogenous spread in bacterial pneumonia, is an associate professor of pulmonary medicine at the University of California, Los Angeles. Dr. Zab Mosenifar, director of pulmonary and critical care medicine at the Cedars Sinai Medical Center, University of California, Los Angeles, served as the primary editor of the article. Other named physicians also reviewed it.

> where one party alleges that an expert's conclusions do not follow from a given data set, the responsibility ultimately falls on that challenging party to inform (via the record) those of us who are not experts on the subject with an understanding of precisely how and why the expert's conclusions fail to follow from the data set. Any failure by the challenging party to satisfy this responsibility is at that party's peril. [*Goebel v Denver & Rio Grande Western R Co*, 346 F3d 987, 990 (CA 10, 2003).]

See also *King v Burlington Northern Santa Fe Ry*, 277 Neb 203, 232-233; 762 NW2d 24 (2009).

Here, Dr. Goldstein put forth a causation theory and supported it with medical literature. Defendants claimed that the literature failed to support the proposition, and propounded a contradictory scientific proposition: that hematogenous spread of *streptococcus pneumonia* can *never* cause pneumonia except in two well-defined, irrelvant circumstances. Having affirmatively injected this scientific claim, defendants bore the burden of proving it. The circuit court adopted Dr. Sherman's view of the science despite that the only evidence supporting it was Dr. Sherman's say-so. The court exacerbated this error by rejecting the Medscape articles, based again on the defense experts' authority.[8]

Moreover, peer-reviewed medical literature *conclusively* establishing a causal relationship has never been required by any court applying *Daubert.* Such a rule flies in the face of *Daubert*'s theme that the admissibility of scientific evidence depends on "good grounds" rather than certainty. Here, peer-reviewed literature supplied "good grounds" for Dr. Goldstein's causation opinion in this medically unusual case.

C.

The circuit court further faulted Dr. Goldstein's testimony by finding it deficient under § 2955(1)(e), "[t]he degree to which the opinion and its basis are generally accepted in the relevant expert community." The court determined that the defense experts' strenuous rejection of the notion that hematogenously spread *streptococcus pneumoniae* verified that Dr. Goldstein's opinion is not generally accepted or reliable. But unlike the Medscape articles, the retained defense experts were far from neutral, objective resources. Indeed, Dr. Sherman testified that 15% of his income derives from serving as an expert witness in "legal matters," 90% of the time for the defense. Permitting a retained expert like Dr. Sherman to vouch for the beliefs of the "relevant expert community" is inconsistent with *Daubert* and MRE 702.

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[8] At his deposition, Dr. Sherman referred to Medscape as "a low quality medical publication." In response to plaintiff's argument that the defense had failed to present articles rebutting Dr. Goldstein's theory, Dr. Sherman claimed that "nobody" would publish an article stating that "pneumococcal bacteremia does not lead to pneumonia." Perhaps Dr. Sherman is correct. But these assertions are not facts—they are opinions. Gatekeeping under MRE 702 does not involve cherry-picking which of several conflicting expert opinions to believe and which to discredit. Dr. Sherman's arguments about the articles are for the jury to evaluate, along with the rest of the evidence supporting or contradicting Dr. Goldstein's theory.

The court was tasked with the responsibility of sorting out whether the data, methodology, and literature advanced by Dr. Goldstein supported the conclusion Dr. Goldstein reached. This inquiry required a focus on the case facts, the literature on which Dr. Goldstein relied, and the method Dr. Goldstein used to apply the scientific information in the literature to the facts. Here, however, the court focused on the experts' ultimate proximate cause conclusions and selected the conclusion it believed rang truer, thereby conflating reliability with persuasiveness.

Where competing "experts' opinions are supported by evidence and sound scientific reasoning, the question of who is right is a question for the jury." *Milward v Acuity Specialty Prods Group, Inc*, 639 F3d 11, 23 (CA 1, 2011). "A factual dispute is best settled by a battle of the experts before the fact finder, not by judicial fiat. Where two credible experts disagree, it is the job of the fact finder, not the trial court, to determine which source is more credible and reliable." *City of Pomona v SQM North America Corp*, 750 F3d 1036, 1049 (CA 9, 2014). Here, published medical literature supports Dr. Goldstein's causation theory. Even if the intellectual provenance of Dr. Goldstein's testimony is doubtful, as Dr. Sherman insists, the adversary system is designed to resolve such debates through rigorous cross-examination, the introduction of countervailing evidence, and a jury instruction that plaintiff bears the burden of proof. That the defense experts vigorously disagreed with the Medscape authors and Dr. Goldstein simply did not render Dr. Goldstein's opinion unreliable.

Moreover, the "general acceptance" factor incorporated in § 2955(1)(e) generally relates to novel (new) scientific theories and therefore lacks relevance here.[9] The "general acceptance"

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[9] That Dr. Goldstein's theory is not novel is demonstrated by the following excerpt from an Indiana case decided in 1919:

> On this phase of the case the uncontradicted testimony of the attending physician is that on April 8, 1918, the wound resulting from Buanno's injury had not fully healed, there being at that time an open sore on the arm about an inch square, which became infected with erysipelas, causing the arm to become swollen to twice its normal size, and that this infection spread "over his neck to the side of his face, and finally developed into streptoccocal pneumonia." The attending physician also testified that:
>
> "There was no mistake in the diagnosis of the infection on the arm. It was erysipelas. There could be no such infection without some exterior brasure of the skin. There would have to be some point of entry. In my opinion the primary cause of this infection was the unhealed portion of his injury. It is rather common for pneumonia to follow such infection."
>
> It is our opinion that the evidence fully sustains the finding that Pasqualle Buanno died as a result of the injury he received . . . . [*Ft Wayne Rolling Mill Corp v Buanno*, 69 Ind App 464, 465-466; 122 NE 362 (1919).]

test for admissibility was announced in *Frye v United States*, 293 F 1013 (DC Cir, 1923). *Frye* involved evidence derived from a "crude precursor to the polygraph machine." *Daubert*, 509 US at 585. The Supreme Court identified the following "famous (perhaps infamous) passage" as encapsulating the *Frye* rule:

> "Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stage is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, *the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.*" [*Id*. at 585-586, quoting *Frye*, 293 F at 1014 (emphasis in original).]

FRE 702 superseded the *Frye* test. In *Daubert*, the Supreme Court reasoned that *Frye* could not be reconciled with the letter or the spirit of the federal rules of evidence:

> [A] rigid "general acceptance" requirement would be at odds with the "liberal thrust" of the Federal Rules and their "general approach of relaxing the traditional barriers to 'opinion' testimony." Given the Rules' permissive backdrop and their inclusion of a specific rule on expert testimony that does not mention "general acceptance," the assertion that the Rules somehow assimilated *Frye* is unconvincing. *Frye* made "general acceptance" the exclusive test for admitting scientific testimony. That austere standard, absent from, and incompatible with, the Federal Rules of Evidence, should not be applied in federal trials. [*Daubert*, 509 US at 588-589 (citations omitted).]

No objective, verifiable evidence presented to the circuit court addressed whether Dr. Goldstein's views lack "general acceptance." Accordingly, the "general acceptance" factor is not pertinent here, and the circuit court erred by relying on it to exclude Dr. Goldstein's testimony.

D.

Lastly we consider the circuit court's determination that despite the "general and generic" statements in the Medscape publications supporting Dr. Goldstein's methodology, "I can't find that factor (g) supports admission of the testimony." Factor (g) concerns whether "the opinion or methodology is relied upon by experts outside of the context of litigation."

The circuit court offered no meaningful explanation for its determination that factor (g) cuts against the admission of Dr. Goldstein's testimony, particularly in light of its directly contrary conclusion that "there are articles that say the infection in the blood, the circumstances in the blood can cause the pneumonia that's caused here, bacteremia that's there." Medscape is a publication designed to be read by doctors, not lawyers. The Medscape articles demonstrate that Dr. Goldstein's deductive methodology flows from accepted medical principles that bear no

relationship to lawsuits. Simply put, the articles support that an infection caused by *streptococcus pneumoniae* can spread hematogenously to the lungs. By relying on this factor to exclude Dr. Goldstein's testimony, the circuit court erred.[10]

IV.

Daubert and its progeny instruct that an inquiry into methodology does not encompass a determination of which expert's view seems more convincing. Nor does any case law mandate as a precondition of admissibility an expert possess first-hand experience with precisely the same medical condition at issue in the case. Rather, the gatekeeping obligation envisions an inquiry into the soundness of an expert's underlying methodology. If the thrust of the expert's reasoning finds purchase in the medical literature, or if the expert has reasonably extrapolated from an established scientific foundation, his or her testimony should be admitted for a jury's consideration.

Determining whether evidence is truly scientific is not simple. As Judge Alex Kozinski, who authored *Daubert II*, put it: "Federal judges ruling on the admissibility of expert scientific testimony face a far more complex and daunting task in a post-*Daubert* world than before." *Daubert II*, 43 F3d at 1315. MCL 600.2955 provides circuit courts with helpful guideposts in making this determination. Here, application of the guideposts supports rather than prohibits the admission of Dr. Goldstein's testimony. We emphasize that neither MRE 702 nor MCL 600.2955 require the party proffering expert testimony to "carry the burden of proving to the judge that the expert's assessment of the situation is correct." *Ruiz-Troche v Pepsi Cola of Puerto Rico Bottling Co*, 161 F3d 77, 85 (CA 1, 1998). The touchstone is reliability, not ultimate accuracy or believability.

In contrast with the defense experts' testimony, Dr. Goldstein's conclusions constituted neither purely subjective beliefs nor unsupported scientific allegation. The articles he cited demonstrate that the science he relies on does not qualify as "junk." Accordingly, a jury rather than the circuit court should determine whether Dr. Goldstein's opinions are more persuasive than those of the competing experts.

We reverse and remand for further proceedings consistent with this opinion. We do not retain jurisdiction.

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[10] The circuit court erred in determining that MCL 600.2955(1)(f) weighed against admission. This factor calls for an examination of "[w]hether the basis for the opinion is reliable and whether experts in that field would rely on the same basis to reach the type of opinion being proferred." The statutory factors involve substantial overlap. We have determined that the peer-reviewed materials upon which Dr. Goldstein relied adequately support that "the basis for [his] opinion [was] reliable" and that other "experts in the field would rely on the same basis to reach the type of opinion being proffered." Moreover, the circuit court's brief assertion "that the plaintiff has failed in that respect as well" was too cursory to permit appellate review of its reasoning.

/s/ Elizabeth L. Gleicher
/s/ Kirsten Frank Kelly
/s/ Deborah A. Servitto