In the United States Court of Federal Claims

OFFICE OF SPECIAL MASTERS

Originally Filed: December 19, 2022
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T.M.,	*	PUBLISHED
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Petitioner,	*	No. 19-119V
	*	
v.	*	Special Master Nora Beth Dorsey
	*	
SECRETARY OF HEALTH AND HUMAN SERVICES,	*	Ruling Awarding Damages; Table Injury; Pain and Suffering; Influenza ("Flu") Vaccine; Guillain-Barré Syndrome ("GBS"); Carpal Tunnel Syndrome ("CTS").
Respondent.	*	
	*	

Anne Carrion Toale, Maglio Christopher & Toale, P.A., Sarasota, FL, for Petitioner.
Lynn Christina Schlie, U.S. Department of Justice, Washington, DC, for Respondent.

RULING ON DAMAGES[1]

I. INTRODUCTION

On January 23, 2019, T.M. ("Petitioner") filed a petition for compensation under the National Vaccine Injury Compensation Program, 42 U.S.C. § 300aa-10, et seq., ("the Vaccine Act").[2] Petitioner alleged that she suffered Guillain-Barré Syndrome ("GBS") as a result of an influenza ("flu") vaccine administered to her on October 19, 2017. Petition at 1-2 (ECF No. 1).

[1] Because this Ruling contains a reasoned explanation for the action in this case, the undersigned is required to post it on the United States Court of Federal Claims' website in accordance with the E-Government Act of 2002. 44 U.S.C. § 3501 note (2012) (Federal Management and Promotion of Electronic Government Services). **This means the Ruling will be available to anyone with access to the Internet.** In accordance with Vaccine Rule 18(b), Petitioner has 14 days to identify and move to redact medical or other information, the disclosure of which would constitute an unwarranted invasion of privacy. If, upon review, the undersigned agrees that the identified material fits within this definition, the undersigned will redact such material from public access.

[2] The National Vaccine Injury Compensation Program is set forth in Part 2 of the National Childhood Vaccine Injury Act of 1986, Pub. L. No. 99-660, 100 Stat. 3755, codified as amended, 42 U.S.C. §§ 300aa-10 to -34 (2012). All citations in this Ruling to individual sections of the Vaccine Act are to 42 U.S.C. § 300aa.

On September 3, 2020, Respondent conceded that Petitioner satisfied the criteria for a Table injury of GBS following flu vaccination, and a Ruling on Entitlement was issued. Respondent's Amended Report ("Resp. Am. Rept.") at 2 (ECF No. 33); Ruling on Entitlement dated Sept. 3, 2020 (ECF No. 34). The parties were unable to resolve the amount of compensation Petitioner should be awarded for pain and suffering and requested the undersigned to resolve the issue. Order dated Mar. 3, 2021 (ECF No. 46).

For the reasons set forth below, the undersigned finds that $180,000.00 represents a fair and appropriate amount of compensation for Petitioner's actual pain and suffering and emotional distress. The undersigned also awards $500.00 per year for Petitioner's life expectancy for future pain and suffering. The parties have agreed that Petitioner is entitled to $3,614.45 for unreimbursable expenses.[3]

II. PROCEDURAL HISTORY

Petitioner filed her petition on January 23, 2019. Petition. Medical records were filed from February 2019 to August 2020. Petitioner's Exhibits ("Pet. Exs.") 1-15. On September 3, 2020, Respondent conceded that Petitioner satisfied the criteria for a Table injury of GBS following flu vaccination, and a Ruling on Entitlement was issued. Resp. Am. Rept. at 2; Ruling on Entitlement.

Thereafter, the parties began discussing damages. In March 2021, the parties reported they disagreed as to the appropriate award for pain and suffering and requested the undersigned to resolve the issue after the parties were given the opportunity to brief the issue. Order dated Mar. 3, 2021. In April 2021, the parties agreed that Petitioner is entitled to $3,614.45 for unreimbursable expenses. Pet. Status Rept., filed Apr. 5, 2021 (ECF No. 48).

Petitioner filed medical records, declarations, and expert reports from Dr. Kazim A. Sheikh, and Respondent filed an expert report from Dr. Brian Callaghan. Pet. Exs. 16-38; Resp. Ex. A. Petitioner filed her brief on the outstanding issue of the appropriate pain and suffering award on April 25, 2022. Pet. Motion for Findings of Fact and Conclusions of Law Regarding Damages ("Pet. Mot."), filed Apr. 25, 2022 (ECF No. 68). Respondent filed his brief on July 7, 2022, and Petitioner filed a reply on July 18, 2022. Resp. Brief on Damages ("Resp. Br."), filed July 7, 2022 (ECF No. 72); Pet. Reply in Support of Pet. Mot. ("Pet. Reply"), filed July 18, 2022 (ECF No. 73).

The issue of pain and suffering damages is ripe for adjudication.

[3] See Petitioner's ("Pet.") Status Rept., filed Apr. 2, 2021 (ECF No. 48); Pet. Motion for Findings of Fact and Conclusions of Law Regarding Damages ("Pet. Mot."), filed Apr. 25, 2022, at 1 (ECF No. 68); Resp. Brief on Damages ("Resp. Br."), filed July 7, 2022, at 1 (ECF No. 72).

III. MEDICAL TERMINOLOGY

A. Guillain-Barré Syndrome

GBS "is an immune-mediated polyneuropathy characterized by an acute onset of symptoms progressing over a few days to weeks followed in most patients by a progressive recovery." Pet. Ex. 23 at 1.[4] Symptoms include "rapidly progressive, generalized weakness, limb paresthesias,[5] and areflexia." Pet. Ex. 25 at 1.[6] "[L]ow back and proximal muscle pain, radicular limb pain, . . . and burning and arthralgias" may also be present. Id.

While most patients have a good physical recovery after GBS and can walk without assistive devices, the illness may leave residual effects that impact activities of daily living, employment, and lifestyle. Pet. Ex. 26 at 2.[7] A study of 70 patients who had GBS found that in the majority of those who had a functional recovery, a substantial number (27%) five years later had made significant changes in their employment, social, and leisure activities due to the residual effects of their illness. Id. Many (62%) of the patients reported an "ongoing detrimental impact" in their lives three to six years after GBS onset. Id. Additional studies have shown that 68% of GBS patients experience severe fatigue, even if they have a good recovery. Pet. Ex. 27 at 3.[8] Fatigue, anxiety, depression, and pain all impact quality of life and can continue for years after the acute phase of GBS. Id. at 7.

B. Carpal Tunnel Syndrome

Carpal tunnel syndrome ("CTS") is an "entrapment neuropathy" caused by compression of the median nerve in the carpal tunnel located at the level of the wrist. Resp. Ex. A, Tab 1 at 1.[9] Signs and symptoms include "numbness, tingling, burning, and/or pain associated with

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[4] A. Bersano et al., Long Term Disability and Social Status Change After Guillain-Barré Syndrome, 253 J. Neurology 214 (2006).

[5] Paresthesia is "an abnormal touch sensation, such as burning, prickling, or formication, often in the absence of an external stimulus." Paresthesia, Dorland's Med. Dictionary Online, https://www.dorlandsonline.com/dorland/definition?id=37052 (last visited Dec. 1, 2022).

[6] Kenneth C. Gorson, This Disorder Has Some Nerve: Chronic Pain in Guillain-Barré Syndrome, 75 Neurology 1406 (2010).

[7] F. Khan et al., Factors Associated with Long-Term Functional Outcomes and Psychological Sequelae in Guillain-Barré Syndrome, 257 J. Neurology 2024 (2010).

[8] Ingemar S.J. Merkies & Bernd C. Kieseier, Fatigue, Pain, Anxiety and Depression in Guillain-Barré Syndrome and Chronic Inflammatory Demyelinating Polyradiculoneuropathy, 45 Eur. Neurology 199 (2016).

[9] Kirsten Pugdahl et al., Electrodiagnostic Testing of Entrapment Neuropathies: A Review of Existing Guidelines, 37 J. Clinical Neurophysiology 299 (2020).

localized compression of the median nerve at the wrist." Id. Clinical criteria for the diagnosis of CTS are as follows:

TABLE 2. Clinical Criteria for the Diagnosis of Carpal Tunnel Syndrome (CTS), defined by Witt et al.[15]

Major criteria
(1) Paresthesias in the hand in a median nerve, median nerve and ulnar nerve, or glove distribution
(2) Paresthesias aggravated by activities such as driving, holding a book or telephone, or working with the hands raised
(3) Paresthesias and pain in the hand that awaken the patient from sleep
(4) Paresthesias relieved by shaking the hand or holding it in a dependent position
Minor criteria
(1) Subjective weakness of the hand;
(2) Clumsiness of the hand or dropping objects
(3) Presence of Tinel or Phalen signs

Definite CTS requires fulfillment of major criterion (1) and at least two other major criteria, while possible CTS requires major criterion (1) and one other major or minor criterion.

CTS, carpal tunnel syndrome.

Resp. Ex. A, Tab 1 at 3 tbl.2. Electromyography ("EMG")/nerve conduction study ("NCS")[10] has been shown to confirm the "clinical diagnosis of CTS with a high degree of sensitivity (>85%) and specificity (>95%)." Id. at 1.

IV. FACTUAL HISTORY

A. Summary of Medical Records[11]

Between May 2014 and August 2016, Petitioner saw her primary care physician, Dr. Dvinder Kaur, one to two times per year for follow-up of her chronic medical conditions, including elevated cholesterol and obesity. See generally Pet. Ex. 5. In October 2016, Petitioner developed right knee pain and was diagnosed with right knee arthritis. Pet. Ex. 7 at 12. On February 15, 2017, she underwent arthroscopic surgery on the right knee with removal of the

[10] EMG is "an electrodiagnostic technique for recording the extracellular activity (action potentials and evoked potentials) of skeletal muscles at rest, during voluntary contractions, and during electrical stimulation." Electromyography, Dorland's Med. Dictionary Online, https://www.dorlandsonline.com/dorland/definition?id=15854 (last visited Dec. 1, 2022). NCS, or electroneurography, measures "the conduction velocity and latency of peripheral nerves." Electroneurography, Dorland's Med. Dictionary Online, https://www.dorlandsonline.com/dorland/definition?id=15860 (last visited Dec. 1, 2022).

[11] This section is primarily taken from Respondent's Amended Rule 4(c) Report. See Resp. Am. Rept. at 2-9. Additional factual summaries are set forth in the parties' briefs. See Pet. Mot. at 8-20; Resp. Br. at 1-8.

menisci, and subsequently received physical therapy for her right knee through March 2017. Id. at 7, 59.

On October 19, 2017, Petitioner received a flu vaccine in her left shoulder at 54 years old. Pet. Ex. 1 at 1. Later that month, on October 27, 2017, she saw Dr. Kaur for a routine annual examination with no reported complaints. Pet. Ex. 5 at 41. She was 5'8" tall and weighed 264 pounds at the visit. Id. Petitioner conveyed she had received a flu shot at work. Id. On review of systems, she denied neurological symptoms including paresthesias and muscle weakness. Id. at 42. A limited neurological exam was normal with "no focal deficits." Id. at 43. Petitioner received a tetanus-diphtheria-acellular pertussis ("Tdap") vaccination in her left shoulder. Id. at 41, 43.

On November 9, 2017, 21 days after her flu vaccination and 11 days after her Tdap vaccination, Petitioner presented to Brunswick Urgent Care with complaints of bilateral upper and lower extremity weakness and numbness with tingling in her hands, which had begun two days earlier. Pet. Ex. 4 at 12. She also noted some problems walking. Id. Strength, sensation, and gait were normal on examination. Id. She was diagnosed with upper and lower extremity weakness and paresthesias, and referred to the emergency room ("ER") for a lumbar puncture to rule out GBS. Id. at 13.

Petitioner reported to the ER triage nurse at Princeton Medical Center that she had bilateral arm weakness and numbness since "this past Tuesday" (November 7, 2017) and bilateral leg weakness and numbness since the morning of November 9, with trouble walking. Pet. Ex. 8.1 at 124. The ER physician, Dr. Joseph Portale, recorded complaints of bilateral arm and leg tingling over the past 24 hours and more recent problems with bilateral leg weakness. Id. at 108. Petitioner reported her recent flu and Tdap vaccinations, and denied having recent illness, fever, or diarrhea. Id. On examination, she had 4/5 proximal leg weakness, normal arm strength, decreased sensation in the arms and legs in a stocking-glove distribution, and absent deep tendon reflexes ("DTRs"). Id. at 109. Dr. Portale indicated Petitioner's symptoms were consistent with a symmetric polyneuropathy and questioned if Petitioner had GBS. Id. He ordered diagnostic and lab studies to further evaluate. Id. Petitioner's cervical spine magnetic resonance imaging ("MRI") showed degenerative disc disease with no cord lesions, and a head computed tomography ("CT") was normal with the exception of mild mucosal thickening in the right maxillary sinus. Id. at 139-40, 143-44. Petitioner's cerebrospinal fluid ("CSF") analysis showed a mildly elevated protein of 49 (normal 15-40) with normal (4) white blood cells. Pet. Ex. 8.0 at 40-42. Petitioner was admitted to the hospital, with an assessment of acute inflammatory demyelinating polyneuropathy ("AIDP"), "likely [GBS]" to receive IVIG and additional treatments. Id. at 114.

Petitioner was hospitalized at the Princeton Medical Center from November 9 to November 14, 2017. Pet. Ex. 8.1 at 42. The critical care admission history by Dr. Erwin Moy reported that Petitioner developed an intermittent tingling sensation in her hands on November 7, which became constant on November 8, and that on November 9, she had tingling in her hands and feet and problems walking due to decreased strength. Id. at 12. On examination, Petitioner had 4/5 proximal leg weakness, normal arm strength, and decreased DTRs. Id. at 13. Dr. Moy

noted that GBS could possibly be caused by "vaccinations such as the [flu] vaccine . . . and the Tdap vaccine." Id. at 14. Petitioner was to receive her first IVIG treatment that evening. Id.

On November 9, 2017, she was seen by neurologist Dr. Aissa Alexeeva, and conveyed noticing a little tingling in her fingers and toes which progressed to leg weakness. Pet. Ex. 8.1 at 16. Dr. Alexeeva noted the "slightly elevated" CSF protein and cervical spine MRI with no evidence of myelopathy. Id. at 17. On examination, Petitioner had 5/5 (normal) upper and lower extremity strength, decreased light touch sensation in her legs, absent DTRs, and difficulty walking. Id. Dr. Alexeeva felt Petitioner had GBS, and commented that Petitioner "had two vaccines within last three weeks which could contribute to this condition." Id. at 18.

On November 10, 2017, Petitioner told Dr. Moy that she felt improvement "immediately after receiving IVIG," but now felt back to her admission baseline. Pet. Ex. 8.1 at 22. On examination, she had normal strength and decreased extremity sensation. Id.

On November 13, 2017, Petitioner was seen by neurologist Dr. Manuel Vergara. Pet. Ex. 8.1 at 38. She reported feeling stronger, but had continued mild numbness and tingling in a stocking distribution. Id. On examination, Petitioner had 4/5 weakness in her hands and her proximal and distal legs, as well as absent DTRs. Id. Dr. Vergara felt that her clinical picture was most consistent with GBS, which was improving with IVIG. Id.

The next day, November 14, 2017, Petitioner reported to Dr. Vergara that her legs were stronger and she was able to walk better, although she still had difficulty with numbness in her toes and fingers. Pet. Ex. 8.1 at 40. She complained of pain in the cervical and scapular region after IVIG infusions. Id. Her examination was unchanged. Id. Dr. Vergara ordered a thoracic spine MRI, noting that Petitioner was ready for transfer to rehab if the MRI was normal. Id. The MRI showed a disc herniation at T2-T3, which did not compress the spinal cord, so Petitioner was transferred to acute rehabilitation. Id. at 43-44, 147.

Petitioner received treatment at Princeton Medical Center Acute Rehabilitation for gait and ADL (activities of daily living) dysfunction from November 14 to November 22, 2017. Pet. Ex. 6 at 289. On admission, Petitioner was examined by Dr. Richard Bach, a physical medicine and rehab specialist. Id. at 266. Dr. Bach noted that her symptoms had improved after five days of IVIG, but that she still had tingling and hypersensitivity in both arms. Id. On examination, she had 4+/5 proximal extremity weakness, decreased sensation, and absent DTRs. Id. at 267. She was also evaluated by physical therapy and needed a rolling walker when ambulating and assistance climbing stairs. Id. at 266.

During her rehabilitation, Petitioner continued to be seen by Dr. Vergara. On November 15, 2017, Dr. Vergara noted that Petitioner had improved with IVIG but, over the last two days of IVIG therapy, had developed significant arthralgias, myalgias, and pain in the cervical region and shoulder girdle. Pet. Ex. 6 at 271. Petitioner continued to have numbness in her hands and feet. Id. On examination, she had 4 to 4+/5 hand and lower extremity weakness including 4/5 left deltoid weakness which Dr. Vergara attributed to left shoulder pain. Id. at 272. She had absent DTRs and decreased sensation in a stocking distribution. Id. On November 20, 2017, Dr.

Vergara noted Petitioner continued to complain of tingling in both arms and weakness in her left arm, and her examination was unchanged. Id. at 285.

On November 22, 2017, Petitioner was discharged to outpatient physical therapy. Pet. Ex. 6 at 289. The discharge summary noted that during her rehabilitation stay she had myofascial pain affecting her left shoulder that was treated with Lidoderm (topical analgesic), Flexeril (muscle relaxant), and Toradol (analgesic). Id. Petitioner was able to ambulate with a cane and was independent for ADLs. Id.

Five days later, on November 27, 2017, Petitioner presented to neurologist Dr. Nidhi Modi with a chief complaint of "tingling, numbness in her arm." Pet. Ex. 2 at 2. Petitioner reported residual left arm weakness and left shoulder and upper arm discomfort. Id. On examination, she had normal upper and lower extremity strength, absent DTRs, and normal sensation with the exception of decreased vibratory sensation in the bilateral toes. Id. at 2-3. Dr. Modi ordered an EMG to evaluate her ongoing arm tingling. Id. at 2. The study, performed on January 15, 2018, had findings consistent with severe CTS at both wrists. Id. at 9. Diffuse low amplitude responses were felt to be "consistent with an axonal motor neuropathy, likely residual from recent AIDP." Id.

On January 15, 2018, Petitioner returned to Dr. Modi. Pet. Ex. 2 at 4. She was receiving physical therapy three times weekly with significant improvement in ambulation. Id. Petitioner reported she no longer needed a cane, but continued to note bilateral hand numbness, left arm weakness, transient sensations of pins and needles, and difficulty lifting weights with her left arm. Id. Dr. Modi noted that EMG/NCS had showed "bilateral CTS along with some residual signs of demyelinating neuropathy." Id. The neurological exam findings were unchanged from November, with the exception of improved ambulation. Id. at 4-5. Petitioner was assessed with GBS, "[b]ilateral hand tingling/numbness – EMG/NCS shows moderate to severe bilateral CTS," and fatigue "likely residual from GBS." Id. at 5. Petitioner was advised to start using wrist splints at bedtime and when using the bike at physical therapy. Id. The next day, January 16, 2018, Dr. Modi wrote a letter stating Petitioner could "return to work with no restrictions on January 29, 2018." Id. at 6.

From the provided physical therapy records, it appears Petitioner's last physical therapy session occurred on January 31, 2018, approximately 3.5 months after receiving her flu vaccination. Her primary complaint at the session appears to have been upper extremity pain. Pet. Ex. 3 at 6. On examination, she had bilateral 5-/5 lower and 4+ to 5-/5 upper extremity weakness. Id. at 7. No records of further physical therapy sessions have been submitted. Petitioner was formally discharged from physical therapy on March 7, 2018, but it does not appear that she was seen or evaluated on that date. Id. at 3.

On September 13, 2018, Petitioner presented to Dr. Kaur for "her regular follow up visit." Pet. Ex. 5 at 26. At the appointment, Petitioner reported that "she had been following up with neurology. Overall she is much better. She has occasional tingling in hands and gets a quick nerve impulse in the left arm." Id. The review of systems reflected a positive for "tingling" under neurological, but the location was not specified. Id. at 27. The neurological portion of Dr. Kaur's general examination noted "no focal deficits." Id. at 29. The "plan"

section of the visit note, included "History of [GBS] – follow up with neurology" and "[CTS] – following up with neurology." Id. at 24. Petitioner was to return to Dr. Kaur in six months. Id. at 31.

On July 8, 2019, Petitioner presented to Dr. Kaur "for her annual physical exam." Pet. Ex. 11 at 20. The review of systems again reported "tingling" under neurological with the location not specified, and the physical examination listed "no focal deficits" under neurological. Id. at 21, 23. Similar to the September 13, 2018 visit, in the "plan" section, Dr. Kaur included "history of [GBS] – follow up with neurology" and "[CTS] – following up with neurology." Id. at 24.

Petitioner presented to Dr. Kaur on December 10, 2019, with a chief complaint of diarrhea. Pet. Ex. 11 at 4. Petitioner continued to report "tingling" of unspecified location on review of systems, with the neurological exam identifying "no focal deficits." Id. at 5, 8. Petitioner was diagnosed with gastroenteritis. Id. at 8.

On March 11, 2020, Petitioner returned to Dr. Modi. Pet. Ex. 13 at 5. Petitioner reported "shooting pains in her hands and feet, which is intermittent in nature," lasting "1-2 hours at a time and then resolve[s]." Id. She also noted balance issues when she walks her dog. Id. On examination, there was no change from Dr. Modi's January 15, 2018 examination with 5/5 (normal) upper and lower extremity strength, absent arm and leg DTRs, decreased vibratory sensation in the toes bilaterally with otherwise normal sensation, a "cautious" gait, and normal coordination and cranial nerve function. Id. at 6. Dr. Modi ordered an EMG/NCS to "evaluate for ongoing denervation" given Petitioner's complains of residual pins and needles sensations, and prescribed a trial of gabapentin for Petitioner's neuropathic pain. Id.

Petitioner next saw Dr. Modi on July 16, 2020, to review the results of her EMG/NCS study. Pet. Ex. 15 at 1. Her June 17, 2020 EMG/NCS study was "abnormal," with findings consistent with moderate CTS, moderate sensory axonal neuropathy, and evidence of chronic cervical and lumbar radiculopathies. Id. at 7. At the visit, Petitioner reported having shooting pain in her feet. Id. at 1. The examination was unchanged from the prior visit. Id. at 2. The assessment remained GBS/AIDP, and Dr. Modi discussed care options with Petitioner. Id. Petitioner did not want further neuropathic pain medicine, nor was she interested in physical therapy. Id. She was to return for follow-up in six to eight weeks. Id.

On March 12, 2021, Petitioner saw Dr. Modi. Pet. Ex. 17 at 1. Dr. Modi wrote "[Petitioner] now reports shooting pains in her hands and feet, which is intermittent in nature." Id. Petitioner denied major changes since her last appointment in July 2020. Id. "She fe[lt] that her hands are not as coordinated." Id. Petitioner also reported wearing her wrist braces and doing physical therapy exercises at home. Id. Physical examination revealed that Petitioner had "decreased vibration sense at the toes bilaterally, left worse than right." Id. at 2. Her gait was "steady, cautious." Id. Dr. Modi's assessment was that Petitioner had GBS in November 2017, and that "[s]he still ha[d] residual pins and needles sensation in her extremities." Id. Dr. Modi wrote, "[a]t this point in time (4 years post episode), I would not expect her symptoms to change much." Id.

B. Affidavits, Declarations, and Letters

1. Petitioner

In her initial affidavit, Petitioner averred that she received the vaccine at issue in the United States, and that her vaccine related injuries lasted longer than six months. Pet. Ex. 10 at ¶¶ 1-3. She also acknowledged that she did not receive any money from settlement or judgment of a prior civil action. Id. at ¶ 4.

Subsequently, on September 15, 2020, Petitioner executed a declaration describing in detail the course of her GBS and how it has affected her life. Pet. Ex. 16. She was 54 years old when she became ill. Id. at ¶ 1. Prior to her illness, she was very active, and worked out in a gym three to five times per week. Id. She and her son bowled together, and she hiked and biked with her older son. Id. She enjoyed cooking and spending time with her friends and family. Id. at ¶ 3.

Regarding her employment, she was a banker in the "Treasury Management Group," a demanding position where her responsibilities included working with companies to develop asset-based loans. Pet. Ex. 16 at ¶ 2. She was also a "certified woman's business advocate" and participated in numerous activities associated with the organization. Id.

Petitioner described the onset of her GBS. She first developed "a sensitivity to temperature in her hands," which lasted two days, followed by an unsteady gait and difficulty walking. Pet. Ex. 16 at ¶¶ 5-6. She was admitted to the intensive care unit ("ICU"), and became unable to walk. Id. at ¶ 6. She had "tremendous pain" in her left shoulder and arm, as well as her back, legs, and feet. Id. The pain was "excruciating" and required "tramadol pain patches every 12 hours." Id. Petitioner was hospitalized for two weeks. Id. at ¶ 7. She received physical therapy three times per day in order to ambulate with a walker. Id. Inpatient rehabilitation was "demanding and exhausting." Id. at ¶ 16. After discharge, she attended outpatient physical therapy to improve her strength and coordination. Id. at ¶ 7. She used a walker for several weeks and a wheelchair for long trips. Id. at ¶ 14. Although she was able to drive after a few months, her driving was limited due to numbness and pain. Id. She was unable to cook or perform housekeeping chores. Id.

Due to her GBS, Petitioner's relationships with friends and family members changed. Pet. Ex. 16 at ¶ 10. Her son did not go away to college, but instead attended community college because he did not want to leave his mother alone. Id. at ¶ 20. Petitioner withdrew from friends and neighbors. Id. at ¶ 25. She and her husband separated. Id. at ¶ 14. She explained that her family has suffered because she is no longer the "happy, active[,] and capable" person she was before her illness. Id. at ¶ 37. She is "frustrated, mad[,] and depressed that . . . [her] life continues on this path of pain and restricted activities." Id. at ¶ 25. "GBS took away [Petitioner's] ability to be active," and "ha[s] given [her] a lifetime of daily pain, brain fog[,] and exhaustion not to mention regular falls and clumsiness." Id. at ¶ 36. Petitioner feels that "GBS has taken so much joy from [her] life." Id. at ¶ 37.

2. Amanda Ramchandani

Petitioner filed a letter and declaration signed by Amanda Ramchandani, the owner of THE MAX Challenge of South Brunswick, the gym that Petitioner attended prior to the onset of her GBS. Pet. Exs. 19-20. Ms. Ramchandani stated that in 2014, Petitioner began the fitness program. Pet. Ex. 19 at 1; Pet. Ex. 20 at ¶ 2. Petitioner never missed a class and was so dedicated that she won "The most transformed member." Pet. Ex. 19 at 1; Pet. Ex. 20 at ¶ 2. In 2017, when she became ill, Petitioner missed classes for the first time since joining the program. Pet. Ex. 19 at 1; Pet. Ex. 20 at ¶ 3. After her illness, Petitioner was not able to return to fitness classes. Pet. Ex. 19 at 1; Pet. Ex. 20 at ¶ 2. Ms. Ramchandani opined that Petitioner's "physical abilities have drastically diminished from the onset of [GBS], even 4 years later." Pet. Ex. 19 at 1; Pet. Ex. 20 at ¶ 3.

3. Vrunda Patel, M.D.

Dr. Vrunda Patel, Petitioner's OB/GYN physician, wrote a letter dated June 8, 2021, to correct a statement in her records dated December 13, 2017. Pet. Ex. 18 at 1. In her record from December 2017, Dr. Patel wrote "[t]he patient states her exercise level is vigorous and frequency is 5 times/week." Pet. Ex. 9 at 11.

Dr. Patel stated that "[Petitioner] was not able to exercise at that time due to her diagnosis of [GBS]. She has not been able to resume her exercise of usual activity since that time." Pet. Ex. 18 at 1.

C. Expert Reports Regarding GBS Sequelae

1. Petitioner's Expert, Dr. Kazim Sheikh[12]

Dr. Sheikh is medical doctor, licensed to practice medicine in Texas, and board certified in neurology with a qualification in muscle pathology and subspecialty certification in clinical neuromuscular pathology. Pet. Ex. 21 at 1; Pet. Ex. 22 at 2. He is a tenured Professor of Neurology at the medical school at the University of Texas in Houston, where he is the Director of the Neuromuscular Program. Pet. Ex. 21 at 1. Dr. Sheikh is also the Director of the Neuromuscular Disorders Center at the Mischer Neuroscience Institute at Memorial Hermann-Texas Medical Center as well as Director of the GBS/CIDP Center of Excellence at the University of Texas Health Science Center at Houston. Id. He has authored numerous publications, has an active clinical practice in neurology, and teaches medical students, residents, and fellows. Id. at 1-2.

In preparation for providing his opinions, Dr. Sheikh reviewed Petitioner's medical records, Respondent's Amended Rule 4(c) Report, and relevant medical literature. Pet. Ex. 21 at 1. The focus of his opinions were two-fold: (1) the sequela of Petitioner's GBS and (2) the cause of pain and numbness in Petitioner's hands. Id.

[12] Petitioner filed two expert reports from Dr. Sheikh. Pet. Exs. 21, 29.

Specifically, Dr. Sheikh opined that Petitioner has the following residual GBS deficits: "1) Chronic fatigue and exhaustion affecting participation in normal activities; 2) Chronic pain and paresthesias affecting hands, arms (L>R), and feet; 3) Imbalance and reduced mobility; 4) Dysautonomic features including brain fog, temperature dysregulation, and sexual dysfunction; 5) Anxiety and depression; [and] 6) Social dysfunction." Pet. Ex. 21 at 6.

Notably, fatigue is a common problem after GBS. In several articles referenced by Dr. Sheikh, the issue of fatigue is addressed. Kuitwaard et al.[13] surveyed 245 patients diagnosed with GBS, and found that even "[s]everal years after the diagnosis, severe fatigue was still prominent, and 45% . . . experienced fatigue as their most disabling symptom."[14] Pet. Ex. 24 at 3-4.

Another article cited by Dr. Sheikh was Khan et al., who studied 76 patients with GBS to determine post-illness restrictions on activity levels. Pet. Ex. 26 at 1. Most patients had a "good functional recovery." Id. "However, 16% reported moderate to extreme impact on their ability to participate in work, family, and social activities; and 22% substantial impact on mood, confidence[,] and ability to live independently." Id. Patients also reported moderate to extreme depression (18%), anxiety (22%), and stress (17%) as compared with the normative population (13%). Id. "Factors associated with poor[] current level of functioning and wellbeing included: females, older patients (57+ years), acute hospital stay (>11 days), those treated in intensive care[,] and those discharged to rehabilitation." Id. The authors concluded that "GBS is complex and requires long-term management of psychosocial sequelae impacting activity and participation." Id.

Additionally, Dr. Sheikh addressed the question of whether Petitioner's chronic pain and numbness of her hands is caused by GBS or bilateral CTS. Specific to the symptoms in her hands, he opined that Petitioner's "[m]ild [CTS] is a minor contributor to hand symptoms and secondary to median nerve injury related to GBS." Pet. Ex. 21 at 7. Thus, Dr. Sheikh believed the symptoms were caused by GBS. Id. at 6-7.

He offered three reasons for his opinions. First, he opined that the 2018 EMG/NCS study "showed both ulnar and median neuropathies" suggesting "a polyneuropathic process" and not an isolated median neuropathy consistent with CTS. Pet. Ex. 21 at 6. Dr. Sheikh emphasized that CTS is caused by "compression of the median nerve at the wrist does not affect other peripheral nerves." Id. Second, he noted that Petitioner complained of symptoms in her arms and hands, whereas CTS usually affects just the hands. Id. Third, after her initial EMG/NCS, Petitioner did not complain of problems with her first 3 fingers which would have been consistent with CTS. Id. Instead of CTS, Dr. Sheikh believed that Petitioner's arm and hand

[13] Krista Kuitwaard et al., Recurrences, Vaccinations and Long-Term Symptoms in GBS and CIDP, 14 J. Peripheral Nervous Sys. 310 (2009).

[14] Compare Pet. Ex. 24 at 3-4, with Pet. Ex. 27 at 3 ("Across all studies, 68% of patients had severe fatigue[], emphasizing the fact that fatigue is a serious residual symptom even in patients with apparent good functional recovery.").

symptoms were caused by "nerve damage to cervical spinal root and peripheral median and ulnar nerves due to GBS." Id. at 6-7.

Moving forward to 2020, Petitioner continued to have "sensory symptoms in the hands, arms, and feet." Pet. Ex. 21 at 7. EMG/NCS study in 2020 "showed significant improvement in the median nerve conductions despite ongoing symptoms." Id. The study also showed "spinal root injury at the cervical and lumbosacral levels related to GBS." Id. Dr. Sheikh opined that Petitioner's "chronic sensory and pain symptoms are residua of large and small sensory nerve fiber damage related to GBS in the spinal roots and peripheral nerves of the upper extremities." Id. To the extent that she had mild CTS, Dr. Sheikh opined that it was due to "enlargement of the median nerve . . . at the wrist segment . . . [with] entrapment in the carpal tunnel." Id. Thus, he concluded that Petitioner's CTS was not an independent condition but related to her GBS. Id.

In his first expert report, Dr. Sheikh cited several articles, most of which discuss common sequela of GBS.[15] Relevant to the effects of GBS on peripheral nerves, Dr. Sheikh cited a paper by Razali et al.,[16] which described serial nerve ultrasound studies in 17 patients with GBS as compared to the same number of controls. Pet. Ex. 28 at 1. Serial ultrasounds showed enlargement of the median, ulnar, and sural nerves. Id. at 3. Notably, the median nerve enlargement was not seen "at typical entrapment sites but at mid-arm in median nerve." Id. at 4. Thus, enlargement was not seen at the wrist. See id.

In his second expert report, Dr. Sheikh opined that "the clinical and electrodiagnostic features of isolated CTS and isolated non-compressive median neuropathy at the wrist would be indistinguishable." Pet. Ex. 29 at 1. He also opined that Petitioner did not have symptoms of CTS before she developed GBS. Id. at 2.

Dr. Sheikh reviewed Petitioner's EMG/NCS study results and opined that neurologist Dr. Modi's interpretation of "severe compression of the median nerves at both wrists (i.e., [CTS])" was incorrect.[17] Pet. Ex. 29 at 3. Instead, according to Dr. Sheikh, "[t]he abnormalities in the ulnar nerve conductions [are] compatible with a more diffuse neuropathic process such as GBS." Id. Dr. Sheikh also asserted that Petitioner did not have clinical criteria of CTS in 2018 at the time that Dr. Modi opined that she had CTS based on her EMG/NCS. Id.

Regarding Petitioner's 2020 EMG/NCS, Dr. Sheikh disagreed with not only Dr. Modi's interpretation, but he also disagreed with Respondent's expert, Dr. Callaghan. Instead of severe compression of the median nerve at the wrist (CTS), Dr. Sheikh opined that Petitioner had

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[15] See Pet. Exs. 23-27.

[16] Siti Nur Omaira Razali et al., Serial Peripheral Nerve Ultrasound in Guillain-Barré Syndrome, 127 Clinical Neurophysiology 1652 (2016).

[17] The 2020 EMG/NCS impression stated the "findings [were] consistent with: 1) Moderate compression of the median nerve at the left wrist (ie. [CTS]). 2) Chronic left C5-C6, C7-T1 cervical radiculopathies. 3) Moderate sensory axonal neuropathy. 4) Chronic left L2-L4, L4-L5, L5-S1 lumbosacral radiculopathies." Pet. Ex. 15 at 7.

"prolonged conduction time suggestive of demyelination" but that "the cause of nerve injury i.e., compression (CTS) [versus] inflammatory injury to nerve (GBS)" was not specified. Pet. Ex. 29 at 3. In summary, Dr. Sheikh opined that Petitioner's clinical course and diagnostic tests were "compatible with a diffuse neuropathic disease [such] as GBS and involvement of median nerves at the wrist are part of GBS and not due to isolated compression of median nerves at the wrists as seen in CTS." Id. at 4.

Further, according to Dr. Sheikh, the segment of the median nerve that passes through the carpal tunnel at the wrist is prone to injury in GBS. Pet. Ex. 29 at 4. He cited several articles in support of his opinion. One of the older articles was published in 1969, by Asbury et al.,[18] who described the pathology of peripheral nerves taken at autopsy in 19 patients who succumbed to idiopathic polyneuritis.[19] Pet. Ex. 33 at 2. Pathology of the median nerve was discussed in two cases. In the first one (Case 9), the median nerve was described as having "intense inflammation," "perivascular focal lesions," and "zones of diffuse subperineurial infiltrate." Id. at 13. However, there was no reference to pathology seen at the wrist, which is the site of entrapment in CTS. In the second case (Case 14), the proximal portion of the left median nerve had abnormal lesions, but there was no description of involvement at the wrist. Id. at 19. The authors noted that the "distal peripheral nerves showed lesser damage" than proximal portions of peripheral nerves.[20] Id. at 19.

In the 1984 paper by Brown and Feasby,[21] 22 patients with GBS were studied, and conduction was measured in the median nerves at common areas of entrapments, including the wrist. Pet. Ex. 30 at 3. The authors found "no correlation between the presence or absence of disproportionate local conduction abnormalities at 'entrapment' sites, and the development or quantity of denervation in muscles in the distribution of these nerves." Id. at 13. Relative to the median nerve, "the presence of focal conduction slowing beneath the flexor retinaculum[22] was suggested by the presence of prolonger terminal motor latencies in 69 [percent] (first two weeks)." Id. at 14. The authors did not, however, reach any conclusions about this finding and its relationship, if any, to the development of CTS. Moreover, they stated that "[w]hether the

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[18] Arthur K. Asbury et al., The Inflammatory Lesion in Idiopathic Polyneuritis: Its Role in Pathogenesis, 48 Medicine 173 (1969).

[19] Idiopathic polyneuritis appears to be a former name for the condition, or some of the conditions, now known as GBS.

[20] This finding, however, was not universal. See Pet. Ex. 33 at 19 (noting "the right femoral nerve showed more extensive inflammatory infiltrate distally than proximally").

[21] W.F. Brown & T.E. Feasby, Conduction Block and Denervation in Guillain-Barré Polyneuropathy, 107 Brain 219 (1984).

[22] Flexor retinaculum is "a heavy fibrous band continuous with the distal part of the antebrachial fascia, completing the carpal tunnel through which pass the tendons of the flexor muscles of the hand and fingers." Retinaculum Flexorium Manus, Dorland's Med. Dictionary Online, https://www.dorlandsonline.com/dorland/definition?id=103850 (last visited Dec. 5, 2022).

nerves in GBS are any more vulnerable to physical trauma because of the polyneuritis is unknown."[23] Id. at 19.

Although Dr. Sheikh acknowledged that the mechanisms of how GBS causes nerve injury at common sites of entrapment are not known, he referenced articles to support his opinion that there can be "synergetic effects of mechanical compression and non-compressive neuropathic etiologies." Pet. Ex. 29 at 7. Of the studies he cited, only one involves GBS, authored by Lambert and Mulder, from 1964. Pet. Ex. 32. Unfortunately, the Lambert and Mulder article consists of only a brief note. Id. at 1. The authors reported that nerve conduction of motor fibers of the ulnar, median, and peroneal nerves in patients with GBS showed "diffuse slowing" that "was often most pronounced at common sites of entrapment." Id. Additionally, the methodology was not reported, and no information was provided about any specific sites of entrapment related to the median nerve.

The other studies cited by Dr. Sheikh to support his opinion about the synergistic effects of compressive and non-compressive mechanisms relate to findings in diabetic neuropathy or diphtheritic neuropathy and not GBS. For example, Hopkins and Morgan-Hughes,[24] in 1969, summarized studies that showed delayed conduction in the median nerve at the wrist in diabetic patients. Pet. Ex. 37 at 1. Based on this observation, they suggested that "peripheral nerves which are minimally affected by disease may be rendered more susceptible to the effects of repeated minor trauma, traction, or mechanical compression." Id. They found that lesions in the plantar nerves of guinea pigs was caused by combined effects of diphtheritic neuropathy induced by diphtheriae toxin and antitoxin and mechanical compression caused from the floor of the cages on the animals' plantar nerves. Id. at 8. They did not determine "[t]he mechanism by which diphtheria toxin renders the plantar nerves more susceptible" to the effects of weightbearing. Id.

Dr. Sheikh also cited a 1989 paper by Sumner,[25] describing a study where acute conduction blocks[26] were induced in sciatic nerves of rats with experimental allergic encephalomyelitis ("EAE") and experimental allergic neuritis ("EAN"). Pet. Ex. 38 at 1. "This technique allows one to follow, in a quantitative manner, the evolving sequence of functional changes in nerve conduction produced by antiserum-mediated attack on myelinated motor axons." Id. "Electrophysiological studies in [the rats] revealed findings strikingly similar to

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[23] The authors noted that such a mechanism was suggested "to contribute to the compression neuropathies in guinea pigs with experimental diphtheritic neuropathy." Pet. Ex. 30 at 19.

[24] A. P. Hopkins & J.A. Morgan-Hughes, The Effect of Local Pressure in Diphtheritic Neuropathy, 32 J. Neurology Neurosurgery Psychiatry 614 (1969).

[25] Austin J. Sumner, The Physiological Basis for Symptoms in Guillain-Barré Syndrome, 9 Annals Neurology 28 (1981).

[26] A conduction block is "a blockage in a nerve that prevents impulses from being conducted across a given segment although the nerve is viable beyond that segment." Conduction Block, Dorland's Med. Dictionary Online, https://www.dorlandsonline.com/dorland/definition?id=60759 (last visited Dec. 5, 2022).

those encountered in human [GBS] . . . ." Id. at 2. Sumner hypothesized that "common sites of nerve entrapment . . . where the blood-nerve barrier may be defective, [may] render[] nerve fibers vulnerable." Id. at 3.

In conclusion, Dr. Sheikh opined that the cause of Petitioner's sensory symptoms and pain in her hands is multifactorial due to a "diffuse neuropathic process such as GBS rather than isolated compressive median neuropathies at the wrist (CTS)." Pet. Ex. 29 at 8.

2. Respondent's Expert, Dr. Brian C. Callaghan[27]

Dr. Callaghan is licensed medical doctor who is board certified in neurology as well as electrodiagnostic medicine. Resp. Ex. B at 1. He is an Associate Professor of Neurology at the University of Michigan, where he is also a neuromuscular specialist. Resp. Ex. A at 1. He is the Co-Director of the Neuromuscular Division at the University of Michigan Health System. Resp. Ex. B at 1. Dr. Callaghan has an active clinical practice in neurology and has published numerous articles. Resp. Ex. A at 1; Resp. Ex. B at 12-21.

The parties' experts agreed that Petitioner suffered sequelae of GBS. Specifically, Dr. Callaghan did not refute Dr. Sheikh's opinions that Petitioner suffered the following residual deficits of GBS: chronic fatigue and exhaustion; imbalance and reduced mobility, dysautonomia features including brain fog and temperature dysregulation; anxiety and depression; and social dysfunction.

The experts disputed whether Petitioner met the formal diagnostic criteria for CTS and whether her CTS was caused by GBS. Dr. Callaghan opined that Petitioner's "neurologist correctly diagnosed her with [CTS]." Resp. Ex. A at 4. This opinion is based on Petitioner's EMG/NCS studies from January 15, 2018, "which revealed bilateral [CTS]," and June 17, 2020, which demonstrated "moderate left [CTS]." Id. In addition, Dr. Callaghan opined that Petitioner's symptoms of hand numbness, including "the numbness and tingling on the palmar surface of the first 3 digits, and shaking her hands out for relief," were consistent with CTS. Id. Petitioner also described symptoms of CTS in her petition, noted by Dr. Callaghan as "hands that become numb when she drives, pain in her hands when working at her computer if it is cold, wrist braces that help control the numbness, and symptoms that wake her from sleep." Id.

In support of his opinion that Petitioner was appropriately diagnosed with CTS, Dr. Callaghan cites clinical criteria published by Pugdahl et al. Resp. Ex. A, Tab 1 at 3 tbl.2. These criteria are as follows:

> Major criteria
> (1) Paresthesias in the hand in a median nerve (palmar surface of the first three digits and lateral half of fourth digit), median nerve and ulnar nerve, or glove distribution
> (2) Paresthesias aggravated by activities such as driving, holding a book or telephone, or working with the hands raised

[27] Respondent filed one expert report from Dr. Callaghan. Resp. Ex. A.

(3) Paresthesias and pain in the hand that awaken the patient from sleep
(4) Paresthesias relieved by shaking the hand or holding it in a dependent Position

Minor criteria
(1) Subjective weakness of the hand;
(2) Clumsiness of the hand or dropping objects
(3) Presence of Tinel (reproducible symptoms when tapping median nerve) or Phalen signs (reproducible symptoms when flexing wrists).

Resp. Ex. A at 4 (quoting Resp. Ex. A, Tab 1 at 3 tbl.2). Since Petitioner had symptoms consistent with the first three major criteria, Dr. Callaghan opined that her diagnosis of CTS was correct. Id.

In addition to meeting the clinical criteria for a diagnosis of CTS, Petitioner also met the EMG/NCS criteria. Resp. Ex. A at 4-5. Dr. Callaghan detailed the specific findings in Petitioner's studies consistent with CTS.[28] Id. He disagreed with Dr. Sheikh that the EMG/NCS studies showed involvement of the ulnar nerve and explained that that "the only ulnar nerve involvement was a decreased amplitude of the right ulnar motor amplitude" in 2018. Id. at 5. In 2020, both right and left ulnar nerves were normal. Id. Therefore, Dr. Callaghan opined that Petitioner met both the clinical and diagnostic criteria for the diagnosis of CTS. Id.

Moreover, Dr. Callaghan opined that CTS is "caused by compression of the median nerve within the carpal tunnel." Resp. Ex. A at 5. He explained that GBS is not known to be a cause of CTS. Id. Regarding the article cited by Dr. Sheikh that observed enlargement of the median nerve in patients with GBS, Dr. Callaghan noted that "the nerves that were enlarged were not at typical sites of entrapment such as the carpal tunnel." Id. Instead, the median nerve was enlarged at the "mid-arm level, [] not at the wrist (site of carpal tunnel)." Id. Dr. Callaghan concluded that "[w]hile GBS and [CTS] can both lead to numbness and tingling in the hands, only [CTS] specifically affects the first three digits of the hands, causes paresthesia aggravated by driving, and causes paresthesia relieved by shaking [the] hand." Id.

In conclusion, Dr. Callaghan opined that "GBS is not known to lead to [CTS] and [CTS] should not be considered a sequelae of GBS." Resp. Ex. at 5. Moreover, "the medical records support two separate diagnoses contributing to the [P]etitioner's symptoms including GBS and [CTS]." Id.

V. CONTENTIONS OF THE PARTIES

The parties dispute two issues: (1) whether Petitioner's "painful and numb hands are a sequela of her GBS" or due to CTS and (2) the amount of damages that should be awarded to Petitioner for pain and suffering and emotional distress. Pet. Mot. at 23, 32-36; Resp. Br. at 10.

Regarding the appropriate award for pain and suffering, Petitioner seeks $200,000.00 for past pain and suffering and $2,000.00 per year, reduced to net present value, for the rest of her

[28] For a description of the EMG/NCS criteria, see Resp. Ex. A at 4-5.

life expectancy, for future pain and suffering. Pet. Mot. at 36. Petitioner cites several cases in support of her position. The first is Hood v. Secretary of Health & Human Services, where that Petitioner's GBS required a six-day hospital stay followed by ten days of inpatient rehabilitation. Id. (citing No. 16-1042V, 2021 WL 5755324, at *3 (Fed. Cl. Spec. Mstr. Oct. 19, 2021)). Mr. Hood also received several courses of IVIG and outpatient physical therapy. Id. (citing Hood, 2021 WL 5755324, at *3). Three years later his EMG/NCS showed residual abnormalities consistent with his prior GBS. Id. (citing Hood, 2021 WL 5755324, at *3). Due to his illness, he was unable to continue his job as a butcher. Id. at 33 n.17; Hood, 2021 WL 5755324, at *9. Further, the evidence established that he continued to have residual symptoms six years after his illness. Pet. Mot. at 34 (citing Hood, 2021 WL 5755324, at *8).

By comparison, Petitioner asserts that her course has been similar but more severe than that experienced by Mr. Hood. Pet. Mot. at 34. Petitioner was hospitalized and had a lumbar puncture and a five-day course of IVIG. Id. Like Mr. Hood, Petitioner also required inpatient rehabilitation. Id. However, Petitioner argues she had severe pain, necessitating prescription medication. Id. She also used a cane to ambulate. Id. While Petitioner was able to return to her job at the bank, she has experienced a separation with her husband, and continues to have fatigue and depression. Id. at 35. Dr. Sheikh opined that Petitioner has chronic fatigue, chronic pain, problems with balance and mobility, dysautonomia, anxiety, and depression. Id. at 35-36.

Respondent proposes a total of $115,000.00 for pain and suffering damages. Resp. Br. at 1. In his brief, Respondent recognizes that "GBS cases have historically run the spectrum from cases involving severe sequelae requiring life care plans to assess prospective damages, to cases in which the petitioner nearly or completely recovers shortly after the six-month minimum duration of symptomatology required to qualify for compensation." Id. at 15. Respondent explains that Petitioner's "clinical course documented by her medical records does not demonstrate a severe course of GBS, comparatively speaking." Id.

Respondent also asserts that Petitioner's clinical course was less severe than the cases cited by Petitioner.[29] Resp. Br. at 15-17. In response to Petitioner's reference to Hood, who was awarded $200,000.00 in actual pain and suffering and $1,000.00 per year for his life expectancy in future pain and suffering damages, Respondent noted that Mr. Hood was only 32 years old when he was diagnosed with GBS. Id. at 16. He suffered four falls resulting in hand and foot fractures. Id. He was unable to walk without a cane for nine months and did not walk unassisted for a year. Id. at 17. By comparison, Petitioner's hospital course was "less severe, her ability to ambulate was less affected, she attended considerably less [physical therapy], and she was able to return to work without restriction several months later." Id. at 17.

[29] See Dillenbeck v. Sec'y of Health & Hum. Servs., No. 17-428V, 2019 WL 4072069 (Fed. Cl. Spec. Mstr. July 29, 2019), aff'd in part, 147 Fed. Cl. 131 (2020) (awarding $170,000.00 in past pain and suffering); Johnson v. Sec'y of Health & Hum. Servs., No. 16-1356V, 2018 WL 5024012 (Fed. Cl. Spec. Mstr. July 20, 2018) (awarding $180,000.00 in past pain and suffering); Fedewa v. Sec'y of Health & Hum. Servs., No. 17-1808V, 2020 WL 1915138 (Fed. Cl. Spec. Mstr. Mar. 26, 2020) (awarding $180,000.00 in past pain and suffering award); Hood, 2021 WL 5755324 (awarding $200,000.00 in past pain and suffering and $1,000.00 per year, reduced to net present value, for the rest of his life expectancy, for future pain and suffering).

The parties agree "that $3,614.45 should be awarded for unreimbursed medical expenses." Pet. Mot. at 1; Resp. Br. at 1.

VI. LEGAL FRAMEWORK

There is no formula for assigning a monetary value to a person's pain and suffering and emotional distress. I.D. v. Sec'y of Health & Human Servs., No. 04-1593V, 2013 WL 2448125, at *9 (Fed. Cl. Spec. Mstr. May 14, 2013) ("Awards for emotional distress are inherently subjective and cannot be determined by using a mathematical formula."); Stansfield v. Sec'y of Health & Human Servs., No. 93-0172V, 1996 WL 300594, at *3 (Fed. Cl. Spec. Mstr. May 22, 1996) ("[T]he assessment of pain and suffering is inherently a subjective evaluation."). Factors to be considered when determining an award for pain and suffering include: 1) awareness of the injury; 2) severity of the injury; and 3) duration of the suffering. I.D., 2013 WL 2448125, at *9 (quoting McAllister v. Sec'y of Health & Human Servs., No. 91-1037V, 1993 WL 777030, at *3 (Fed. Cl. Spec. Mstr. Mar. 26, 1993), vacated and remanded on other grounds, 70 F.3d 1240 (Fed. Cir. 1995)).

The undersigned may look to prior pain and suffering awards to aid in the resolution of the appropriate amount of compensation for pain and suffering in this case. See, e.g., Doe 34 v. Sec'y of Health & Hum. Servs., 87 Fed. Cl. 758, 768 (2009) (finding that "there is nothing improper in the chief special master's decision to refer to damages for pain and suffering awarded in other cases as an aid in determining the proper amount of damages in this case"). The undersigned may also rely on her experience adjudicating similar claims. Hodges v. Sec'y of Health & Hum. Servs., 9 F.3d 958, 961 (Fed. Cir. 1993) (noting that Congress contemplated the special masters would use their accumulated expertise in the field of vaccine injuries to judge the merits of individual claims). Importantly, however, it must also be stressed that pain and suffering is not determined based on a continuum. See Graves v. Sec'y of Health & Hum. Servs., 109 Fed. Cl. 579 (2013).

In Graves, Judge Merow rejected the special master's approach of awarding compensation for pain and suffering based on a spectrum from $0.00 to the statutory $250,000.00 cap. Judge Merow noted that this constituted "the forcing of all suffering awards into a global comparative scale in which the individual petitioner's suffering is compared to the most extreme cases and reduced accordingly." Graves, 109 Fed. Cl. at 589-90. Instead, Judge Merow assessed pain and suffering by looking to the record evidence, prior pain and suffering awards within the Vaccine Program, and a survey of similar injury claims outside of the Vaccine Program. Id. at 595.

VII. ANALYSIS

A. Whether Petitioner's CTS is a Sequela of Her GBS

The undersigned finds that Petitioner had two distinct diagnoses, CTS and GBS, although both contributed to her symptoms of hand numbness and tingling. Further, the undersigned finds that Petitioner has not proven by preponderant evidence that her CTS was caused by GBS.

There are two principal reasons for these findings. First, Petitioner did not show by preponderant evidence that GBS can cause CTS. Secondly, Petitioner's treating physicians did not attribute her CTS to GBS. Finally, to the extent that there is an overlap of symptoms, specifically numbness in Petitioner's hands caused by CTS and GBS, this is acknowledged in the undersigned's award for pain and suffering.

In support of Petitioner's contention that her CTS was caused by her GBS, she filed expert reports from Dr. Sheikh and accompanying medical literature. He opines that the pain and numbness in Petitioner's hands were caused by GBS and to the extent that she had CTS, it was caused by her GBS. Dr. Sheikh references medical literature that he asserts establish two propositions. The first is that GBS causes a diffuse neuropathic disease which affects the median nerve in the arm, causing an inflammatory process of the nerve, and leading to pain and numbness in the hand. He opines that these symptoms are not caused only by compression of the median nerve as is seen in CTS. Secondly, he opines that the median nerve, which passes through the carpal tunnel (at the level of the wrist), is prone to injury in GBS. The papers that Dr. Sheikh relies on, however, do not provide preponderant evidence of these two propositions.

Of the referenced papers, three discuss the median nerve in the context of GBS. The most current, published in 2016 by Razali et al., reported on serial ultrasound studies of the median nerves in 17 patients with GBS. The studies showed significant enlargement of the median nerve three weeks after onset of GBS. However, the median nerve was not enlarged at the wrist consistent with CTS. Instead, it was enlarged at the mid-arm level. Therefore, this study does not support the idea that GBS causes CTS.

The findings published by Razali et al. also cast doubt on a statement made by Brown and Feasby in an article they published in 1984 about a study of 25 patients with GBS. Specific to the median nerve, they stimulated the nerve at the wrist and measured maximum motor conduction velocity and motor terminal latency to assess for a conduction block. Sensory conduction was also measured, but these results were not included because "conduction block was much more difficult to assess in sensory [fibers]." Pet. Ex. 30 at 3. The authors reported "focal conduction slowing beneath the flexor retinaculum was suggested by the presence of prolonged terminal motor latencies in 69 [percent] [in the first two weeks of GBS] of the median nerves." Id. at 14. However, the authors did not reach any conclusions about this finding and its relationship, if any, to CTS. In fact, CTS was not discussed. Moreover, the study only included motor fibers (due to the difficultly assessing sensory fibers), and the authors discussed weakness and paralysis, not pain or numbness of the hands (sensory symptoms).

The third paper cited by Dr. Sheikh that referenced the median nerve was published in 1969 by Asbury et al. and it described the pathology findings of peripheral nerves in patients who succumbed to GBS. The median nerve was described in two cases. However, there was no discussion of abnormalities of the nerve at the location of the wrist. In one of the cases (Case 14), the authors specifically observed that the distal peripheral nerves showed less damage.

While the articles include conclusory statements suggesting that GBS can affect the median nerve at its distal portion (that runs through the carpal tunnel), this conclusion is not

supported by the results of the studies. Further, none of the authors of these papers opine that CTS is caused by GBS. Moreover, none of them establish that GBS contributes to or renders a patient more susceptible to CTS.

In his expert report, Dr. Callaghan stated that he "was unable to find any article linking GBS to [CTS]." Resp. Ex. A at 5. Based on the medical literature filed in this case, Dr. Callaghan's statement appears to be accurate.

The experts agree that both GBS and CTS can cause numbness in the hands. Petitioner's expert Dr. Sheikh opines that "[m]ild [CTS] is a minor contributor to [Petitioner's] hand symptoms," while Respondent's expert, Dr. Callaghan, opines that "only [CTS] specifically affects the first three digits of the hands, causes paresthesias aggravated by driving, and causes paresthesias relieved by [hand] shaking," all which Petitioner has described. Pet. Ex. 21 at 7; Resp. Ex. A at 5.

Further, Petitioner's treating neurologist, Dr. Modi, diagnosed Petitioner with two distinct conditions, GBS and CTS. On November 27, 2017, Petitioner saw Dr. Modi and her chief complaint at that visit was "tingling, numbness in her arm." Pet. Ex. 2 at 2. Dr. Modi ordered an EMG/NCS to evaluate her complaint. The study was done on January 15, 2018. Dr. Modi interpreted it as showing "bilateral CTS along with some residual signs of demyelinating neuropathy." Id. at 4. Dr. Modi's diagnoses were (1) GBS and (2) "[b]ilateral hand tingling/numbness – EMG/NCS shows moderate to severe bilateral CTS." Id. at 5. In 2020, Dr. Modi again ordered an EMG/NCS. He interpreted this study as showing (1) moderate CTS and (2) moderate sensory axonal neuropathy (from GBS). Pet. Ex. 15 at 2, 7.

Here, the undersigned finds Petitioner's treating neurologist's opinions to be more persuasive. See, e.g., Capizzano v. Sec'y of Health & Hum. Servs., 440 F.3d 1317, 1325 (Fed. Cir. 2006) (noting treating physician statements are typically "favored"); Cucuras v. Sec'y of Health & Hum. Servs., 993 F.2d 1525, 1528 (Fed. Cir. 1993) (finding contemporaneous medical records, "in general, warrant consideration as trustworthy evidence"). Dr. Modi took a thorough history, performed physical examinations, and ordered and interpreted diagnostic studies. Dr. Sheikh opines that Dr. Modi's interpretation of the diagnostic studies were "incorrect." Pet. Ex. 29 at 3. However, the undersigned is not willing to adopt such a view, especially given the fact that Dr. Callaghan agrees with Dr. Modi's interpretation of the studies.

For all of these reasons, the undersigned agrees with the opinions of Dr. Callaghan, and finds that Petitioner suffered GBS, which caused numbness of her extremities, including numbness and tingling of her hands. She also has a distinct diagnosis of CTS, which was not caused by her GBS. Her CTS affects the first three digits of her hands, causes paresthesias that are aggravated by driving, and causes paresthesias relieved by shaking her hands.

B. Petitioner's Award for Pain and Suffering

In determining an award in this case, the undersigned does not rely on a single decision or case. Rather, the undersigned has reviewed the particular facts and circumstances in this case,

giving due consideration to the circumstances and damages in other cases cited by the parties and other relevant cases, as well as her knowledge and experience adjudicating similar cases.

The parties cited several cases relevant to the issues presented here. The undersigned finds that several cases, including Johnson, Dillenbeck, and Fedewa, are helpful in evaluating Petitioner's case given the similarity in facts.[30] Dillenbeck, 2019 WL 4072069; Johnson, 2018 WL 5024012; Fedewa, 2020 WL 1915138. Each of these are discussed in turn.

Ms. Johnson was 61 years old when she was diagnosed with GBS after receiving a flu vaccine, and was awarded $180,000.00 for actual pain and suffering. Johnson, 2018 WL 5024012, at *1-2. Ms. Johnson worked as a school bus driver for her local school district and as a part-time school librarian. Id. at *2. Ms. Johnson received a flu vaccine in November 2015 and was subsequently hospitalized for five days, from December 10 to 15, 2015, for GBS. Id. at *2-3. She received a lumbar puncture and five rounds of IVIG. Id. at *3. She did not take gabapentin following her injury because she feared being dependent on medication and suffering adverse effects of medication. Id. at *7. After three months, she was approved to work half-days up to three times a week as a librarian, but could still not return to work as a school bus driver. Id. at *4. Approximately three-and-one-half months after her diagnosis, Ms. Johnson was cautiously driving again and walking without her walking sticks. Id. Subsequently, Ms. Johnson passed her physical examination in 2016 and returned as the school bus driver for the 2016-2017 school year. Id. Ms. Johnson had initially completed some in-home therapy and three sessions of outpatient therapy between March 2016 and June 2016, but she did not partake in therapy between June 2016 and February 2017. See id. A little over one year after Ms. Johnson's hospitalization, she completed 45 personal exercise visits between February 27, 2017 and February 26, 2018. Id.

At the time of her damages hearing in January 2018, over two years after her hospitalization, Ms. Johnson still reported GBS sequela including incontinence, decreased work duties, fatigue, and residual numbness in her legs. Johnson, 2018 WL 5024012, at *5. She stated that she could no longer hike with her family and dog like she used to. Id. at *4. She also testified that incontinence meant that she was unable to tell when she needed to use the bathroom and traveled with spare clothing. Id. at *5. Finally, Ms. Johnson testified that she still had numbness in her legs and could not tell when her feet were cold. Id. Based on the facts and circumstances of the case, Ms. Johnson was awarded $180,000.00 for actual pain and suffering. Id. at *9.

Ms. Dillenbeck was 61 years old when she was diagnosed with GBS after receiving the flu vaccine. Dillenbeck, 2019 WL 4072069, at *1. She was awarded $170,000.00 for actual pain and suffering and $500.00 per year for future pain and suffering damages. Id. at *14-15. Ms. Dillenbeck was hospitalized, received multiple rounds of IVIG, and attended outpatient physical therapy multiple times per week. Id. at *2. Ms. Dillenbeck returned to work on March 1, 2016, approximately three months after her hospitalization, though with a 15-pound weight

[30] The undersigned does not find Hood to be comparable. Mr. Hood was considerably younger, and his clinical course was more severe both due to more significant symptoms and a longer period of recovery. Hood, 2021 WL 5755324.

restriction. Id. In April 2016, Ms. Dillenbeck requested to be free of work restrictions despite still reporting symptoms of paresthesia in hands and feet, chest sensitivity, and an unsteady gait. Id. Ms. Dillenbeck took gabapentin for the six months following her hospitalization. Id. at *3. At the time of her testimony over three years later, in February 2019, Ms. Dillenbeck still reported GBS sequalae, including lack of sensation in hands and feet, increased sensitivity on chest, abdomen, and back, weakness in her hands, and generalized fatigue. Id. at *3-4.

In Dillenbeck, the special master found that damages for pain and suffering "reflect the personal cost of having to suffer GBS" and "the lost opportunity to continue to perform vet tech duties from which she clearly took great pleasure." Dillenbeck, 2019 WL 4072069, at *14. The special master accepted Ms. Dillenbeck's explanation that her quick return to work and release from restrictions was due to the pressure she felt to return to work rather than a reflection of her true health or readiness. Id. at *9-10.

Mr. Fedewa was 54 years old when he suffered GBS. Fedewa, 2020 WL 1915138, at *2. He was awarded $180,000.00 in actual pain and suffering. Id. at *1. Prior to Mr. Fedewa's hospital admission for GBS, he sought medical treatment three times, complaining of progressively worsening numbness and weakness. Id. at *2. Once admitted, he was hospitalized for eight days, then transferred to inpatient rehabilitation for five days. Id. at *2-3. He reported terrible experiences with his lumbar puncture and EMG tests, and he had a difficult time with his five rounds of IVIG treatment. Id. He began physical therapy during inpatient rehabilitation, and after he was discharged home, he attended 22 sessions of outpatient physical therapy over the span of three months. Id. at *3. He was unable to drive or work for three months. Id. at *5. He took gabapentin for three months following his hospitalization. Id. at *6. His depression and anxiety required Wellbutrin, which he took for approximately 15 months post-hospitalization. Id.

Regarding his employment, Mr. Fedewa, then age 54, worked as a dental equipment repairman. Fedewa, 2020 WL 1915138, at *2. His job required him to drive to service locations and to lift and move equipment up to 250 pounds. Id. at *6. He returned to work approximately three months after his hospitalization, due to the need to support his family, but worked under a 25-pound weight restriction. Id. Working was painful and difficult for many months. Id. GBS also altered Mr. Fedewa's family and social life. Id. Prior to GBS, he was physically active on his farm raising animals, tending to plants, and enjoying outdoor activities with his children. Id. He was also an active member in his church community. Id. After GBS, Mr. Fedewa was unable to participate in community and family activities, and this affected his relationships with his friends, family, and especially his children. Id. He dealt with the residual symptoms of his GBS for over two-and-one-half years. Id. Mr. Fedewa stated that his "greatest loss ha[d] been the continuing trauma that has made life hard and took the joy out of living." Id. He continued to experience depression and fatigue. Id.

The factors to consider when determining an award for pain and suffering include awareness of the injury, severity of the injury, and duration of the suffering. Awareness of suffering is not typically a disputed issue in cases involving GBS. Here, neither party has raised, nor is the undersigned aware of, any issue concerning Petitioner's awareness of suffering and the

undersigned finds that this matter is not in dispute. Thus, based on the circumstances of this case, the undersigned determines that Petitioner had full awareness of her suffering.

Regarding severity and duration, the undersigned finds Petitioner's clinical course to be like that of Mr. Fedewa's clinical course. They both had comparable stays in the acute hospital setting as well as inpatient rehabilitation. Both received five rounds of IVIG treatment during their acute hospital stay. Prior to hospitalization, however, Mr. Fedewa had a more dramatic and difficult presentation. He sought treatment three different times and fell at home prior to hospital admission. His first lumbar puncture was unsuccessful, and he underwent the difficult procedure a second time. Both Petitioner and Mr. Fedewa, however, reported particularly painful and difficult experiences during their hospitalizations. Petitioner had severe pain associated with her IVIG treatments, similar to Mr. Fedewa. After discharge from inpatient rehabilitation, they both had outpatient physical therapy. Both attended outpatient physical therapy for three months and gained significant improvement.

Regarding employment, both Petitioner and Mr. Fedewa returned to work full time after approximately three months.[31] Petitioner had no work restrictions, while Mr. Fedewa had weight restrictions.

Both Petitioner and Mr. Fedewa experienced significant fatigue and emotional distress. Mr. Fedewa's anxiety and moderately severe depression required him to take Wellbutrin for over a year. Additionally, he was limited in caring for his children, and as a result, he experienced considerable suffering. At the time of his injury, two of his children were young, requiring physical care that Mr. Fedewa could not provide. He was also unable to perform parental duties for his older children. His limited capacity to play with, care, and support his children resulted in substantial emotional pain.

Petitioner also experienced significant emotional distress and her relationships with friends and family members changed as a result of her GBS. She became withdrawn and her social life was adversely affected. She and her husband separated. Before GBS, Petitioner led a very active and physical life, enjoying sports and gym classes on a regular basis. After GBS, she has become frustrated and depressed due to pain and fatigue. Petitioner feels that GBS has taken so much joy from her life.

Based on a review of the entire record and consideration of the facts and circumstances presented here, the undersigned finds that $180,000.00 represents a fair and appropriate amount of compensation for Petitioner's actual pain and suffering and emotional distress.

The undersigned also finds an award for future pain and suffering reasonable and appropriate. Petitioner saw her neurologist Dr. Modi for a follow up visit on March 12, 2021. Physical examination revealed that Petitioner had "decreased vibration sense at the toes

[31] Mr. Fedewa returned to work because he was the sole provider for his wife and seven children. Fedewa, 2020 WL 1915138, at *8. As noted in Dillenbeck, a petitioner returning to work quickly does not necessarily lessen the severity of their injury. See Dillenbeck, 2019 WL 4072069, at *9-10.

bilaterally, left worse than right." Pet. Ex. 17 at 2. Her gait was "steady, cautious." Id. Dr. Modi's assessment was that Petitioner had GBS in November 2017, and that "[s]he still ha[d] residual pins and needles sensation in her extremities. At this point in time (4 years post episode), [Dr. Modi did] not expect her symptoms to change much. EMG/NCS [left lower extremity] in June 2020 showed moderate sensory axonal neurology." Id. A reasonable interpretation of Dr. Modi's record is that Petitioner's sensory abnormalities had not changed in four years and were expected to be permanent.

Respondent's expert does not disagree. In Dr. Callaghan's expert report, he references the visit by Petitioner to see her neurologist in March 2021 and noted at that time that "the expectation was that her symptoms would not change much from here on." Resp. Ex. A at 3.

Moreover, Petitioner's expert, Dr. Sheikh, opined that in addition to paresthesias, Petitioner also suffers from other GBS sequelae, including chronic fatigue and exhaustion affecting participation in normal activities, anxiety and depression, and social dysfunction. Pet. Ex. 21 at 6. These residual effects are corroborated by the declaration of Petitioner.

Based on Petitioner's medical records, and the evaluation and opinions of Dr. Modi, Dr. Sheikh, and Dr. Callaghan, the undersigned finds an award of future pain and suffering is appropriate and reasonable for the residual effects of GBS. The evidence establishes that although Petitioner had a good physical recovery, she has had sensory symptoms, significant fatigue, and other residual problems, which have had an impact on her ability to participate in family and social activities.

In this respect, her residual course is like that of Ms. Dillenbeck. Over three years after her diagnosis of GBS, Ms. Dillenbeck testified that she continued to experience residual effects, including decreased sensation and weakness in her hands, increased sensation in her chest, abdomen, and back, and generalized fatigue which interfered with her enjoyment of life. Dillenbeck, 2019 WL 4072069, at *3, *14-15. She also lost the opportunity to continue her position as a veterinary technician, a position that gave her "great pleasure." Id. at *14.

Petitioner has residual effects of GBS that warrant an award of future pain and suffering, and thus, the undersigned awards $500.00 per year for her life expectancy, reduced to net present value.

VIII. CONCLUSION

In determining an award in this case, the undersigned does not rely on a single decision or case. Rather, the undersigned has reviewed the particular facts and circumstances as well as her knowledge and experience adjudicating vaccine injury cases.

In light of the above analysis, and in consideration of the record as a whole, the undersigned finds that Petitioner should be awarded (1) $180,000.00 for actual (or past) pain and

suffering; (2) $500.00 per year reduced to net present value, for Petitioner's life expectancy;[32] and (3) $3,614.45 for unreimbursed medical expenses.

The parties are to file a joint status report within 30 days, **by Wednesday, January 18, 2023**, (1) converting the undersigned's award of future pain and suffering to its net present value, and (2) providing a statement confirming that this ruling reflects all items of damages and that no issues remain outstanding. If the parties are unable to agree on the amount of the net present value of the future award, the undersigned will use a one percent net discount rate for the first fifteen years, followed by a two percent net discount rate for the remaining years.[33]

Thereafter, a damages decision will issue.

IT IS SO ORDERED.

s/Nora Beth Dorsey
Nora Beth Dorsey
Special Master

[32] Based on Petitioner's date of birth, July 9, 1963, Petitioner is expected to live for approximately 24 additional years based on the data for all females. See Elizabeth Arias & Jiaquan Xu, Nat'l Ctr. for Health Statistics, Ctrs. for Disease Control & Prevention, United States Life Tables, 2020, 71 Nat'l Vital Stat. Reps. 1, 2 tbl.A (2022).

[33] See Dillenbeck, 2019 WL 4072069, at *15 (applying a one percent net discount rate for the first fifteen years, followed by a two percent net discount rate for the remaining years), aff'd in part, 147 Fed. Cl. 131 (2020); Curri v. Sec'y of Health & Hum. Servs., No. 17-432V, 2018 WL 6273562, at *5 (Fed. Cl. Spec. Mstr. Oct. 31, 2018) (same); Petronelli v. Sec'y Health & Hum. Servs., No. 12-285V, 2016 WL 3252082, at *5-6 (Fed. Cl. Spec. Mstr. May 12, 2016) (analyzing the appropriateness of a one percent discount for future damages).