STATE OF MICHIGAN

COURT OF APPEALS

SIMON KASSEM, Personal Representative of the ESTATE OF ABDULLA KASSEM, Plaintiff-Appellant, v TIMOTHY MICHAEL GADDY and EFFICIENT HAULING SERVICES, L.L.C., Defendants-Appellees.	UNPUBLISHED April 17, 2014 No. 311057 Wayne Circuit Court LC No. 10-000163–NI

Before: HOEKSTRA, P.J., and SAWYER and GLEICHER, JJ.

PER CURIAM.

Common wisdom holds that sudden, intense fear can literally scare a person to death. The expression "you scared me to death" (or "half to death," depending on the emotional environment) is no stranger to general parlance. Plaintiff's forensic pathology expert opined that the decedent, Adbulla Kassem, died of a cardiac arrhythmia caused by severe fright and shock engendered by a car crash. The circuit court conducted a *Daubert* hearing to evaluate the scientific validity of the expert's proposed testimony. Despite that the record evidence validated the relevance and reliability of the expert's causation theory, the circuit court excluded his testimony and subsequently granted summary disposition to defendants. We reverse and remand for further proceedings.

I. BACKGROUND FACTS

On a dark, wet night in February 2008, 85-year-old Adbulla Kassem began driving home from a family dinner in Dearborn. His route took him to Haggerty Road, then south on Miller Road. Just past Miller's intersection with Rotunda Boulevard, Kassem's vehicle slammed into the back of a tractor-trailer rig driven by defendant Timothy Michael Gaddy and owned by defendant Efficient Hauling Services, L.L.C. Corporal Richard Massic, the Dearborn Police accident reconstructionist who investigated the crash, concluded that Gaddy had failed to place the trailer's "outer bumper" in the "down" position. In the "up" position, Massic explained, a driver following the truck would be unable to see any taillights. Massic determined that when Kassem's car hit the tractor-trailer rig, the outer bumper was up, and none of the truck's rear lights were visible.

Gaddy recounted that while traveling south on Miller, he stopped for a red light at Rotunda. When the light turned green he began to proceed slowly through the intersection. As he was shifting from third to fourth gear, he felt a strong impact at the rear of his rig. Gaddy estimated that he was moving not more than 10 miles an hour when Kassem's car struck his truck. Gaddy disputed Massic's determination that the trailer's rear outer bumper was in the up position.

An eyewitness to the accident, Kheir Arabi, observed the accident while stopped at the intersection of Miller and Rotunda. Arabi estimated Kassem's speed as 25 miles an hour. He described seeing a "heavy impact," and recalled that Kassem's vehicle did not slow before striking the trailer. When Arabi approached the accident scene he observed Kassem's head resting on the deployed airbag and the steering wheel, and called 911. An EMS unit arrived within minutes. According to the EMS report, Kassem was unresponsive and had a "weak thready pulse." The EMS team initiated cardiopulmonary resuscitation and relayed Kassem to Oakwood Hospital. Further resuscitation efforts at Oakwood proved unsuccessful, and Kassem was pronounced dead. No autopsy was performed.

Dr. Raad Al-Saraf signed Kassem's death certificate. Dr. Al-Saraf did not examine Kassem before or after Kassem's death, but reviewed the hospital record. He identified a cardiac arrhythmia called ventricular tachycardia as the immediate cause of Kassem's death, and added that the arrhythmia resulted from "coronary artery disease."

Plaintiff Simon Kassem, the personal representative of Kassem's estate, brought a wrongful death action against defendants. Plaintiff identified Dr. Werner Spitz as an expert witness who would testify concerning the causal relationship between the accident and Kassem's death. Defendants moved to exclude Dr. Spitz's testimony, contending that "no reliable evidence" supported Dr. Spitz's conclusion, set forth in an "opinion letter," that the accident precipitated Kassem's demise. In relevant part the letter stated:

> The records indicate that, whereas, Mr. Kassem had coronary artery disease, there is nothing in the records to support the claim that an acute heart attack, i.e., myocardial infarction caused the crash.
>
> Instead, there is reliable literature to support that a sudden surge of the [sic] blood pressure, outpouring of adrenalin and vasoconstriction, as in situations of great fear and sudden fear of impending doom, will often trigger fatal cardiac arrhythmia, in predisposed individuals, as I believe occurred in this case.

Plaintiff opposed defendants' in limine motion and submitted an affidavit signed by Dr. Spitz describing his medical opinion in more detail. The letter referenced a number of medical journal articles and textbook excerpts. In relevant part, Dr. Spitz attested:

> 19. In my opinion, within a reasonable degree of medical certainty, and based on my review of these records and information, and my education, training an[d] extensive knowledge and experience in the field of forensic pathology, Mr. Kassem was pre-disposed to cardiac distress, and his fatal cardiac arrhythmia was triggered by a sudden surge of the blood pressure, outpouring of adrenalin and

vasoconstriction caused by the situation of great and sudden fear of impe[n]ding doom presented by the motor vehicle accident.

* * *

23. Strong emotions, such as excitement, apprehension, fear or anxiety affect the beating of the heart. See, Sodeman and Sodeman, *Pathological Physiology Mechanisms of Disease* (Philadelphia: W.B. Saunders Company, 4th Ed., 1968), pp 489-490. A copy is attached as Exhibit 5.

24. Norepinephrine is a powerful vasoconstrictor hormone that is released when the body is stressed or exercised. Norepinephrine excites the heart and contracts the veins and arterioles. Additionally, mental anguish has been associated with an inability to ventilate air, called dyspnea. Guyton & Hall, *Textbook of Medical Physiology* (Philadelphia: Elsevier, Inc., 11th Ed., 2006), ch 17, p 201; ch 42, p 532. A copy if attached as Exhibit 6.

25. Strong emotions also markedly affect blood pressure, brought on through increased cardiac action and liberation of adrenaline into the blood stream; and strong emotions may raise the body's metabolism above the basal level. Fear is known to cause the heart to accelerate, the vessels to constrict, respiration to quicken, sweat to produce, and the skeletal muscles to increase their tone. Best, *The Physiological Basis of Medical Practice* (Baltimore: Waverley Press, Inc., 7th Ed., 1961), ch 22, pp 274-275; ch 44 pp 766-767; ch 52 pp 890-892; ch 66, pp 1229-1231. (Exhibit 4).

26. Emotional stress, such as fear or anxiety, is known to precipitate cardiac arrhythmias and lead to sudden cardiac death. This has been known to be referred to as being "scared to death," or in the criminal context, "homicide by heart attack." See, Dolinak, *Forensic Pathology Principles and Practice* (Burlington, MA: Elsevier Academic Press, 2005), ch 22, p 506 (copy attached as Exhibit 7); Spitz and Fisher, *Medicolegal Investigations of Death, Guidelines for the Application of Pathology to Crime Investigation* (Springfield, IL: Charles C. Thomas Publisher, Ltd., 4th Ed. (2006), ch VII, pp 302-308; and ch IX, p 457 (copy attached as Exhibit 8).

27. For example, "Homicide by heart attack" acknowledges that there are published guidelines, generally accepted by medical examiners and courts, for certifying homicides by heart attack even absent physical injury. Those guidelines require that: "(a) the crime be of such a nature, that, if physical injury had ensured [sic], a homicide charge would be supported; (b) the victim realize an implicit threat to his or her safety; (c) the circumstances be of an obvious emotional nature; (d) the cardiac arrhythmia and collapse occur during the criminal act or in the ensuing emotional response period and (e) that chronic heart disease b[e] demonstrable." Exhibit 8 at p 457.

* * *

> 35. In conclusion, as stated in my July 29, 2009 letter, it is my opinion, within a reasonable degree of medical certainty, and based on my review of these records, and on my education, training, knowledge and experience in the field of forensic pathology, that Mr. Kassem was predisposed to cardiac distress due to his pre-existing history of coronary artery disease, hypertension and hyperlipidemia, and his fatal cardiac arrhythmia was triggered by a sudden surge of the blood pressure, outpouring of adrenalin and vasoconstriction caused by the situation of great and sudden fear of impe[n]ding doom presented by the stress event of the February 8, 2008 motor vehicle accident.

The circuit court convened a *Daubert*[1] hearing.

A. Dr. Spitz's Testimony at the *Daubert* Hearing

Dr. Spitz is board certified in pathology and forensic pathology. He served for 16 years as chief medical examiner for Wayne County, and for 14 years as chief medical examiner for Macomb County. Dr. Spitz authored a textbook, *Medical/Legal Investigation of Death*, 4th ed (2006), used in medical schools and police academies. Defendants stipulated that Dr. Spitz qualified as an expert witness under MRE 702.

Dr. Spitz reviewed Kassem's medical records, the police reports and photographs of the accident, and the deposition testimonies of plaintiff, Arabi, Dr. Al-Saraf, and the investigating police officers. He described that Kassem's medical history included coronary artery disease with stents placed, high blood pressure, and increased cholesterol. Based on the evidence he reviewed, Dr. Spitz concluded that immediately prior to the accident Kassem was "in a stable state of health," and specifically noted that Kassem had driven to the accident scene by "crossing at least two traffic lights and going around corners[.]"

Dr. Spitz readily accepted and agreed with Dr. Al-Saraf's conclusion that a cardiac arrhythmia precipitated Kassem's demise. Spitz explained that "cardiac arrhythmia is a haywire rhythm of a heartbeat" that can occur with a "surge of blood pressure" and "a sudden increase of pulse and respirations, a fear of impending doom[.]" In this case, Dr. Spitz explained, immediately before or during the crash, Kassem likely experienced "a surge of the [sic] blood pressure, an increase in pulse rate that goes up almost instantaneously because it takes seconds from observing to responding." Spitz elaborated:

> Here you have a . . . situation where an elderly individual with a predisposed heart, coronary artery disease, suddenly develops a surge of those things which keep us alive which is blood pressure, frequency of pulse, heart rate another word, the[] rhythm of the heart and breathing.

A person with a "susceptible condition" who experiences further blood pressure elevation and "taxation" of the cardiovascular system, Dr. Spitz testified, is at risk for a sudden death. The

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

"sudden surge of blood pressure and the inability of the heart to pump," Dr. Spitz clarified, "is what brings about the ventricular fibrillation."

Dr. Spitz supplied the court with a number of articles and textbook excerpts as support for his opinion. The textbook references confirm that stress or exercise stimulates the nervous system and causes the release of hormones, such as adrenaline (also called epinephrine) and norepinephrine, which excite the heart and contract the veins and arteries. For example, Guyton & Hall, *Textbook of Medical Physiology*, (Philadelphia: Elsevier, Inc, 11th ed, 2006), p 251, explains:

> Stimulation of the autonomic nerves to the heart can affect coronary blood flow both directly and indirectly. The direct effects result from action of the nervous transmitter substances acetylcholine from the vagus nerves and norepinephrine and epinephrine from the sympathetic nerves on the coronary vessels themselves. The indirect effects result from secondary changes in coronary blood flow caused by increased or decreased activity of the heart.
>
> The indirect effects, which are mostly opposite to the direct effects, play a far more important role in normal control of coronary blood flow. Thus, *sympathetic stimulation, which releases norepinephrine and epinephrine, increases both heart rate and heart contractility as well as increases the rate of metabolism of the heart.* [Emphasis added.]

Another textbook, Dolinak, Matsches & Lew, *Forensic Pathology*: *Principles and Practice*, (Boston: Elsevier Academic Press, 2005), p 506, affirms that "emotional stress . . . may precipitate" abnormal cardiac rhythms and "lead to sudden cardiac death." The text continues:

> Mental stress such as anger, fear, and anxiety increase sympathetic output and can produce significant increases in heart rate and blood pressure, leading to increased myocardial oxygen demand. The reaction to this stress may then precipitate a fatal dysrhythmia, particularly in those with significant heart disease such as severe coronary artery atherosclerosis[.]

Several of the submitted medical journal articles more specifically support the link between fear or stress and sudden cardiac death. For example, a 1985 article published in the Journal of the American College of Cardiology launches its discussion of the subject with the statement: "Anecdotes from folklore are supported by several epidemiologic and pathophysiologic observations that appear to strongly link emotional stress to sudden death."[2] The article goes on to explain that "acute psychological stress is strongly associated with sudden cardiac death," and "emotional stress can elicit disordered cardiac rhythms directly." *Id.* at 97B. Arousal of the stress hormones, the article continues, "is capable of creating myocardial damage as well as independently inducing malignant rhythm disturbances." *Id.* Yet another article,

[2] Eliot et al, *Role of Emotions and Stress in the Genesis of Sudden Death*, 5 J Am Coll Cardiol 95B, 96B (1998).

Lecomte, *Stressful Events as a Trigger of Sudden Death: A Study of 43 Medico-Legal Autopsy Cases*, 79 Forensic Science Int'l 1 (1996), analyzed the cardiovascular pathologic findings made in 43 autopsies. The authors concluded that "considerable evidence" supported that prior heart damage predisposing a person to sudden cardiac death, and "the autonomic nervous system and its response to" an acute emotional stressful event "could act as a trigger for asystole or ventricular fibrillation." *Id*. at 8.

On cross-examination, Dr. Spitz emphasized that Kassem's fatal cardiac event likely occurred immediately before the impact, during the moments that Kassem realized that he was about to hit the truck. When asked whether any evidence supported that Kassem had ever seen the truck before hitting it, Dr. Spitz responded:

> You have an individual who's driving at relatively low speed, 25 miles an hour according to the witness who estimated the speed. The main impact of his testimony is that they were, both, Mr. Kassem and Mr. Gaddy driving slowly. . . .
>
> Now, imagine that Mr. Kassem is driving slowly behind an invisible object and suddenly he sees that and he goes whoa, and he crashes into the object.
>
> * * *
>
> There's no reason why he couldn't make an observation. He couldn't make an observation because it wasn't a visible object. Reasonable medical certainty tells me he was behind an invisible object and when he suddenly looked up, he saw that thing in front of him. The fear of impending doom increased blood pressure, the high pulse, that occurred instantaneously.

Defense counsel closely questioned Dr. Spitz regarding the possibility that Kassem had suffered a cardiac event related solely to Kassem's coronary artery disease just before colliding with the truck. Counsel posited that Kassem suffered a heart attack, and the heart attack caused the collision. Dr. Spitz firmly rejected this theory, insisting "[n]othing tangible supports that." While Dr. Spitz admitted that "somebody could have a heart attack when he's in the middle of the ocean and he will drown," he rejected that Kassem coincidentally happened to have a heart attack seconds before striking the unlit rear of a tractor-trailer. Rather, Dr. Spitz insisted, the crash circumstances rendered it reasonably medically certain that the impending crash caused the cardiac event.

B. Dr. Zobl's Testimony

Defendants presented the testimony of Dr. Eldred Zobl, a board certified cardiologist. Dr. Zobl agreed that Kassem succumbed to a fatal cardiac arrhythmia, but expressed no opinion as to when it occurred: "He had a motor vehicle accident that terminated in his death. When that occurred, he suffered some form of heart damage, a fatal lethal arrhythmia, what caused it and when it was caused, I don't know." He reiterated: "He suffered a cardiac arrest. What caused that cardiac arrest was obviously I think some form of heart injury. Whether it was his underlying coronary disease, whether something happened at the accident, I don't know."

Dr. Zobl conceded that if Kassem had suffered a cardiac arrest before the accident, he would have been unable to drive and "would be within seconds unconscious." Dr. Zobl's disagreement with Dr. Spitz focused on whether Kassem realized that he had been in an accident before dying. According to Dr. Zobl, "Obviously when you're in a motor vehicle accident, if you're still conscious your blood pressure is going to go up, your heart rate is going to go up, of course. But to say that everything happened before the motor vehicle accident, that's totally speculative." Defendants produced no medical or scientific literature refuting or rebutting the medical literature supplied by Dr. Spitz.

C. Dr. Al-Saraf's Testimony

Dr. Al-Saraf's deposition testimony was submitted to the circuit court. Dr. Al-Saraf agreed that fear and shock caused by an accident could cause sudden cardiac death:

> *Q.* Doctor, in your opinion, is it possible that a sudden surge of blood pressure, an outpouring of adrenalin and vasoconstriction, as a result of great fear or sudden fear of impending doom, could trigger fatal cardiac arrhythmia in a person predisposed, such as Mr. Abdulla Kassem?
>
> *A.* It's possible to produce a heart attack which can cause, as a complication, the arrhythmias.
>
> *Q.* So in this case, given Mr. Kassem's cardiac condition, one possibility would be an immediate fear and that would trigger the heart attack which causes the arrhythmia?
>
> *A.* It's possible.
>
> *Q.* Now, in the death certificate, when you put natural here for manner of death, am I correct that does not mean the death was not a result of the car accident, correct? That's not what that means?
>
> *A.* As a physical trauma. It wasn't because of a physical trauma from the car accident. What it mentions here, accident, suicide, homicide, natural, indeterminate or pending. Pending usually means waiting for the autopsy.
>
> *Q.* However, in this instance if, indeed, Mr. Abdulla Kassem had a sudden fear and had a sudden blood pressure and adrenalin outpouring that triggered cardiac arrhythmia, if that had occurred –
>
> *A.* It's possible.
>
> *Q.* It's possible. And even though you put natural, that doesn't rule out what I just said?
>
> *A.* Again, by natural I mean there was no physical trauma. There is no broken things, no bleeding in the brain, no injury to the liver.

Q. Okay. It doesn't rule out that he had a great fear as a result of this motor vehicle accident and that triggered the heart attack?

A. Yes.

D. The Circuit Court's Ruling

In a written opinion, the circuit court acknowledged Dr. Spitz's qualification as an expert witness under MRE 702, but ruled that his opinions were the product of "subjective belief or unsupported speculation." The circuit court summarized:

> Based on his [Dr. Spitz's] review of the evidence he concluded that the Plaintiff was not experiencing any heart difficulty prior to the accident. That there was a slight elevation in the road, the lighting was insufficient and that it had been raining or snowing the night of the accident. Based on these facts Dr. Spitz opined that Mr. Kassem did not see the truck until the accident was unavoidable. This is when he experienced physiological response to fear that caused his fatal heart attack.
>
> On cross-examination, Dr. Spitz admitted an autopsy should have been done to conclusively determine the cause of death. Dr. Spitz admitted that Mr. Kassem would have had to observe the truck for a physiological event to occur. He could not say with certainty the decedent observed the truck . . . and admitted if Mr. Kassem had a blocked artery his opinion would change. Dr. Spitz admitted there were other possibilities as to the cause of death such as chest trauma, aorta tear or air bag injury. His conclusion was that these possibilities (including cardiac arrest) were less likely tha[n] his theory.
>
> Dr. Spitz's testimony and opinion are based on assumptions that do not accord with established facts. He failed to reliably apply his method to the facts of this case. His testimony amounts to mere subjective belief and speculations. His testimony would not assist the trier of fact.

The circuit court granted defendants' motion in limine, and subsequently granted summary disposition pursuant to MCR 2.116(C)(10) based on plaintiff's inability to establish causation without Spitz's testimony.

III. ANALYSIS

A. This Court's Standard of Review

The central issue presented in this case is whether the circuit court properly applied MRE 702 to exclude Spitz's expert testimony. We review for an abuse of discretion a circuit court's evidentiary rulings. *People v Farquharson*, 274 Mich App 268, 271; 731 NW2d 797 (2007). When our inquiry involves whether the trial court correctly applied a rule of evidence, our review is de novo. *People v King*, 297 Mich App 465, 472; 824 NW2d 258 (2012).

Here, we apply de novo review to determine whether the circuit court executed its gatekeeping role in conformity with the governing legal principles set forth in *Gilbert v DaimlerChrysler Corp*, 470 Mich 749; 685 NW2d 391 (2004), in which our Supreme Court adopted the *Daubert* framework. A court acting as an expert testimony gatekeeper may not "'perform the function inadequately.'" *Id.* at 780, quoting *Kumho Tire Co Ltd v Carmichael*, 526 US 137, 158-159; 119 S Ct 1167; 143 L Ed 2d 238 (1999) (SCALIA, J., concurring). When a trial 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 for clear error the trial court's underlying factual findings. *People v Holtzer*, 255 Mich App 478, 484; 660 NW2d 405 (2003).

B. Governing Legal Principles

The admission of expert testimony is governed by MRE 702, which provides:

> 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.

MRE 702 "requires trial judges to act as gatekeepers who must exclude unreliable expert testimony." Staff Comment to 2004 Amendment of MRE 702. In *Gilbert*, 470 Mich at 782, our Supreme Court elaborated that the trial court's gatekeeper role

> applies to *all* stages of expert analysis. MRE 702 mandates a searching inquiry, not just of the data underlying expert testimony, but also of the manner in which the expert interprets and extrapolates from those data. Thus, it is insufficient for the proponent of expert opinion merely to show that the opinion rests on data viewed as legitimate in the context of a particular area of expertise (such as medicine). The proponent must also show that any opinion based on those data expresses conclusions reached through reliable principles and methodology. [Emphasis in original.]

Before admitting expert scientific testimony, the trial court must satisfy its "fundamental duty" of ensuring that the expert testimony is reliable and relevant. *Id*. at 781. MRE 702 explicitly incorporates the *Daubert* standards of admissibility regarding an expert's testimony. *Id*. This task requires that the proponent of the testimony establish its reliability "by showing that it 'is based on sufficient facts or data,' that it 'is the product of reliable principles and methods,' and that the proposed expert witness 'has applied the principles and methods reliably to the facts of the case.'" *People v Unger*, 278 Mich App 210, 217; 749 NW2d 272 (2008), quoting MRE 702.

This analysis 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) (opinion by DAVIS, J.). "[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." *Unger*, 278 Mich App at 217-218. An expert's testimony meets the *Daubert* standard when the expert "employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field." *Kumho Tire Co*, 526 US at 152. As the United States Supreme Court emphasized in *Daubert*, 509 US at 594-595:

> 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.

C. Application of the Legal Principles

After summarizing a portion the *Daubert* hearing testimony and the corresponding evidentiary record,[3] the circuit court's opinion closed with the following statement: "Dr. Spitz's testimony and opinion are based upon assumptions that do not accord with established facts. He failed to reliably apply his method to the facts of this case. His testimony amounts to mere subjective belief and speculations. His testimony would not assist the trier of fact." The circuit court offered no explanation for these findings. We conclude that in rejecting Dr. Spitz's testimony the circuit court abused its discretion by failing to properly apply MRE 702 to the evidence presented.

We first address the scientific basis for Dr. Spitz's opinion and the circuit court's determination that Dr. Spitz "failed to reliably apply his method to the facts of this case." Based on the uncontradicted evidence that a ventricular arrhythmia took Kassem's life, Dr. Spitz considered potential causes for a fatal ventricular arrhythmia and proposed that one of them — intense fear and shock — accounted for Kassem's fatal cardiac event. Dr. Spitz grounded this conclusion on the principles and methods customarily used in forensic pathology, including review of the medical and police records and consideration of the testimony of witnesses. In other words, Dr. Spitz premised his conclusion solely on the objective record facts, accepting all of them as relevant and accurate. We do not find this method wanting, particularly in light of Dr. Al-Saraf's acknowledgment that Dr. Spitz's causation theory could explain Kassem's death. Nor do we discern any evidence that Dr. Spitz unreliably applied forensic methods to the facts of the case. The medical literature Dr. Spitz supplied to the court demonstrates that consistent with

[3] The circuit court's opinion omitted any mention of the medical literature that Spitz referenced during his testimony.

common wisdom, acute emotional stress can cause sudden cardiac death.[4] Defendants produced no literature to the contrary. Thus, no evidence contradicted that Dr. Spitz's opinion derived from a methodology customarily used by forensic pathologists, who regularly opine regarding cause of death, and that Dr. Spitz reasonably applied the methodology to the facts at hand.

The circuit court further found that Dr. Spitz's opinion "amounts to mere subjective belief and speculations." The testifying physicians agreed that the electrocardiogram obtained before Kassem's death demonstrated the presence of a ventricular arrhythmia. The physicians agreed that the fatal ventricular arrhythmia took Kassem's life. Drs. Spitz and Al-Saraf testified that fear of impending doom could trigger a fatal cardiac arrhythmia, and the medical literature verifies the scientific legitimacy of this deduction. Dr. Spitz's causation theory was factually predicated and rationally derived from objective facts. A reasonable trier of fact viewing the scientific and accident-related evidence in the light most favorable to plaintiff could reasonably conclude that the accident scared Kassem to death. While neither the literature nor the facts *irrefutably* confirmed the cause of Kassem's death, both sufficiently underpinned Dr. Spitz's conclusion. The circuit court abused its discretion by finding Dr. Spitz's testimony "speculative and subjective."

We next address whether Dr. Spitz's opinion regarding the cause of Kassem's death rests on an adequate factual foundation. An expert's causation opinions must have a basis in established fact, and cannot be premised merely on supposition. *Skinner v Square D Co*, 445 Mich 153, 164-165; 516 NW2d 475 (1994). At the time of his death, the decedent in *Skinner* had been operating an electric metal "tumbling machine" of his own design and manufacture. *Id.* at 157. The plaintiffs theorized that defendant Square D Company defectively designed a switch that the decedent had incorporated in his tumbling machine such that the switch's "large 'phantom zone' " sometimes inaccurately signaled that the switch was "off" while power actually continued flowing to the machine. *Id.* at 158. Because no one witnessed the decedent's accident, no direct evidence demonstrated any relationship between the switch and the decedent's electrocution. The plaintiffs' case against Square D was entirely circumstantial, predicated on a mere assumption that the Square D switch had played a role in the decedent's death. *Id.* at 163. Furthermore, some of the physical evidence directly contradicted the hypothetical accident scenario proposed by the plaintiffs. *Id.* at 171-172. Square D maintained that even assuming the presence of a defect in its switch, the plaintiffs' circumstantial proofs failed to demonstrate that the decedent "was misled by the switch when he was fatally electrocuted." *Id.* at 158. The Supreme Court agreed, concluding that the record contained no

[4] The term "Baskerville effect" has been defined as "A fatal heart attack triggered by extreme psychological stress. The effect is named after Charles Baskerville, a character in the Arthur Conan Doyle story 'The Hound of the Baskervilles,' who suffers a fatal heart attack due to extreme psychological stress." MedicineNet.com, <http://www.medterms.com/script/main/art.asp?articlekey+19341> (accessed April 1, 2014).

direct or circumstantial evidence from which a reasonable jury could infer the mechanism of the decedent's electrocution or whether the switch contributed to the accident. *Id.* at 174. The Court emphasized in *Skinner* that "[t]o be adequate, a plaintiff's circumstantial proof must facilitate reasonable inferences of causation, not mere speculation." *Id.* at 164.

Dr. Spitz's opinion rests on circumstantial evidence that Kassem saw the truck. He posited that Kassem likely saw the truck in the seconds before he hit it. *Skinner* mandates that "a plaintiff's circumstantial proof . . . facilitate reasonable inferences of causation, not mere speculation." *Id.* at 164. Dr. Spitz's testimony fulfils this mandate.

What Kassem saw or did not see, and when he saw it, constitute questions of fact. Because Kassem is dead, it is impossible to definitively establish his predeath visual perceptions. Rather, a jury must utilize direct and circumstantial evidence to determine whether Kassem saw or should have seen the truck before striking it. Viewed in the light most favorable to plaintiff, the evidence readily facilitates a reasonable inference that Kassem saw the truck before hitting it. Kassem's headlights were on, and the police officers at the scene described that streetlights provided illumination of the roadway. Arabi, whose vehicle was situated at an intersection at least 50 feet from the accident scene, had no difficulty seeing Kassem's car approach and then strike the truck. Indeed, defendants contend that Kassem *should* have seen the truck before striking it because in defendants' view, Gaddy had properly positioned the "outer" rear bumper. Based on the evidence supplied by the eyewitnesses and the investigating police officers, a juror could reasonably infer that Kassem saw the truck before hitting it.[5]

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[5] In *Skinner*, 445 Mich at 168, the Supreme Court cited *Kaminski v Grand Trunk Western R Co*, 347 Mich 417; 79 NW2d 899 (1956), as illustrative of "the level of circumstantial evidence needed to adequately establish causation." *Kaminski* involved a night-time accident that occurred when a train struck a trailer parked near a railroad track, which in turn hit the plaintiff. *Kaminski*, 347 Mich at 423-424. The *Kaminski* Court cited approvingly the trial court's opinion finding that circumstantial evidence supported the accident theory propounded by the plaintiff. *Id.* at 426-427. Because that theory relied in part on the train conductor's ability to have seen the trailer before colliding with it, an issue strikingly similar to the fact question presented here, we quote at length from the trial court's opinion as cited in *Kaminski*:

> "A logical and probable inference can be drawn from the testimony that the trailer was near the track too close for clearance; that either the trailer was seen by the conductor in that position or that it was there to be seen and should have been seen by required care and watchfulness. That such inference is a legitimate one is somewhat supported by the conductor's own opinion given immediately after the accident and so reported by him at the time.
>
> Inasmuch as it was the conductor's duty to watch out for obstacles along the spur track, that he knew of the previous existence of these trailers in the close vicinity of the spur track, that he had a lantern with him that showed 25 to 40 feet in addition to the headlight of the Diesel, that he could see an unstated distance which was upwards of five feet beyond the left track, there was a question of fact

The circuit court's role as a gatekeeper of expert testimony does not extend to resolving disputed fact questions. "The soundness of the factual underpinnings of the expert's analysis and the correctness of the expert's conclusions based on that analysis are factual matters to be determined by the trier of fact, or, where appropriate, on summary judgment." *Smith v Ford Motor Co*, 215 F3d 713, 718 (CA 7, 2000). A jury rather than the circuit court must resolve the parties' underlying factual disagreement concerning Kassem's awareness of the truck. If a jury concludes that Kassem never saw the truck, it will reject Spitz's opinions as factually unsound. Alternatively, a jury may decide that Kassem's headlights and the streetlights would have made the truck visible at some point before the crash. This view of the evidence is supported by specific facts of record and consistent with the witness testimony. Cross-examination will aid in exposing the strengths and weaknesses of both views. But regardless of which side has the more credible argument concerning Kassem's ability to see the truck in the moments before the crash, Spitz was entitled to base his opinion on a disputed fact. In deciding that Spitz based his opinions on assumptions not in accord with established facts, the trial court abused its discretion. Rather than performing a gatekeeper function, the circuit court acted as a fact finder.

Finally, we address the circuit court's assessment that Dr. Spitz's testimony would not benefit the trier of fact. Although common wisdom holds that fright and shock can cause sudden death, whether it did so in this case is beyond the understanding of the average lay person. The relevance of scientific evidence is established simply by a finding that it "will assist the trier of fact . . . to determine a fact in issue." MRE 702. The circuit court identified no reason that medical testimony would be unhelpful or unnecessary to the jury's consideration of the cause of Kassem's death.

To summarize, the circuit court abused its discretion by excluding Spitz's causation testimony. Dr. Spitz grounded his opinion within the factual record and reasonably applied the methods used by forensic pathologists in determining cause of death. The circuit court's

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> for the jury as to whether or not the conductor should have seen the trailer, there having been nothing else in the area that could have come in contact with the gondola car except the trailer, which the conductor testified could have caused the scraping sound that he heard, and, seeing it, have taken precautions to avoid the accident." [*Id*. at 426-427.]

The Supreme Court concluded:

> All in all, we are constrained to agree with the trial judge that the jury had a right to draw the same inference as was drawn by conductor Miller when he reported the accident-that the trailer was "parked too close to track" and that it was struck with result as claimed by plaintiff. This means that the jury of right could infer negligence from conductor Miller's failure to discover and act upon presence of the trailer at left trackside, and it means that the motion for directed verdict was properly denied. [*Id.* at 428.]

abbreviated decision provides this court with no indication that the circuit court properly applied the governing law to the facts of the case. Proper execution of a trial court's gatekeeping function requires more than rote recitation of a formulaic ruling. Accordingly, we vacate the order granting defendants' motion in limine.

We now turn to the appellate arguments made by defendants in support of the circuit court's ruling. Defendants initially contend that "[b]ased on the documentary medical evidence/opinions . . . it . . . is most likely that the decedent was having a cardiac arrhythmia before the impact occurred, which explains why he failed to apply the brakes or make any attempt whatsoever to avoid the collision."[6] Regarding Dr. Spitz's theory, defendants argue that the proffered medical literature omits an "error rate" and "the standards governing the application[.]" Further, defendants assert, Dr. Spitz's theory "has not been tested or peer reviewed, and there is no evidence to suggest that this theory is widely accepted regarding similar accidents where no autopsy was performed."

Defendants offer no explanation for accepting their view of the chain of causation leading to Kassem's death over that of Dr. Spitz. Notably, even defendants' expert, Dr. Zobl, refused to be pinned down as to when Kassem's cardiac event occurred. Defendants' remaining arguments invoke the admissibility standards set forth in MCL 600.2955(1), which requires that a circuit court consider seven factors, including "[t]he known or potential error rate of the opinion and its basis," MCL 600.2955(1)(d), and "[t]he 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." MCL 600.2955(1)(c). "[A]lthough MCL 600.2955(1) explicitly requires the trial court to *consider* all seven of the factors it enumerates, the statute does not require that each and every one of those seven factors must favor the proffered testimony." *Chapin*, 274 Mich App at 137 (emphasis in original). Defendant has not explained how Dr. Spitz's theory could be evaluated for an error rate or why it is inconsistent with the methodological standards of forensic pathology. We find those factors inapposite to the scientific issue under consideration in this case. And contrary to defendants' argument, the medical journal articles Spitz provided appear to have been peer-reviewed.

Defendants additionally rely on an oft-cited passage from *General Electric Co v Joiner*, 522 US 136; 118 S Ct 512; 139 L Ed 2d 508 (1997), in contending that Dr. Spitz's testimony rests on an inadequate foundation. In *Joiner*, the United States Supreme Court considered whether a United States District Court had properly excluded expert testimony linking Robert Joiner's small-cell lung cancer to his exposure to chemicals used in his workplace. *Id.* at 139-140. The district court determined that the four epidemiological studies cited by Joiner's experts failed to establish that Joiner's cancer was caused by exposure to workplace chemicals. After examining each study, the district court concluded that the studies failed to support the experts'

[6] We note that defendants failed to present the trial court with any medical or scientific literature substantiating this claim. Dr. Zobl, a cardiologist, refused to render a definitive opinion concerning the timing of Kassem's arrhythmia.

conclusions. *Id.* at 144-145. The Supreme Court held that the district court had not abused its discretion in reaching this conclusion, explaining:

> Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered. . . . That is what the District Court did here, and we hold that it did not abuse its discretion in so doing. [*Id.* at 146 (citation omitted).]

The "data" referred to by the Court in *Joiner* consisted of the four studies relied upon by the plaintiff's expert witnesses. "[G]iven the tenuous link in *Joiner* between plaintiff's exposure to PCBs and the onset of his cancer a number of years later, the lack of studies linking PCBs to cancer in humans left only 'the *ipse dixit* of the expert' to support his conclusion." *Heller v Shaw Indus, Inc*, 167 F3d 146, 155 (CA 3, 1999). Thus, the Court's "ipse dixit" statement allows trial courts to close the evidentiary gate when an expert's conclusions lack any genuine relationship to the science alleged to support them. Had the scientific articles Dr. Spitz submitted in support of his theory failed to substantiate that sudden and intense fear can trigger a cardiac arrhythmia, his opinions would have been inadmissible *ipse dixit.* Here, however, the science supports Dr. Spitz. Contrary to defendants' argument, *Joiner*'s prohibition of scientifically unsupported expert testimony does not permit a trial court to exclude a reliable opinion predicated on a reasonable view of contested foundational evidence.

Based on our ruling that Spitz's testimony is admissible, the circuit court improperly granted defendants summary disposition under MCR 2.116(C)(10).

We reverse the circuit court's in limine order and the order granting summary disposition, and remand for further proceedings consistent with this opinion. We do not retain jurisdiction.

/s/ Joel P. Hoekstra
/s/ David H. Sawyer
/s/ Elizabeth L. Gleicher