

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO
Judge Philip A. Brimmer

Civil Case No. 07-cv-01844-PAB-KLM
(consolidated with 07-cv-02248-PAB-BNB)

WENDY WILSON, as an individual and as the next of kin and personal representative
of Ryan Wilson, deceased, et al.,

Plaintiffs,

v.

CITY OF LAFAYETTE, et al.,

Defendants.

ORDER

This case arises out of the death of Ryan Wilson after a police pursuit. The pursuit ended when a police officer shot Mr. Wilson with a TASER and, shortly thereafter, Mr. Wilson died. In support of their claims against defendant Taser International, Inc. (“Taser”), which manufactured the device, plaintiffs seek to introduce expert testimony regarding the potential causal connection between the use of the TASER and Mr. Wilson’s death. Taser asks the Court to exclude the testimony of plaintiffs’ proffered causation experts pursuant to Federal Rule of Evidence 702 [Docket Nos. 124, 125, 126, and 130]. The motions are fully briefed and ripe for disposition.¹

¹At the September 24, 2009 hearing on pending motions in this case, the parties agreed that the record on these motions was complete and that there was no need for separate evidentiary hearings.

I. BACKGROUND²

On August 4, 2006, Ryan Wilson was approached by two undercover officers from the Boulder County Drug Task Force in a field in Louisville, Colorado. Upon realizing that he was speaking to police officers, Mr. Wilson fled. The officers chased him for approximately three-quarters of a mile across rough terrain and multiple fences.³ Officer John Harris arrived by police vehicle during the pursuit and identified Mr. Wilson from a description he received from the other officers. He also began pursuing Mr. Wilson by foot. Mr. Wilson then approached another fence. There is a dispute regarding whether Mr. Wilson stopped, turned to face Officer Harris, and turned to flee again or whether Mr. Wilson simply slowed down as he approached the fence. In any event, at this stage of the encounter, Officer Harris discharged an X26 model TASER device at Mr. Wilson.

When the trigger on a TASER is pressed, two probes connected by wires to the device are fired. If both probes lodge in the skin or clothing of the person targeted, an electrical current will flow between the two probes. This current will override the target's central nervous system and cause loss of muscle control. There is no dispute that one of the TASER probes hit and secured itself to Mr. Wilson's left side. While there is some dispute regarding whether and where the second probe hit, there is some

²For purposes of this motion, a brief factual recitation will suffice. To the extent relevant to specific proffered expert testimony, additional factual discussion will be included below. Unless otherwise indicated, the recited facts are not in dispute.

³Many of the details surrounding the encounter between Mr. Wilson and the police, while relevant to other issues in this case, are largely immaterial to the instant motions.

evidence that it may have struck Mr. Wilson in the back of the head or neck and that an electrical current flowed between the two probes. In any case, at the same time Officer Harris shot Mr. Wilson with the TASER, Mr. Wilson immediately fell to the ground, face down, and was unresponsive to Officer Harris' commands. Upon reaching Mr. Wilson, the pursuing officers turned him over and detected breathing and a pulse. Between ten seconds and a minute later, however, Mr. Wilson stopped breathing and the officers could no longer detect a pulse. The officers' attempts to resuscitate him failed. It was later discovered that Mr. Wilson suffered from hypoplastic coronary artery disease and myocardial bridging near his heart.

II. FEDERAL RULE OF EVIDENCE 702

Federal Rule of Evidence 702 provides that

[i]f 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 upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evid. 702. As the rule makes clear, while required, it is not sufficient, that an expert be qualified based upon knowledge, skill, experience, training, or education to give opinions in a particular subject area. Rather, the Court must "perform[] a two-step analysis." *103 Investors I, L.P. v. Square D Co.*, 470 F.3d 985, 990 (10th Cir. 2006). After "determin[ing] whether the expert is qualified by 'knowledge, skill, experience, training, or education' to render an opinion," *id.* (quoting Fed. R. Evid. 702), the specific proffered opinions must be assessed for reliability. See *id.*; Fed. R. Evid. 702 (requiring

that the testimony be “based upon sufficient facts or data,” be the “product of reliable principles and methods,” and reflect a reliable application of “the principles and methods . . . to the facts of the case”).

Rule 702 “imposes on the district court a gatekeeper function to ‘ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.’” *United States v. Gabaldon*, 389 F.3d 1090, 1098 (10th Cir. 2004) (quoting *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993)). To execute that function, the Court must “assess the reasoning and methodology underlying the expert’s opinion, and determine whether it is both scientifically valid and applicable to a particular set of facts.” *Dodge v. Cotter Corp.*, 328 F.3d 1212, 1221 (10th Cir. 2003) (citing *Daubert*, 509 U.S. at 592-93). When assessing reliability, “the court may consider several nondispositive factors: (1) whether the proffered theory can and has been tested; (2) whether the theory has been subject to peer review; (3) the known or potential rate of error; and (4) the general acceptance of a methodology in the relevant scientific community.” *103 Investors I*, 470 F.3d at 990 (citing *Daubert*, 509 U.S. at 593-94). These considerations are not exhaustive. Rather, “the trial judge must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable.” *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999). Ultimately, the test requires that the expert “employs in the courtroom the same level of intellectual rigor that characterizes the practice of any expert in the relevant field.” *Kumho Tire Co.*, 526 U.S. at 152.

While plaintiffs, as the proponents of the challenged testimony, have the burden

of establishing admissibility, their proffer is tested against the standard of reliability, not correctness; they need only prove that “the witness has sufficient expertise to choose and apply a methodology, that the methodology applied was reliable, that sufficient facts and data as required by the methodology were used and that the methodology was otherwise reliably applied.” *United States v. Crabbe*, 556 F. Supp. 2d 1217, 1221 (D. Colo. 2008).

In sum, expert testimony must be excluded if the expert is unqualified to render an opinion of the type proffered, if the opinion is unreliable, if the opinion will not assist the trier of fact, or if the opinion is irrelevant to a material issue in the case.

III. DISCUSSION

A. Phillip S. Wolf, M.D.

In determining whether expert testimony is admissible, the district court generally must first determine whether the expert is qualified “by knowledge, skill, experience, training, or education” to render an opinion. *United States v. Nacchio*, 555 F.3d 1234, 1241 (10th Cir. 2009) (en banc).

As TASER concedes in its reply brief, Taser’s Reply [Docket No. 187] at 2, Dr. Wolf is a reputable cardiologist. Dr. Wolf’s curriculum vitae indicates that he is board certified in Internal Medicine and Cardiovascular Medicine and is a fellow in the American College of Cardiology. He has been a professor of medicine since 1966 at the University of Colorado Health Sciences Center. Ex. 3 to Pls.’ Response [Docket No. 161-4]. Moreover, he has authored or co-authored a number of articles on atrial fibrillation and arrhythmias. Ex. 4 to Pls.’ Response [Docket No. 161-5].

However, the Court must examine the opinion being challenged before it can determine the relevancy of these qualifications. See *Crabbe*, 556 F. Supp. 2d at 1221. Taser challenges Dr. Wolf's qualifications to offer an opinion as to whether fright caused by seeing the TASER device could have contributed to Mr. Wilson's death.⁴ Dr. Wolf's initial report, which was one page long, does not state his opinion regarding the cause of death. See Ex. 1 to Pls.' Response [Docket No. 161-2]. However, during his deposition, Dr. Wolf stated that "Mr. Wilson's . . . death was related to extreme physical and emotional stress aided and abetted by the deployment of a Taser gun." Ex. A-16 to App. to Taser's Rule 702 Mots. [Docket 128-20] at 20:9-12. By "deployment of the Taser gun," Dr. Wolf testified that he meant the aiming of the device at Mr. Wilson. *Id.* at 57:18-20. Dr. Wolf further stated that "I would submit that his death was caused by the fright engendered by the chase and the pointing of the Taser gun." *Id.* at 88:9-11. Dr. Wolf testified that Mr. Wilson's death was not caused by ventricular fibrillation. *Id.* at 9:12-14. Dr. Wolf does agree that Mr. Wilson died of cardiac arrest. *Id.* at 74:3-4.

TASER points out that Dr. Wolf admitted that he has not researched levels of emotional stress, the stress caused by encounters with police officers pointing a weapon at the subject, and emotional stress caused by deployment of TASERs. *Id.*, 56:24 - 57:12. Dr. Wolf also admitted that he has not published any papers on the issue of high levels of emotional stress. *Id.* at 56:17-20. Moreover, the record contains no evidence that Dr. Wolf has ever reviewed any medical literature regarding stress

⁴ Because Dr. Wolf does not claim that electroshock from the deployment of the TASER caused Mr. Wilson's cardiac arrest, Dr. Wolf's lack of experience with how TASER devices affect humans when discharged is irrelevant to the admissibility of his opinion on the cause of death.

from seeing a weapon. In response, plaintiffs claim that Dr. Wolf is “intimately familiar with how stressors affect the heart,” Pls.’ Response [Docket No. 161] at 4, has 44 years of clinical experience as a cardiologist, has extensively reviewed published materials on high levels of emotional stress, and has reviewed Mr. Wilson’s medical records. *Id.* at 6. Plaintiffs assert that “Dr. Wolf, based upon his experience and training, is qualified to offer his opinion with respect [to] Ryan’s cause of death because he is a cardiologist.” *Id.* at 9.

The Court agrees with Taser that Dr. Wolf lacks the requisite knowledge, skill, experience, education, or training to offer an opinion that merely seeing the TASER in the hands of Officer Harris contributed to Mr. Wilson’s death. Familiarity with medical literature on the effects of high levels of emotional stress does not allow an experienced cardiologist, without more, to testify as to whether merely seeing a TASER device could have helped cause cardiac arrest.

Taser claims that Dr. Wolf’s methodology in forming his opinion was nothing more than reading the materials he was given and synthesizing them. Taser’s Rule 702 Mot. [Docket No. 124] at 13. When asked what his method in arriving at his opinions was, Dr. Wolf stated: “I would look at all the records I had at the time, and I would synthesize it by sitting at my computer with the file on my left side and transcribe my opinion from that.” Ex. A-16 to App. to Taser’s Rule 702 Mots. [Docket 128-20] at 45:7-11. Plaintiffs do not explain Dr. Wolf’s methodology in their response.

The party offering the expert “must show that the method employed by the expert . . . is scientifically sound.” *Nacchio*, 555 F.3d at 1241 (citing *Dodge v. Cotter Corp.*, 328 F.3d 1212, 1222 (10th Cir. 2003)). Generally, a court should focus on an expert’s

methodology rather than on the conclusions it generates. *Dodge*, 328 F.3d at 1222.

However, since Dr. Wolf did not identify anything by way of a formal methodology, it is helpful to consider the nature of his opinion. The opinion at issue, that Mr. Wilson's seeing the TASER contributed to his cardiac arrest, is not an obvious proposition.

Instead, Dr. Wolf's opinion that Mr. Wilson seeing the TASER helped to cause his heart failure is somewhat remarkable. The fact that this remarkable opinion is not the product of research into fright-induced heart failure, studies of the degree to which TASERs are visible when being held in an officer's hand, and case reports of suspects having heart attacks after seeing (or knowing) that a weapon is being pointed at them, but rather is based on no methodology besides generalized knowledge about the effect of high levels of stress causes this opinion to fall squarely within what has been described as "unscientific speculation offered by a genuine scientist." *Mitchell v. Gencorp Inc*, 165 F.3d 778, 783 (10th Cir. 1999) (quoting *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 318 (7th Cir. 1996)). Plaintiffs have failed to demonstrate that Dr. Wolf arrived at his opinion by means of a reliable methodology.

For two independent grounds – lack of qualifications and lack of methodology– Dr. Wolf's opinion that Mr. Wilson's death was caused, in part, by the fright of seeing or believing that a TASER was pointed at him will be excluded.

B. David S. Rosenbaum, M.D.

Plaintiffs have offered the testimony of Dr. David S. Rosenbaum regarding the potential causes of Mr. Wilson's death. Taser does not contest Dr. Rosenbaum's expertise in the areas of cardiology and clinical electrophysiology. Taser points out that

he does not have prior experience relating to the specific effects of TASERs. That alone, however, does not automatically render him unqualified to proffer an opinion on the physiological effects of a Taser charge. Taser asserts that “[a]s the Court did in *TASER Int’l, Inc. v. Chief Medical Examiner of Summit County, Ohio*, Case No. CV 2006-11-7421, May 2, 2008 (Court of Common Pleas, Summit County, Ohio) . . . , *Neal-Lomax v. Las Vegas Metro. Police Dep’t*, 574 F. Supp. 2d 1193, 1203-04 (D. Nev. 2008), and *Lash v. Hollis*, 525 F.3d 636, 641 (8th Cir. 2008), this Court should not allow Rosenbaum to testify about the core issue in this case – causation – since he lacks the relevant expertise to opine on the physiological effects from the use of a TASER device.” Taser’s Rule 702 Mot. [Docket No. 125] at 11. That other courts exercised their discretion to exclude testimony in cases regarding TASERs involving different factual contexts, legal postures, or expert opinions does not provide significant instruction to the proper exercise of discretion in this case. Moreover, Dr. Rosenbaum’s proffered testimony does not suffer from some of the deficiencies noted in two of the cases cited by Taser. For example, Dr. Rosenbaum has researched the medical literature surrounding TASERs, *cf. Neal-Lomax*, 574 F. Supp. 2d at 1203-04, and has engaged in differential diagnosis, *cf. Lash v. Hollis*, 525 F.3d at 640.

The Court finds that Dr. Rosenbaum is qualified, based on education, experience, knowledge, and skill, in the areas of cardiology, electrophysiology, and biomedical engineering – which Taser does not contest.⁵ These are all areas relevant to the opinions he offers in this matter. Plaintiffs have satisfied their burden at the first

⁵Dr. Rosenbaum also has training as an electrical engineer.

step of the Rule 702 admissibility analysis.

That, of course, does not end the inquiry. The specific testimony Dr.

Rosenbaum seeks to give must be tested for reliability. The following constitute Dr.

Rosenbaum's conclusions, as articulated in his expert report:

It is not possible to ascribe the cause of death with certainty to any one single factor. Physical stress coupled with hypoplastic coronary artery syndrome w[ere] . . . likely strong contributors to Mr. Wilson's death. Respiratory compromise could have also contributed. If the TASER did indeed discharge electrical current into Mr. Wilson's chest, it is possible that it too could have contributed to his death. While scientific literature suggest that the likelihood of inducing ventricular fibrillation by a TASER is low, and requires dart configurations which may not have been present in this case, it is not know[n] whether such restricted conditions are required to induce arrhythmias in individuals with underlying heart disease, as in Mr. Wilson's case. The very striking temporal relationship between deployment of the TASER and collapse remains troubling. Dr. Jeff Ho points out in his review of this case that implicating the TASER to Mr. Wilson's death remains "false logic", and the temporal association between deployment of the TASER and collapse does not prove causality. While this is true, the evidence in this case is not sufficient to prove with certainty an alternative cause of death. The finding of hypoplastic coronary arteries at autopsy does not prove it as a cause of death either. Therefore, it is difficult to absolutely rule in or rule out a contributory role of the TASER in this case.

Ex. 3 to Pls.'s Response [Docket No. 168-4] at 6. Consistent with this opinion, Dr.

Rosenbaum testified at his deposition as follows:

[W]hat the probability was that the TASER actually caused him to die, it's very difficult to say with certainty. And as a scientist and as a clinician, I'm always very careful about numbers and I – I really don't want to say anything that exceeds the evidence that's available in medical literature, because I just don't think the evidence is good enough to tell us either way whether it's safe or unsafe. But I think taking all the knowledge we have at this point in time, I think it's – it's hard to dismiss the possibility that the TASER precipitated his death. And there's one additional factor which is also hard to get around, which is the temporal correlation between the application of TASER and when he collapsed suddenly. So he – the clinical description was someone who – who fell over suddenly, which is consistent with a cardiovascular cause of death and arrhythmia, wouldn't be expected if someone had a respiratory arrest, for example, and this occurred at exactly

the same time when the TASER energy was applied. So that's another piece of information, I think, is very hard to ignore and very strongly implicates the TASER. It doesn't prove causality, but it – it implicates the TASER. And when taken with all the other information, it's hard to dismiss it. It's hard to dismiss it.

Ex. 2 to Pls.' Response [Docket No. 168-3] at 30:8 - 31:13. At his deposition, Dr. Rosenbaum stated that, in light of additional reading of the relevant literature, he found it "more difficult to rule [the TASER] out" than at the time he drafted his report. *Id.* at 54:12. Furthermore, he testified that "[b]ased on the clinical scenario and the time course of events, it's more likely than not that there was ventricular tachycardia and fibrillation. And, of course, the absence of proof is natural because . . . people don't walk around with electrocardiograms. So there's no way we would ever be able to prove it." *Id.* at 113:11-18.

In addition to challenging his specific expertise with TASERs, as addressed above, Taser argues that Dr. Rosenbaum's opinion is not based upon sufficient facts or data, will not assist the trier of fact, and was not stated to a reasonable degree of medical certainty. The Court is unpersuaded and finds that plaintiffs have met their burden of establishing the admissibility of Dr. Rosenbaum's opinions as stated in his expert report and deposition.

While Taser is correct that a "court may conclude that there is simply too great an analytical gap between the data and the opinion proffered," *Dodge*, 328 F.3d at 1222, that is not the case here. Taser argues that Dr. Rosenbaum is speculating that the two probes actually struck Mr. Wilson and delivered electricity to his body. The question of whether both probes attached and the TASER discharged electricity is disputed in this case. There is, however, evidence supporting the conclusion that both

probes attached to Mr. Wilson. In any event, the question is not whether the facts underlying his opinion are correct, particularly where they are facts in dispute and within the purview of the jury's determinations. Such an underlying assumption is better left for attack via contrary evidence and cross-examination. See *Larson v. Kempker*, 414 F.3d 936, 941 (8th Cir. 2005) ("As a general rule, the factual basis of an expert opinion goes to the credibility of the testimony, not the admissibility, and it is up to the opposing party to examine the factual basis for the opinion in cross-examination."). Instead, the question is whether the facts, as understood and applied by Dr. Rosenbaum, are sufficient to support his opinion.⁶ Dr. Rosenbaum is not being offered as a TASER expert, and he need not be one. Upon reviewing the record, including the sequence of events and the nature of Mr. Wilson's response to the TASER shot, as well as reviewing the relevant medical literature, Dr. Rosenbaum had a sufficient factual basis to render his tempered and qualified opinion regarding the potential causes of Mr. Wilson's death, including the potential impact of the TASER's electrical charge.⁷ Of course, if the trier of fact is convinced that no electrical charge passed through Mr. Wilson's body, then Dr. Rosenbaum's opinion, to the extent it was based on that assumption, will be undermined.

⁶Dr. Rosenbaum noted that direct evidence of ventricular tachyarrhythmia or fibrillation is "very difficult to obtain . . . unless the individual happens to have a pacemaker or defibrillator because on autopsy if the person had sudden cardiac death from VF, you wouldn't have anything" Cf. Ex. 2 to Pls.' Response [Docket No. 168-3] at 105:1-6. Yet, he was clear that he did "have evidence – it may not be the best evidence, but I have evidence that said well these things happened." *Id.* at 112:20-22.

⁷Beyond noting his lack of specific experience with TASERs, Taser largely leaves that point uncontested.

In any event, Dr. Rosenbaum fully accounts for the existence of other possibilities and does not attempt to render an opinion extending beyond the available evidence. In that way, his opinion does not evidence an analytical leap. Dr. Rosenbaum's conclusions "follow from the data." *Bitler v. A.O. Smith Corp.*, 391 F.3d 1114, 1121 (10th Cir. 2004) ("[W]hen the conclusion simply does not follow from the data, a district court is free to determine that an impermissible analytical gap exists between premises and conclusion."). He fully describes the nature, scope, and limitations to the evidence available – an approach Taser does not seriously contest – and then renders an opinion regarding the potential causes of death, explaining how he excluded or discounted causes other than those described in his ultimate conclusions. *Cf. LeBlanc v. City of Los Angeles*, No. CV 04-8250 SVW (VBKx), 2006 WL 4752614, at *8 (C.D. Cal. Aug. 16, 2006) ("The absence of other probable causes, combined with the temporal relationship between the second Taser discharge and LeBlanc's cardiac arrest, led him to identify Taser as the cause of death. . . . There is no reason to believe that this conclusion is speculative rather than based on Dr. Ordog's experience and accepted medical science."). Some of that evidence included animal studies. Taser argues that renders Dr. Rosenbaum's methodology suspect to the extent he creates a definitive link between animal studies and humans. There is no basis for Taser's objection, as Dr. Rosenbaum is clear about the limitations of animal studies and the qualified role they played in his opinion. See Ex. 3 to Pls.' Response [Docket No. 168-4] at 2 (identifying some of the limitations on extrapolating animal studies to humans and declining to make a definitively probabilistic link); Ex. 2 to Pls.' Response [Docket No. 168-3] at 63:21 - 64:23 (noting the limitations of different forms of experimental

models but opining that “the animal studies have provided a very important proof of concept, and that proof of concept is that the application of the TASER waveform to the body surface can capture the heart muscle and cause fibrillation”).⁸

Taser further takes issue with Dr. Rosenbaum’s consideration of the temporal relationship between the TASER discharge and Mr. Wilson’s death. As an initial matter, Dr. Rosenbaum made clear that he did not rely upon that alone, but rather that it was a fact to be considered when rendering his opinion. Taser argues that such a consideration is barred as a matter of law. To so find would mean that Taser would be entitled to a special causation rule by which the default assumption is that TASERs cannot cause cardiac arrest, not only as a matter of science, as it would argue to a trier of fact, but as a matter of law, somehow barring consideration of otherwise reliable evidence supporting causation. In an effort to achieve the adoption of such a rule, Taser applies an overly broad and logically flawed interpretation of *post hoc ergo propter hoc*, the logical fallacy that because an event follows another, it was necessarily caused by the earlier event. Taser is correct that application of such false reasoning can blind one to alternative possibilities, many of which will be as or more plausible. In this case, for instance, such a fallacy would be at work if plaintiffs’ theory of causation was that, because Officer Harris opened his patrol car door not long before Mr. Wilson’s death, the opening of the door must have caused his death.

Taser, however, is seeking to have this Court apply a rule of logic that may also

⁸As this indicates and will be discussed further below, Taser’s true objections to Dr. Rosenbaum’s opinions do not relate to the methodology or the fit between the data and his opinions, but rather to the weight those opinions should be accorded.

yield inaccurate results, i.e., that sequence is not relevant to causation. That is not necessarily true. This is not a case of mere temporal proximity, but rather of near temporal synchrony: Mr. Wilson collapsed at the same time he was struck by at least one TASER probe. To the extent certain events occur nearly simultaneously – for instance, a baseball bat making contact with a person who immediately falls over – the causal connection between them becomes quite strong. That does not mean that contrary explanations are not possible or may not be offered (or that additional expert testimony regarding areas outside the jury’s knowledge may also be required or helpful). Here, however, in addition to the remarkable temporal proximity, plaintiffs have offered Dr. Rosenbaum’s testimony which includes differential diagnosis providing the trier of fact with helpful information regarding the likelihood of other, independent causes of death.⁹ See *LeBlanc*, 2006 WL 4752614, at *8 (noting that differential diagnosis “is a standard scientific technique of identifying the cause of a medical problem by eliminating the likely causes until the most probable one is isolated.”) (quoting *Clausen v. M/V New Carissa*, 339 F.3d 1049, 1057 (9th Cir. 2003)). In that

⁹It is true that Dr. Rosenbaum opines that the exertion and underlying hypoplastic coronary artery disease were “likely strong contributors to Mr. Wilson’s death.” Taser is correct, then, that Dr. Rosenbaum did not rule out that those things could have independently caused Mr. Wilson’s death. That, however, goes to the weight of the testimony. Taser is free to cite his opinion as well as those of its own experts in its attempt to claim there is insufficient proof of causation, either at summary judgment or trial. Yet, Dr. Rosenbaum did provide opinions regarding the potential connections between Mr. Wilson’s heart conditions and his death. At his deposition, he testified that, while “in some instances, [myocardial bridging] . . . can be clinically significant,” it is “very common” and “means almost nothing in terms of its possibility of being clinically relevant.” See Ex. 2 to Pls.’ Response [Docket No. 168-3] at 62:19-25. In regard to the hypoplastic coronary artery disease, he testified that it is a “potential cause of sudden death,” though is “[e]xtremely rare.” *Id.* at 63:4-7. Taser does not take issue with these specific opinions.

way, Dr. Rosenbaum's testimony will be potentially helpful to the trier of fact and is relevant to a material issue in the case, contrary to Taser's second main objection to the testimony.

Finally, Taser argues that Dr. Rosenbaum's opinion is insufficiently certain. It is not. Rather, it is non-definitive. It would be one thing if Dr. Rosenbaum had said he was uncertain about how the heart is capable of stopping, how electrical pulses could have acted upon the heart, or whether Mr. Wilson's response was consistent with such an occurrence. About such relevant matters, Dr. Rosenbaum is certain. Dr. Rosenbaum is simply unwilling to make a definitive claim that the Taser caused Mr. Wilson's death. See *Goebel v. Denver and Rio Grande Western R. Co.*, 346 F.3d 987, 991 (10th Cir. 2003) ("While expert opinions 'must be based on facts which enable [the expert] to express a reasonably accurate conclusion as opposed to conjecture or speculation, . . . absolute certainty is not required.'") (citation omitted); see also *Warren v. Tastove*, 240 F. App'x 771, 773 (10th Cir. 2007) (unpublished) (requiring that "an opining physician . . . offer an opinion with a reasonable degree of medical certainty" and noting that "a hunch, even an educated hunch, is not enough"); *In re Fosamax Products Liability Litigation*, 645 F. Supp. 2d 164, 173 (S.D.N.Y. 2009) ("To be scientifically valid, the subject of expert testimony need not be 'known to a certainty' because, 'arguably, there are no certainties in science.' Rather, the testimony must rest on 'good grounds, based on what is known.'") (quoting *Daubert*, 509 U.S. at 590 (internal quotation marks omitted)); *Anderson v. Hess Corp.*, 592 F. Supp. 2d 1174, 1178 (D.N.D. 2009) ("Neither Rule 702 nor *Daubert* requires the expert testimony to

resolve the ultimate issue of fact to a scientific absolute.”).¹⁰ In that way, he limits himself to what the evidence supports in his view and does so in a manner that the Court deems to be reliable, thorough, and consistent with the “intellectual rigor that characterizes the practice of an expert in the relevant field.” *Kumho Tire Co.*, 526 U.S. at 152.¹¹ Indeed, for the most part, Taser does not seriously contest that conclusion and is correct that Dr. Rosenbaum will not opine that the TASER was the definitive cause of death. But he need not and has not suggested he would.

In sum, plaintiffs have met their burden of showing, at this stage of the proceedings, that Dr. Rosenbaum is qualified to render the proffered opinions and that the opinions are reliable and will assist the trier of fact. Taser has not seriously called into question the “reasoning and methodology underlying [Dr. Rosenbaum’s] opinion,” *Dodge*, 328 F.3d at 1221. Rather, Taser questions the validity of the opinion in the guise of attacking its admissibility. To the extent Taser seeks to undermine confidence in the correctness of the opinion or to highlight the limited scope of the opinion, it may do so through normal means at trial. *See Daubert*, 509 U.S. at 596 (“Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible

¹⁰*Cf. Vision I Homeowners Ass’n, Inc. v. Aspen Specialty Ins. Co.*, --- F. Supp. 2d ---, 2009 WL 4809877, at *3 (S.D. Fla. Dec. 15, 2009) (“Relevant testimony from a qualified expert is only admissible if the expert knows of facts which enable him to express a reasonably accurate conclusion as opposed to conjecture or speculation. However, absolute certainty is not required.”) (citations omitted)

¹¹*See Bonner v. ISP Technologies, Inc.*, 259 F.3d 924, 929 (8th Cir. 2001) (“The only question relevant to the admissibility of the scientific evidence is whether it is sufficiently reliable and relevant to assist the jury’s determination of a disputed issue.”).

evidence.”).

C. Kelly C. Lear-Kaul, M.D.

Dr. Lear-Kaul, a forensic pathologist, offers the following opinion in her autopsy report regarding the cause of Mr. Wilson’s death:

Although the Taser is used in numerous law enforcement agencies throughout the United States as a “less-than-lethal” or “non-lethal” weapon, several deaths have been reported as being related to Taser use; in very few of these cases has the decedent succumbed immediately upon Taser application, contrary to the timeline as is seen in this case. In addition, the decedent had no illicit drugs (stimulants or otherwise) in his system, further distinguishing him from the “excited delirium” category to which many of these deaths are attributed. Although many studies have failed to show adverse effects of Taser application in volunteers, it remains unclear the effect electrical weapons have in states of stimulation (from exertion or hyperadrenergic state due to altercation or confrontation by law enforcement). It is certainly conceivable that in these conditions, the increased cardiac muscle excitability makes the heart more susceptible to arrhythmia induced by Taser discharge. The presence of a hypoplastic coronary artery may have played a direct role in the death; sudden death has been attributed to this anomaly, particularly in young people, however some authors believe that coronary artery hypoplasia is an inappropriate explanation for cardiac dysfunction. In addition, this death may be viewed as similar to deaths from commotio cordis, where a physical blow to the chest, or in this case application of electrical current, causes fatal arrhythmia due to interruption of the cardiac conduction cycle.

In summary, the ultimate cause of cardiac arrhythmia in this case appears multifactorial, and includes the Taser application, hypoplastic coronary artery, and extreme exertion. The use of a Taser cannot be overlooked, particularly given the timeline of events, with the decedent collapsing and becoming pulseless and unresponsive immediately following Taser discharge.

Ex. 2 to Pls.’ Response [Docket No. 160-3] at 2-3.

While Taser contends that Dr. Lear-Kaul is not qualified “to testify about the core issue in this case – causation,” Taser’s Rule 702 Mot. [Docket No. 126] at 11, it does not seriously challenge Dr. Lear-Kaul’s qualifications to conduct an autopsy and to

render opinions regarding the condition of the body and the absence of other apparent causes. That is to be expected, as Dr. Lear-Kaul's qualifications in that regard are apparent. Dr. Lear-Kaul completed a residency in anatomic and clinical pathology followed by a one-year fellowship in surgical pathology. Ex. 1 to Pls.' Response [Docket No. 160-2] at 32:14-17. She has personally completed more than 1,300 autopsies in her time as a forensic pathologist with the Arapahoe County Coroner's Office in Arapahoe County, Colorado. *Id.* at 6:14-15, 30:12-13. Consequently, the Court finds that Dr. Lear-Kaul may testify about how she conducted the autopsy of Mr. Wilson and the process by which she ruled out certain causes of death.

As for her specific opinions, Dr. Lear-Kaul may testify to the presence of a hypoplastic coronary artery and to her opinion that, in light of ruling out other causes and her examination, Mr. Wilson died of a cardiac arrhythmia. She may also testify, based on her education and experience, that cardiac arrests caused by electrical currents leave no detectable evidence in the heart. *See id.* at 164:25 - 165:7. Her qualifications to render, and her methodology in reaching these opinions, are largely undisputed. The Court is satisfied, at this stage of the proceedings, that these opinions are reliable and will be helpful to a jury charged with determining causation.

As for Dr. Lear-Kaul's inclusion of the TASER as a potential cause of death, her testimony will be excluded. The Court finds that, because Dr. Lear-Kaul's opinion regarding the nature and effect of a TASER is based solely on the temporal sequence of events and on a limited amount of post-autopsy research on TASERs, she may not offer her opinion regarding the specific nature of the possible impact of the TASER

charge.¹² In other words, the Court agrees with Taser that Dr. Lear-Kaul's inclusion of the TASER as a possible contributing cause is based almost exclusively on the temporal proximity between the TASER charge and Mr. Wilson's death. It is certainly to be expected that, having ruled out other potential causes, Dr. Lear-Kaul focused some attention in her autopsy report on the TASER's potential role in Mr. Wilson's death. But her opinion on that ultimate point will not be helpful to a jury in this civil case, as the autopsy report does not provide a specific and well-founded explanation of the manner in which a TASER could have caused the cardiac arrhythmia.

D. John G. Webster, Ph.D.

Dr. John G. Webster's expert report contains the following opinions:

- It is my opinion that the Taser weapon can induce human ventricular fibrillation, which results in rapid loss of consciousness, and unless treated by cardiopulmonary resuscitation and defibrillation, leads to death in a few minutes.¹³
- It is my opinion that it is more likely than not that the Taser weapon induced cardiac arrest in Ryan Wilson.
- [T]he Taser darts landed on Ryan Wilson and caused the electric shock to flow through his body, resulting in his immediate incapacitation.

¹²In this case, Dr. Lear-Kaul's opinion regarding the Taser rests primarily on temporal proximity. The remarkable closeness in time is certainly some evidence of causation, but not of the sort requiring her proffered testimony on that specific issue. Unlike Dr. Rosenbaum, Dr. Lear-Kaul does not purport, beyond certain general statements regarding electrical currents, to offer an opinion on the specific effect that a TASER waveform could have on a mammalian heart. Indeed, she does not necessarily offer an opinion on whether the electrical current or the stress induced by the probe strike was a more likely contributing cause.

¹³In their response to Taser's motion, plaintiffs misquote this opinion, omitting the word "human." See Pls.' Response [Docket No. 167] at 4.

- Pigs are the animals of choice in the vast majority of Taser studies because they have hearts and torsos of similar size to humans.
- Pigs provide a more accurate model to assess effects of electroshock to the human heart, in particular, the onset of ventricular fibrillation, if and only if the thoracic fat layer and muscle barrier covering the heart of pigs is first removed to model the absence of this tissue in thin humans. The model developed by Taser International and as addressed in the PACE study, is defective, along with its conclusions, because the thoracic fat layer and muscle barrier covering the heart were not first removed before applying electric current to the skin. Pigs have a layer of fat plus a layer of muscle over the sternum whereas most humans have only a thin skin layer. This causes a lower cardiac current density in the pig heart than in the human heart and results in a lower probability of ventricular fibrillation.
- Because the Taser dart is 9 mm long, there is overlap from these pig and human studies, which shows that there is a small probability that a Taser dart will land in the small area between the ribs over the heart and cause ventricular fibrillation.
- The heart is vulnerable to the onset of ventricular fibrillation during only about 10% of the cardiac cycle. However[,] the Taser discharges about 19 pulses per second and thus excites the heart during the vulnerable period of the heart for every heartbeat during its five second discharge. The heart is also more vulnerable to ventricular fibrillation when stimulated for more than one heartbeat. The five second Taser discharge stimulates more than one heartbeat, which increases the likelihood of ventricular fibrillation.
- All these facts point to the likelihood that the Taser weapon induced cardiac arrest in Ryan Wilson.

Ex. 1 to Pls.' Response [Docket No. 167-2] at 6-10.¹⁴

¹⁴Dr. Webster has also produced a rebuttal report, Ex. 18 to Pls.' Response [Docket No. 167-19], challenging the opinion of Taser's proffered expert Andrew Hinz that the absence of certain physical evidence on the TASER probes establishes that no electricity passed between them and through Mr. Wilson's body. Only if Mr. Hinz's testimony is admitted will Dr. Webster's opinion on this issue likely be relevant. Therefore, the Court reserves judgment on this aspect of Dr. Webster's proffered testimony. After the Court rules on plaintiffs' Rule 702 motion challenging Mr. Hinz's testimony [Docket No. 252], Taser is free to renew its challenge to Dr. Webster's rebuttal report, if necessary.

These opinions move along a spectrum, from those relating to evidence of how a TASER can affect the hearts of pigs to a specific TASER's effect on Mr. Wilson's heart. If placed in categories, from general to specific, Dr. Webster's testimony would be that his experiments demonstrate TASERs can cause ventricular fibrillation in pigs; that the results of those experiments, when compared to data on human anatomy, support the proposition that TASERs are capable of causing ventricular fibrillation in humans; that the nature of the TASER discharges increases the likelihood of ventricular fibrillation in humans above that implied by the fact that the "heart is vulnerable to the onset of ventricular fibrillation during only about 10% of the cardiac cycle"; that ventricular fibrillation "results in rapid loss of consciousness, and unless treated by cardiopulmonary resuscitation and defibrillation, leads to death in a few minutes," and that the "cardiac arrest" of Mr. Wilson was caused, at least in part, by the TASER charge resulting from both TASER probes striking Mr. Wilson.

As quoted above, Dr. Webster asserts that "it is more likely than not that the Taser weapon induced cardiac arrest in Ryan Wilson." *Id.* at 6. At his deposition, Dr. Webster phrased this opinion as follows: "I believe that the Taser was one of several contributors to the death." Ex. 12 to Pls.' Response [Docket No. 167-13] at 13:16-17; *see id.* at 105:23 - 106:1 ("It's my opinion that he died from a multi-factoral causes [sic] which included the Taser, and with that opinion I would state that without the Taser he would be alive."). Regardless of how worded, Dr. Webster's testimony regarding the specific cause of Mr. Wilson's death must be excluded because plaintiffs have not established his qualification to render such an opinion and the opinion is based on insufficient data.

Dr. Webster's training and experience, which is substantial, is in the field of electrical engineering. See Exs. 1 and 2 to Pls.' Response [Docket Nos. 167-2, 167-3]. He focused on biomedical engineering during his graduate studies and, since receiving his Ph.D. in 1967, has taught and researched in the field of medical instrumentation and devices. See Ex. 1 to Pls.' Response [Docket No. 167-2] at 2. Dr. Webster has published over two hundred articles and been involved, as either an author or editor, in the publication of twenty three books. *Id.* In recent years, Dr. Webster has conducted experiments on the effects of TASERs on pigs and what those effects might indicate regarding the safety of their use on humans. See Exs. 3, 4, 5, 6, 7, 8, 9 and 10 to Pls.'s Response [Docket Nos. 167-4, 167-5, 167-6, 167-7, 167-8, 167-9, 167-10, 167-11]. As will be discussed below, Dr. Webster's training and experience qualify him to testify regarding the results of these studies. That does not mean, however, that he has the knowledge required to offer an opinion on how the human heart functions in response to a TASER discharge and how Mr. Wilson's heart likely responded in this case.

Furthermore, his attempt to draw the connection between his studies and Mr. Wilson's death is not based upon any scientific or technical methodology. Dr. Webster simply drew the inference based on the temporal proximity between the Taser charge and Mr. Wilson's death. At his deposition, Dr. Webster stated the belief "that the Taser application was a strong – a significant cause because of the synchrony between the Taser application and the fall of Wilson and his subsequent death." Ex. 12 to Pls.' Response [Docket No. 167-13] at 18:5-8. As discussed in relation to Dr. Lear-Kaul's testimony, this inference does not rest on any methodology or knowledge outside the expertise of the jury. Therefore, Dr. Webster will not be permitted to testify regarding

the likelihood of the TASER causing Mr. Wilson's death.¹⁵

Nor may he testify regarding the human heart's susceptibility to ventricular fibrillation or that ventricular fibrillation in humans "results in rapid loss of consciousness, and unless treated by cardiopulmonary resuscitation and defibrillation, leads to death in a few minutes." Taser is correct in noting – and Dr. Webster does not dispute – that he is not an expert in human cardiology or physiology. Dr. Webster's opinion regarding what occurred in this case is based on an application of knowledge acquired doing experiments on pigs to his understanding of the facts of this case. He is not qualified to serve as an expert bridging that large analytical gap. Furthermore, plaintiffs have not directed the Court to the basis for his reaching this opinion regarding ventricular fibrillation and the nature of the cardiac cycle in humans.

Similarly, his testimony that both probes hit Mr. Wilson and caused an electrical charge to pass through his body is not based on any scientific methodology. Dr. Webster simply cites the statements of the police officers involved in the pursuit of Mr. Wilson. See Ex. 1 to Pls.' Response [Docket No. 167-2] at 6 (where Dr. Webster's sole cited support for this opinion is Officer Harris' statement that the TASER was "immediately effective" and Officer Lanphere's statement that "Officer Harris . . . stated he was tased in the back of the head and in the back"). It is the province of the jury to determine, based on those statements and any other admissible evidence, whether both probes hit Mr. Wilson. Dr. Webster's opinion on this point is not based on any

¹⁵That is not to say that Dr. Webster may not describe the temporal relationship between a TASER charge and results observed in pigs, subject to the conditions and limitations outlined below.

specific qualifications or application of a scientific or technical methodology. Rather, he steps into the shoes of the jury and concludes that the officers' statements are credible. Therefore, the Court will not permit Dr. Webster to testify that both probes hit Mr. Wilson.

That leaves Dr. Webster's testimony regarding the results of his studies on pigs and what those results indicate regarding the potential risks of TASERs to humans. Taser correctly notes that, to the extent Dr. Webster's testimony relies on drawing a connection between animal studies and human results, there is a risk that a jury will rely on an opinion based on "too great an analytical gap between the data and the opinion offered." *General Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997). First, it is important to emphasize that the connection between the effects on pig hearts and the possible effect on humans summarized in the cited studies is not based on the mere "*ipse dixit* of the expert." *Id.* Rather, Dr. Webster, along with others involved in the study, explained in great detail how they applied the results of the pig studies to data and computer models of the human anatomy. They did so in an effort to predict whether people whose hearts are within a certain distance from their chest wall might be susceptible to ventricular fibrillation in the event TASER probes engage particular locations of the body. See, e.g., Ex. 10 to Pls.' Response [Docket No. 167-11] at 2 ("This study was designed to determine the mean of probability of Tasers (model X26) causing VF in humans through electrical stimulation, using (1) computer models, (2) data on dart-to-heart distances that caused VF from two pig studies, (3) human skin-to-heart minimum distances measured using echocardiography, and (4) data on Taser® dart landing statistics from police reports."). The theories presented by Dr. Webster

and his colleagues have been subject to peer review, have been and continue to be the subject of testing, albeit mostly limited to animal testing, and appear to be accepted as reliable by the relevant scientific community. See *Daubert*, 509 U.S. at 593-94. In fact, Taser has sponsored its own studies using pigs as subjects and, in seeking to exclude Dr. Webster's testimony regarding the potential connection between the results of the pig studies and human risk, cites the underlying results of Dr. Webster's "improved . . . pig testing method" which demonstrated an exceedingly small risk of causing ventricular fibrillation in pigs. See Taser's Rule 702 Mot. [Docket No. 130] at 7. The true focus of Taser's objection is to those aspects of the studies which attempt to use these results to predict the possibility of ventricular fibrillation in humans.

The risk of permitting Dr. Webster to testify regarding the results of the pig studies and the potential overlap between the pig studies and human anatomy is that the jury will draw a stronger connection between Dr. Webster's studies and the workings of the human heart than is supported by Dr. Webster's expert testimony. Furthermore, the jury might be misled into believing that Dr. Webster applied the data drawn from his studies to Mr. Wilson's specific anatomy, which he did not. In other words, Dr. Webster's testimony that his experiments demonstrate TASERs can cause ventricular fibrillation in pigs and that the results of those experiments, when compared to data on human anatomy, support the proposition that TASERs are capable of causing ventricular fibrillation in certain humans might lead the jury to draw a direct causal link without additional evidence or expert testimony regarding potential medical explanations for Mr. Wilson's death in this case. The jury will have the benefit, however, of Dr. Lear-Kaul's differential diagnosis and Dr. Rosenbaum's application of

the “proof of concept” drawn from the medical literature that a TASER charge can stimulate the mammalian heart. Dr. Rosenbaum’s proffered testimony also includes discussion of the significant limitations of drawing direct connections between animal studies and human risks, thus addressing the substance of Taser’s main objection to Dr. Webster’s testimony. Therefore, in plaintiff’s case in chief,¹⁶ the admissibility of Dr. Webster’s testimony regarding his work correlating the pig studies to data on human anatomy will be conditioned on the introduction of Dr. Rosenbaum’s testimony regarding potential medical explanations for Mr. Wilson’s death in light of the medical literature and the other evidence in this case.¹⁷

¹⁶If Taser argues that a properly-functioning TASER is not capable of stimulating the mammalian heart as suggested by the “proof of concept” Dr. Rosenbaum draws from the literature, then Dr. Webster’s testimony regarding the results of his experiments might be admissible in rebuttal without being conditioned on Dr. Rosenbaum’s testimony. In other words, if one argument presented to the jury is that there are no studies drawing a connection between TASER charges and a risk of human ventricular fibrillation, Dr. Webster’s testimony alone may be helpful to the jury in assessing that claim.

¹⁷During his deposition, Dr. Webster also described the different nature of the waveform emitted by the older version of the TASER (the M26) and the newer version at issue in this case (the X26), asserting that the M26’s “unidirectional” waveform was less dangerous. See Ex. 12 to Pls.’ Response [Docket No. 167-13] at 51-52. That opinion does not appear in Dr. Webster’s expert report. Nevertheless, while Taser objects to Dr. Webster’s qualifications to opine on potential dangers to the human heart, it does not specifically object to Dr. Webster’s testimony regarding the differences in the electrical waveforms between the two versions. Therefore, to the extent this testimony is relevant to an issue in the case, Dr. Webster may offer it in regard to his knowledge as an electrical engineer who has observed the relative effects of different TASERs *on pigs*. Furthermore, such testimony will also be conditioned upon introduction of Dr. Rosenbaum’s testimony for the reasons discussed.

IV. CONCLUSION

For the foregoing reasons, it is

ORDERED that the motion to exclude the testimony of Dr. Phillip S. Wolf [Docket No. 124] is GRANTED. It is further

ORDERED that the motion to exclude the testimony of Dr. David S. Rosenbaum [Docket No. 125] is DENIED. It is further

ORDERED that the motion to exclude the testimony of Dr. Kelly Lear-Kaul [Docket No. 126] is GRANTED in part and DENIED in part. It is further

ORDERED that the motion to exclude the testimony of Dr. John G. Webster [Docket No. 130] is GRANTED in part and DENIED in part.

DATED February 25, 2010.

BY THE COURT:

s/Philip A. Brimmer
PHILIP A. BRIMMER
United States District Judge