In the United States Court of Federal Claims

WALTER THORNTON, Petitioner, v. THE UNITED STATES, Respondent.	No. 18-1002 Filed under seal: January 28, 2026 Reissued: February 13, 2026

William E. Cochran, Jr., Black McLaren Jones Ryland & Griffee, PC, Memphis, Tennessee, for petitioner.
Joseph Leavitt, Civil Division, United States Department of Justice, Washington, DC, for respondent.

OPINION AND ORDER
Denying Mr. Thornton's motion for review

Walter Thornton filed a petition under the National Childhood Vaccine Injury Act of 1986, seeking compensation for rhabdomyolysis that he alleges resulted from a seasonal flu vaccination.[1] He argues that the special master's decision was arbitrary and capricious because the special master (1) failed to consider the record as a whole; (2) applied improper standards to treating physician opinions and medical literature; (3) required proof of the specific molecule involved in the development of Mr. Thornton's condition, impermissibly raising the burden of proof; and (4) erroneously concluded that it was Mr. Thornton's burden to rule out exercise as a cause of his condition.

The special master's decision was not arbitrary, capricious, or an abuse of discretion. He considered the evidence, made plausible inferences, and articulated his reasoning. The court therefore will deny Mr. Thornton's motion for review and affirm the special master's decision.

[1] This opinion was originally issued under seal on January 28, 2026. The parties had no proposed redactions. The court reissues the opinion publicly.

I. Background

A. Mr. Thornton's medical history

In September 2016, Mr. Thornton was 27 years old and serving on active duty in the Air Force. Mr. Thornton exercised at the gym approximately 15 to 20 hours a week. ECF No. 17-1 at 1-2. For at least the previous two years, Mr. Thornton ran two miles and did 60 pushups and 60 sit-ups every weekday. ECF No. 65-1 at 1. His medical history included diarrhea and dehydration treated in the emergency room, a knee injury, and persistent plantar fasciitis and Achilles tendinitis.

On September 15, 2016, Mr. Thornton received a pre-deployment health assessment. The Air Force determined that he was deployable. ECF No. 7-3 at 646-50. He reported feeling very good. *Id.* Two weeks later, on September 30, Mr. Thornton received a flu vaccine. ECF No. 7-2. He also received an inactivated polio vaccine on September 12, 2016, and an anthrax vaccine on October 3, 2016. *Id.*

For eleven days after the flu vaccine, Mr. Thornton did not exercise. ECF No. 65-1 at 1-3. Exercise was optional for one week to recover from vaccines and for one week leading up to Air Force physical fitness testing. *Id.* On October 11, Mr. Thornton attempted physical fitness testing. *Id.* at 3. During the testing, Mr. Thornton did approximately 38 pushups and 42 sit-ups and ran nearly 1.5 miles. *Id*. At the half-mile mark, Mr. Thornton began experiencing soreness in his upper thighs, shoulders, and abdomen. *Id.* The soreness worsened throughout the run until Mr. Thornton collapsed from the pain. *Id.* That day, he went to the emergency room at the Gerald Champion Regional Medical Center. ECF No. 7-4 at 35. He had high creatine levels; the staff tried to treat the creatine levels, but they remained high even after hydration. *Id.* at 40, 43. He was diagnosed with dehydration, azotemia with doubling of creatine, and intrinsic kidney disease. *Id.* At 40. He was referred to a kidney specialist. *Id.*

The next day, Mr. Thornton returned to the Champion emergency room complaining of excruciating muscle pain throughout his abdomen and the large muscles of his upper arms and thighs. ECF No. 7-4 at 62. He was diagnosed with acute rhabdomyolysis. ECF No. 7-4 at 59-62. He was also diagnosed with acute kidney injury, acute liver injury, and metabolic acidosis. *Id.* Mr. Thornton was transferred to the William Beaumont Hospital the following day, on October 13. *Id.* at 61.

On October 22, Mr. Thornton was discharged from Beaumont with a diagnosis of rhabdomyolysis. ECF No. 7-5 at 276-77; ECF No. 7-4 at 21. Five days later, Mr. Thornton returned to the Champion emergency room with abdominal pain. ECF No. 7-4 at 21. The staff sent him home after giving him fluids. *Id.* at 24-25. Mr. Thornton returned to Champion the next day complaining of weakness, fatigue, shortness of breath, aches all over, and nausea. *Id.* at 11. The emergency room transferred him back to Beaumont for treatment. *Id.* at 14. Mr. Thornton complained of leg weakness and pain in his legs and stomach, which he said had been worsening since his discharge the week before. ECF No. 7-5 at 439. The hospital staff gave him fluids and intravenous medication for three days. They gave him two rounds of intravenous immunoglobulin, which, according to the medical records, resolved his rhabdomyolysis. *Id.* at 623. The hospital discharged Mr. Thornton over a week later, with diagnoses of "Inflammatory myositis—etiology unclear; Non-exertional, non-traumatic rhabdomyolysis; Essential hypertension." *Id.* at 628.

Mr. Thornton visited a neurologist, Dr. Shawna Scully, for a follow-up on November 14, 2016. ECF No. 7-3 at 567. Dr. Scully observed that Mr. Thornton's creatine kinase levels were within normal limits after intravenous immunoglobulin treatments but that he was still complaining of muscle pain and struggling to walk again. *Id.* Dr. Scully noted that Mr. Thornton's first rhabdomyolysis episode occurred during an aggressive physical fitness test approximately one

week after receiving vaccines. *Id.* She wrote that "this is an autoimmune mediated process, perhaps triggered by several recent vaccinations" and prescribed calcium, vitamin D, and magnesium. *Id.* at 572-73.

Mr. Thornton had another appointment with Dr. Scully about a week later; he complained of shortness of breath, weakness and deconditioning, orthostatic hypertension, and pain in his hip, thigh, and lower back. ECF No. 7-6 at 205-06, 210. Dr. Scully noted that Mr. Thornton's creatine kinase levels were "the best … he has had to date" and that Mr. Thornton was "stable and tolerating simple in-home ambulation." *Id.* at 206. Dr. Scully assessed Mr. Thornton as having myositis, orthostatic hypotension, and low back pain. *Id.* at 210.

Mr. Thornton next saw Dr. Scully about a month later, on December 27, 2016. ECF No. 7-6 at 121. Although his creatine kinase levels had further improved, Mr. Thornton continued to complain of significant muscular pain, fatigue, decreased exercise tolerance, shortness of breath, and occasional lightheadedness. *Id.* at 123. Dr. Scully noted that Mr. Thornton's cardiology tests were within normal limits and that his symptoms "seem to be accounted for by profound deconditioning." *Id.* at 123. Dr. Scully referred him to a neuromuscular specialist. *Id.* at 144.

One month later, on January 27, 2017, Mr. Thornton saw Dr. Erik Ortega, a neuromuscular specialist. ECF No. 7-7 at 1-2. Dr. Ortega opined that Mr. Thornton's physical activity in the fitness test was normal for him, "so one would not expect that he would have rhabdomyolysis as a consequence." *Id.* at 1. At the time of the appointment, Mr. Thornton continued to complain of headaches and pain in his back, buttocks, thighs, and head. *Id.* at 3. Dr. Ortega noted that he "strongly suspect[ed] that [Mr. Thornton's] rhabdomyolysis was induced by his exposure to vaccinations." *Id.* at 4. He also noted that there were case reports describing patients experiencing rhabdomyolysis following vaccination. *Id.*

Mr. Thornton visited Dr. Scully again on March 8, 2017. ECF No. 7-6 at 99. Mr. Thornton described generalized muscle pain, fatigue, and difficulty breathing and focusing. *Id.* at 100. He also reported a recurring headache. *Id.* Dr. Scully described Mr. Thornton's condition as "autoimmune myositis thought to have been associated with the administration of vaccinations." *Id.* at 102. Although she noted that the doctors "were able to resolve active rhabdomyolysis / prevent further muscle breakdown as evidenced by chronically elevated [creatine kinase] values with the initiation of [intravenous immunoglobin] and no recurrence since that initial therapy," Dr. Scully acknowledged that Mr. Thornton continued to experience incapacitating muscle pain, which significantly limited his functioning. *Id.*

Mr. Thornton had high creatine kinase levels in late August and early September 2017, nearly a year after his flu vaccine. ECF No. 7-3 at 89. On September 12, 2017, he returned to Beaumont at the recommendation of his primary care provider. ECF No. 7-5 at 819. Mr. Thornton continued to experience generalized pain, malaise, and intermittent chest pain. *Id.* The doctor at Beaumont reported that he "[s]uspect[ed] recurrent autoimmune inflammatory myositis." *Id.* at 839. Mr. Thornton was discharged three days later, on September 15, 2017, after his creatine kinase levels stabilized. *Id.* at 892.

About two weeks later, Mr. Thornton was "medically separated from the military as his condition [made] him currently not employable." ECF No. 7-9. Six months later, in April 2018, Mr. Thornton saw rheumatologist fellow Ashley Blaske, who opined that Mr. Thornton suffered another episode of rhabdomyolysis in September 2017 after working out. ECF No. 8-3 at 31. His physical exam was normal. *Id.* Dr. Blaske suspected that Mr. Thornton suffered from metabolic myopathy. Although metabolic myopathy was a "little unusual to present later in life, … myalgias without weakness and elevated [creatine kinase] are classic for metabolic myopathy." *Id.* at 33.

B. Vaccines, exercise, cytokines, inflammation, and rhabdomyolysis

Mr. Thornton's medical theory is that his flu vaccine caused pro-inflammatory cytokines that caused an "underlying, asymptomatic level of inflammation" for at least eleven days after the vaccine was administered. ECF No. 145 at 7. Mr. Thornton argues that the inflammation "acted synergistically with his exercise to induce his rhabdomyolysis." *Id.* Because the issues in the case turn on the interactions among vaccines, exercise, cytokines, inflammation, and rhabdomyolysis, the court will briefly discuss some generally agreed-upon principles involving the interactions among those things.

Cytokines are signaling molecules. ECF No. 124 at 137:14-15. The parties agree that cytokines, along with other inflammatory mediators, are released following vaccine administration. *Id.* at 81:10-21; *id.* at 168:24-169:7; ECF No. 135 at 14. The parties agree that cytokines are also released following exercise. ECF No. 143 at 17; ECF No. 124 at 84:13-23. The parties do not dispute that exercise can induce rhabdomyolysis. ECF No. 124 at 84:13-23; ECF No. 145 at 8; ECF No. 135 at 14. When a patient suffers from rhabdomyolysis, cytokines cause abnormal signals within the body. ECF No. 124 at 137:9-18. The abnormal signaling causes increased calcium and, ultimately, lysis, or rupture, of the cell membrane and hypoxia. *Id.* While some literature suggests that pro-inflammatory cytokines may cause rhabdomyolysis (ECF No. 65-25 at 621 (Hamel, *Acute Rhabdomyolysis and Inflammation*, 28 Journal of Inherited Metabolic Diseases 621 (2015))), the medical community has not resolved whether cytokines induce rhabdomyolysis or simply play a role in rhabdomyolysis once it has been induced (ECF No. 137 at 207:4-7).

C. The procedural background of this case

Mr. Thornton filed a petition in 2018 with the Office of Special Masters in this court alleging that he has suffered from rhabdomyolysis, myositis, and autoimmune induced inflammatory myopathy directly caused by the polio and flu vaccines he received in September 2016. ECF No.

1. Mr. Thornton retained Dr. Eric Gershwin, a rheumatologist, as an expert witness. Dr. Gershwin opined that Mr. Thornton had rhabdomyolysis caused by a combination of the vaccine and exercise. ECF No. 124 at 67:5-11.

The government retained two experts: a rheumatologist, Dr. Carlos Rose, and a neurologist, Dr. Peter Donofrio. The government's experts opined that the vaccine did not cause Mr. Thornton's rhabdomyolysis. ECF No. 124 at 150:12-22; ECF No. 132 at 234:17-25. After the parties filed expert reports and briefs, the special master held an evidentiary hearing on June 6 and October 24, 2023. The special master then directed the parties to file post-hearing briefs. ECF No. 134 at 3. The parties could argue any issue, but the special master noted that he was particularly interested in Dr. Gershwin's theory that the flu vaccine caused elevated cytokines, which caused Mr. Thornton's rhabdomyolysis. *Id.* at 2. The special master therefore instructed the parties to address "the reliability of Dr. Gershwin's opinion that elevated cytokines could continue to affect a person through signaling after returning to normal." ECF No. 143 at 16.

The special master concluded that Mr. Thornton had not satisfied his burden of establishing by a preponderance of the evidence that the flu vaccine, or either of the other fall 2016 vaccines, were the cause of his rhabdomyolysis. ECF No. 143.[2] The special master noted that neither party had meaningfully argued or submitted evidence suggesting that the anthrax vaccine caused Mr. Thornton's rhabdomyolysis. ECF No. 143 at 24 n. 4. And while Mr. Thornton initially argued that the polio vaccine contributed to his rhabdomyolysis (ECF No. 143 at 11), his arguments now concern only the flu vaccine (ECF No. 145 at 6-7).

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[2] The special master initially released his opinion under seal at ECF No. 143. He later released a public version of his opinion, ECF No. 147.

With regard to the flu vaccine, the special master noted that Mr. Thornton had not produced "sufficient evidence that the flu vaccine produces the cytokines that would contribute to rhabdomyolysis" or presented "a sound and reliable theory" for how the flu vaccine, combined with exercise, would contribute to rhabdomyolysis. ECF No. 143 at 30. According to the special master, because Mr. Thornton's symptoms began eleven days after he received the flu vaccine, Mr. Thornton also had not "establish[ed] a timeframe during which one may infer that the onset of rhabdomyolysis was triggered by a flu vaccine." *Id.* at 34.

Mr. Thornton sought this court's review of the special master's decision. ECF No. 144.

II. Discussion

This court has jurisdiction to review a special master's decision under the Vaccine Act. 42 U.S.C. § 300aa-12(e). On a motion for review, this court may uphold or set aside the special master's findings of fact and conclusions of law or remand the petition to the special master for further action. 42 U.S.C. § 300aa-12(e)(2); *accord* Rules of the Court of Federal Claims, Appendix B, Vaccine Rule 27.

This court reviews the decision of a special master to determine whether it is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law. 42 U.S.C. § 300aa-12(e)(2)(B); *Masias v. Secretary of Health and Human Services*, 634 F.3d 1283, 1287 (Fed. Cir. 2011); *accord* Vaccine Rule 27. That standard is "well understood to be the most deferential possible." *Munn v. Secretary of Health and Human Services*, 970 F.2d 863, 870 (Fed. Cir. 1992).

"If the special master has considered the relevant evidence of record, drawn plausible inferences and articulated a rational basis for the decision, reversible error will be extremely difficult to demonstrate." *White v. Secretary of Health and Human Services*, 153 F.4th 1214, 1220 (Fed. Cir. 2025) (quotation marks omitted). This court, like the Federal Circuit, does "not reweigh the factual evidence, assess whether the special master correctly evaluated the evidence, or examine

the probative value of the evidence or the credibility of the witnesses—these are all matters within the purview of the fact finder." *Porter v. Secretary of Health and Human Services*, 663 F.3d 1242, 1249 (Fed. Cir. 2011); *see Munn*, 970 F.2d at 871-72 (explaining that the Federal Circuit and this court apply the same standard). The court will uphold a factual determination unless the evidence cannot reasonably be interpreted in a way that supports the determination. *See generally Shoes by Firebug LLC v. Stride Rite Children's Group, LLC*, 962 F.3d 1362, 1371 (Fed. Cir. 2020) (explaining that, when the lower tribunal was presented with two alternative theories, the reviewing court's "task is not to determine which theory [it] find[s] more compelling" or "to second-guess the [tribunal's] assessment of the evidence" (quotation marks omitted)). Thus, even when the court may have reached a different conclusion had it reviewed the evidence independently, it will not disturb the special master's reasonable evaluation of the record.

This court reviews discretionary rulings for abuse of discretion. *Munn*, 970 F.2d at 870 n.10. That review "will rarely come into play except where the special master excludes evidence." *Id.* The court gives "no deference to the … Special Master's determinations of law," reviewing legal questions de novo. *Carson v. Secretary of Health and Human Services*, 727 F.3d 1365, 1368 (Fed. Cir. 2013).

Under the Vaccine Act, a petitioner alleging injuries caused by a covered vaccine can prove entitlement to compensation in one of two ways. For so-called table injuries, a petitioner may recover when an injury or condition listed in the vaccine injury table (42 U.S.C. § 300aa-14(a)) begins to manifest itself within the time specified in the table for the vaccine in question. *Hines v. Secretary of Health and Human Services*, 940 F.2d 1518, 1524 (Fed. Cir. 1991); *see* 42 U.S.C. § 300aa-11(c)(1)(C)(i). Causation in those cases is presumed. *Hines*, 940 F.2d at 1524.

For off-table injuries, which are not listed in the table or occur outside the timeframe specified in the table, such as Mr. Thornton's rhabdomyolysis, the petitioner must prove actual causation. *Id.* at 1524-25; 42 U.S.C. § 300aa-11(c)(1)(C)(ii). The Federal Circuit has applied a three-pronged test for actual causation. A petitioner must provide "(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 v. Secretary of Health and Human Services*, 418 F.3d 1274, 1278 (Fed. Cir. 2005). The petitioner must prove each prong by a preponderance of the evidence. *Boatmon v. Secretary of Health and Human Services*, 941 F.3d 1351, 1359 (Fed. Cir. 2019). Once the petitioner establishes a prima facie case, the government "bears the burden of establishing alternative causation by a preponderance of evidence." *Cedillo v. Secretary of Health and Human Services*, 617 F.3d 1328, 1335 (Fed. Cir. 2010).

Here, the special master's decision was not arbitrary or capricious, at least with respect to his determination that Mr. Thornton had not proven actual causation because his flu vaccine was not close enough in time to his injury.

A. The special master's weighing of the evidence was not arbitrary or capricious, and he considered the whole record

Mr. Thornton presented, through his expert, case reports that showed links (1) between several vaccines, including the flu vaccine, and rhabdomyolysis and (2) between the flu virus and rhabdomyolysis. *See* ECF Nos. 65-11 to 65-20. He also relied on the opinions of the two treating physicians who had noted that the vaccines "perhaps" caused or were "strongly suspect[ed]" to have caused Mr. Thornton's rhabdomyolysis. ECF No. 7-3 at 572-73; ECF No. 7-7 at 4. Mr. Thornton argues that the special master failed to consider the record as a whole in denying his

claim. ECF No. 145 at 13-19. Mr. Thornton also argues that the special master improperly dismissed certain categories of evidence, namely the treating physician opinions and medical literature. ECF No. 145 at 14-19.

A special master is presumed to have considered the whole record, even if he did not explicitly discuss every piece of evidence. *Hazlehurst v. Secretary of Health and Human Services*, 604 F.3d 1343, 1352 (Fed. Cir. 2010). The special master "has discretion to determine the relative weight to give evidence in the record," but he must provide "logical reasoning for finding certain articles unreliable." *K.L. v. Secretary of Health and Human Services*, 134 Fed. Cl. 579, 607-08 (2017).

Here, the special master addressed the evidence Mr. Thornton presented and found it unpersuasive. The special master explained his assessment that the case reports and physician opinions offered by Mr. Thornton did not support a finding that he had presented a sound medical theory. ECF No. 143 at 30, 36. The special master noted that many of the case reports concerned vaccines other than the flu vaccine and were therefore of little relevance to Mr. Thornton's case. *Id.* at 29-30. For the case reports concerning patients who experienced rhabdomyolysis after receiving the flu vaccine, the special master noted that those reports were "factually distinct ... in the traits of the subject." *Id.*

For example, the special master noted that seven of those case reports described other factors that were believed to contribute to the patients' rhabdomyolysis: statins or fibrate therapy. ECF No. 143 at 26. The government's expert, Dr. Donofrio, had opined that there is a "clinically accepted connection between statin and fibrate medications and rhabdomyolysis." ECF No. 124 at 167:22-25. Considering those case reports against Dr. Donofrio's testimony, the special master

determined that the reports did not suggest that a flu vaccine plus exercise, without statins or fibrate therapy, could cause rhabdomyolysis. ECF No. 143 at 29.

The special master also considered two case reports concerning patients who suffered from rhabdomyolysis after receiving a flu vaccine, without statins. ECF No. 143 at 29. The special master found those reports to be "too different from Mr. Thornton's case" to support Mr. Thornton's theory that the flu vaccine can cause rhabdomyolysis. *Id.* at 30. They involved much older patients, aged 65 and 73 instead of 27. *Id.* at 29-30. The special master also noted that the case reports concerning the flu vaccine did not mention exercise, while Mr. Thornton's theory was that his rhabdomyolysis was caused by the combination of the flu vaccine and exercise. *Id.* at 30. And the special master noted that he and the other special masters frequently reject general vaccine-induced inflammation as a theory. *Id.*

The special master also addressed one review article and two case reports concerning patients who experienced rhabdomyolysis after suffering from the flu virus, rather than after receiving a flu vaccine. He discounted that medical literature, stating that "the flu infection and flu vaccine are not synonymous, and the comparison does not carry the petitioner's burden." ECF No. 143 at 25.

Reasonable minds may disagree on whether, despite some factual differences, the medical literature—primarily case reports—nevertheless represents reliable evidence supporting Mr. Thornton's theory. But it is not unreasonable to find that factual distinctions between the cases described and Mr. Thornton's circumstances limit the value of that medical literature. *Lampe v. Secretary of Health and Human Services*, 219 F.3d 1357, 1365 (Fed. Cir. 2000) (explaining that, for a study to be instructive, "its conclusions must fit the facts of the case under consideration").

The special master's decision that the medical literature was distinguishable from Mr. Thornton's situation, and therefore entitled to little weight, was thus neither arbitrary nor capricious.

The special master also discussed the opinions of Mr. Thornton's treating physicians, two of whom—his neurologist and his neuromuscular specialist—noted that recent vaccines "perhaps" caused or were "strongly suspect[ed]" to have caused his rhabdomyolysis. ECF No. 7-7 at 4; ECF No. 7-3 at 572-573. The Federal Circuit has explained that "treating physicians are likely to be in the best position to determine whether a logical sequence of cause and effect shows that the vaccination was the reason for the injury." *Capizzano v. Secretary of Health and Human Services*, 440 F.3d 1317, 1326 (Fed. Cir. 2006) (cleaned up). Although the special master acknowledged the value of treating physician opinions in his decision, he cautioned that those opinions "are not conclusive." ECF No. 143 at 36.

The special master discounted Mr. Thornton's treating physicians' opinions because they did not "propose[] a mechanism by which the vaccine may have caused Mr. Thornton's injury." ECF No. 143 at 36. Just as it is not necessary for a plaintiff to identify a specific biological mechanism connecting a vaccination to his claimed injury, there is no requirement that a treating physician propose a specific mechanism. *Knudsen v. Secretary of Health and Human Services*, 35 F.3d 543, 549 (Fed. Cir. 1994) ("[C]ausation can be found … without detailed medical and scientific exposition on the biological mechanisms."). But it is within the discretion of the special master to determine the strength of a treating physician's opinion in supporting a plaintiff's medical theory. 42 U.S.C. § 300aa-13(b)(1) ("Any such diagnosis, conclusion, judgment, test result, report, or summary shall not be binding on the special master or the court."). It was not arbitrary or capricious for the special master to find that the physician opinions here did not strongly support Mr. Thornton's medical theory.

Dr. Ortega, Mr. Thornton's neuromuscular specialist, "strongly suspect[ed]" that the vaccines caused Mr. Thornton's rhabdomyolysis. ECF No. 7-7 at 4. He noted the existence of case reports describing patients who suffered from rhabdomyolysis after receiving a vaccine. *Id.* ("There are a number of case reports describing patients who have rhabdomyolysis following a variety of vaccinations"). The special master dismissed Dr. Ortega's conclusion, citing the allegedly questionable value of case reports and stating that Dr. Ortega did not explain which case reports he was referring to. ECF No. 143 at 36. The special master did not explain why the opinion of Mr. Thornton's treating neuromuscular specialist, which would normally be considered probative, should be dismissed for failure to cite particular case reports. *Id.* There is no question that such case reports exist; Mr. Thornton cited them extensively, and the special master discussed them in his decision. *See, e.g., id.* at 25-26, 29-30. But, as mentioned above, the special master considered the available case reports and provided reasonable explanations for distinguishing them from Mr. Thornton's case. It is unclear whether Dr. Ortega was aware of reports connecting the flu vaccine to rhabdomyolysis or why they might be applicable for some reason beyond the distinctions the special master raised.

The special master made a rational decision to give relatively little weight to the opinions of Mr. Thornton's treating physicians. He reviewed the record as a whole. Although another factfinder might have given more weight to the opinions of the treating physicians, the special master's conclusion was neither arbitrary nor capricious.

B. The special master reasonably concluded that Mr. Thornton failed to establish a temporal relationship between the flu vaccine and his rhabdomyolysis

Mr. Thornton alleges an off-table injury. He therefore must prove by a preponderance of the evidence that the flu vaccine he received on September 30, 2016, caused his rhabdomyolysis. *Capizzano*, 440 F.3d at 1319-20. Although Mr. Thornton is not required to show causation with

"scientific certainty," he must present a theory that is more than merely "plausible" or "possible." *Boatmon*, 941 F.3d at 1360. Under the third prong of *Althen*, 418 F.3d at 1278, he must show that the onset of his claimed injury occurred in the period for which it is medically acceptable to infer causation. The special master's decision was neither arbitrary nor capricious in finding that Mr. Thornton failed to meet his burden on that prong.

Mr. Thornton argues that the flu vaccine caused a proinflammatory cytokine response that persisted for at least eleven days, until his physical fitness testing. ECF No. 145 at 6-7. He argues that the exercise plus cytokine-induced inflammation then caused rhabdomyolysis. To support his theory, Mr. Thornton provided medical literature that, he argues, shows that the flu vaccine can cause heightened cytokine levels over a long period of time, or at least eleven days. While the special master acknowledged that "cytokine expression can be variable among individuals" (ECF No. 143 at 32), he ultimately concluded that Mr. Thornton had not established a temporal relationship between the flu vaccine and his rhabdomyolysis (*id.* at 34).

The special master pointed out that Mr. Thornton did not provide evidence suggesting that the flu vaccine can cause elevated cytokines for eleven days. ECF No. 143 at 33-34. Instead, two of Mr. Thornton's articles suggest that cytokine levels remain elevated after a flu vaccination only for a short time, with one giving 44 hours, or less than two days. ECF No. 74-6 at 207 (K.R. Talaat et al., *Rapid changes in serum cytokines and chemokines in response to inactivated influenza vaccination*, 12 Influenza and Other Respiratory Viruses 202 (2018)) (describing cytokine levels returning to baseline by 44 hours); ECF No. 74-2 at 42 (Caroline Hervé et al., *The how's and what's of vaccine reactogenicity*, 4 NPJ Vaccines 39 (2019)) (describing "a slight and short-lived increase in inflammatory mediators"). Special masters have often found prong three of *Althen* satisfied where injury onset was within a few days of a vaccination; those examples include flu vaccine

cases. *See Fuller v. Secretary of Health and Human Services*, No. 15-1470, 2019 WL 7576382, at *19 (Fed. Cl. Spec. Mstr. Dec. 20, 2019) (finding a proximate temporal relationship for an injury occurring three days after a DTaP vaccination); *Bantugan v. Secretary of Health and Human Services*, No. 15-721, 2019 WL 7602581, at *21 (Fed. Cl. Spec. Mstr. Nov. 16, 2022) (finding a proximate temporal relationship where symptoms began two days after a flu vaccination). By contrast, in at least one case, a fifteen-day gap was too long to establish a proximate temporal relationship. *See Gram v. Secretary of Health and Human Services*, No. 15-515, 2022 WL 17687972, at *51 (Fed. Cl. Spec. Mstr. Nov. 16, 2022). Mr. Thornton provided evidence that some subjects experienced *lower* cytokine levels for up to two weeks after receiving a flu vaccine. ECF No. 74-6 at 5 ("IL-8 levels remained low at Day 14."). But evidence of lower cytokine levels does not support his medical theory, which relies on heightened cytokine levels as a cause of rhabdomyolysis.

Mr. Thornton provided only one study in which cytokine levels were elevated for up to two weeks following a vaccination. ECF No. 74-5 at 1183 (Jeffrey I. Cohen et al., *Kinetics of serum cytokines after primary or repeat vaccination with the smallpox vaccine*, 201 Journal of Infectious Diseases 1183 (2010)). The special master considered the Cohen article but noted that it involved the smallpox vaccine; it did not address whether the flu vaccine could trigger heightened cytokine levels for up to eleven days. ECF No. 143 at 32 (citing *Lampe*, 219 F.3d at 1365). Given the lack of evidence suggesting that the flu vaccine could cause heightened cytokine levels for up to eleven days, and the existence of literature suggesting that cytokine levels typically returned to normal within two days of receiving a flu vaccine, it was not unreasonable for the special master to find Mr. Thornton's medical theory improbable. The special master's conclusion was not based on "wholly implausible" evidence. *Cedillo*, 617 F.3d at 1338.

Mr. Thornton faults the special master for requiring him to identify the particular cytokine allegedly responsible for his rhabdomyolysis and for requiring him to rule out exercise as a second cause of his injury. He argues that requiring him to identify the specific cytokine impermissibly raised his burden of proof. ECF No. 145 at 18. A petitioner is not required to identify the "specific biological mechanism" by which a vaccine is connected to his claimed injury. *Knudsen*, 35 F.3d at 549. And if a vaccine is a substantial factor and a but-for cause of an injury, the presence of another but-for cause, such as exercise, is not dispositive. *See generally Althen*, 418 F.3d at 1278 (explaining that a petitioner must show that the vaccine was "a but-for cause of the injury"). But here, because the special master's conclusion that the eleven-day delay between the vaccination and injury was not arbitrary and capricious, the court need not further address Mr. Thornton's arguments concerning identifying a specific molecule or ruling out exercise as a cause of his rhabdomyolysis.

The special master's conclusion that Mr. Thornton had not met his burden of proof was neither arbitrary nor capricious.

III. Conclusion

For the reasons stated above, this court **denies** Mr. Thornton's motion for review and **affirms** the special master's decision. The clerk of the court shall enter judgment accordingly.

IT IS SO ORDERED.

/s/ Molly R. Silfen
MOLLY R. SILFEN
Judge