In the United States Court of Federal Claims

OFFICE OF SPECIAL MASTERS

No. 06-0573V

Filed: 1 September 2010

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DEBORAH M. EBENSTEIN,	*	
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Petitioner,	*	
	*	
v.	*	Actual Causation; MMR,
	*	Idiopathic Thrombocytopenic Purpura;
SECRETARY OF HEALTH AND HUMAN SERVICES,	*	Adult Petitioner; Late Onset
	*	
	*	
Respondent.	*	
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John F. McHugh, Esq., Law Office of John McHugh, New York City, New York, for Petitioner; *Michael P. Milmoe, Esq.*, United States Department of Justice, Washington, District of Columbia, for Respondent.

UNPUBLISHED ENTITLEMENT RULING[1]

ABELL, Special Master:

On 7 August 2006, Petitioner filed this Petition for compensation under the National Childhood Vaccine Injury Act of 1986 (Vaccine Act or Act)[2] alleging that, as a result of the Measles-Mumps-Rubella (MMR) vaccine administered to Petitioner on 23 December 2004, she suffered (off-Table) Idiopathic Thrombocytopenic Purpura (ITP or Thrombocytopenia). *See* Amended Petition.

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[1] Petitioner is reminded that, pursuant to 42 U.S.C. § 300aa-12(d)(4) and Vaccine Rule 18(b), a petitioner has 14 days from the date of this ruling within which to request redaction "of any information furnished by that party (1) that is trade secret or commercial or financial information and is privileged or confidential, or (2) that are medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of privacy." Vaccine Rule 18(b). Otherwise, "the entire decision" may be made available to the public per the E-Government Act of 2002, Pub. L. No. 107-347, 116 Stat. 2899, 2913 (Dec. 17, 2002).

[2] The statutory provisions governing the Vaccine Act are found in 42 U.S.C. §§300aa-10 et seq. (West 1991 & Supp. 1997). Hereinafter, reference will be to the relevant subsection of 42 U.S.C. §300aa.

Eventually, an evidentiary hearing on the ultimate issue of vaccine causation was convened by the Court *in vivo* in New York City, New York on 6 November 2008. Hearing Transcript ("Tr."). Wherein, the Court heard from medical expert witnesses for both parties, Dr. David Rosenstreich, an Allergist/Immunologist, for the Petitioner, and Dr. James Nachman, a hematologist, for the Respondent. Following those hearings, the parties filed closing briefs with the Court, and the case became ripe for a ruling. On 2 August 2010, the Court convened a hearing to announce its ruling to the parties, which is excerpted in relevant portion and incorporated herein.

As a preliminary matter, the Court notes that Petitioner had satisfied the pleading requisites found in § 300aa-11(b) and (c) of the statute, by showing that: (1) she is the real party at interest as the injured party; (2) the vaccine at issue is set forth in the Vaccine Injury Table (42 C.F.R. § 100.3); (3) the vaccine was administered in the United States or one of its territories; (4) no one has previously collected an award or settlement of a civil action for damages arising from the alleged vaccine-related injury; and, (5) no previous civil action has been filed in this matter Additionally, the § 16 requirement that the Petition be timely filed have been met. On these matters, Respondent tenders no dispute.

The Vaccine Act authorizes the Office of Special Masters to make rulings and decisions on petitions for compensation from the Vaccine Program, to include findings of fact and conclusions of law. §12(d)(3)(A)(I). In order to prevail on a petition for compensation under the Vaccine Act, a petitioner must show by preponderant evidence that a vaccination listed on the Vaccine Injury Table either caused an injury specified on that Table within the period designated therein, or else that such a vaccine *actually caused* an injury not so specified. § 11(c)(1)(c).

I. LEGAL STANDARD

It is axiomatic to say that a petitioner bears the burden of proving, by a preponderance of the evidence–which this Court has likened to fifty percent and a feather–that a particular fact occurred or circumstance obtains. Put another way, it is required that a special master, "believe that the existence of a fact is more probable than its nonexistence before [he] may find in favor of the party who has the burden to persuade the [special master] of the fact's existence." *In re Winship*, 397 U.S. 358, 371-72 (1970) (Harlan, J., concurring). Moreover, mere conjecture or speculation does not meet the preponderance standard. *Snowbank Enterprises v. United States*, 6 Cl. Ct. 476, 486 (1984).

This Court may not rule in favor of a petitioner based on his asseverations alone. This Court is authorized by statute to render findings of fact and conclusions of law, and to grant compensation upon petitions that are substantiated by medical records and/or by medical opinion. §§ 12(d)(3)(A)(i) and 13(a)(1).

Contemporaneous medical records are afforded substantial weight, as has been elucidated by this Court and by the Federal Circuit:

> Medical records, in general, warrant consideration as trustworthy evidence. The records contain information supplied to or by health professionals to facilitate diagnosis and treatment of medical conditions. With proper treatment hanging in the balance, accuracy has an extra premium. These records are also generally contemporaneous to the medical events.

Cucuras v. Sec'y of HHS, 993 F. 2d 1525, 1528 (Fed. Cir.1993).

Medical records are more useful to the Court's analysis when considered in reference to what they include, rather than what they omit:

> [I]t must be recognized that the absence of a reference to a condition or circumstance is much less significant than a reference which negates the existence of the condition or circumstance. Since medical records typically record only a fraction of all that occurs, the fact that reference to an event is omitted from the medical records may not be very significant.

Murphy v. Sec'y of HHS, 23 Cl. Ct. 726, 733 (1991), *aff'd*, 968 F. 2d 1226 (Fed. Cir. 1992), *cert. denied sub nom. Murphy v. Sullivan*, 113 S. Ct. 263 (1992) (citations omitted), citing *Clark v. Sec'y of HHS*, No. 90-45V, slip op. at 3 (Cl. Ct. Spec. Mstr. March 28, 1991).

As aforementioned, the Court is authorized to award compensation for claims where the medical records or medical opinion have demonstrated by preponderant evidence that either a cognizable Table Injury occurred within the prescribed period or that an injury was actually caused by the vaccination in question. § 13(a)(1). If Petitioner had claimed that she had suffered a "Table" injury, to her would §13(a)(1)(A) have assigned the burden of proving such by a preponderance of the evidence. In this case, however, Petitioner does not claim a presumption of causation afforded by the Vaccine Injury Table, and thus the Petition may prevail only if it can be demonstrated to a preponderant standard of evidence that the vaccination in question, more likely than not, actually caused the injury alleged. *See* § 11(c)(1)(C)(ii)(I) & (II); *Grant v. Sec'y of HHS*, 956 F. 2d 1144 (Fed. Cir. 1992); *Strother v. Sec'y of HHS*, 21 Cl. Ct. 365, 369-70 (1990), *aff'd*, 950 F. 2d 731 (Fed. Cir. 1991). The Federal Circuit has indicated that, to prevail, every petitioner must:

> show a medical theory causally connecting the vaccination and the injury. Causation in fact requires proof of a logical sequence of cause and effect showing that the vaccination was the reason for the injury. A reputable medical or scientific explanation must support this logical sequence of cause and effect.

Grant, 956 F. 2d at 1148 (citations omitted); *see also Strother*, 21 Cl. Ct. at 370.

Furthermore, the Federal Circuit has articulated an alternative three-part causation-in-fact analysis as follows:

> [Petitioner's] burden is to show by preponderant evidence that the vaccination brought about [the] injury by providing: (1) a medical theory causally connecting the vaccination and the injury; (2) a logical sequence of cause and effect showing that the

> vaccination was the reason for the injury; and (3) a showing of a proximate temporal relationship between vaccination and injury.

Althen v. Sec'y of HHS, 418 F. 3d 1274, 1278 (Fed. Cir. 2005).

As part of that analysis, the Federal Circuit recently explained:

> [T]he proximate temporal relationship prong requires preponderant proof that the onset of symptoms occurred within a timeframe for which, given the medical understanding of the disorder's aetiology, it is medically acceptable to infer causation-in-fact.

de Bazan v. Sec'y of HHS, 539 F. 3d 1347, 1352 (Fed. Cir. 2008).

Under this analysis, while a petitioner is not required to propose or prove definitively that a specific biological mechanism can and did cause the injury, he must still proffer a plausible medical theory that causally connects the vaccine with the injury alleged. *See Knudsen v. Sec'y of HHS*, 35 F. 3d 543, 549 (1994).

As a matter of elucidation, the Undersigned takes note of the following two-part test, which has been vindicated and viewed with approval by the Federal Circuit,[3] and which guides the Court's practical approach to analyzing the *Althen* elements:

> The Undersigned has often bifurcated the issue of actual causation into the "can it" prong and the "did it" prong: (1) whether there is a scientifically plausible theory which explains that such injury could follow directly from vaccination; and (2) whether that theory's process was at work in the instant case, based on the factual evidentiary record extant.

Weeks v. Sec'y of HHS, No. 05-0295V, 2007 WL 1263957, 2007 U.S. Claims LEXIS 127, slip op. at 25, n. 15 (Fed. Cl. Spec. Mstr. Apr. 13, 2007).

Of importance in this case, it is part of Petitioners' burden in proving actual causation to "prove by preponderant evidence both that [the] vaccinations were a substantial factor in causing the illness, disability, injury or condition and that the harm would not have occurred in the absence of the vaccination." *Pafford v. Sec'y of HHS*, 451 F. 3d 1352, 1355 (Fed. Cir. 2006), *rehearing and rehearing en banc denied*, (Oct. 24, 2006), *cert. den.*, 168 L. Ed. 2d 242, 75 U.S.L.W. 3644 (2007), citing *Shyface v. Sec'y of HHS*, 165 F. 3d 1344, 1352 (Fed. Cir.1999). This threshhold is the litmus test of the cause-in-fact (a.k.a. but-for causation) rule: that petitioner would not have sustained the damages complained of, *but for* the effect of the vaccine. *See generally Shyface, supra*. "[T]he relevant inquiry ...[is]... 'has the petitioner proven ... that her injury was in fact caused by the ...

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[3] *See Pafford v. Sec'y of HHS*, No. 01-0165V, 2004 WL 1717359, 2004 U.S. Claims LEXIS 179, *16, slip op. at 7 (Fed. Cl. Spec. Mstr. Jul. 16, 2004), *aff'd*, 64 Fed. Cl. 19 (2005), *aff'd* 451 F. 3d 1352, 1356 (2006) ("this court perceives no significant difference between the Special Master's test and that established by this court in *Althen* and *Shyface*"), *rehearing and rehearing en banc denied*, (Oct. 24, 2006), *cert. den.*, 168 L. Ed. 2d 242, 75 U.S.L.W. 3644 (2007).

vaccine, rather than by some other *superseding*[,] *intervening* cause?' ...[The petitioner need not] rule out every possible explanation ...[but]... must simply show ... that her injury was caused by a vaccine." *Johnson v. Sec'y of HHS*, 33 Fed. Cl. 712, 721 (1995), *aff'd* 99 F. 3d 1160 (Fed. Cir. 1996) (emphasis added).

"To prove causation, a petitioner in a Vaccine Act case must show that the vaccine was 'not only a but-for cause of the injury but also a substantial factor in bringing about the injury.'" *Moberly v. Sec'y of HHS*, __ F.3d __, 2010 WL 118661 (Fed. Cir. 2010) quoting *Shyface v. Sec'y of HHS*, 165 F.3d 1344, 1352-53 (Fed. Cir. 1999); *see also Id*. citing *Walther v. Sec'y of HHS.*, 485 F.3d 1146, 1151 (Fed. Cir. 2007) (for causation analysis in off-Table cases, the Restatement (Second) of Torts applies and 'the petitioner is treated as the equivalent of the tort plaintiff'). In the watershed case of *Shyface v. Sec'y of HHS*, 165 F. 3d at 1352, the Federal Circuit "adopt[ed] the Restatement [(2d) of Torts] rule for purposes of determining vaccine injury, that an action is the 'legal cause' of harm if that action is a 'substantial factor' in bringing about the harm, and that the harm would not have occurred but for the action," and that rule continues to guide the Court today in the instant matter.[4] *Cf. Hargrove v. Sec'y of HHS*, No. 05-0694V, 2009 WL 1220986 * 39-40 (Fed. Cl. Spec. Mstr. Apr. 14, 2009).

II. DISCUSSION

The Court's Bench Ruling was as follows:

> Petitioner was born 14 June 1976 -- I believe that's Flag Day -- and was 28 at the time of the vaccination and injury. The Petitioner claims that the MMR vaccination received on 23 December 2004 caused in Petitioner a thrombocytopenia on 4 February 2005. Petitioner had received the MMR shot twice before, 1978, 1990, but she had to get the shot again because she didn't have measurable rubella or measles antibodies in her system and was therefore required for her work for NYU Medical

[4] The mandate of the Federal Circuit in *Shyface* to follow the RESTATEMENT (2D) OF TORTS on the application of actual causation did not indicate how this Court should approach the tectonic shift of the common law into the later Restatement(s). The short answer to this question is that the Federal Circuit incorporated the RESTATEMENT (2D) OF TORTS, and until the Circuit does otherwise to change that gloss, that is the mandatory precedent binding on this Court. By way of more detailed analysis, given the Circuit's reasoning in *Shyface* for incorporating the Restatement, *i.e.* that Congress contemplated the common law (in its then contemporaneous understanding) within the Vaccine Act draftsmanship, thus presuming the common law as a background legislative intent, it would appear that only the Second Restatement is binding on this Court in matters touching on actual causation, because that is the version in use at the time of the Act's drafting and passage. Likewise, when the Federal Circuit decided *Shyface* in 1999, the RESTATEMENT (3D) OF TORTS: PRODUCTS LIABILITY had already become available in published form, and yet the Circuit did not choose to incorporate or even reference that Restatement's provisions at all, notwithstanding the potential corollary to the Program's focus on causation in the absence of a fault element. Had it done so, a contrary argument could have been made that the Circuit's reading of congressional intent was a progressing correspondence to whatever Restatement provisions were most current. However, this would seem to correspond to the more dubious "statutory purpose" canon of interpretation. The Court's reading of *Shyface* leads to a result that the Third Restatement should be viewed at most as persuasive, but not mandatory authority, and is not to be followed where it conflicts with the Second Restatement. Therefore, to the extent the Court cites to the Third Restatement herein, it shall be only to bolster or elaborate citations to other sources.

Center. 6 January 2005, Petitioner was treated for a headache and streptococcus-negative pharyngitis, and was treated with Zithromax. On 4 February, Petitioner began bleeding vaginally outside the period of her normal menstrual cycle.

After that, beginning on 5 February 2005, she noticed that she bruised much more easily without any significant contact. Then, beginning on 20 February 2005, her menstrual bleeding increased to several times that which was normal. On 26 February 2005, Petitioner avers she developed a large hematoma with the width of a tennis ball on her leg just above the knee. She was admitted to the hospital for nosebleeds, heavy vaginal bleeding and a risk of spontaneous internal hemorrhaging. Petitioner was diagnosed with idiopathic thrombocytopenic purpura, ITP. Doctors weren't sure if it might be myelodysplastic syndrome, probably mispronouncing that, MDS, and that had them worried. Should mention that myelodysplastic syndrome is any of a group of related bone marrow disorders of varying duration preceding the development of overt acute myelogenous leukemia.

They are characterized by abnormal hematopoietic stem cells, anemia, neutropenia and thrombocytopenia. Splenomegaly, hepatomegaly and lymphadenopathy may not occur until the onset, often explosive, of leukemia. It is also called preleukemia. She had to return repeatedly to the hospital for medical attention because her condition did not respond to the treatment course between 11 March and 6 April 2005. On 11 April 2005 and on 27 April 2005, doctors changed their diagnosis of Petitioner from ITP to MDS. Pursuant to that, Petitioner had to have a splenectomy, removal of the spleen, on 7 April 2005, but that did not appear to affect her condition. More, and different, treatments were tried to no avail.

Doctors thought maybe she needed a bone marrow transplant, thinking it was due to some exotic disorder, a 7Q abnormality, for example, but then decided against it because they decided it was ITP, as previously diagnosed. Therefore, no marrow transplant was necessary. The actual initial diagnosis on 12 May 2005 was immune-mediated thrombocytopenia. Some time thereafter she made a recovery, but not inside of six months. By the way, at the entitlement hearing, Respondent noted that they would not contest the factual allegations, unrecorded by a medical visit at the time, that there was an increased menstrual flow on the third and fourth of February 2005.

Fact witness testimony: We start with the Petitioner herself. Petitioner had a battle with Hodgkin's Disease lasting several years. She was diagnosed in April 1993 and was treated with radiation and chemotherapy until June 2004, since which time she has been in remission. The Court notes that there was only six months between when her cancer went into remission and the vaccination at issue. Her Hodgkin's Disease did not affect her menstrual flow at all one way or the other. Presumably totally unrelated. Now, the following testimony was taken from a deposition of the Petitioner. Most of what is in Petitioner's deposition was later stipulated to by Respondent at the hearing. Petitioner did testify at the hearing, but it was very brief.

Petitioner received the MMR vaccination on 23 December 2004. Petitioner did go to the doctor on 6 January 2005 for a sore throat and sinus, nasal congestion. She tested negative to strep throat so bacterial sources were ruled out. The doctor presumed it was a viral cold. Petitioner said she first suffered from slight vaginal bleeding, "spotting", on 3 February 2005, which was odd because her menstrual bleeding was not scheduled to begin for another two weeks. She had never experienced that phenomena before. That spotting continued if not every day, every other day thereafter for some time. Then, two days later, on 5 February 2005, she noticed two raised, golf ball sized bruises, hematomas, on her shins from where she had been wearing ski boots while skiing in the Catskills. She hadn't fallen at any point either. It was also the first time that had happened to her.

About two weeks later, on 16 February, when her menstrual cycle should have commenced, it did not. Her periods had been extremely regular up to that point. About a week after that, on 22 February, she started bleeding very heavily from her vagina at about twice the volume of regular menstrual cycle bleeding. This amount of bleeding had not occurred since her first menstrual cycle at 13 years of age. Things got to be very scary by 27 February where she's bleeding so much she became concerned that it was more than merely menstruation. In her notes, she referred to it has hemorrhaging. Should be mentioned that she is a nurse. At that point, she went to the doctor soon thereafter, and the rest is in the medical records previously summarized.

Now, Petitioner's fact witness testimony. The Petitioner's husband, VJ boyfriend, Andrew Ebenstein, was at the time of the hearing Petitioner's husband. He was her boyfriend at the time of her symptoms. He says that after going skiing on 4 February 2005, he noticed that she had large, even bruises on her shins just above both of her ankles the morning of 5 February. She thought that they were from the ski boots, although her boots had never done so before, and she hadn't fallen or anything. Also, the boot was on the part of the leg protected within the boot. Her period came late that month, 22 February, instead of the week of 14 February. When it did come, he remembers her telling him it was very heavy. That same weekend she showed him another large bruise on her leg above her knee. It was the circumference of a golf ball and was raised above the surface of the skin.

Petitioner's expert, Dr. David Rosenstreich: To summarize his curriculum vitae: med school at NYU, 10 years at NIH at the Institute of Allergy and Infectious Diseases. He did research as a visiting associate professor at Rockefeller University. He has been at the Albert Einstein College of Medicine and the Montefiore Medical Center since 1980 and is currently the Director of the Division of Allergy and Immunology there. Board-certified in internal medicine and allergy and immunology. Dr. Rosenstreich conceded on cross-examination that he isn't usually the treater for ITP cases at his practice, but only consults on them when the treating hematologist brings him in on the immune-related ITP case "maybe once every year or two".

He testified that "the medical community generally accepts the idea that the MMR vaccination can cause thrombocytopenia", which is defined as "a low platelet count in the blood". Later, he said that he relied heavily on the epidemiologically derived association between MMR and ITP. How it typically manifests and is diagnosed. "Without platelets, your blood can't clot and people bleed. When your platelet count gets low enough, then people start to have manifestations of bleeding at different parts of their body. If you have it in the skin, you can have little bleeding points called petechiae. You can have large bruises called ecchymoses or hematoma. You can have vaginal bleeding that won't stop because you can't coagulate the blood properly. Or you can have GI bleeding." Of those phenomena he said the Petitioner evidenced petechiae, hematomas and vaginal bleeding.

He viewed her first external symptom of onset as "February 2, when, according to Mr. Ebenstein's deposition, she developed unusual bleeding after sex". Hematomas followed with the ski boot bruises on 5 February. Later, on redirect, he clarified that the onset of the immune reaction began soon after receiving the MMR vaccine, but that symptoms did not manifest until sufficient platelets had been destroyed to manifest symptoms. Describing the mechanism, Dr. Rosenstreich stated "the immune thrombocytopenia that she had is due to antiplatelet antibodies. In the case induced by MMR vaccine, one or more of the viruses induces antiplatelet antibodies, so even though you're making immune response against the viruses, the body will also begin to make an immune response against platelets in some kind of cross-reaction. It's called molecular mimicry. So, in this case, she was immunized, developed antibodies that cross-reacted against the platelets, and eventually, when the antibody levels get high enough, the platelets are coated and are destroyed. That's the usual assumption MMR vaccine, and this is probably what happened here."

Regarding whether such a process was at work in this case, the Court's phraseology, the did it concept, Dr. Rosenstreich testified that the drug that actually treated her condition effectively, Rituximab, is "a monoclonal antibody that inactivates, or kills, B lymphocytes. Now, B lymphocytes are the cells in the body that make antibodies, and presumably, by decreasing, or inactivating, or decreasing the ability of her B lymphocytes to make antibodies, she no longer made antibodies and no longer was coating her platelets with antibodies, and she recovered". This served to confirm "the fact that it probably was antibody-mediated cause to this problem".

Dr. Rosenstreich distinguished the clinical picture between ITP in children vis-à-vis adults saying "Most children will have disease that's an abrupt onset and relatively short, limited, that will go away. A high percent of these are followed by some kind or preceded by some type of viral infection. In adults, the course tends to be a little bit more undulate. It comes on more slowly, often lasts much longer and frequently won't go away without treatment." He explained Petitioner's longer onset interval in this case as still fitting a biologically plausible theory in that "the injury table says 30 days following MMR as the cut off, but there are several large studies in the

literature showing that at least the authors of those papers felt that many of the cases of thrombocytopenia following MMR occurred after 30 days, and some as high as six weeks".

One of the articles, and that is Petitioner's Exhibit 12, Moussalem, one of the authors, filed by Petitioner stated it could be up to eight weeks. Petitioner pointed out at some point that this Court has found in another case, Cunningham, that MMR can cause ITP that manifested six to seven weeks postvaccinal. In this case, using the spotting as manifestation of onset, the onset interval is 42 days postvaccinal, five and one half weeks. This onset question becomes tricky because we are measuring from the onset of symptoms, but the real onset is when she started losing platelets in sufficient number to be thrombocytopenic.

Regarding how long it took for an immune response to begin, Dr. Rosenstreich said "That's not so easy to answer. If one were to start from an immunologically naive point where you've never been exposed to something, to get a significant immune response that is detectable clinically might take as long as two weeks. If one has been exposed to something before so you get what's called a secondary response, it may happen in a couple of days. And that's, of course, if you're measuring the immune response. The clinical manifestations of the immune response can take much longer depending on how long it takes to develop a severe response and all of the secondary effects that happen. In this case, we really don't know what was going on from the MMR -- the time that she got the MMR to the time she first started manifesting bleeding, but presumably during that time she was slowing dropping her -- she developed an immune response, developed antiplatelet antibodies, started coating her platelets with antibodies. The platelets began to be phagocytized, or eaten up by the cells in the body, the reticular and epithelial cells. And then, when the platelet counts were, enough of them were destroyed, the counts got low enough that she began to manifest bleeding. And that, of course, takes a significant period of time for all those things to happen."

Dr. Rosenstreich had an interesting theory about the nonbacterial sore throat/headache symptoms in her January 2005 description. "What actually caused the symptoms those days is hard to say. It could have been a typical viral upper respiratory infection, a cold or acute sinusitis from bacteria, or just the manifestations of the immunologic reaction that was going on because as you start to make antibodies and destroy cells, you release a lot of inflammatory chemicals inside the blood and people start getting symptoms, flu-like symptoms." Interestingly, he incorporated into his explanation what could have happened if those symptoms were caused by a virus infection.

"There are some studies that suggest that it may be a two step phenomenon, that it's not just a development of the immune response in response to the vaccine, but that you also need a concurrent viral infection that stimulates the phagocytic cells in the body. So then you have platelets that are coated, and then, when the phagocytic cells

or the macrophages are stimulated, they destroy the platelets. So it's two steps. The vaccine gives you the antibodies, the presumptive infection stimulates the phagocytes, and then you get the platelet destruction." He elaborated that in this scenario the vaccine is still the primary causal factor of the eventual development of ITP.

"Whatever that event was in January, and I'm not sure whether it's bacterial, viral or just immunological, my opinion is that that by itself would not have caused thrombocytopenia. It certainly is accepted that the vaccine by itself will cause enough thrombocytopenia to cause disease. I think that the vaccine is the crux of the whole problem here." Dr. Rosenstreich then discussed medical literature at the cutting edge of medical knowledge that supported this theory. Exhibit 24, the Canadian study. "In our children with thrombocytopenia after vaccination, the majority also had a history of presumed viral infection or exposure to medication as alternate potential causes of thrombocytopenia. The clinical features described in our postimmunization cases are similar to those reported in the literature."

Dr. Rosenstreich thought that this jibed "with the theory that it's really a two part phenomena, that you need something to stimulate the immune system to generate in most cases the antiplatelet antibodies, and then the virus will then tip it over." Of course, I did mention Exhibit 12 earlier. I should probably quote from that since that is rather important. If we go to Exhibit 12, the Moussalem article, I believe it's page 1106 in the right column, 3.4 Immunization. "For 13 out of 40 patients the immunization status was recorded in the chart and five of these patients received immunization two to eight weeks prior to the diagnosis. The immunizations were hepatitis B and measles, mumps, rubella, MMR, and DPT and oral polio."

Going down on that same page under discussion, "The seasonal nature of the disease was previously described, suggesting that infectious or environmental agents may trigger the immune response to produce platelet-reactive autoantibodies four to eight weeks following an infection." Further down, "Recently, British researchers have corroborated a causal association between the MMR vaccine and ITP, an observation first reported by Scandinavian investigators in the 1980s. The component of the MMR vaccine which is responsible for vaccine-associated ITP is still uncertain, but both the measles and rubella components are likely candidates." That goes over to page 1107. Anyway, that was from Exhibit 12.

Now moving on to Exhibit 18, the Mouse study. "Results indicate that the test virus, in addition to inducing a transient thrombocytopenia by itself, can dramatically enhance thrombocytopenia that is triggered concomitantly to the infection by antiplatelet antibodies. This effect of the virus on antiplatelet antibody-induced thrombocytopenia is not caused by new antibody production in response to a viral infection. Because the test virus may enhance phagocytosis, it could be postulated that the virus induces thrombocytopenia by this mechanism because macrophage functions, and especially phagocytosis, are enhanced by a cytokine produced in the

course of the test virus infection. This cytokine was suspected as a mediator of virally-induced enhancement of antiplatelet antibody pathogenicity."

Dr. Rosenstreich explained this article. "This was a study in mice where they basically got around the generation of antibodies by giving the mice the antiplatelet antibodies. They just injected them with the antiplatelet antibodies, and that in itself did not cause profound thrombocytopenia, but if they then gave a subsequent infection with one or more viruses, then they got the severe thrombocytopenia mimicking the human disease. So it was a two step phenomena, the antibodies plus the infection, and they postulated that it was because the infection was stimulating macrophages which are cells in the body that kill platelets, and they postulated that it was through a chemical called interferon that activates the macrophages."

Exhibit 4, New England Journal of Medicine article. "Since ITP has no pathognomonic, that is, tell-tale features, diagnosis requires the exclusion of other causes of thrombocytopenia. Drug-induced thrombocytopenia may account for many of the episodes of acute and transient thrombocytopenia in adults. Thrombocytopenia is increasingly common as the duration of human immunodeficiency virus, HIV, infection lengthens. Other viral infections may cause mild thrombocytopenia. The diagnostic dividing line between ITP and autoimmune diseases with associated thrombocytopenia is often indistinct since many patients with ITP have serum antinuclear antibodies and high titers but do not go on to have clinically apparent systemic lupus erythematosus."

Dr. Rosenstreich pointed out that this reference "indicates that viral thrombocytopenia is relatively mild", whereas Petitioner's thrombocytopenia was "very severe". Dr. Rosenstreich summarized that the MMR vaccine is the central cause and that if the virus was involved, it served only to exacerbate the reaction initiated by the vaccine. "The MMR vaccine generated the antiplatelet immunity, probably antibodies, and gave her thrombocytopenia. I think it's certainly possible that whatever happened in January may have been an exacerbating problem that may have just really made it much more severe, but basically, I think it's the vaccine that essentially gave her the antiplatelet immunity that caused the disease."

He indicated when questioned by Respondent that ITP was much more common in children than in adults and that it's rather rare in adults. Respondent raised whether the lack of a previous reaction to her two previous MMR vaccines was significant, which led to a couple of interesting points in his answer. First, "people can get a subsequent MMR without a problem who had problems before. I think, according to my theory of causation, it was the two incidents together that gave her the disease and that if she just had the MMR and was fortunate enough not to have had an intercurrent infections afterwards, then she was probably okay."

Second, and perhaps more interesting, "Immunologically she was a much different person in 2004 than she was in 1990. 1990 was before she had Hodgkin's. So she

had Hodgkin's lymphoma, she had radiation, she had chemotherapy. It really changed her whole immune system, and evidence of that fact is the fact that when she was tested in September of 2004, even though she had been immunized to MMR, she no longer had immunity to it. So the disease she had, along with the treatment, I think really altered her immune response. So we're talking about a whole different person, in a sense, immunologically which may account for why she had such problems this time where she didn't have them before."

Dr. Rosenstreich further indicated that certain viruses can cause ITP even without a precedent event, like the MMR vaccination, though perhaps not to the severe extent of the course seen in Petitioner. However, he added "you know, rereading this, I'm not even sure anymore that it was a viral illness. My understanding was that these types of infections -- I seem to see lots and lots of people with respiratory infections, sinus infections. I personally have never encountered anyone who has thrombocytopenia, certainly to this degree, from that. I think given the two possibilities between the vaccine, which is known to cause thrombocytopenia, and this kind of intercurrent, rather innocuous infection, I would say that the MMR is more likely to have caused it."

Now, Mr. McHugh suggested to Dr. Rosenstreich that the sore throat in January of 2005 could have been allergy or asthma symptoms since Petitioner lived in the Bronx which, as he put it, "has a tremendous amount of respiratory disease related to immune problems", such that "essentially, an allergy reaction, that this thing in January could have been an allergy". Dr. Rosenstreich concurred, but was not willing to hold it out beyond 50 percent and a feather. Respondent's expert, Dr. James Nachman. On his curriculum vitae: Medical school at Johns Hopkins, pediatric residency in Children's Memorial, pediatric hematology oncology fellowship at Children's Memorial Chicago. He's been on the faculty at the University of Chicago for the last 30 years. Board-certified in both pediatrics and pediatric hematology and oncology, the latter of which is his primary practice area.

As a hematologist, he's actually treated ITP patients. He's treated between 350 and 500 ITP patients over those 30 years, the majority of which were children or young adults up to 25 years old. Even then, only about 10 percent of those patients were between the ages of 18 and 25. So, in a sense, he doesn't treat people who are the age that Petitioner was during the time period at issue since she was over 25 during the entire period relevant in this case. Hematologists like him only call an immunologist in about five percent of ITP cases when they, the hematologists, are convinced that the ITP is part of an autoimmune disease. One could postulate, isn't that part of the problematic history in this case, that the hematologist took our her spleen convinced she had MDS, only to cure the problem after all that with an autoimmune drug?

Dr. Nachman portrayed the majority of ITP cases thusly. "There is certainly no requirement for any kind of a vaccination, I mean, at least in the pediatric and young

adult, and I'd see no difference between young adults and adults. The incidence of ITP is basically the same, is that viral infection in and of itself seems to be a perfectly adequate stimulant for the development of ITP. You certainly don't need anything else to happen to those children or young adults. The vast majority of these cases, as I said, are self-limited cases." Of course, Dr. Nachman does not believe the MMR vaccine had anything to do with Petitioner's ITP, believing the unidentified virus that putatively caused Petitioner's sore throat was the real culprit. He noted that viruses acting alone without the MMR vaccine can cause an ITP.

In childhood, 60 to 80 percent of thrombocytopenia cases are temporally related with a precedent virus with symptoms including URI, sore throat, et cetera. However, he does not elucidate that since most thrombocytopenia cases occur in very young children. Viral infections for the affected age group are about as common as trips to the daycare center. He says, though, that where a reaction to a virus causes molecular mimicry, once the virus is eliminated there is nothing further to incite antibody production, so the antibody levels soon begin to drop and the platelets will repopulate, and thus, the thrombocytopenia will be self-resolving and rather short in duration.

However, in going on about virally-caused ITP, a few seeds of doubt are planted by Dr. Nachman's words themselves. He repeats many times that viruses can cause "short, mild" thrombocytopenia or "acute, mild" thrombocytopenia, the majority of which are "self-limited cases". Well, Petitioner's case was neither short, nor mild, and it certainly was not self-limited. He repeatedly speaks of "children and young adults", that is, his patient base, but a central contention of Petitioner's expert is that ITP in adults, such as is Petitioner, has a longer onset and doesn't resolve on its own. His example of a virus that can cause ITP is measles, a pretty serious virus with strong symptoms. However, the sore throat suffered by Petitioner in January was comparatively mild.

When the Court queried whether the exact pattern of symptoms would be distinguishable as between MMR-related ITP and virus-related ITP, Dr. Nachman responded "Well, so this is a very unusual case of ITP to begin with. I mean, in general, ITP, both in adults and in children, when it presents with severe bleeding generally comes to medical attention very quickly. Here, it is already a month before a platelet count is actually done. It's not done until March. Second of all, what's very unusual about this is that they tried various immunosuppressive strategies, such as WinRho, such as IVIg, all the typical ways to try and raise platelet counts. None of these were effective, and splenectomy didn't improve the platelet count. Now, that's a very unusual situation because if it's an antibody-mediated thrombocytopenia, the spleen is the primary source of removal of those antibody coated platelets. So you can make the argument here that it's hard to figure out exactly what this was, but it's a very atypical case, and, as I said, it may well be that it has absolutely nothing to do with the MMR, nothing to do with a viral infection,

and this is one of these autoimmune phenomena that we see after Hodgkin's Disease."

He later added when that same question was asked of him that he would expect MMR-related ITP to be less severe and self-resolving, and thinks the fact that Petitioner's case was not either of those militates for viral causation. However, this characterization was based on the overwhelming majority of MMR-related ITP cases occurring in very young children, that is, less than two years, for whom ITP almost always resolves on its own and rather quickly, according to Dr. Nachman's own testimony. He later conceded on cross-examination that those medications don't work in about 30 to 40 percent of the patients, and that doesn't mean they have an independent autoimmunity, it just means that particular drug treatment doesn't work on them.

Dr. Nachman differentiated molecular mimicry from truly autoimmune processes. Dr. Nachman distinguished what he saw as "true" autoimmunity, antibody immunity directly against the organs or structures of the organism itself, as contrasted to processes where antibodies are directed against an invading foreign body, but then confusedly attacks the self cells, that is, cells, that is, molecular mimicry. Later, it seemed the real reason for this distinction is that Dr. Nachman appeared to be saying that the Petitioner's Hodgkin's Disease was the cause of her seemingly untreatable ITP. "So certainly we've seen in Hodgkin's Disease patients ITP develop without any vaccination or without any viral infection, so Hodgkin's Disease in and of itself can be associated with autoimmune which is a whole different kettle of fish. So autoimmunity means that the body actually recognizes itself as foreign, and Hodgkin's Disease in and of itself is associated with autoimmunity, not these molecular mimicry approaches."

But if that were the case, why wouldn't the ITP have returned as soon as she stopped treatment? If she truly had autoimmune antibodies specifically directed against her platelets due to her long-term struggle with Hodgkin's, why would a temporary treatment stop that permanently? That's a query. The Court queried how this could be related to the Hodgkin's if it was in remission, to which Dr. Nachman replied "right, but those patients who have Hodgkin's Disease have a higher incidence of later autoimmune phenomena".

This came up again on cross-examination and Dr. Nachman opined on how Hodgkin's in remission could predispose a person to autoimmunity in their own cells based on a study he helped conduct. "I also ran two large national trials of Hodgkin's Disease for children and young adults between zero and 21 years of age, and out of about, oh, 825 young adult patients, we've identified approximately 10 to 15 patients who, after their treatment for Hodgkin's Disease, then developed autoimmune diseases. A couple had lupus, a couple had ITP, but there's clearly a higher incidence of autoimmune phenomena in patients who are cured of Hodgkin's Disease."

That's not to say that Petitioner's Hodgkin's Disease directly caused her ITP. He explained that "In patients who have had Hodgkin's Disease as opposed to certain other kinds of malignancy, there is a higher incidence of autoimmune phenomena noted." He went into greater detail explaining Petitioner's case in particular. He said that even if molecular mimicry was the initial mechanism, whether from the virus, as he argued, or from the vaccine, at some point in the following weeks or couple of months, Petitioner's system would have cleared the foreign body against which the antibodies were being manufactured.

The fact that didn't happen, he stated, meant that something else was going on, such as that after she formed antibodies against the foreign bodies which cross-reacted with her own platelets, at some point she may have begun generating antibodies against the platelets themselves, a true autoimmune process by his classification. Another complicating detail is that she did not respond to the initial drug treatment to autoimmune-type processes. "It's just that she didn't respond to any of the typical drugs that we associate with antibody-mediated immune thrombocytopenia." He explained this latter point saying, "In children, about 80 percent of patients for whatever reason will respond to these various drugs. In adults, it's probably about 50 to 60 percent of the patients will respond to these various drugs."

But those drugs are not immunosuppressant drugs, as was the one that finally cured her. "What they do is they fool the spleen into releasing antibody coated platelets." Therefore, "if this was an autoimmune phenomena, then it's much less likely that these drugs would work because there's an ongoing stimulus to these antibodies to be produced". This means that it probably had become autoimmune by the time the doctors first tried to treat it. For Dr. Nachman, onset of observable symptoms occurs at the peak of the antibodies, which is usually within four weeks, with either a two to four or three to four week onset window. Based on this, he believes the onset here, five to six weeks, would be unlikely which the Court interpreted as "unlikely, but not implausible".

As to onset in this case, Dr. Nachman thought the vaginal bleeding was not necessarily a distinctive onset indicator of ITP. Associated with ITP, yes, but nonspecific. He did think the bruises on her shins could certainly be onset of ITP. He basically concedes ITP onset was the first few days of February, as Petitioner alleged. However, to him, this just makes the onset window perfect for a viral causation from whatever virus was associated with the sore throat, et al., but too long for MMR-related ITP. Dr. Nachman also seems implicitly to concede that the consensus among the medical community on the MMR-ITP onset window is shifting, at least when discussing adult patients.

"What the table says is in that seven to 30 days, and that was the literature in the old days. The new literature would strongly suggest that this does hold in younger patients, but it may not hold at all in older patients, but that's different stuff and we just have to see where these things play out." Following up on that point he

discussed an epidemiology study that found six weeks for ITP onset in some of the cases. The study had too few adult cases to make a conclusion, but there were some child cases that had onset of six weeks. "There were a few outliers between 30 and 42 days" included within the studied cohort.

However, to Dr. Nachman, this case does not fit with the reports of MMR-related thrombocytopenia because "In childhood, the vast majority of cases of ITP with very severe thrombocytopenia, bleeding instances, et cetera, only have a history of a preceding viral infection in the three to four weeks, plus the fact that, as I said, the incidence of temporally-related ITP in older children and adults is much, much, much lower than it is in these 12 to 23 month old patients." So Dr. Nachman's argument as to why the MMR vaccine was unrelated is based on the prevalence of viral infection in one to two year old infants and the relatively lower prevalence in adults. It was left unclear to the Court how that conclusion follows from the explanation given.

He also admits that we don't even know which viruses are most associated with ITP because the ITP is just associated with precedent viral symptoms, but the virus is not typically nailed down. Once a treater is convinced the symptoms are not bacteriological, they just treat it as they would any virus. He added, "What they did in this case is exactly what they usually do. They do a throat culture to rule out strep throat, and then they treat empirically with antibiotics. But this certainly fits with the typical kind of viral story that we hear that precedes ITP." Well, except that it wasn't brief or self-resolving, and it happened to a full-grown adult. Other than that, totally typical.

Turning to discuss MMR-related ITP, Dr. Nachman acknowledged "MMR vaccinations have been associated with ITP. MMR, given generally in early childhood, seems to have a higher incident of ITP in those cases who got the MMR than those who didn't." He expanded on this point saying, "the incidence of cases of ITP temporally related to MMR or other vaccinations is much, much, much, much higher in children one to two years of age than it is in any other group, so although half the MMR immunizations in the United States are given after the age of two years, almost all the cases that are temporally, or however you want to call it, related to MMR occur in patients 12 to 23 months of age. The incidence of MMR-related ITP is clearly much, much lower in older patients and adults than it is in very young children. So, you know, if they get it later or if they get a second, it seems to be a much, much lower incident of things."

Now, one wonders, doesn't this just corroborate Dr. Rosenstreich's reasoning that Petitioner's immune system following her cancer treatments was weakened and naive again? That it had regressed and "forgot" much of the immunologic knowledge it had gained? Queries. When asked to opine on whether the symptoms of sore throat, et al., in January were just an allergic or asthmatic response, Dr. Nachman replied "I think it's much more likely that this was a viral infection than anything else. You

have the typical headache, she has sinus tenderness, she had a red throat that didn't have a bacterial pathogen, at least a strep isolated. We generally would assume that those are viral infections."

In sum, Dr. Nachman's explanation for the ITP is thus: "All you can say in this particular case, it seems to me, is that the MMR is outside of the normal timeframe that we associate with ITP, certainly in the table. The viral infection is clearly within the timeframe we recognize as being a causal factor in ITP, and, in this case, it may well be that it wasn't related to either of those two at all, but may have been an autoimmune phenomena related to her Hodgkin's Disease or treatment of her Hodgkin's Disease." However, among the possible causes, Dr. Nachman thought the virus acting alone was the most plausible explanation, followed by the Hodgkin's and MMR-related as a distant third.

He explained this ordering when asked. "Well, we know that there are certain cases of viral associated ITP both in children and adults that are very severe, that are very prolonged. That's clear. So in children, about 10 to 15 percent of those cases become prolonged and severe. In adults, probably 30 to 35 percent of cases become prolonged and severe. And again, in a majority of those cases, the only inciting feature that we know about or the only associated feature is a viral infection. Autoimmunity in Hodgkin's Disease clearly exists, could explain this type of picture. The reason that MMR is so low down on the list is that it's outside of the normal timeframe and the evidence suggesting that adults have different, have much less vaccine-associated ITP than do young children."

So his ordering is based first on statistical likelihood of all adult ITP cases, then on the long onset window for MMR in this case, then on the statistical unlikelihood that Petitioner suffered MMR-related ITP as an adult because it's such a rare occurrence. But it doesn't seem like he ever took into consideration the effect on Petitioner's system that the cancer treatments, the chemotherapy, radiation, may have caused which had been raised by Dr. Rosenstreich. The only article that Dr. Nachman discussed in support was one he hadn't filed by the time of the hearing and was then filed with Respondent's posthearing brief as Respondent Exhibit C.

"Because only five exposed cases occurred after age two, analyses were limited to children age 12 to 23 months. Seventy-six percent of immune thrombocytopenia purpura cases in children age 12 to 23 were attributable to MMR vaccination. The vaccine causes one case of immune thrombocytopenia purpura per every 40,000 doses. For each child, follow-up time was limited to the 365 days before and after vaccination. It was found that a majority, 80 percent, of the MMR-exposed cases occurred in children age 12 to 23 months. In the older three age groups, there were only five exposed children, three between the ages of two and four, one between the ages of four and 10, and one at over 10 years of age. Our study found a strong association between MMR and the risk of ITP in children 12 to 23 months of age."

For Dr. Nachman, "the importance of this publication is that they confirm that within 12 to 23 month old children there is a higher incidence of MMR-related ITP, but that the number of cases in kids over two years of age, in which half of the MMR immunizations are given, it's not like the other older kids aren't getting them, the number of cases is so small that you would never, ever be able to make a statement, and, in fact, if you relate it to the total number of cases of ITP, there could never be a causal association documented for those patients." On cross-exam, Dr. Nachman conceded that the viruses in the MMR cases are all live viruses and that the measles virus has been associated with ITP. In fact, it was even the exemplar he had used earlier to discuss virally-caused ITP.

Also on cross-examination, Dr. Nachman responded to questions on the differences between Petitioner's case and those that are typical for ITP in children. "Children ITP and adult ITP tend to overlap quite a bit, but it's clear that in adults there is a higher incidence of chronic ITP. There is a lower recognized antecedent in terms of viral infection, and many more cases of 'ITP in adults are eventually shown to be related to autoimmune diseases'. Less cases of adult ITP have a viral antecedent than do the cases in children." "In many cases, the onset of ITP in children is abrupt, whereas in children it can be much slower." He conceded that the age bracket into which fall most of the ITP cases and almost all of the MMR-related ITP cases, that's one to two year olds, that is the age bracket when the predominant share of the population receives their MMR vaccine, and is also an age when most kids are having lots of bouts with viruses.

Now, some somewhat relevant back and forth in the recall of the experts. Some of this is puissant. Dr. Rosenstreich. Dr. Rosenstreich perused the unfiled article brought by Dr. Nachman and said it wasn't really relevant to this case at hand, the case of Barr, because so few cases occurred after age two. They only looked at patients under the age of 18, and their only real observation about ITP patients over the age of two was to say, well, that's really uncommon, and move on. Dr. Rosenstreich also noted that the treating physicians did not at any time believe she suffered from autoimmune ITP as an after effect of the Hodgkin's.

They did consider it as an option, but they concluded it was immune-mediated thrombocytopenia, that is, cross-reaction by molecular mimicry. The treaters did not believe that Petitioner's ITP resolved by itself, but only by treatment of Rituximab, which stunted her immune reactivity. He restated in response to Dr. Nachman that if it was a virus that caused Petitioner's injury by molecular mimicry, it was measles or rubella, which are viruses that affect the body systemically, not the incidental and local rhinovirus in January, which would have been two weak and limited to trigger such an immune response.

Also in response to Dr. Nachman, Dr. Rosenstreich said the comparison to the typical ITP case in infants is misplaced since Petitioner is an adult and an adult with a "fairly abnormal immune system" for whom her cancer treatments had seriously affected her

immune system. For him, it's apples and oranges to compare Petitioner to the typical infant case. Now Dr. Nachman on recall. Dr. Nachman defended the article he provided as being significant to adults in that, "it's clear from this article that there is significantly lower incidence of associated ITP with MMR in older children and young adults up to 18. I see no reason to suspect that anybody 18 to 25, 26, is not in the similar boat, with the caveat, as Dr. Rosenstreich mentioned, that this young lady had Hodgkin's Disease, but an altered immune system and is at risk for more autoimmune phenomena. But it's clear that the only association that they found of MMR with ITP was in this very restricted age group, and that there was a huge difference in the case-associated. I'm only saying case-associated because that's all it is. Again, it's an association in time. There were only five cases out of over 500,000 vaccinations with MMR that were even temporally-associated. A hell of a lot more viral infections out there, just like in children. The vast majority of ITP in children, and up to 30 percent of ITP in adults, is temporally-associated with viral infections, not with immunizations, so, by far, the most likely aetiology of her ITP is the viral infection of January 4 and not the MMR."

Dr. Rosenstreich responded back to Dr. Nachman's point saying, "It's certainly not clear to me why Dr. Nachman is focusing on the one viral infection that is causing this ITP as opposed to the viral infection she got the week before, which was the measles and rubella vaccine, which is a live vaccine and it causes an infection. And, it seems that that since it's associated with the development of immune-mediated thrombocytopenia it is certainly just as likely to have caused the disease as the presumptive infection, which we don't even know if she had a viral infection the week before." He also raised the below preponderance possibility that the sore throat in January could have been a response to the immunization in December and not a viral infection at all.

Dr. Nachman again came back on the same article arguing on the statistical odds, saying, "There is much greater causative impact of viral infections in the medical literature on ITP than there is of MMR, and now, in view of this fact, there is clearly, at least in kids two to 18 years of age, a significantly lower incidence of even MMR-associated cases." On whether Petitioner actually suffered a viral infection in January or was merely experiencing a reaction to the vaccine from weeks earlier, Dr. Nachman pointed out that Petitioner's treating physician recorded that she had, "pharyngeal erythema", redness of the throat, but that doesn't help prove anything because throat redness does not mean viral illness.

That's a description of symptom, not of cause. The Court notes. On the same point, Dr. Nachman added that throat redness is not an associated symptom of receiving the MMR vaccine so far as he is aware. This leads him to believe "she clearly had a viral infection, and I think the preponderance of the evidence would suggest, based on what we know about viral illnesses and ITP, what we know about MMR and ITP, that in this particular case, the preponderance of the evidence is clearly in favor of the

viral illness of January 4 being the inciting feature and no requirement for preceding immunization or any other influence of that immunization."

On final cross-examination, Dr. Nachman agreed that Petitioner received live viruses from the MMR vaccine and that was a certain, not hypothetical or "presumed" viral illness. All right. The Court's analysis. The Court accepts the contents of the medical records as accurate reflections on Petitioner's state when observed. The Court accepts Petitioner's proffered fact witness testimony, including Petitioner's own account of the manifestation of her onset of symptoms on 4 February 2005, beginning with irregular vaginal bleeding, followed by irregular bruising and followed by more severe irregular vaginal bleeding. By representation in open Court, Respondent does not object to this finding.

The Court accepts the credentials and testimony of both experts as methodologically scientific, and although the Court must choose one expert's conclusions over another, the Court respects and thanks both experts for their time and assistance to the Court. Respondent's expert does not object to the proposition that MMR vaccine can cause idiopathic thrombocytopenia purpura, ITP, even though he thinks that it's much more statistically prevalent at the age when most MMR shots are given, at the one to two year range. Due to a lack of large data sets for older patients, he is skeptical of a cognizable association for those patients. Petitioner's expert pointed out, and Respondent's expert conceded, however, that Petitioner is a special case.

Even though an adult, her immune system would have been set back considerably and might not have responded to things as a typical adult's immune system would have due to the effects on her immune system caused by her Hodgkin's Disease and the radiation and chemotherapy used to fight it. For example, even though she had already received two MMR vaccines in her lifetime, Petitioner demonstrated no rubella or measles antibodies in 2004 when starting her job as a nurse. Both experts agree that whether viral-induced or vaccine-induced, molecular mimicry would be the operative mechanism, meaning that when the body produces antibodies against the wild virus or the viruses in the MMR vaccine, those antibodies cross-react to attack self cells. This was distinguished from true autoimmunity whereby the body actually produces antibodies that attack specific self cells.

Respondent's expert pointed out that this latter phenomenon can at times be seen following a bout with Hodgkin's Disease, which Petitioner had fought for a number of years leading up to this set of circumstances. Her cancer went into remission in June 2004, approximately six months before receiving the MMR vaccine. However, as Petitioner's expert pointed out, the treating doctors considered, but ultimately rejected, this explanation of her condition. She was diagnosed with "immune-mediated thrombocytopenia". Petitioner's expert also noted that the drug that effectively treated her condition was one that kills the B lymphocytes that make immune antibodies which would tend to support the antibody-mediated molecular

mimicry conception on the did it prong in this case and makes autoimmunity as sequela from Hodgkin's Disease unlikely herein.

Petitioner's expert raised a plausible theory as an extension to simple molecular mimicry supported by a lab experiment whereby antibodies would attach to platelets following the MMR vaccine but would not be cleared by the spleen or otherwise, at least until a viral infection occurred, prompting the body to produce phagocytic macrophage white blood cells as an immune response. As a sidebar, *phago-* is from *ephagon*, the Greek aorist of the verb to eat. The larger population of those phagocytes quickly engulf many antibody-coated platelets in short order which kills them and takes them out of circulation. This theory explains a role for both the MMR vaccine and the virus as both causative agents in Petitioner's injury.

The viral infection plays a role by triggering the body to make phagocytes which actually kill the platelets, but the platelets are coated in the first place due to a response to the MMR without which the phagocytes would not have attacked the platelets. As long as the MMR vaccine remains a "substantial factor" and a "but for cause", the Court must rule for entitlement to compensation. Petitioner's expert also made what he saw as a critical distinction between ITP in adults versus ITP in children whereas children, who represent the vast majority of ITP cases, typically have abrupt onset. Now, there is an open question contemplated and discussed by the experts who testified in this case: What to make of the pharyngeal erythema, that is, the throat redness, or the pharyngitis, that is, the soreness, inflammation of the throat, that she experienced on and around 6 January 2005.

Respondent's expert believes the virus was an independent cause because of statistical probabilities in reported thrombocytopenia cases. As most cases of that illness are reported in the one to two year old range, antecedent virus is usually reported, and therefore associated, by temporal association. He points out that viruses can, and often do, by themselves cause ITP without a vaccine antecedent, although he admits that such cases are usually mild and self-resolving. Petitioner's expert stipulated in his expert report that the pharyngeal symptoms were virally related, but at the hearing he stated that it was possible, but not probable, that the symptoms could have been allergic in origin or simply a delayed reaction to the vaccine.

The Court found neither of these persuasive, not only because Petitioner's expert did not hold them out as more likely than not, but also because it was January, not exactly allergy season, but it was flu season, and there was no indication that Petitioner had allergies before or after that time. Also, a vaccine reaction two weeks after vaccination seems a bit far fetched perhaps. The Court finds that there was a mild viral infection that caused Petitioner's pharyngeal symptoms on or around 6 January 2005. From the testimony given by the experts and summarized here, the Court finds that although viruses can cause ITP independently, when they do, it is typically abrupt in onset, brief in course, mild in severity and self-resolving.

The Court notes that Petitioner's course shared none of these attributes. Whether one measures onset as four weeks from the virus infection, as Respondent's expert opined, or four, five and a half to six weeks from the vaccination, as Petitioner's expert opined, that is a longer onset, as long as, or longer than, respectively, the outside window of onset, period, for ITP. It was not brief in course. Although it did not last so long that it had to be considered chronic, her condition did last about six months. Perhaps it could be said that as an adult, and one with a troubled immune system, it took her longer to replace the destroyed platelets, but that only corroborates Petitioner's argument contrasting her course from the typical course of ITP in children. It was not mild, but quite severe. This was strongly stated by Petitioner's expert and conceded by Respondent's expert.

It did not self-resolve. The treaters were at a loss on how to treat Petitioner since she was not self-resolving and was not responding to the treatments they imposed, including splenectomy. They believed that the treatment of Rituximab was what worked and cured her. They did not believe that her symptoms self-resolved. All of these points fit much better with Petitioner's expert's theory that adult cases of ITP will follow a slower, but ultimately more severe course, with later onset, slower development, a longer duration and potentially greater severity. Also, the Court found persuasive Petitioner's point that for such a strong systemic immune response, one that produced a plethora of antibodies, the virus that caused only mild, transient pharyngitis seemed much too mild and unlikely to have elicited such a strong response all on its own.

From these points, the Court finds it less likely than not that Petitioner's ITP was solely related to the virus, wholly independent of the MMR vaccine. The Court finds the onset window fits a plausible theory postulated in peer-reviewed literature and in keeping with Petitioner's expert's view that adult ITP is different from ITP in infants, and, in particular, regarding onset window. That article of medical literature contemplated an onset window of eight weeks, that is, Exhibit 12, Moussalem, within which Petitioner's case clearly fits. The problem with onset window is that the epidemiological study proffered by Respondent shows a selection bias in their methods.

The authors needed to define their data set, so they have to draw a line somewhere, and thus, they used a window of up to four weeks. Other studies may have used other windows. This represents a human choice, albeit a knowledgeable, informed one, not a statistical finding. Also, as Petitioner's expert pointed out, since the adult cases of ITP so rare, their onset distribution is more statistically likely to have a narrow distribution with few outliers for variation. This does not mean that cases cannot fall outside of those parameters, and perhaps if they do, they're excluded from the possibility of vaccine causation, which becomes self-perpetuating.

Even Respondent's expert did not think the five and a half to six week onset was implausible, just unlikely, and he conceded that the conventional wisdom regarding

adult onset window is shifting to encompass a longer timeframe, and he even stated that "the onset of ITP in children is abrupt, whereas in adults it can be much slower". Given these considerations, the Court finds that Petitioner's onset of observable symptoms following the MMR vaccination is more likely than not plausible and persuasive to support Petitioner's theory of causation.

Given all of these facts and findings, the Court concludes that the live virus MMR vaccine that Petitioner received on 23 December 2004 could, and did, cause antibody production in Petitioner in response to the vaccine; that measles virus has been associated with causing ITP, the injury complained of; that the antibody response to the MMR vaccine can cross-react to the process known as molecular mimicry to attack self cells, such as platelets, by coating the platelets with antibodies; that Petitioner did suffer from such a reaction as evidenced by her response to the Rituximab drug which inhibits antibody production; that Petitioner did suffer from a relatively mild viral infection on or about 6 January, but that such infection was limited in scope and was not systemic; that viral infection prompts the body to raise the production of phagocyte cells that consume antibody-coated bodies; that the MMR vaccine response did coat Petitioner's platelet cells with antibodies that were then consumed by the phagocytic cells that increased in response to the viral infection; that Petitioner's platelets began to be destroyed soon thereafter, leading to the onset of symptoms on or about 3, 4 and 5 February 2005; that Petitioner's injurious condition was severe and persisted over six months; that the vaccine and the viral infection were concomitant causes, but that the vaccine was the cause that led to the antibody coating of Petitioner's platelets, the primary and necessary step of the disease process. The body's regular array of phagocytes, inter alia, would have attacked the platelets regardless once they were coated with antibodies. The viral infection, if anything, just initiated their destruction more precipitously. Therefore, based on that, the Court finds that the MMR vaccine was a but for cause and substantial factor in Petitioner's injury. The Court thus awards compensation to the Petitioner.

Tr. at 3-49.

III. CONCLUSION

Therefore, in light of the foregoing, the Court **RULES** in favor of entitlement in this matter. The parties are instructed to contact the Court for further proceedings, regarding the issue of damages. The Court may be reached *via* my law clerk, Isaiah Kalinowski, Esq., at 202-357-6351.

IT IS SO ORDERED.

Richard B. Abell
Special Master