United States Court of Appeals for the Federal Circuit

2009-5057

MOLLY MOBERLY, by her mother and next friend,
TERESA MOBERLY,

Petitioners-Appellants,

v.

SECRETARY OF HEALTH AND HUMAN SERVICES,

Respondent-Appellee.

Kevin P. Conway, Conway, Homer and Chin-Caplan, P.C., of Boston, Massachusetts, argued for petitioners-appellants. On the brief was Ronald C. Homer.

Voris E. Johnson, Jr., Trial Attorney, Torts Branch, Civil Division, United States Department of Justice, of Washington, DC, argued for respondent-appellee. With him on the brief were Tony West, Assistant Attorney General, Timothy P. Garren, Director, Mark W. Rogers, Deputy Director, Gabrielle M. Fielding, Assistant Director, and Ryan D. Pyles, Trial Attorney.

Appealed from: United States Court of Federal Claims

Judge Victor J. Wolski

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Appeal from the United States Court of Federal Claims in case 98-VV-910,
Judge Victor J. Wolski.

DECIDED: January 13, 2010

Before BRYSON, PROST, and MOORE, Circuit Judges.

BRYSON, Circuit Judge.

This Vaccine Act case presents the question whether a child's seizure disorder was shown to have been caused by a vaccination. The special master found that the petitioners failed to establish causation, and the Court of Federal Claims upheld that finding. We affirm.

I

Molly Moberly was born in Lincoln, Nebraska, on May 17, 1996. On July 17, 1996, she received her first set of vaccinations, including her first Diphtheria-Pertussis-

Tetanus ("DPT") vaccination, with no apparent ill effects. Two months later, on September 17, 1996, Molly received her second DPT vaccination.

Two days after that vaccination, Molly suffered two brief seizure episodes characterized by twitching, jerking, and staring. On October 6, she experienced two more brief seizures. An emergency room physician who treated Molly at that time conducted a neurological examination, which was normal. Molly also underwent a CT scan and an EEG, but both results were negative. Dr. Richard Torkelson, the Director of University Epilepsy Services at the University of Nebraska Medical Center, examined Molly on October 10 and noted that "[a] very detailed review of [Molly's] systems was just totally unremarkable," and that "[s]he look[ed] so healthy" that he was "inclined to look at [her convulsions] as a transient disturbance." Nevertheless, on October 24 Molly's mother contacted the State Health Department, which suggested that Molly's "seizures could possibly be a reaction to a DPT" vaccination. The State Health Department recommended that in the future, instead of the DPT vaccination, Molly receive only the DT vaccination, which contains vaccines for diphtheria and tetanus, but not the vaccine for pertussis.

Over the next few months, Molly continued to experience seizures, but her treating physicians characterized her development as otherwise normal. She received an MRI on November 4, which was "totally normal." Dr. Torkelson added at that time that "her presentation would not fall within any of the recognized syndromes that 'may' be related to pertussis." On January 27, 1997, Dr. Torkelson noted that Molly had been seizure-free for 12 weeks, and he described all of her functions as normal, other than a significant acceleration in weight. He added: "As before, her diagnosis remains simple

partial (motor) seizures, alternating in side. There is a disorder that is alternating hemiconvulsions in childhood; I do not think we have sufficient data to make that diagnosis yet, though that remains a possibility."

Molly's seizures recurred in January of 1997. Dr. Torkelson then began treating her with anti-seizure medicines. On February 19, she received a DT vaccination. She experienced a seizure on the afternoon after that vaccination, and she had additional seizures in late February and March. On April 1, 1997, Molly was evaluated by Dr. Christopher Harrison and Dr. Alice Pong, two physicians at the Children's Hospital of Creighton University. They observed that Molly had had one seizure since being started on a new medication, but was otherwise "doing well from a developmental standpoint." While they acknowledged that "[t]wo of her seizures ha[d] been temporally related to immunizations, the first with her DPT and the second with DT," they did not draw any conclusions from that temporal relationship and stated instead that "[c]ausality cannot be proven at this time between the seizures and the immunizations."

On May 26, 1997, Molly suffered her first prolonged seizure, which lasted about an hour. Prior to that event, her seizures had been brief, with none reported longer than 12 minutes. Molly was relatively stable thereafter until August 11, 1997, when she experienced six seizures, including one prolonged seizure lasting between 45 minutes and an hour. She was taken to an emergency room where she underwent another MRI of her brain, which again was found to be normal. The hospital report provided a succinct summary of her medical history:

> Molly had her first seizure shortly after her 4-month immunizations. They were attributed in part to her Pertussis vaccine per her mother's report. After a trial of Tegretol, the seizures were finally well controlled with a combination of Depakote and Phenobarbital. She has only had seizures

> associated with fever or illness, and they have become more generalized in nature.

In November 1997, Molly was evaluated by a pediatric neurologist with the Minnesota Epilepsy Group, who drew up a new plan of medication. Despite the adjustments in treatment, Molly continued to suffer "break-through seizures about every two to three weeks." When Dr. Torkelson saw her on March 6, 1998, he diagnosed her condition as "Alternating hemiconvulsions, now largely generalized, etiology uncertain, medically intractable." It is agreed that Molly now suffers from an intractable seizure disorder.

II

On December 4, 1998, Molly's mother, Teresa Moberly, filed a petition on Molly's behalf seeking compensation under the National Childhood Vaccine Injury Act, 42 U.S.C. §§ 300aa-1 to 300aa-34. The case was assigned to a special master, who heard expert testimony from Dr. Marcel Kinsbourne for petitioners Molly and Teresa Moberly, and Dr. Robert J. Baumann for the respondent.

Dr. Kinsbourne testified that in his opinion the pertussis component of the DPT vaccine had caused Molly's seizure condition. He gave three reasons in support of that opinion.

First, Dr. Kinsbourne relied on a British epidemiological study, the National Childhood Encephalopathy Study ("NCES"), which he characterized as the only satisfactory epidemiological study of the relationship between pertussis immunization and severe convulsions or encephalopathy. That study, according to Dr. Kinsbourne, revealed a statistically significant relationship between the DPT vaccine and certain neurological injuries that developed within a short time after the administration of the

vaccine. That relationship, he stated, provided a basis for concluding that, for a child falling within the parameters of the study, pertussis immunization may be causally linked to the subsequent neurological injury. Dr. Kinsbourne acknowledged that Molly did not qualify as a typical NCES "case child" because her initial seizures were too mild and her prolonged seizures occurred too long after her second DPT immunization. Nonetheless, he stated that Molly's case would qualify for inclusion in the NCES under an exception to the NCES definition of a "case child" covering children whose subsequent seizures were considered to be part of a "single pathological process." He concluded that Molly's seizures were all part of a single pathological process as that term was used in the NCES, and that the NCES therefore provided evidence of causation as applied to her case.

Second, Dr. Kinsbourne proposed a mechanism by which pertussis toxin in an infant's circulatory system might penetrate the brain and cause seizures. He referred to the proposed mechanism as the "blood-brain barrier" theory. Under that theory, he explained, the pertussis neurotoxin in the vaccine penetrates the blood-brain barrier with the aid of endotoxin, which is also contained in the vaccine, and then binds with G proteins in the brain to cause seizures and brain damage.

Third, Dr. Kinsbourne expressed the opinion that Molly's condition must have been caused by the DPT vaccine because she was healthy before the vaccination, she suffered seizures shortly after the vaccination, and her treating physicians did not identify any other cause for her seizure condition.

Dr. Baumann, the respondent's expert, testified that in his opinion there was no relationship between Molly's September 1996 DPT vaccination and her illness. He

explained that the most important consideration in his assessment was that Molly did not display any evidence of "acute severe neurological injury" following her initial seizures in September 1996. In addition, referring to the NCES definition of a case within the ambit of the study, Dr. Baumann testified that he did not consider Molly's seizure disorder to reflect a "single pathologic process with an obvious and continuing underlying clinical or pathological explanation" and that the NCES authors therefore would not have included her case in the study. Dr. Baumann stated that Molly's seizure disorder "changed, both clinically and electrically" long after her second DPT vaccination and that the course of her illness was typical of infants with epilepsy unrelated to immunization. Accordingly, Dr. Baumann concluded that Molly's illness was not caused by the DPT vaccination, but instead was properly characterized as "idiopathic epilepsy." He added that by using the approach to causation proposed by Dr. Kinsbourne, "every child with epilepsy who had a seizure in time relationship to the DPT would have to be considered to have DPT as the etiology."

With respect to Dr. Kinsbourne's "blood-brain barrier" theory, Dr. Baumann acknowledged that the neurotoxicity of pertussis and its effect on G proteins is accepted. He stated, however, that the other aspects of Dr. Kinsbourne's "blood-brain barrier" theory had not been studied, and he added that "people in the field" did not consider those aspects of the theory to be "biologically plausible."

Following the hearing, the special master ruled that the petitioners had not shown that the September 1996 DPT vaccination caused Molly's neurological injury. As to whether the NCES authors would have regarded Molly's case as falling within the study's exception for a "single pathological process," the special master found that Dr.

Kinsbourne's testimony was "contradictory and confusing" and discredited his testimony on that ground. For that reason, the special master found that the petitioners could not rely on the NCES to prove causation.[1] The special master also rejected Dr. Kinsbourne's "blood-brain barrier" theory because that theory had never been scientifically tested and because the applicability of that theory in this case was not supported by Molly's medical records. Finally, the special master concluded that mere temporal correlation between the vaccination and Molly's first seizures, even in the absence of an alternative explanation for those seizures, was insufficient to prove causation by a preponderance of the evidence. Accordingly, the special master denied compensation.

On review before the Court of Federal Claims, the petitioners raised two arguments. First, they claimed that the special master had erred in refusing to find that Molly's condition was a "single pathological process" for purposes of the NCES. Second, they complained that, with respect to the causation requirement, the special master had erroneously applied a heightened standard of proof by requiring "scientific certainty," rather than a preponderance of the evidence as provided by the Vaccine Act.

The Court of Federal Claims rejected both arguments and upheld the special master's decision. Moberly v. Sec'y of Health & Human Servs., 85 Fed. Cl. 571 (2009). The court noted that the special master's determination regarding Molly's eligibility under the NCES exception was a finding of fact. Applying the statutory standard of

[1] The Court of Federal Claims remanded the case to the special master to give the parties an opportunity to supplement the record with "evidence demonstrating how the NCES authors determined that a series of convulsions were 'part of a single pathological process.'" The parties declined the invitation to supplement the record on the ground that prior attempts to solicit the cooperation of the NCES authors had proved fruitless.

review, see 42 U.S.C. § 300aa-12(e)(2), the court held that the special master's finding was not arbitrary or capricious because the special master "considered the language of the NCES and the testimony of the petitioner's expert, and articulated a rational basis for his conclusion." 85 Fed. Cl. at 599. The Court of Federal Claims further held that the special master had set forth the correct legal standard and had applied it properly in finding that none of the evidence in the record supported a finding of causation. The court noted that a review of Molly's medical records showed that none of her treating physicians had expressed the view that her seizures were caused by her DPT vaccination. The court explained that the only other evidence in the record providing any support for her theory of causation was the testimony of Dr. Kinsbourne, which the special master had found to be "contradictory and confusing" and "shockingly poor." Id. at 605.

III

In Vaccine Act cases, we review a ruling by the Court of Federal Claims de novo, applying the same standard that it applies in reviewing the decision of the special master. Lampe v. Sec'y of Health & Human Servs., 219 F.3d 1357, 1360 (Fed. Cir. 2000). We review factual findings under the arbitrary and capricious standard, and we review legal rulings to determine whether they are "not in accordance with law." Munn v. Sec'y of Health & Human Servs., 970 F.2d 863, 870 n.10 (Fed. Cir. 1992).

A

The Vaccine Act distinguishes between so-called "Table injuries," for which causation is presumed when a designated condition follows the administration of a designated vaccine within a designated period of time, see 42 U.S.C. §§ 300aa-11(c),

300aa-14, and all other injuries alleged to be caused by a vaccine, known as "off-Table injuries," for which causation must be proved in each case. Lampe, 219 F.3d at 1360. The petitioners concede that Molly's case falls into the latter category; therefore, they must prove "actual causation" or "causation in fact" by a preponderance of the evidence. See Shalala v. Whitecotton, 514 U.S. 268, 270 (1995); Pafford v. Sec'y of Health & Human Servs., 451 F.3d 1352, 1355 (Fed. Cir. 2006); Althen v. Sec'y of Health & Human Servs., 418 F.3d 1274, 1278 (Fed. Cir. 2005).

To prove causation, a petitioner in a Vaccine Act case must show that the vaccine was "not only a but-for cause of the injury but also a substantial factor in bringing about the injury." Shyface v. Sec'y of Health & Human Servs., 165 F.3d 1344, 1352-53 (Fed. Cir. 1999). In doing so, the petitioner's burden

> is to show by preponderant evidence that the vaccination brought about her injury by providing: (1) a medical theory causally connecting the vaccination and the injury; (2) a logical sequence of cause and effect showing that the vaccination was the reason for the injury; and (3) a showing of a proximate temporal relationship between vaccination and injury.

Althen, 418 F.3d at 1278. A petitioner must provide a reputable medical or scientific explanation that pertains specifically to the petitioner's case, although the explanation need only be "legally probable, not medically or scientifically certain." Knudsen v. Sec'y of Health & Human Servs., 35 F.3d 543, 548-49 (Fed. Cir. 1994).

B

On appeal, the petitioners argue that the special master imposed a heightened burden of proof by requiring a showing of causation to the level of "scientific certainty" rather than by a preponderance of the evidence. They contend that if the special

master had applied the proper standard of proof, he would have been compelled to find that the evidence they presented established causation.

While the petitioners acknowledge that the statute requires proof of causation by a preponderance of the evidence, see 42 U.S.C. § 300aa-13(a)(1)(A), they appear to be arguing for a more relaxed standard. They repeatedly characterize the test as whether Molly's condition was "likely caused" by the DPT vaccine. By that formulation, however, they appear to mean not proof of causation by the traditional "more likely than not" standard,[2] but something closer to proof of a "plausible" or "possible" causal link between the vaccine and the injury, which is not the statutory standard. Similarly, the petitioners object to the use of the term "causation in fact" by the special master and the Court of Federal Claims, because they claim that proof that a vaccine "in fact" caused an injury would require conclusive scientific evidence. But this court has regularly used that term to describe the causal requirement for off-Table injuries and has made clear that the applicable level of proof is not certainty, but the traditional tort standard of "preponderant evidence." See, e.g., de Bazan v. Sec'y of Health & Human Servs., 539 F.3d 1347, 1351 (Fed. Cir. 2008); Pafford, 451 F.3d at 1355; Capizzano v. Sec'y of Health & Human Servs., 440 F.3d 1317, 1320 (Fed. Cir. 2006); Althen, 418 F.3d at 1278.

[2] "The burden of showing something by a 'preponderance of the evidence,' the most common standard in the civil law, simply requires the trier of fact to believe that the existence of a fact is more probable than its nonexistence before [he] may find in favor of the party who has the burden to persuade the [judge] of the fact's existence." Concrete Pipe & Prods. of Cal., Inc. v. Construction Laborers Pension Trust for S. Cal., 508 U.S. 602, 622 (1993), quoting In re Winship, 397 U.S. 358, 371-72 (1970) (Harlan, J., concurring) (internal quotation marks omitted).

The petitioners also invoke legislative intent and the purposes of the federal Vaccine Program to argue that a standard less demanding than the tort standard of causation is applicable. In doing so, however, they conflate the burden of proof imposed for off-Table injuries with the lenient presumptions applicable to Table injuries. As this court has made clear, the Vaccine Act "relaxes proof of causation for injuries satisfying the Table in § 300aa-14, but does not relax proof of causation in fact for non-Table Injuries." Grant v. Sec'y of Health & Human Servs., 956 F.2d 1144, 1148 (Fed. Cir. 1992); see Walther v. Sec'y of Health & Human Servs., 485 F.3d 1146, 1151 (Fed. Cir. 2007) (for causation analysis in off-Table cases, the Restatement (Second) of Torts applies and "the petitioner is treated as the equivalent of the tort plaintiff").

C

While accepting that the DPT vaccine may cause seizures in some cases, the special master concluded that the evidence of record was insufficient to prove that in Molly's case the second DPT vaccination caused the seizure condition that led to her injury. For the reasons detailed below, we sustain that ruling.

1

The evidence before the special master—other than the expert testimony from Dr. Kinsbourne—consisted in essence of the following: Molly was healthy before she received her second DPT vaccination; she suffered seizures within 36 hours of receiving the vaccine; DPT vaccine is capable of causing seizures and permanent brain damage; and no alternative cause of her condition has been identified. As the special master noted, the problem with that evidence is that it amounts at most to a showing of

temporal association between a vaccination and a seizure, together with the absence of any other identified cause for the ultimate neurological injury.

As this court has stated, "neither a mere showing of a proximate temporal relationship between vaccine and injury, nor a simplistic elimination of other potential causes of the injury suffices, without more, to meet the burden of showing actual causation." Althen, 418 F.3d at 1278. That is true even if the off-Table injury occurs within a time period set forth in the Table. See H.R. Rep. No. 908, pt. 1, at 15 (1986), reprinted in 1988 U.S.C.C.A.N. 6344, 6356 ("[S]imilarity to conditions or time periods listed in the Table is not sufficient evidence of causation."). To be sure, temporal proximity is a factor to be considered in the analysis of causation, see Capizzano, 440 F.3d at 1326. But "a proximate temporal association alone does not suffice to show a causal link between the vaccination and the injury." Grant, 956 F.2d at 1148.

The special master and the Court of Federal Claims both undertook a meticulous review of Molly's medical records. Based on that review, the Court of Federal Claims agreed with the special master that "[w]hile several of Molly's treating physicians noted the temporal relationship between Molly's September 17, 1996 DPT vaccination and Molly's initial brief seizures, none offered ever a solid statement that . . . [the] vaccination caused probably Molly's condition." Had any of Molly's treating physicians provided such an opinion, it could have been probative with respect to causation. See Capizzano, 440 F.3d at 1326. Instead, the notations in Molly's medical records regarding the temporal proximity of the DPT immunization to the seizures were all speculative. On the few occasions when Molly's treating physicians addressed the question of causation, they declined to provide a diagnosis linking the seizures to the

DPT vaccination. For instance, Dr. Torkelson noted that Molly's parents were "understandably concerned" that the seizures might be related to the immunization, but he then expressed his view that Molly's symptoms were inconsistent with those of pertussis. Dr. Harrison and Dr. Pong also raised the issue of temporal proximity, but they determined that "[c]ausality cannot be proven at this time." After consideration of the entirety of the record, the special master and the Court of Federal Claims concluded that no treating physician ever drew a causal link between Molly's seizures and her DPT vaccination. We do not find that determination to be arbitrary or capricious.

2

The petitioners also claim that causation should have been found on the basis of the "blood-brain barrier" theory proposed by their expert witness, Dr. Kinsbourne. They argue that every element of that theory is scientifically accepted except for the mechanism by which endotoxin allegedly permits the pertussis neurotoxin to enter the brain. As to that step, they argue that it should not matter "how [pertussis] gets into the brain when we know it can get into the brain." They do not point to any support for that assertion; to the contrary, their expert witness testified that the proposed mechanism had never been tested in any peer-reviewed study. Although a Vaccine Act claimant is not required to present proof of causation to the level of scientific certainty, the special master is entitled to require some indicia of reliability to support the assertion of the expert witness. See Terran v. Sec'y of Health & Human Servs., 195 F.3d 1302, 1316 (Fed. Cir. 1999) (holding that the factors set forth in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993), may be applied in assessing the reliability of an expert witness's testimony).

Even setting aside the question whether the "blood-brain barrier" theory was reliable, Dr. Kinsbourne conceded that there was no evidence in the record suggesting that the proposed mechanism was at work in Molly's case. Accordingly, the special master did not err in concluding that the blood-brain barrier theory did not support the petitioners' claim of causation.

3

With regard to the expert testimony relating to the NCES, the special master determined that the petitioners failed to demonstrate that Molly would have qualified as a "case child," and the petitioners do not challenge that finding on appeal. Nevertheless, even though they now declare that they do not "need the NCES to prove [their] case," they contend that the NCES remains probative of "general causation."

The special master properly held that the petitioners could not rely on the NCES to prove causation because they failed to establish that Molly would have been regarded as a "case child" within the scope of that study. As a general matter, epidemiological studies are designed to reveal statistical trends only for a carefully constructed test group. Such studies provide no evidence pertinent to persons not within the parameters of the test group. In the case of the NCES, moreover, the results obtained were sufficiently weak that the authors specifically noted that the results were "insufficient to indicate the presence or absence of a causal relation between DPT and chronic nervous system dysfunction under any other circumstances." The NCES thus provides no support for the claim of causation in this case.

D

As a final point in their reply brief, the petitioners note that this court recently reached a contrary result in Andreu v. Secretary of Health & Human Services, 569 F.3d 1367 (Fed. Cir. 2009), which is factually similar to this case in several respects. Because of the similarities between the two cases, the petitioners argue that Andreu requires that we reverse the judgment in this case and direct the entry of judgment in their favor.

As in Molly's case, Enrique Andreu suffered seizures shortly after receiving a DPT vaccination, and no other neurological cause was found for his seizures. At the hearing before the special master, Andreu presented evidence regarding the "blood-brain barrier" theory and the NCES similar to the evidence presented in this case. In Andreu, however, there was direct testimony from Andreu's treating physicians stating "unequivocally" that the DPT inoculation caused his seizures. 569 F.3d at 1376. While testimony from treating physicians is not required in Vaccine Act cases, it can provide supporting evidence of causation, and it did so in Andreu. In this case, by contrast, there was no treating physician evidence that supported the claim of causation. To the contrary, to the extent the treating physician evidence bore on causation, it was negative, as the principal treating physician, Dr. Torkelson, expressed skepticism that Molly's condition was caused by her DPT vaccination.

Furthermore, in Andreu this court held that the "blood-brain barrier" theory should have been credited because the government's expert witness did not dispute the biological plausibility of the theory and thus failed to cast it into doubt. 569 F.3d at 1377. In this case, by contrast, the government's expert witness did not concede the

biological plausibility of the "blood-brain barrier" theory, and in fact testified that "people in the field don't think it's biologically plausible." Moreover, the petitioners' expert witness undercut his own position by conceding not only that the blood-brain barrier theory had never been tested, but also that there was no evidence suggesting that it applied to Molly's case. Because the evidentiary record in the Andreu case is significantly different from the record in this case, the result in Andreu does not compel the same result here.

To be sure, it is not necessary for a Vaccine Act petitioner to point to "conclusive evidence in the medical literature linking the DPT vaccine" to a child's injury. Andreu, 569 F.3d at 1378. Nor is a petitioner required to point to epidemiological studies or "general acceptance in the scientific or medical communities" to prove causation, as the legal standard is a preponderance of the evidence, not scientific certainty. Andreu, 569 F.3d at 1378; Capizzano, 440 F.3d at 1325-26. But to say that proof in the form of epidemiological studies or well-established medical experience is not mandatory does not mean that the special masters in Vaccine Act cases are precluded from inquiring into the reliability of testimony from expert witnesses. Weighing the persuasiveness of particular evidence often requires a finder of fact to assess the reliability of testimony, including expert testimony, and we have made clear that the special masters have that responsibility in Vaccine Act cases. See Terran, 195 F.3d at 1316 ("[T]he rules of evidence require that the trial judge determine whether the testimony has a reliable basis in the knowledge and experience of the relevant discipline.") (internal quotation marks omitted); Knudsen, 35 F.3d at 548 (proof of actual causation "must be supported by a sound and reliable medical or scientific explanation"); Hodges v. Sec'y of Health &

Human Servs., 9 F.3d 958, 967 (Fed. Cir. 1993) ("[T]he factfinder must decide the reliability, consistency, and probative value of the scientific evidence, with the guidance of scientific opinion.").

In addressing the role of the special master in evaluating medical evidence, the court in Andreu stated that the special master may not "cloak the application of an erroneous legal standard in the guise of a credibility determination, and thereby shield it from appellate review." 569 F.3d at 1379. That is not to say, however, that a special master, as the finder of fact in a Vaccine Act case, is prohibited from making credibility determinations regarding expert testimony. Assessments as to the reliability of expert testimony often turn on credibility determinations, particularly in cases such as this one where there is little supporting evidence for the expert's opinion. See, e.g., de Bazan, 539 F.3d at 1353-54; Pafford, 451 F.3d at 1359; Lampe, 219 F.3d at 1361-62; Hanlon v. Sec'y of Health & Human Servs., 191 F.3d 1344, 1349 (Fed. Cir. 1999); Bradley v. Sec'y of Health & Human Servs., 991 F.2d 1570, 1575 (Fed. Cir. 1993). Finders of fact are entitled—indeed, expected—to make determinations as to the reliability of the evidence presented to them and, if appropriate, as to the credibility of the persons presenting that evidence. What Andreu prohibited was for the finder of fact to reject evidence based on an unduly stringent legal test while characterizing the rejection as based on the reliability of particular evidence or the credibility of a particular witness.

In this case, the special master applied the correct legal standard and found, based in part on the unconvincing nature of the expert evidence and the lack of credibility of the petitioners' expert, that the petitioners failed to prove causation by a

preponderance of the evidence. That judgment has not been shown to be legally or factually erroneous. We therefore affirm the judgment of the Court of Federal Claims.

No costs.

AFFIRMED.