

Research Advisory Committee on Gulf War Veterans' Illnesses

Committee Meeting Minutes

March 10, 2021

U.S. Department of Veterans Affairs

Virtual meeting was held due to COVID-19 restrictions

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I hereby certify the following minutes as being an accurate record of what transpired at the March 10, 2021 meeting of the Research Advisory Committee on Gulf War Veterans' Illnesses.



Lawrence Steinman, M.D.
Chair, Research Advisory Committee on Gulf War Veterans' Illnesses

Attendance Record

Members of the Committee present

Dr. Lawrence Steinman, Chair
Dr. James Baraniuk
Mr. Brent Casey, Gulf War Veteran
COL. Richard Gaard, USA, Ret., Gulf War Veteran
Dr. Drew Helmer
Dr. Carey Pope
Ms. Barbara Ward, Vietnam Veteran
Ms. Jane Wasvick
Mr. William Watts, Gulf War Veteran
Dr. James Woody, USN, Ret., Gulf War Veteran

Designated Federal Officer

Dr. Karen Block

Committee Staff

Mr. Stanley Corpus
Ms. Marsha Turner

Data on Participants

128 Webex
47 Webex phone

Invited Speakers

Dr. James Baraniuk
Dr. Fiona Crawford
Dr. Beatrice Golomb
Dr. Dane Cook
Dr. Marco Loggia
Dr. Lisa McAndrew
Dr. Kathleen Holton
Dr. Ashkok Shetty
Dr. Alfred Leung
Dr. Nancy Klimas

Meeting of the Research Advisory Committee on Gulf War Veterans’ Illnesses (RAC-GWVI)

Department of Veterans Affairs

Wednesday, March 10, 2021

11:00am - 3:30pm ET

Webex URL: <https://tinyurl.com/racgwvi-march2021>

Meeting number (access code): 199 853 4496; Meeting password: uiJMAfX*828

1-404-397-1596 USA Toll Number

AGENDA

11:00–11:10	Opening Remarks and VA Gulf War Program Update	Karen Block, PhD Designated Federal Officer
11:10-11:15	Welcome/Overview/Setting the Table	Lawrence Steinman, MD, Chair Res Adv Cmte on GW Veterans’ Illnesses
11:15-12:45	What have we learned? Taking a deeper dive into candidate Gulf War biomarkers.	
11:15-11:25	Cerebrospinal Fluid Proteomics in Gulf War Illness	James Baraniuk, MD Director, Chronic Pain and Fatigue Research Center Georgetown University Medical Center, Washington DC
11:25-11:35	Identification of plasma biomarkers of Gulf War Illness	Fiona Crawford, PhD Research Biologist, Tampa VAMC, FL President and CEO, Roskamp Institute, Sarasota, FL
11:35-11:45	Gulf War Illness and Bioenergetic/Mitochondrial Dysfunction	Beatrice Alexandra Golomb, MD, PhD Professor of Medicine UC San Diego School of Medicine
11:45-11:55	Cardiopulmonary exercise test (CPET)-metrics	Dane Cook, PhD Professor of Kinesiology, Univ of Wisconsin-Madison Director, Exercise Science Lab, Madison VAMC, WI
11:55-12:05	Gut Microbiome in Gulf War Illness, An unstable resistome and targeted therapeutics	Saurabh Chatterjee, MS, PhD Director, Environmental Health and Disease Lab Arnold School of Public Health, Univ of South Carolina
12:05-12:15	In-Vivo Imaging of Neuroinflammation in Gulf War Illness	Marco Loggia, PhD, Assoc Director, Center for Integrative Pain Neuroimaging Harvard Medical School, Boston MA
12:15-12:45	Round Table Discussion with Biomarker Speakers and RAC Committee	
12:45-12:55	Break	
12:55-2:15	What have we learned? Taking a deeper dive into potential Gulf War therapies.	
12:55-1:05	Clinical Trial of Problem-Solving Treatment for GWI	Lisa McAndrew, PhD Director of Research, Fellowship Director War Related Illness and Injury Center, East Orange NJ

1:05-1:15	Low-Glutamate Diet improves Gulf War Illness Symptoms	Kathleen Holton, PhD, MPH Associate Professor, Nutritional Neuroscience Lab American University, Washington DC
1:15-1:25	Low-Dose Curcumin Nanoparticle Therapy	Ashkok Shetty, PhD, Professor/Assoc Director, Institute for Regenerative Medicine, Texas A&M College of Medicine
1:25-1:35	Repetitive Transcranial Magnetic Stimulation	Albert Leung, MD, Professor, Anesthesiology and Pain Medicine, UC San Diego Director, Ctr for Pain and Headache Research, San Diego VA
1:35-1:45	Optimizing Dosage of Etanercept and Mifepristone for Homeostatic “Reboot”	Nancy Klimas, MD Director, GWI and ME/CFS Research Ctr and Clinic, Miami VA Director, Institute for Neuro Immune Medicine, Nova Southeastern Univ FL
1:45-2:15	Round Table Discussion with Therapeutic Speakers and RAC Committee	
2:15-2:45	Committee Discussion	
2:45-3:15	Public Comment	
3:15-3:30	Summary/Closing Comments/Business	Larry Steinman, MD
3:30	Adjourn	

Meeting of the Research Advisory Committee on Gulf War Veterans' Illnesses (RAC-GWVI)
U.S. Department of Veterans Affairs
Wednesday March 10, 2021
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Opening Meeting Announcements and ORD Gulf War Research Program Updates

Dr. Karen Block, Designated Federal Officer, RAC-GWVI and VA ORD Director of Gulf War Research

Introduced by Dr. Steinman, RAC-GWVI Chair, Dr. Block opened the meeting as a virtual public meeting due to the COVID-19 pandemic, CDC guidelines of social distancing and VA travel restrictions. She noted a quorum for the committee was present and offered a warm welcome to all RAC-GWVI committee members and thanked the administrative staff. She noted there would be a public comment session and questions can be submitted by chat, or email to Dr. Block or RAC-GWVI. She noted the meeting was being recorded and written proceedings would be made public, then called the meeting to order.

Dr. Block, as Director of the Office of Research and Development Gulf War Research Program in Washington, DC, presented VA Gulf War Research Program updates. 1) An article just put in press by Dr. Erin Dursa and her colleagues from Post Deployment Health *Bullman et al. Annals of Epidemiology, 2021* titled, "Cause-specific mortality risks among US Veterans: 25 years after their service in the 1990-1991 Gulf War" reported no increased risk of disease-specific mortality among deployed Veterans compared to nondeployed, and both groups were less than that of the US population. Female Veterans, both deployed and non-deployed, had increased risk of suicide compared to US population females. 2) The program funding portfolio showed a decreased number of Award applications submitted in the last few cycles, however, approved funding was balanced across model systems: biomarkers, mechanisms, and clinical trials. Currently active research projects and clinical trials in these areas were presented. 3) The 2020 GWI State of the Science (SOTS) Conference details were presented. Topic areas were treatments, epidemiology, diagnostic markers, and pathology. Attendance Day 1 was >650 participants, Day 2 >400. Participants and attendees were asked to complete a feedback survey to inform future meetings. She highlighted the call for papers for a special issue in *Life Sciences*, which had already received more than 60 original submitted manuscripts that would inform the field. 4) Dr. Block noted the last RAC-GWVI meeting reviewed research on diagnostics and treatments for Gulf War Illness presented at the 2020 GWI State of the Science Conference and this meeting would highlight a select few of those promising treatments and biomarkers, and presented a brief summary of today's presentations.

RAC-GWVI Welcome and Introductions

Lawrence Steinman, MD, Chair, Research Advisory Committee on Gulf War Veterans' Illnesses

Dr. Steinman stated the meeting today would be divided into two areas. He defined biomarkers, to diagnose and categorize Gulf War Illness, and which may be used to be predictive. He reminded the speakers of their time limit to allow sufficient time for Q&A from the Committee and noted the public comment session will allow time for the listening public to offer their comments and questions. Dr. Steinman described the subcommittee Veteran Engagement Sessions, traveling the US to hear from Veterans clearly hurting from Gulf War illness. He stated the mission of the committee is to advise the VA on how we can best do research, which means figuring out what the disease is, or the diseases are, and treating them. He then prompted committee members to introduce themselves. After committee introductions, he introduced the first speaker.

Session 1**Biomarker presentations and roundtable discussion with the Committee**

Selected speakers with promising diagnostic biomarkers from the 2020 GWI State of the Science Conference presented their research and were asked to focus on the following questions:

1. Would you characterize your biomarker as distinguishing between Gulf War Illness and no Gulf War Illness or is it more specific to a symptom of Gulf War Illness?
2. How does the marker inform us of the nature of GWI, degenerative, inflammatory, metabolic?
3. Is the biomarker related to a potential therapy?
4. Can the biomarker be used to assess response to a therapy, making it a so-called dynamic/mechanistic biomarker?

Presenters:

Dr. James Baraniuk, Cerebrospinal Fluid Proteomics in Gulf War Illness:

Dr. Fiona Crawford: Identification of plasma biomarkers of Gulf War Illness.

Dr. Beatrice Alexandra Golomb:

Dr. Dane Cook: Cardiopulmonary exercise test (CPET)-metrics

Dr. Saurabh Chatterjee: Gut Microbiome in Gulf War Illness, An unstable resistome and targeted therapeutics

Dr. Marco Loggia: In-Vivo Imaging of Neuroinflammation in Gulf War Illness

Discussion with committee and presenters:

- **Mitochondria and global dysfunction/dysregulation:** Synergy was noted between the mitochondria presentations. Mitochondria, the energy of the body, is widespread including in the brain and in markers that determine inflammation. This global dysfunction may be narrowed down by integrating the research.
 - **Link-based merit funding:** Dr. Block said she has funding to include up to three PIs/proposals to synergize this information into meaningful, real-world impact. Investigators were encouraged to contact her.
 - **Veterans care about treatment and care, not so much how it happened.** Dr. Crawford stated there's a need to help today's patient population. Good clinical workups are needed to make sense of this global disruption.
- **Prioritizing translation of findings into clinical practice:** Dr. Helmer noted the challenges of not having these biomarkers available as part of the clinical practice evaluation. Was there something ready for clinicians to use, or how quickly could they be available.
 - **Cardiopulmonary exercise testing:** Per Dr. Cook, this is already part of the WRIISC evaluation to not only rule out other illnesses but provide interesting clinical data to help Veterans know how to approach lifestyle choices.
 - **Extreme sensitivity in women with GWI:** Dr. Baraniuk reported his published research found extreme tenderness and sensitivity in women with GWI. This test, also used for fibromyalgia, would be a good clinical tool VA wide and should be known by all women with GWI (less useful for men).
 - **Lipid panel:** Dr. Baraniuk noted triglyceride levels and Dr. Crawford noted lipid dysfunction stating good clinical data on basic lipid measures need to be recorded in human research participants. Drs. Steinman and Helmer noted HDL, LDL and triglycerides are universally performed in the standard lipid panel under guidelines for cardiovascular risk. Dr. Helmer will look into documentation within the VA structured system.

- MRI vs PET imaging: Dr. Pope asked Dr. Loggia about his work with T2 flair PET imaging vs MRI. Dr. Loggia reported MRI data is simultaneously collected in his studies using a PET-MR scanner, and they are also looking at other more clinically applicable measures to target the inflammatory mechanism.
- Translator Protein (TSPO) agonists: Dr. Pope recalled that TSPO was previously called peripheral benzodiazepine receptor and asked if diazepam fits into this pharmacologically. Dr. Loggia replied they have potential for pharmacological doses, showing some promise in neurodegenerative disorders, but this has not been looked at in GWI.
- Lipids and energy metabolism, Dr. Baraniuk asked if altered lipid metabolism affects the respiratory results in VO₂ testing or the muscle responses for phosphocreatine testing. Dr. Cook replied that the relationship between oxygen consumption and carbon dioxide production, which is a respiratory quotient, gives a rough rationale to look at anaerobic and aerobic metabolism, fat, protein, and sugar for energy, and we do not see abnormalities in that particular outcome.

Session 2

Therapeutic presentations and roundtable discussion with the Committee

Selected speakers with promising treatments from the 2020 GWI State of the Science Conference presented their research and were asked to focus on the following questions:

1. Is your treatment strategy A) Repurposing an FDA approved drug, B) a non-FDA approved drug, or C) an over the counter nutraceutical?
2. If it is an FDA-approved drug, do you know if it is on the VA Pharmacy Formulary?
3. What do you feel is an appropriate timeline to establish safety and efficacy, before taking it to a trial for registration as an FDA-approved treatment?
4. How are participants informed of progress in the study, type of communication, and frequency?
5. What regulatory hurdles might you face, and have you discussed the trial with regulatory agency and filed an IND with the FDA?

Presenters:

Dr. Lisa McAndrew, Clinical Trial of Problem-Solving Treatment for GWI

Dr. Kathleen Holton, Low-Glutamate Diet improves Gulf War Illness Symptoms

Dr. Ashkok Shetty, Low-Dose Curcumin Nanoparticle

Dr. Albert Leung, Repetitive Transcranial Magnetic Stimulation

Dr. Nancy Klimas, Optimizing Dosage of Etanercept and Mifepristone for Homeostatic “Reboot”

Discussion with committee and presenters:

- Treatments ready for implementation: Dr. Helmer noted treatments ready for implementation in the VHA system:
 - Problem-Solving Treatment for GWI: Dr. McAndrew stated there is likely a provider at every VA trained in the fundamentals of problem-solving treatment, and the fundamentals are the same whether delivered for GWI or other conditions. The first clinical, implementation clinical trial for Veterans with GWI is already underway, comparing care delivered in specialty care to care delivered in primary care.
 - Low-glutamate diet: Dr. Holton’s study showed reducing sources of free glutamates had effects on excitotoxicity, oxidative stress and neuroinflammation with no detrimental effects. Total symptom burden was significantly reduced with Veterans reporting profound improvement. No

FDA approval is needed, and it could roll out via VA dieticians. Dr. Steinman clarified that this differs from a gluten-free diet.

- Treatments that are close or show promise:

- Low-dose curcumin nanoparticle therapy: Dr. Shetty's research showed improved cognitive and mood function, diminished oxidative stress and inflammation, improved mitochondrial function, and enhanced hippocampal neurogenesis in a rat model noting it has promise for treating GWI in Veterans.
- Repetitive Transcranial Magnetic Stimulation (rTMS): Dr. Leung described a non-invasive brain stimulation modality to deal with pain and headaches. Reported it also improves sleep, cognition and fatigue.
- Optimizing Dosage of Etanercept and Mifepristone for Homeostatic "Reboot": Dr. Klimas' research maps the whole regulatory pathway using a computational modeling system. This study uses short exposure Etanercept to reduce neuroinflammation long enough to normalize the HPA regulatory pathway. These drugs are already FDA approved and available in the VA formulary. She has an infrastructure grant to support phase one and two trials so this trial will immediately move into phase 2, and she has a registry with 3500 Veterans giving permission to be recontacted for participation in future studies, informing them with newsletters, social media and conferences and giving updates on the research.

Dr. Steinman noted this research may also be very instructive for those with multiple sclerosis.

- Other discussion points:

- Low glutamate diet and etanercept combination: Dr. Woody noted TNF drives glutamate production with the excitatory opportunities in the brain. If treating with etanercept and lowering TNF, it would be interesting to see if glutamate goes down. A combination of low diet and etanercept might be considered.
- Ketamine combination: Dr. Steinman noted another combination to explore may be ketamine with the anti-TNF, as ketamine affects glutamate excitatory toxicity.
- Butyrate: Per Dr. Holton, low-butyrate production could be caused, for example, by dysfunction in the GI tract, where you don't have good bacteria producing butyrate. Per Dr. Chatterjee, butyrogenic bacteria are very, very strongly decreased in GWI Veterans. Because of the circulatory levels of butyrate increasing because of either supplementation or use of other probiotic or butyrogenic bacteria, it can cross the blood-brain barrier and also affect neuroinflammation. Butyrate is considered highly effective in GWI, so phase II trials are moving forward.
- Vitamin D: Measured and available at the VA, but also inexpensive to buy elsewhere. Also available through cod liver oil and diet (good fish intake). Per Dr. Steinman, people of color should pay more attention to this and Dr. Holton stated if obese or living in a place with less sun, more may be needed. It was suggested they increase the VA formulary dosage from 4000 to at least 5000.

Session 3

Committee Discussion

- GWI and COVID vaccine: Jane Wasvick raised a question from the chat asking if those with GWI should get a COVID vaccine. Response per Dr. Steinman: Every adult should get the COVID vaccine as soon as available unless there's an issue discussed with your doctor.

- Veteran Engagement Session: Bill Watts reported issues raised by Veterans including provider education on GWI, GW Veterans feeling left out, no caregiver support (but noted caregiver stipends will now be available next year), Veterans with cancer being unable to participate in research, and getting a diagnostic code for GWI as a priority. Dr. Steinman noted the RAC-GWVI plans to implement evening sessions and noted this session is being recorded for those who cannot attend. Jane Wasvick brought up the request for a clinician liaison to help create a connection between clinical care and research.
- Translation to implementation: Per Dr. Helmer, RAC creates a set of recommendations to share with the Secretary, which should include a recommendation that explicitly calls for a focus on translating these findings and prioritizing the interventions and diagnostic tests that are ready for clinical practice. A strategy for implementation is needed.
 - Discussion by the committee included the strength of evidence and validation needed to put research into practice, the importance of monitoring adverse events even for low risk interventions with easy roll-out into the VA, and the minimum standard of having two independent pivotal trials that show benefit. It was noted that ***the RAC-GWVI can advocate for promising research by having a mechanism for fast tracking trials within the VA system so that a second independent trial can be performed*** (e.g. Dr. Holton's research).
 - Per Dr. Helmer: ***There are hybrid effectiveness and implementation designs that can be used to make these interventions more accessible to more people more quickly.*** He agrees you need to establish efficacy first before moving to an effectiveness survey.
- Positive feedback: Dr. Gaard gave a shout out to the Tomah VA Medical Center for getting the word out about vaccinations. He also noted the collaboration of speakers on future research would be very positive. He will look into the Vitamin D issue with the pharmacy chief at his VAMC.
- Increasing VA funded research: Dr. Baraniuk, noting the number of VA funded Awards for Gulf War research has decreased over the last 2 years: Because these meetings show there are exciting opportunities and collaborations waiting for VA investigators, he asked Dr. Block about advertising these more widely through the VA. Dr. Block agreed and responded that she would add more to the RFAs, and is also working on building the workforce (e.g. VA researchers in the field).

Public Comment

Moderated by Veteran Bill Watts, Committee Member

Anthony H: First, a couple of compliments. Mr. Chair, I'd like to compliment you on having this session where you're actually having the RAC hear research presentations.

My name again is Anthony Hardy. I'm the national chair and director of Veterans for Common Sense. We're also the legacy organization with Gulf War Veteran leaders from the original Gulf War Veterans organization back in the 1990s and 2000s to help to -- that got the legislation passed in 1998 that among other things gave the authority for this committee to be created.

And then I also served on this committee for eight years. But I want to compliment you on having actual research presentations again. That was a critically important focus of the RAC for many years. It was then lost, and, hopefully, it's restored, and this won't be a one-time situation.

I also want to compliment Dr. Karen Block, Karen, for her role in co-leading the first ever Gulf War Illness State of the Science conference along with Dr. Kristy Lidie from over at the Department of Defense Congressionally Directed Medical Research Program, the treatment-focused Gulf War Illness research program that funds the vast majority of the federal government's Gulf War Illness research. Karen was

instrumental in helping to make that conference happen and getting VA approvals and bringing resources to bear and more than 100 presenters, including virtual poster sessions, so just fantastic. And then I want to mention very briefly, I didn't hear it come up when there was a discussion about the low-glutamate diet, but the GWIRP as we call it, the Gulf War Illness Research Program over at DoD, funded a low-FODMAP diet. And for those that aren't familiar, FODMAPs are essentially sugars more complex than glucose, and FODMAP stands for Fermentable Oligosaccharides, Disaccharides, Monosaccharides, And Polyols. And it's been found in a number of research studies to be incredibly effective in treating irritable bowel syndrome, particularly IBSD with diarrhea. As an N of 1, I had a wonderful clinician who referred me to a phenomenal VA nutritionist, was very excited that I knew about this, was interested, and I was probably her star patient. It was life-changing for my IBSD, and I'm very anxious to see what the ultimate results are on the low-FODMAP treatment trial in Gulf War Veterans. There's also a really interesting tie-in between what happens when you're having FODMAPs and you can't digest them, as if you had lactose intolerance, but you're intolerant to many of these, what happens to the butyrate in your gut, and then what happens, leaky gut thereafter and so on. And so I found that not only were my IBSD symptoms significantly relieved, at least it gave me a sense of control over them to be able to avoid the highest FODMAP foods, things like soy and high-fructose corn syrup that hides in our refrigerator doors, but others. It also helped with cognition. So thanks for all that.

From Webex chat: Is there any research looking into Gulf War vets and multiple chemical sensitivity syndrome?

Dr. Golomb: This is really a partly tangential issue, but we've looked at drug and chemical adverse effects and predictors of those and have a paper that we'll be presenting those findings. We already published one specifically looking at vaccine adverse effect predictors and interestingly found that radiation exposure was the strongest predictor in Gulf War Veterans.

We've looked at what is the biggest predictor of radiation adverse effects and actually carbon monoxide, which there's literature support for for that particular issue. But pesticides, fuel solvents, et cetera, were predictors for overall adverse effects, which were significantly correlated with self-rated number of exposures to which people had adverse effects.

We also recently looked at genetic data. There's Japanese data showing that adverse genetic variance in superoxide dismutase 2, which is the main mitochondrial antioxidant, was tied to multiple chemical sensitivity. And we found that if you controlled for the mitochondrial haplogroup, the ancestral variant of mitochondrial, you know, DNA that was most tied to Gulf War Illness severity, then even in a small sample of superoxide dismutase 2 adverse variance that confers impaired mitochondrial antioxidant function, it was a significant predictor of multiple chemical sensitivity in Gulf War Veterans.

Denise N: Okay. I want to ask the researchers to be very clear and put out articles, whatever, to encourage Gulf War Veterans to get their COVID vaccine. I know a couple of you all put out news articles that got some pushback from the vets themselves. But you need to explain why in very certain terms to get it. Like I said, I will take a picture of that comment that was a slide and share it with others from that Facebook page. But they're very resistant as lots also had before vaccine resistance after anthrax in the Gulf War and the PB pills.

So this group of vets needs special attention. You need to acknowledge their concern but tell them why it's so important. And I want to recommend that you consider VA setting up two things. A

recommendation from this committee could help. Putting clinical specialty centers like Parkinson's disease in the VA, certain specialty centers that you go to for Parkinson's -- and I know there's other specialty centers. And I think it's high time after 30 years that we have some specialty centers besides our research and besides the War-Related Illness Center to deal with Gulf War Illness problems, okay?

So that's one recommendation. Second one is that we need to make sure that our million person -- don't say man anymore -- million person blood that the VA's drawn is identified if they're Operation Desert Storm, OIF, whatever. And we need to go back and look at the genetics because we're getting more and more complaints like the children, the grown adults now having health problems that started early on that these Veteran parents have had to deal with all their lives, and they need answers. So we need to branch out and have a different research group for that because we've got to handle the vets because the vets go to VA. The offspring are not. So we need to somehow make a plan for that, okay? If we're going to move into the 2021 year and beyond, we can do a better job if we put our minds to it. I want to tell you all -- Sean Scott out of Tampa that put together a conference, and Jim from Oklahoma that set up Desert Storm Foundation, and Doug Rokke, three people that died within a couple of weeks that were our Gulf War Veterans. Two of them I know for sure were COVID. One died at home, and I believe it was COVID-related. So it is imperative we get the word out on the vaccine. Thank you.

Jim B.: This is Jim Bunker with the National Gulf War Resource Center, Veterans Information Network. First, there was a lot of discussion on vitamin D3. Vitamin D3 is a formulary with the VA, so Veterans can get that from their doctors. That's where I get mine from for the last 20 years.

A question I wanted to ask everybody, because I get asked this a lot by people that I work with to help with their claims and answer lots of questions all day long on the phone, is if you see as researchers higher rates of thyroid problems, not necessarily cancers, but problems with the thyroid within the Gulf War community and/or also OIF or OEF Veterans too. Thank you.

Bill W: My thyroid is 100 percent shot as well, so thank you.

Jim B.: Mine's been shot since mid '96.

Bill W.: Just so everybody knows, Dr. Klimas did an excellent video on the COVID shot. And I'll try to get that to you, Denise.

Denise N.: Thank you. It's heartbreaking when we have vets that died of it and trying to get the others motivated to get their shots. I feel the conflict myself. I had not gotten a flu vaccine for years after coming home. I finally broke down and said let me look at this seriously with all my research and medical nursing background.

So I have already gotten my COVID shot. I made sure that my husband got his. One of the things I want to mention, if anybody's directly connected with the Defense Department, we have the VA now passing a law. It's in process from the VA committees, House and Senate VA committees. Any Veteran can go into a VA and not have to be in one of the priority groups or into the VA, and they will vaccinate them.

The other thing is I know in San Antonio the military bases are. Listen, this is personal to me. My husband served 25 years, retired lieutenant colonel, through active, reserve, and then 25 years with the FAA, okay? We could have gone down to Peterson Air Force Base or Fort Carson if the military, who are not mandating the shots yet for active duty -- if they have the shots available and if they could take the retirees in, it would help the full government response to COVID.

The more shots we can give from VA or the military as Veterans or retirees, the better it is for other civilians to get in line and get their shots. And I've been yelling and screaming at the top of my lungs

about that. My husband almost had -- well, he did -- a widow-maker and a triple bypass, and he's two years older than me. So I tried to get him in at the VA. Despite everything, you know -- anyway, we got it done.

Both of us went elsewhere. But I want to get this across. This is important. We're losing vets to COVID.

Julie H.: Can we get data from VA how many ODS Veterans hospitalized or died from COVID?

is there any research looking into Gulf War vets and immune disorders such as hypogammaglobulinemia?

Dr. Helmer: With regard to the COVID question, so the VA actually has a great data resource available for research and operations purposes related to COVID.

And, of course, the challenge is that we don't have good markers of ODS service, Operation Desert Storm or Desert Shield service, in the VA clinical record. So the best we could probably do is get an approximation of the number of Gulf War Veterans hospitalized with COVID in the VA system or who died of COVID, so we can probably get an estimate but not a really good estimate of what that is.

With regard to hypogammaglobulinemia, it's actually a fairly rare condition. And I am not aware of anybody who looked closely at the overlap between Gulf War service and hypogammaglobulinemia. As you've heard, there are many people looking at immune dysfunction more generally in Veterans with Gulf War Illness. But I'm not aware of anything that really pinpoints to that specific diagnosis.

Dr. Steinman: There's one thing to add. None of these vaccines involve a live virus, and therefore, usually people with hypogammaglobulinemia, the one thing that you want to worry about is a live virus, something like Zostavax. But, if it's not a full virus, a hypogammaglobulinemic person, if that's just what it is, should not be at any greater risk than the rest of us.

Dr. Block: Also, if I can add to that COVID question, we have a Health Services Research and Development Service at ORD, and they have a CORC study. This CORC study is COVID-19 Observational Research Collaboratory. And, basically, they have all the COVID vets who had COVID, what their symptoms were to get in the hospital, what was their 30-day outcome of that, and did it result in mortality, if they had to be put on a ventilator. They have all this information.

Anyway, we're collaborating with them to look at Gulf War I Veteran data and COVID statistics. We're not going to get into the long-haulers at this time. We're just going to look at the hospitalization rates, the symptoms, the 30-day outcome, and mortality. So that should be coming.

Anthony H.: This is Anthony with just a quick follow-up question for Drew (Helmer).

Have you seen any B-cell deficiency in Gulf War Veterans, or are any of the other panelists aware of that? And B-cell meaning B like boy.

Dr. Helmer: Yeah. Anthony, similar to my question about the biomarkers presentation, you know, we only check B-cell function or look for B-cell issues when we suspect that there's a problem, and so people have not looked at B-cells from a clinical perspective with regard to Gulf War Illness on a widespread scale, and so I don't have any kind of clinical information about that. You know, once again, I'll defer to others about whether they've examined that as part of their research projects.

Dr. Chatterjee: I can actually chip in here for a little comment of some data that we have from our laboratory. This is Saurabh Chatterjee from the University of South Carolina.

So we actually did some preliminary studies in mouse models of Gulf War Illness where we injected spiked protein, that is, the protein which is responsible for the entry of the virus inside the cell, and there

we found that after six days in Gulf War Illness model mouse, the levels of IgG are nowhere when compared to non-Gulf War Illness mouse models. So I do not know of any clinical data, but that is itself very significant.

Bill W.: Something I would like to ask of the upper echelon of the RAC is, as Denise and Anthony and probably a few others can tell you, it seems like lately Facebook is starting to shut down a lot of the Veteran groups for some reason, and it's getting harder and harder for us to get the word out. So I would like to see, is it possible that we start going to the Public Affairs of all the hospitals and have them start posting our RAC meetings on their prompter screens around the hospitals?

Dr. Block: Stan, are you on the line?

Mr. Corpus: Yeah, I'm here. I mean, one of the things is, of course, filtering it down from the PA office down all the way past -- down to the CBOCs and so forth and VSO offices. I think that's the big challenge right now.

Logistically, some of these hospitals are not set. But we've got some ideas, and we've already been working with VISN-21 especially for this meeting, and we've also got -- our information is being published on the VA website. I believe that's the VA Experience website. And they posted that. I think I sent a link about that last week.

So that's a good thing. Slowly but surely we've got to look at it maybe like as a startup company, but we'll start filtering the word out. We're going to touch bases with the VACO multimedia and try to get some information from them how we can get the word out, especially to those who might not have Internet.

Denise N.: I have one quick question, and that's on COVID. There was some discussion, I think, before the new session of Congress came in with the VA, House and Senate, about COVID impact if you die after going in, and you had COVID, how that would impact your rating, and if your spouse would get DIC afterwards. And I don't think that's been finished yet. But that's really important for some of our widows to know. If their husbands have died and they were Operation Desert Storm and had, you know, a rating for whatever, chronic fatigue, fibro, you know, the irritable bowel, PTSD, and if they got COVID and died, is that going to be the cause of death that causes them not to get a DIC for their spouse?

Dr. Steinman: I think it would be at the edge, if not outside. It's something absolutely vital, but we've been admonished at least once to stay in our lane. But it doesn't mean we can't try to help outside of this committee. But I don't have a specific answer.

Bill W.: Dr. Steinman or Stan, if either one of you have an agenda in front of you, I don't have mine, how much longer do we have for public comment?

Dr. Steinman: Well, public comment was going to go to 3:15. It's 12 past the hour. Unless there's any burning question, we can conclude the public session. I just don't want to cut anyone off if somebody has anything to ask.

And remember, you can always get hold of us through other channels, emails. And Karen gave her email. We're responsive. We don't always like the criticism, but we respond. And the criticism is almost always appropriate, but we don't always have the answers.

Closing Remarks

Lawrence Steinman, MD, Chair, Research Advisory Committee on Gulf War Veterans' Illnesses

Dr. Steinman announced the next few meetings.

- Veteran Engagement Session, which will be virtual, is May 19, 2021.
- Full committee meeting scheduled August 4, 2021. In-person vs virtual still to be determine based on CDC and VA restrictions.

He stated today's session was highly productive, we all learned a lot and people were able to express themselves. He stated the committee is working hard to try to help understand Gulf War Illness and to engage with the Veterans on how we might assist on the research side. He thanked everyone for their participation.

Meeting adjourned.

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