United States Court of Appeals for the Federal Circuit

EILISE MORIARTY, A MINOR, BY HER PARENTS AND NATURAL GUARDIANS, MARIE LOUISE MORIARTY, AND STEPHEN MORIARTY,
Petitioners-Appellants

v.

SECRETARY OF HEALTH AND HUMAN SERVICES,
Respondent-Appellee

2015-5072

Appeal from the United States Court of Federal Claims in No. 1:03-vv-02876-TCW, Judge Thomas C. Wheeler.

Decided: April 6, 2016

CLIFFORD JOHN SHOEMAKER, Shoemaker and Associates, Vienna, VA, argued for petitioners-appellants.

GLENN ALEXANDER MACLEOD, Vaccine/Torts Branch, Civil Division, United States Department of Justice, Washington, DC, argued for respondent-appellee. Also represented by ALEXIS B. BABCOCK, CATHARINE E. REEVES, VINCENT J. MATANOSKI, RUPA BHATTACHARYYA, BENJAMIN C. MIZER.

Before MOORE, CLEVENGER, and REYNA, *Circuit Judges.*

MOORE, *Circuit Judge*.

Marie Louise and Stephen Moriarty (the "Moriartys"), on behalf of their daughter Eilise, appeal the judgment of the Court of Federal Claims that affirmed a special master's decision denying their petition for compensation under the National Childhood Vaccine Injury Compensation Program, 42 U.S.C. § 300aa–1 to –34 (2006) ("Vaccine Act"). We vacate and remand for further proceedings.

BACKGROUND

Eilise Moriarty was born in August 1996. Prior to receiving the vaccination at issue in this case, Eilise had problems with her gross motor skills and language development and was diagnosed with hypotonia and developmental delay. But, following focused therapy to improve her fine motor and speech skills, Eilise showed dramatic improvement by October 2000.

On January 2, 2001, Eilise received three vaccinations, including her second dose of the measles, mumps, and rubella ("MMR") vaccine. Five days later, Eilise's elder brother witnessed her arching her back, thrusting her head back, rolling her eyes, and her left side jerking in a strange, almost rhythmic pattern. Eilise's brother did not know what was happening at the time, but, after having seen his sister have a number of seizures, he later testified that Eilise had a seizure that day. The Moriartys, who did not witness this seizure, noted that Eilise was feverish and lethargic that night. Eilise went to school the next day, but came home early and was running a fever in the late afternoon. Over the next two weeks, Eilise attended school but was tired and lethargic.

On January 23, 2001, Eilise had a grand mal seizure at school and was taken to a hospital. She had another

seizure there the following day. She was transferred to another hospital where she underwent magnetic resonance imaging ("MRI") and electroencephalogram ("EEG") testing. Eilise's MRI results were generally normal, but her EEG results were abnormal, which the clinician noted were "consistent with a clinical diagnosis of epilepsy." J.A. 600–01. Eilise continued to have seizures over the next two days while her doctors adjusted her medication. Once Eilise's seizures were under control, she was discharged on January 28, 2001. Dr. Elgin, a pediatric neurologist, noted at Eilise's discharge that she had a "new onset of seizure disorder" and that "there seem to be no precipitating factors causing the seizures." J.A. 10. Two days later, Dr. Vining, a neurologist at Johns Hopkins Medical Center, examined Eilise and her medical records and noted that she had a new onset of seizures with unknown etiology.

Eilise's seizures continued to worsen throughout the spring of 2001. Eilise was hospitalized twice for seizures in March 2001. Some of these seizures were "drop attacks" where Eilise would drop her head suddenly and sometimes her entire body would collapse. During this time, Dr. Elgin expressed her concern in a clinic report that, while she showed some signs of improvement, Eilise may have Lennox-Gastaut syndrome, which is a form of age-dependent epileptic encephalopathy.[1] A second EEG test performed during one of Eilise's March hospital stays was consistent with her having a clinical seizure disorder.

In April and May 2001, Eilise underwent various tests to determine her continued eligibility for special education services. Eilise's test results showed that she

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[1] The Vaccine Injury Table, 42 U.S.C. § 300aa–14(b)(3)(A), defines "encephalopathy" as "any significant acquired abnormality of, or injury to, or impairment of function of the brain."

was delayed, especially verbally. In June 2001, Eilise was admitted to Johns Hopkins Hospital because of intractable seizures and to begin a ketogenic diet. Eilise was a "super-responder" to the ketogenic diet, and in October 2001, Eilise became seizure-free. Eilise stayed on the ketogenic diet for over two years, remaining seizure-free, before tapering off the diet. Eilise's treating neurologist during this time, Dr. Rubenstein, diagnosed her with "[s]tatic encephalopathy of unknown etiology" and "[i]ntractable seizures, resolved with ketogenic diet." J.A. 396–97, 400–01.

In 2003, the Moriartys filed a petition under the Vaccine Act, alleging that Eilise suffered from autism as a result of her vaccinations. Eilise's petition was grouped and stayed with other autism cases pending resolution of lead cases in the omnibus autism proceedings. While her petition was stayed, Eilise underwent examinations by a clinical psychologist, an occupational therapist, and a speech and language pathology clinician, all of whom noted in the background sections of their reports that Eilise's seizures were attributed to her second MMR vaccination. After decisions in the lead autism cases, the Moriartys amended Eilise's petition to remove the reference to autism, alleging instead that Eilise suffered from a "seizure disorder and encephalopathy." In May 2013, a special master held a hearing where Eilise's parents and brother testified, along with Eilise's expert, Dr. Shafrir, and the government's expert, Dr. MacDonald (both pediatric neurologists). At the time of this hearing, Eilise was 17 years old but was reading at an "easy" fifth grade level and had third grade level math skills. During the post-hearing briefing process, Eilise's petition was re-assigned to a new special master because the previous one's service term ended. Both parties declined the new special master's offer of another hearing.

The special master denied Eilise's petition. He determined that the Moriartys failed to prove either the first

or second prongs of our three part test in *Althen v. Secretary of Health and Human Services*, 418 F.3d 1274 (Fed. Cir. 2005), as required for Eilise's "off-Table" injury. Regarding prong one, which requires a petitioner to show a medical theory causally connecting the vaccination at issue to the injury, *Althen*, 418 F.3d at 1278, the special master noted that the Moriartys' theory connecting Eilise's MMR vaccination to her condition had "evolved" over time, ultimately becoming that the MMR vaccine triggered an immune-mediated reaction that led to epileptic encephalopathy. Eilise's expert, Dr. Shafrir, cited eight articles in his second report supporting this point, but the special master declined to consider the contents of that report or all of the cited articles because the Moriartys "did not elicit testimony from Dr. Shafrir about these articles as part of the direct examination." J.A. 19. Instead, the special master limited his consideration to only two of the articles cited in Dr. Shafrir's second expert report, on the basis that the government had cross-examined Dr. Shafrir about their contents. The special master also noted that the government's expert, Dr. MacDonald, testified that "there is no evidence to support the conclusion that the MMR vaccine can cause autoimmune epileptic encephalopathy." J.A. 22. Ultimately, the special master determined that Dr. Shafrir was unpersuasive, and consequently concluded that the Moriartys failed to meet *Althen* prong one by "fail[ing] to demonstrate that the MMR vaccine can cause an autoimmune epileptic encephalopathy." J.A. 22.

The special master also determined that the Moriartys failed to prove *Althen* prong two, which requires showing a logical sequence of cause and effect showing that the vaccination at issue was the reason for the injury. *See Althen*, 418 F.3d at 1278. He explained that, even if the Moriartys had met their burden to prove *Althen* prong one, they failed to show that Eilise suffered from autoimmune epileptic encephalopathy. He discounted

Dr. Shafrir's testimony that Eilise suffered from this condition because "Dr. Shafrir was relying upon his 'clinical experience' and the sequence of events in which the vaccination preceded Eilise's January 7, 2001 seizure." J.A. 24. Dr. MacDonald testified that patients with autoimmune epileptic encephalopathy "most commonly present with 'lethargy, behavioral issues, confusion, speech loss, aphasia, a whole host of cognitive problems, balance problems, hemiparesis'" and that autoimmune encephalopathy "may include" various objective evidence such as "brain swelling on an MRI scan." J.A. 24. The special master noted that "it is unusual for a disease not to have any typical clinical symptoms" and found Dr. MacDonald "more credible [than Dr. Shafrir] when he provided a list of clinical signs and diagnostic assessments" for autoimmune epileptic encephalopathy. J.A. 25. He cited Dr. MacDonald's testimony that Eilise did not have autoimmune epileptic encephalopathy "because in his experience, patients are 'desperately sick' if they have immune-mediated encephalopathies that result in seizures" and stated that "Dr. MacDonald's suggestion that an autoimmune process is likely to cause changes on neuroimaging studies rings true." *Id.* He found that the treatment ordered by Eilise's treating doctors "tends to support Dr. MacDonald's opinion," *id.*, and that, ultimately, Dr. MacDonald was more persuasive on this point than Dr. Shafrir.

Finally, the special master determined that the Moriartys met their burden to prove *Althen* prong three by showing a proximate temporal relationship between Eilise's vaccination and her injury. The Court of Federal Claims affirmed the special master's decision. The Moriartys appeal. We have jurisdiction under 42 U.S.C. § 300aa–12(f).

DISCUSSION

We review the Court of Federal Claims' decisions in Vaccine Act cases de novo, applying the same standard used by that court to review the special master's determination. *Moberly ex rel. Moberly v. Sec'y of Health & Human Servs.*, 592 F.3d 1315, 1321 (Fed. Cir. 2010). We only set aside findings of fact or conclusions of law that are arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law. 42 U.S.C. § 300aa–12(e)(2)(B); *Moberly*, 592 F.2d at 1321.

Under the Vaccine Act, there are two types of injuries: "Table" and "off-Table." 42 U.S.C. §§ 300aa–11(c)(1)(C)(i), 300aa–11(c)(1)(C)(ii). Causation is presumed for Table injuries when a specified condition follows the administration of a specified vaccine within a specified period of time. *Moberly*, 592 F.3d at 1321 (citing 42 U.S.C. §§ 300aa–11(c), 300aa–14). All other injuries are off-Table injuries where the petitioner has to prove causation by a preponderance of the evidence. *Althen*, 418 F.3d at 1278. The parties do not dispute that Eilise's injury is in the off-Table category, meaning that, in order to receive compensation for Eilise's injuries, the Moriartys must:

> [S]how 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.

Id. Only the first and second prongs of the *Althen* test are at issue in this appeal because the special master found, and the parties do not dispute, that the Moriartys proved the third prong of the *Althen* test.

I.

The Moriartys argue that the special master erred in determining that they did not meet their burden to prove *Althen* prongs one and two for numerous reasons. With respect to prong one, the Moriartys argue, *inter alia*, that the special master erred by not considering the whole of the record, which includes Dr. Shafrir's second expert report and the scientific articles discussed in that report. The government counters that a review of the special master's decision shows that he considered both Dr. Shafrir's testimony and Dr. Shafrir's filed expert reports and the literature cited therein. We hold, as explained below, that the special master erred by failing to consider the entire record, including Dr. Shafrir's second expert report and the articles he cited, which is relevant medical and scientific evidence present in the record.

We start with the language of the statute, which instructs that "[c]ompensation shall be awarded under the [Vaccine Act] to a petitioner if the special master or court finds on the record as a whole" that the petitioner has met his evidentiary burdens. 42 U.S.C. § 300aa–13(a)(1). The statute then identifies matters to be considered by a special master in determining whether to award compensation, which include any medical records or reports "contained in the record regarding the nature, causation, and aggravation of the petitioner's . . . injury" as well as "all other relevant medical and scientific evidence contained in the record." *Id.* § 300aa–13(b). This section also requires that special masters "shall consider the entire record and the course of the injury" when evaluating the weight to be afforded to any medical records or reports present in the record. *Id.* Thus, this statutory language indicates that a special master, reviewing the entire record of the case before him, must consider all *relevant* medical and scientific evidence contained in the record, which includes any *relevant* medical records or reports. It

also instructs that the special master "shall" consider the entire record, which includes this relevant evidence, when assigning the weight given to particular evidence. With this statutory guidance in mind, we now turn to the specific issues in this case.

The issue in this case is whether the special master erred by failing to consider relevant medical and scientific evidence contained in the record. We conclude that he has. The special master erred in concluding that he need only review evidence of record which was the subject of testimony at the hearing.

We generally presume that a special master considered the relevant record evidence even though he does not explicitly reference such evidence in his decision. *Hazelhurst v. Sec'y of Health & Human Servs.*, 604 F.3d 1343, 1352 (Fed. Cir. 2010). However, this presumption does not apply, as in this case, where a special master indicates otherwise. *Id.* In his decision, the special master recognized that Dr. Shafrir discussed a connection between measles vaccination and encephalopathy in his second expert report. J.A. 18 n.11. He noted that Dr. Shafrir relied on and discussed several articles in this report before stating the opinion that Eilise's epileptic encephalopathy sits within the spectrum of MMR vaccine encephalopathy. *Id.* But the special master never considered Dr. Shafrir's testimony *contained in his second expert report* in reaching his decision that the Moriartys had failed to prove *Althen* prong one. This report is relevant medical or scientific evidence and it is part of the record in this case. Instead, the special master refused to consider both Dr. Shafrir's written testimony and the articles he relied upon in this report solely because he did not testify about them at the hearing. The special master wrote:

> Although Dr. Shafrir had cited various articles in support of his opinion in his second report, exhibit

> 37, petitioners did not elicit testimony from Dr. Shafrir about these articles as part of the direct examination. When an expert does not explain the relevance of the article, a special master is not required to interpret the study without the benefit of the expert's guidance. *Moberly v. Sec'y of Health & Human Servs.*, 85 Fed. Cl. 571, 598 (2009), *aff'd*, 592 F.3d 1315 (Fed. Cir. 2010).

J.A. 19 (footnote omitted). The special master then addressed only two of the articles cited in Dr. Shafrir's report because he found that the "lack of direct testimony from Dr. Shafrir was ameliorated to some extent because the Secretary and the presiding special master inquired about a few of the articles that Dr. Shafrir cited." *Id.* There is thus no indication that the special master considered Dr. Shafrir's written testimony in his second report and the articles cited therein, and there is, in fact, an affirmative indication that he did not do so.

Additional statements indicate that the special master did not consider Dr. Shafrir's written testimony in his report or the articles he cited. In denying the Moriartys' petition, the special master faulted them for "fail[ing] to demonstrate how the measles vaccine would cause an autoimmune epileptic encephalopathy," and "elicit[ing] very little testimony about the basis for Dr. Shafrir's opinion that the measles vaccine can cause an epileptic encephalopathy." J.A. 18–19; *see also* J.A. 22 ("[P]etitioners failed to demonstrate that the MMR vaccine can cause an autoimmune epileptic encephalopathy."). And the special master relied on Dr. MacDonald's testimony that "there is no evidence to support the conclusion that the MMR vaccine can cause autoimmune epileptic encephalopathy." J.A. 22. The special master could not conclude that there is no evidence to support the conclusion that the MMR vaccine can cause autoimmune epileptic encephalopathy unless he was refusing to consider the articles cited by Dr. Shafrir in his second expert

report. One such article, a five-page article by Weibel et al.,[2] cited and explained by Dr. Shafrir in his second report, teaches the very point that the special master faulted the Moriartys for failing to present evidence to establish—that the MMR vaccine can cause autoimmune epileptic encephalopathy.

Weibel analyzed data from claims submitted to the National Vaccine Injury Compensation Program—claims such as the one the Moriartys filed for Eilise here. The objective of this article is "[t]o determine if there is evidence for a causal relationship between acute encephalopathy followed by permanent brain injury or death associated with the administration of . . . [the] combined measles, mumps, and rubella vaccine." J.A. 1459. The authors explain that encephalopathy has occurred in a number of cases following measles infection and that pleocytosis (i.e., an increase in the number of white blood cells in the cerebral spinal fluid ("CSF")) is reported in about 20% of these patients. White blood cells, also called leukocytes, are part of the immune system, and an increase in their number can indicate, *inter alia*, an immune system disorder or that the body is fighting off an infection. The authors go on to explain on the first page of

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[2] Robert E. Weibel, Vito Caserta, David E. Benor, & Geoffrey Evans, *Acute Encephalopathy Followed by Permanent Brain Injury or Death Associated With Further Attenuated Measles Vaccines: A Review of Claims Submitted to the National Vaccine Injury Compensation Program*, 101(3) PEDIATRICS 383–87 (1998) ("Weibel"). We note that the authors all work at either the Division of Vaccine Injury Compensation, National Vaccine Injury Compensation Program within the Health Resources and Services Administration, or the Office of the General Counsel at the Department of Health and Human Services.

this article that, in cases of post-measles-infection encephalopathy where pleocytosis is present, "the absence of a detectable virus in the brain is obscure, but may be suggestive of an *autoimmune encephalopathy*." *Id.* (emphasis added). The authors then explain that prior case reports and review articles suggest that similar neurologic complications can also follow administration of a measles vaccine. Thus, this article squarely addresses the same disease allegedly suffered by Eilise: autoimmune encephalopathy caused by administration of a measles vaccine.

Based on their results, the Weibel authors concluded that their data "suggests that a causal relationship between measles vaccine and encephalopathy may exist as a rare complication of measles immunization." J.A. 1459. In reaching this conclusion, they found that most of the children[3] who suffered acute encephalopathy after receiving a measles vaccine also exhibited seizures (34 out of 48) and nearly half developed a seizure disorder (23 out of 48). They also found that 11 of the 40 children (about 28%) for whom CSF analysis had been performed exhibited pleocytosis. In discussing their data, the authors state that "[m]anifestations of acute encephalopathy including loss of consciousness, ataxia, *seizures*, and *pleocytosis* among these 48 children is similar to the clinical features of acute encephalopathy described after natural measles and other live measles vaccines." J.A. 1462 (emphasis added).

This article unmistakably talks about Eilise's injury. It suggests that the measles vaccine can cause encephalo-

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[3] The study's inclusion criteria were that the child suffered an acute encephalopathy of undetermined cause within two to fifteen days of receiving a measles-containing vaccine followed by permanent brain impairment or death.

pathy, and it reports that the clinical features of this encephalopathy include seizures (i.e., epileptic encephalopathies) in a subset of children. Moreover, the article explains that infection with the measles virus may cause an autoimmune encephalopathy in some situations, and that the medical evidence suggests that similar complications can occur following the measles vaccine. It also reports that, as with natural measles infections, measles vaccines are associated with pleocytosis in a subset of patients. It cannot be reasonably disputed that this article constitutes relevant scientific evidence.

Thus, to the extent that the special master's recitation of Dr. MacDonald's testimony that there is "no evidence" to support causation is a factual finding, that factual finding is not supported—and, indeed, is contradicted—by the evidence in the record. In ignoring Weibel and Dr. Shafrir's discussion of it in his second expert report, the special master ignored relevant record evidence that tends to prove the very point that the special master faulted the Moriartys for failing to prove.

There are three errors with respect to the special master's assertion that he was not required to consider the medical and scientific evidence of record. First, the special master's holding that he could decline to review such evidence is legally erroneous. The special master held: "When an expert does not explain the relevance of the article, a special master is not required to interpret the study without the benefit of an expert's guidance. *Moberly v. Sec'y of Health & Human Servs.*, 85 Fed. Cl. 571, 598 (2009), *aff'd*, 592 F.3d 1315 (Fed. Cir. 2010)." The *Moberly* decision does not support the special master's claim that he may refuse to consider relevant scientific and medical evidence of record merely because it is not explained by an expert. In fact, such a holding would be in direct conflict with the governing statute which requires the special master to consider all relevant medical and scientific evidence of record. As a preliminary

matter, we note that the Federal Circuit decision in *Moberly* did not address this issue at all. The Court of Federal Claims decision explained only that "a special master may interpret and apply the conclusions of a medical study introduced into the record by a party, without the guidance of expert witnesses." *Moberly*, 85 Fed. Cl. at 598. The Court of Federal Claims further stated although the special master may interpret a medical study without assistance of any expert, it is possible that a special master could conclude that "a particular study, or aspects of a study" may not be able to be understood absent such assistance and in those circumstances a special master could decline to interpret that portion of the study which he cannot understand. *Id*. Nowhere does the Court of Federal Claims (or our own court in its decision on the appeal) state that a special master is not required to consider a reference. Indeed, such a holding would be contrary to the statutory requirement that the special master consider the record as a whole, including all relevant scientific and medical evidence. A special master is required to consider all relevant medical and scientific evidence of record. And he is obligated to consider such evidence even if it is not explained by the testimony of an expert. However, if the technical complexity of a particular study is such that the relevance of the medical study or its particular findings cannot be understood by the special master without expert assistance that was not provided, then the special master may conclude that this evidence or portion of the evidence is entitled to little or no weight. And of course this sort of factual determination would be reviewed under the arbitrary and capricious standard on appeal. But the special master made no such finding in this case. In this case, the special master found that he was not required to consider the articles which the expert, Dr. Shafrir, did not discuss in his oral testimony at the hearing. He stated that "[a]lthough Dr. Shafrir had cited various articles in support of his opinion in his second report, exhibit 37,

petitioners did not elicit testimony from Dr. Shafrir about these articles as part of the direct examination. . . . The lack of direct testimony from Dr. Shafrir was ameliorated to some extent because the Secretary and the presiding special master inquired about a few of the articles Dr. Shafrir cited." J.A. 19. The special master then only discussed the articles which Dr. Shafrir had offered oral testimony about. The special master was not free to decline to review the other medical and scientific articles in the record simply because the expert had not testified to them on direct or cross examination.

Second, the special master was clearly erroneous in his assessment of which medical and scientific articles Dr. Shafrir had offered testimony on. Since the special master considered only oral testimony and not the expert report of Dr. Shafrir he clearly erred in his review of the Shafrir testimony. The special master did not consider Dr. Shafrir's discussion of the relevance of these articles in his expert report. For example, Dr. Shafrir opined in his report "that Eilise's epileptic encephalopathy sits within the spectrum of MMR vaccine encephalopathy" and explained that Weibel describes "one side of the spectrum" where measles vaccination was followed by permanent brain injury or death and that these authors concluded that the data they analyzed "suggests that causal relationship between measles vaccine and encephalopathy may exist as rare complications of measles immunization." J.A. 1382. This is not a case where the expert simply cited a large number of references in a voluminous expert report without providing any guidance as to their relevance. The exact opposite is true—Dr. Shafrir's second report is a total of eight pages and cites a total of eight articles. And the report does not simply cite the eight articles without explanation, leaving it to the special master to determine the articles' relevance. Rather, it explains the relevance of each article and provides a numbered list summarizing Dr. Shafrir's

conclusions based on these articles. It cannot be said that Dr. Shafrir provided no guidance as to the relevance of these articles. He did, and he did it concisely in his second report.

We have never held that the relevance of particular articles cited by an expert in a report *must* be explained in the form of the expert's testimony at a hearing in Vaccine Act cases. Indeed, such a holding would be contrary to the broad statutory instruction that the special master consider the entire record, including all relevant medical and scientific evidence contained in that record, which includes expert reports such as the one at issue here. Such a holding would also be contrary to the Court of Federal Claims' Vaccine Rule 8, which provides that "[i]n receiving evidence, the special master will not be bound by common law or statutory rules of evidence but must consider all relevant and reliable evidence governed by principles of fundamental fairness to both parties." *Hazelhurst*, 604 F.3d at 1349 (quoting Vaccine R. 8(b)(1) (2009)). Vaccine Rule 8 also explains the forms in which parties may present such evidence, namely "in the form of documents, affidavits, or oral testimony which may be given in person or by telephone, videoconference, or videotape." Vaccine R. 8(b)(2). As this rule instructs, traditional rules of admissibility of evidence that apply in district court actions do not apply in Vaccine Act proceedings. *See Hazelhurst*, 604 F.3d at 1349. The use of more flexible evidentiary rules, like the statutory instruction to consider the entire record, is consistent with the purpose of the Vaccine Act, which established "a no-fault compensation program 'designed to work faster and with greater ease than the civil tort system.'" *Bruesewitz v. Wyeth LLC*, 562 U.S. 223, 228 (2011) (quoting *Shalala v. Whitecotton*, 514 U.S. 268, 269 (1995)).

Moreover, we have repeatedly endorsed a special master's reliance on both the reports and testimony of expert witnesses. *See, e.g.*, *Hazelhurst*, 604 F.3d at 1349–

50 (finding no error in the "special master's decision to admit and consider [an expert's] testimony and reports"); *Hibbard v. Sec'y of Health & Human Servs.*, 698 F.3d 1355, 1365 (Fed. Cir. 2012) (affirming a special master's decision where an expert's "report and testimony made clear" that whether the petitioner suffered a particular injury was a necessary component of her case). Here, the special master's decision indicates that he did not consider either the explanations regarding the relevance of articles that Dr. Shafrir offered in his report or the articles themselves solely because Dr. Shafrir did not testify on these points at the hearing. In so doing, the special master erred.

Finally, contrary to the special master's assertion, Dr. Shafrir testified on direct about at least three of the references cited in his second report when explaining his opinion regarding Eilise's injury and its causation.[4] For example, Dr. Shafrir testified on direct that:

> So I think that what Eilise suffered, based on a case report that we also had that was published with similar onset of epileptic encephalopathy after the measles vaccine that the same immune mechanism that produced the [acute disseminated encephalomyelitis], that produced the cerebral ataxia, also it produced here a specific immune mediated epileptic encephalopathy on top of what she had before.

J.A. 210. And he further testified that "there is the entity of immune mediated epileptic encephalopathy exists in quite significant numbers. We have specific support describing the same thing in others -- I think it was a young man." J.A. 211. In his second report, Dr. Shafrir

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[4] The special master found there was oral testimony about only two of the articles. J.A. 19.

cited and explained the relevance of a case report[5] involving a child who "developed epileptic encephalopathy on day 14th [sic] after measles immunization." J.A. 1384. He explained that this child "developed rapid nodding of the head" and, as his seizures increased in frequency, they "occasionally produced falls." *Id.* He noted that this child was "finally diagnosed with Lennox-Gastaut syndrome" and that, even so, the child's neuroimaging and other immunological studies were normal. *Id.* The case report identified the affected child as "a 2-year-old boy with Lennox-Gastaut syndrome," J.A. 1488, consistent with Dr. Shafrir's testimony that the case report involved a "young man." Dr. Shafrir explained that this child had not responded as well as Eilise to various seizure medications. Dr. Shafrir similarly testified about at least two other articles cited and explained in his second expert report.[6]

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[5] Tatsuya Ishikawa, Chizuko Ogino, & Sangmi Chang, *Case Report: Lennox-Gastaut syndrome after a further attenuated live measles vaccination*, 21 Brain & Development 563–65 (1995).

[6] Dr. Shafrir's hearing testimony specifically mentioned "studies by Gibbs" discussing patients with EEG changes. J.A. 209. In his second report, Dr. Shafrir identified and explained the relevance of two articles by Gibbs et al., pointing out that two patients with measles developed a "convulsive" (i.e., epileptic) disorder as documented by their changing EEG test results. J.A. 1383–86. And, in fact, the special master recognized that Dr. Shafrir included at least one article by Gibbs in his second report because he relied on the government's cross-examination of Dr. Shafrir about that article in his decision.

Dr. Shafrir also testified on direct about "an article on acute cerebral ataxia," explaining that this disorder is

Admittedly, it would have been easier for the special master if Dr. Shafrir's hearing testimony clearly referenced and discussed each of the articles. But that is not a basis for the special master to refuse to consider relevant scientific evidence in the record where the statutory language, and even the Vaccine Rules, instruct that this evidence must be considered. Given the statutory mandate to consider all relevant medical and scientific evidence of record, the special master's refusal to do so is arbitrary and capricious.

The special master's refusal to consider Dr. Shafrir's second expert report and the references cited in it is particularly concerning here given the procedural history in this case. As noted above, a different special master actually held the hearing at which Dr. Shafrir testified. We generally give a special master "broad discretion in determining credibility because he saw the witnesses and heard the testimony." *Bradley v. Sec'y of Health & Human Servs.*, 991 F.2d 1570, 1575 (Fed. Cir. 1993). But here that general rule carries less force because the special master who decided Eilise's petition was not present at this hearing such that he, like us, only has the transcript of that proceeding on which to rely. *See* Oral Argument at 16:00–51, *available at* http://oralarguments.cafc.uscourts.gov/default.aspx?fl=20

"[an]other neuroimmune reaction to the vaccine" that is "much less severe" than other disorders. J.A. 210. In his second report, Dr. Shafrir explained that "[m]any of the clinical phenomena seen with the actual infection with measles, mumps, or rubella are seen with the vaccination" and that some of these clinical phenomena are "immune phenomena such as acute cerebellar ataxia" citing an article titled "Gait disturbance interpreted as cerebellar ataxia after MMR vaccination at 15 months of age: a follow-up study." J.A. 1382, 1386.

15-5072.mp3. In such a situation, consideration of the entire record is particularly important in order to avoid potentially overlooking relevant material.

II.

As the special master noted, much of the evidence relevant to proving *Althen* prong one in this case is relevant to proving *Althen* prong two. Thus, the special master's error in not considering relevant evidence with respect to *Althen* prong one affects his analysis with respect to prong two as well. Moreover, there is "no reason why evidence used to satisfy one of the [*Althen*] prongs cannot overlap to satisfy another prong." *Capizzano v. Sec'y of Health & Human Servs.*, 440 F.3d 1317, 1326 (Fed. Cir. 2006). And, in certain cases, a petitioner can prove a logical sequence of cause and effect between a vaccination and the injury (*Althen* prong two) with a physician's opinion to that effect where the petitioner has proved that the vaccination can cause the injury (*Althen* prong one) and that the vaccination and injury have a close temporal proximity (*Althen* prong three). *Id.* While we believe that this is one such case, we hesitate to determine that in the first instance. We therefore vacate the decision below and remand to allow the special master to consider the entire record including the relevant medical and scientific evidence, such as Dr. Shafrir's second report and the articles cited therein.

CONCLUSION

For the foregoing reasons, we vacate the decision of Court of Federal Claims affirming the decision of the special master rejecting the Moriartys' petition. We remand for further proceedings consistent with this opinion.

VACATED AND REMANDED

COSTS

Costs to the Moriartys.