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Chair

Mr. Neil Ellis

Standing Committee on Veterans Affairs

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● (1535)

[*English*]

The Chair (Mr. Neil Ellis (Bay of Quinte, Lib.)): Pursuant to Standing Order 108(2), a study of the effects of mefloquine use among Canadian veterans today, we have Dr. Ritchie as an individual; and from The Quinism Foundation, Dr. Nevin.

We'll start with Dr. Ritchie. The floor is yours.

Dr. Elspeth Ritchie (As an Individual): Good afternoon, Chairman and members of the committee. It is a real pleasure to be here today.

I would like to share the perspective of a military psychiatrist, which is what I was for many years. I have been around mefloquine, and consistently been uninformed as to the toxic effects of mefloquine.

Normally, when I give a presentation, I start with World War I and roll up through World War II, Korea and Vietnam. In the interest of time I will truncate that today and I will start with Somalia, but all wars produce both physical and psychological reactions to a war, and we often don't know which it is. You remember shell shock from World War I, or the Gulf War syndrome more recently, with which we've gone round and round.

The short version of the presentation is that many things we have seen over the last 30 years that we thought were psychological we can now attribute, partially or completely, to the effects of mefloquine. With regard to Somalia, I deployed there early in Operation Restore Hope, as an army psychiatrist, a young major. I deployed with the 528th combat stress control team out of Fort Bragg. Our purpose was to diagnose, treat and evaluate combat stress control reactions.

We knew very little about mefloquine then. The day I got into the country a young solider was evacuated, acutely psychotic, we believe secondary to the effects of mefloquine.

I worked mainly with the American forces, although I was asked to evaluate Corporal Matchee after his suicide attempt. He was in a coma so I could not evaluate him.

During our time there we spent a lot of time discussing the dangers of malaria, and the neuropsychiatric short-term effects of mefloquine became apparent to us, but we did not think about the long-term effects at that time.

Fast-forward, we returned home. We were using less mefloquine. The murders, murder-suicides at Fort Bragg happened in 2002, shortly after we had gone into Afghanistan. I was part of a team asked to look at mefloquine; could this be related? At that time, again we didn't know very much about mefloquine. Various studies said one in 4,000, one in 10,000, one in 18,000 people may have neuropsychiatric effects from mefloquine. We were just told or knew about the short-term effects. We studied the indexed cases—you may or may not remember—Staff Sergeant Nieves, who killed his wife and then himself; Master Sergeant Wright, who killed his wife, hanged himself in a jail cell six months later, apparently hallucinating; and Staff Sergeant Brandon Floyd, who had been off mefloquine for six months when he killed his wife and then himself.

We looked at a lot of factors, but again, back then we didn't think about long-term effects of mefloquine. When you stop most medications, the effects go away. We found a combination of things responsible for the murder-suicides, which included marital fidelity and rapid operations tempo, but I got interested in mefloquine as a result of both those experiences. Back in 2004 I presented a paper on the neuropsychiatric effects of mefloquine.

Moving quickly through time, I retired from the army in 2010. Staff Sergeant Bales committed the atrocities in early 2012, and I immediately thought of mefloquine. During that intervening period the U.S. Army's use of mefloquine had declined precipitously, although it was still being used. Another factor was that headquarters repeatedly said we had to screen and document the screening of soldiers to make sure they didn't have mental illness or traumatic brain injury. Over and over again our systems found problems with the way we screened and documented soldiers for mental illness, traumatic brain injury, anxiety or suicide. Of course, during that time period from about 2004 to 2010, our suicide rate in the army doubled.

● (1540)

After my retirement, my most recent work has been with the VA as a psychiatrist. I cannot speak for the VA here, but I will say that we started to look through the risks at the War Related Illness and Injury Study Center. We looked at soldiers and other veterans in the U.S. who we thought may have suffered long-term effects from mefloquine. We found a variety of diagnoses. We found very seldom a clear picture, but certainly a lot of veterans who ascribed their symptoms to mefloquine.

Although I've been retired from the army since 2010, I've been very active in veterans' and military issues. I have followed the mefloquine controversy closely. Just last week one of my newest books came out, entitled *Veteran Psychiatry in the US*. We cover a whole range of issues for veterans, including toxic exposures. My colleague Dr. Nevin has a chapter on the effects of mefloquine.

I would like to leave you with a couple of thoughts. One is that, again, every war has produced physical and psychological reactions that we don't understand at the time. I think the last 20...or going back to Somalia or longer. After a period of time, there are both physical and psychological reactions. At the conference we just had on mefloquine, my colleague Dr. Kudler, who is a world-renowned expert in post-traumatic stress disorder, talked about how 40 or 45 years ago, nobody believed in PTSD, post-traumatic stress disorder. Later on, we had people who thought traumatic brain injury wasn't a factor. Over and over again, you hear case reports or discussions that gradually lead to recognition.

This question about the long-term effects is something that has puzzled me. Back when I was in Somalia or at Fort Bragg, and we were trying to figure out why Sergeant Floyd would have murdered his wife and then himself, being apparently very paranoid and psychotic at the time, we didn't have a mechanism to understand that. Now we have more ideas about how the drug may affect the brain stem and other parts of the brain to cause both neurologic and psychological problems.

I would like to close with an example that's very relevant to me in my current sitting. I'm chair of psychiatry at a hospital in Washington, D.C. I'm not speaking on their behalf, so I won't go into that in detail. As a psychiatrist, however, I work with a lot of patients who have been on antipsychotics in the past or who are on antipsychotics now. You're familiar with these medications—thorazine, haloperidol or haldol, risperdal, quetiapine and olanzapine; there's a range of them. We know they cause such short-term effects as dystonia, which is a rapid clamping of the muscle, or extrapyramidal symptoms, or akathisia, a lot of muscle movements. We also now know that they cause long-term problems such as tardive dyskinesia. You've perhaps all heard of that. That's TD, the oral buccal movements of the mouth or the tongue. If you go to a nursing home, you will often see the repeat movement. We know that these symptoms wax and wane over time, but when the medication is stopped, they may not go away. They may get worse. I'm not saying that the long-term effects of mefloquine toxicity are the same as tardive dyskinesia. Rather, that's a model that can be used. There are short-term effects that may stop when the drug goes away, but then there can be long-term effects.

As we move into the question and answer period, I know that you'll ask me many questions I don't know the answer to, because in many cases we don't have the science. We haven't done the studies. You might ask me how mefloquine affects women differently, to which I might say, "Well, I think it does; we have some studies...", or you might ask why mefloquine toxicity is so prominent in veterans from Somalia and maybe less so in other conflicts. I have some hypotheses, but I don't have all the answers.

There are, however, a couple of things I'm very sure of. One is that in both the U.S. and Canada, we need to do a better job of screening veterans for exposure to mefloquine. That would be fairly simple.

● (1545)

Have you ever taken the once-a-week anti-malaria pill? As a follow-up to that, have you ever experienced a variety of symptoms that include dizziness and nystagmus?

The other question that I'm very clear on is that you have some percentage of your veterans who will have significant and permanent problems because of mefloquine. I cannot tell you the exact percentage and I cannot tell you who they are. Based on all of the work that Dr. Nevin and I, and others, have done, you have veterans who have suffered permanent injury. I think it is critically important for you all to identify those veterans.

As a psychiatrist I see a lot of people who are suicidal; that's my bread and butter. One of the things I've seen over and over with people suffering from mefloquine toxicity is they don't know where the suicidal feelings are coming from. They want to jump in front of a bus, they want to stab themselves or sometimes they want to kill their family. It can be just so helpful to them to know that this isn't just them; it's that they've been poisoned by a drug and that's why they're feeling this way. Just knowing about that exposure can be very helpful in having them say, "Okay, it's not just me. It's the medication." The relief that veterans get is enormous.

With that, let me conclude my remarks.

I'll be happy to take your questions. Some of your questions I won't be able to answer because they're either outside my scope or we don't know, and some I may defer to Dr. Nevin to answer.

Thank you very much for your attention.

The Chair: Thank you.

Dr. Nevin.

Dr. Remington Nevin (Executive Director, The Quinism Foundation): Thank you, Mr. Chair, and thank you, members of the committee, for inviting me here today.

I'm Dr. Remington Nevin, and I'm the executive director of the Quinism Foundation, which is a Vermont-based non-profit organization. Our mission is to support and promote education and research on the medical condition known as chronic quinoline encephalopathy, otherwise known as neuropsychiatric quinism. This is the medical condition caused by poisoning of the central nervous system by mefloquine and related quinoline anti-malarials.

I last provided evidence to this committee in December 2016 in the form of a written brief on the topic of mefloquine, and in that brief I commented in part on what were then the recent changes to the Canadian mefloquine product monograph updated in August of that year. The monograph was subsequently updated again in, I believe, September 2017, following the publication of both the Canadian Forces surgeon general report on mefloquine and the Health Canada report on mefloquine. It is the language from this most recent update that I will refer to in my testimony today.

The current Canadian mefloquine product monograph now warns physicians and other prescribers, in bold typeface, that:

> Patients should be advised to consult a healthcare professional if any neurological and/or psychiatric symptoms occur during the prophylactic use of mefloquine

—for the prevention of malaria—

> as healthcare professionals may have to discontinue mefloquine and prescribe an alternative medicine for the prevention of malaria.

The monograph further clarifies, in a boxed warning, that not only may mefloquine have to be discontinued, but that “mefloquine should be discontinued” and an alternative medication substituted if psychiatric or neurologic symptoms occur during prophylactic use.

The updated monograph then also makes clear that:

> Psychiatric symptoms ranging from anxiety, paranoia...and depression to hallucinations and psychotic behavior...can occur with mefloquine use. Symptoms may occur early in the course of mefloquine use and on occasion...these symptoms have been reported to continue long after mefloquine has been stopped.

The monograph then also makes clear that:

> In a small number of patients it has been reported that dizziness or vertigo and loss of balance may continue for months or years after discontinuation of mefloquine, and in some cases vestibular damage may be permanent.

There are several important points being made in this approved labelling, which has been approved by Health Canada and, therefore, presumably are being agreed to by Health Canada.

The first point being made is that there is an acknowledgement by Health Canada and the product's manufacturer that in some cases there are long-term psychiatric and neurologic symptoms that result from mefloquine use. The assumption in the labelling is that there is a likelihood of these symptoms being causal, meaning caused by the drug, and not merely associated with its use. To be clear, this causality is really not disputed by experts. There is broad consensus among international drug regulators on this fact. There's good evidence from the medical and scientific literature and from the accumulated pharmacovigilance data—meaning the adverse-event reports—that symptoms such as insomnia, abnormal dreams, nightmares, anxiety, depression and cognitive dysfunction, among other psychiatric symptoms, for example, can continue for years after use of the drug. That's the first point.

The second point being made by this updated language is that there's also tacit acknowledgement by Health Canada and the drug's manufacturer that to reduce the risk of these long-term symptoms, mefloquine should be discontinued at the onset of any psychiatric or neurologic symptom. This is made clear by the additional language in the monograph, that:

> During prophylactic use, if signs of acute anxiety, depression, restlessness or confusion occur, these may be considered prodromal to a more serious event. In these cases, the drug must be discontinued and an alternative medication should be substituted.

It should be clear, given the other language in the monograph, as well as international drug labelling, that these specific symptoms—the acute anxiety, depression, restlessness or confusion—should be considered illustrative and not exclusive. For example, the European drug labelling makes clear that abnormal dreams, nightmares and insomnia should also require the drug's discontinuation. I believe this is clear from the Canadian product monograph language as well.

● (1550)

For the purposes of this committee’s mandate, these two points have profound implications for the care of Canadian veterans, tens of thousands of whom since the 1990s have been exposed to mefloquine, in most cases without the benefit of these enhanced warnings.

One obvious and profound implication is that for those Canadian veterans who were ordered to take mefloquine prior to these warnings appearing in the product monograph, and who were therefore not told to discontinue the drug at the onset of any psychiatric symptoms, there is an increased risk that they experienced the “more serious event” that these psychiatric symptoms are considered prodromal to. To be clear, this more serious event is in fact the development of the long-term psychiatric and neurologic symptoms that in some cases can contribute to disability.

This then raises the question: what is being done systematically by Veterans Affairs Canada and others to identify those veterans who did in fact develop these long-term psychiatric and neurologic symptoms as a result of their use of mefloquine? The answer appears to be nothing. As a result, in a recent letter to the former Minister of Veterans Affairs, we called upon VAC to implement a program to screen veterans for a history of symptomatic mefloquine exposure, meaning those veterans who not only recall having taken mefloquine but who recall having experienced those symptoms that are specifically listed as being prodromal to the more serious event, which we understand is a euphemism for the development of disability from the drug’s use.

Unfortunately, what we received in reply from the current minister was a very unsatisfying response, which suggests to us that VAC is not taking this issue seriously. I'd be happy to share this response for the record on request.

As we noted in our original letter to the veterans affairs minister, we believe that screening veterans “for symptomatic mefloquine exposure is a necessary first step to raising clinicians’ awareness of the prevalence of mefloquine poisoning among the recent Canadian veteran population”. We also believe that screening will permit VAC to more accurately and validly “estimate the total number of veterans exposed to mefloquine” and “how incomplete prescribing documentation may be”. We also believe that this will permit VAC to estimate “how many veterans may be suffering disability who may become eligible for disability compensation” as a result. As we noted in our original letter, our organization would be pleased to work with VAC to help implement such screening in this population.

That concludes my prepared testimony. I would be very pleased to answer any questions the committee members may have. Thank you.

● (1555)

The Chair: Ms. Wagantall.

Mrs. Cathay Wagantall (Yorkton—Melville, CPC): Thanks, Chair, and thanks to both of you for being here.

As you're aware, Dr. Nevin and Dr. Ritchie, we're now at a point where in Canada only about 5% of our armed forces are given this particular drug. Looking forward, and due to I think a great deal of pressure, the surgeon general and Health Canada have come around, to some degree, on these issues.

Our concern here is veterans who were forced to take this drug in the past. In your opinion, what should the Canadian Armed Forces be doing, then, specifically, in regard to assisting these veterans? As an example, are our one-hour mental health appointments at all effective? This is what's being given to our veterans in the early stages of PTSD, TBI or mefloquine poisoning. Does it go far enough? Do you have suggestions for programming for Canada that we should be investing in?

Dr. Elspeth Ritchie: I think we could each spend two hours answering that question. I think what might work is if I try and then turn it over to Dr. Nevin.

One of the things in the U.S. military that we've seen since 9/11 is that there are many programs trying to do early identification of post-traumatic stress disorder, traumatic brain injury and other psychological consequences of war. People get worried about their careers. We have not done—and on our part, this is a pity, in my opinion—a systematic screening for mefloquine as well.

I think it is important that you screen for all of those, as well as depression, which runs hand in hand with PTSD and isn't quite the same thing—also, of course, they're often comorbid with substance abuse—but by doing it in such a way that the service member honestly believes it will not impact their career. After they're off active duty, it's usually easier. When they're on active duty, they often are very determined, because they're so proud of their service and they really want to hold onto it.

Mrs. Cathay Wagantall: Okay, thank you.

Dr. Nevin, before you answer.... You're saying that this is a very limited response. Would you be able to write a report on that particular question and present it to the committee to be part of our records?

Dr. Remington Nevin: Yes, I'd be happy to follow up my testimony with an additional brief.

Could you clarify precisely what the question is that I am being asked?

Mrs. Cathay Wagantall: Looking forward, we're seeing an improvement, not an admission of guilt of having done anything in the past, but less in the future. However, there are these individuals who were forced to take this drug and have faced great challenges with their health. What should the Canadian Armed Forces be doing specifically as far as programming?

You mentioned that right now we have one hour of mental health appointments, that type of thing. What should be done?

Dr. Remington Nevin: To distinguish the military, the Department of National Defence, from VAC.... I have long stated that we will make the most progress on this issue with a simple acknowledgement in the United States, either by DOD or VA, that mefloquine is the cause of some degree of chronic disability among veterans. If a senior DOD leader in the United States were to acknowledge this in a memorandum or in a public forum, or if a senior official at the Department of Veterans Affairs were to make a similar acknowledgement, this would do more than anything else.

It's my belief that the clinicians in both of these organizations recognize the problems caused by mefloquine, but after 25 years of being told by senior leadership that this drug is not a problem, they are still somewhat reluctant to come forward and identify these problems in their patient population. What they need to see is a clear green light from their leaders that this will not result in any adverse impacts on either the clinicians' careers or the members' careers.

To address your question specifically, if the Department of National Defence would simply acknowledge what is obvious from the product monograph updates—namely what I discussed in my opening statement, that there is clearly some degree of chronic disability among Canadian veterans as a result of their use of mefloquine, particularly without the benefit of the updated warnings —that, I think, would do more than anything else.

From—

Mrs. Cathay Wagantall: Sorry.

Dr. Nevin, I'm sure that you're aware of the research that's been going on in Australia and of the 14 conditions that they have identified as related to having reactions to mefloquine. They have also gone so far as to say that they won't recognize the term “mefloquine toxicity”. It was two years ago when we started having these conversations, and now your term is “quinism”.

Can you talk about the difference between those two terms or what has developed since then?

● (1600)

Dr. Remington Nevin: Our group was formed largely to advocate for and to support and promote education and research on this medical condition, which we have termed “quinism”. We chose this language very deliberately. We believe that quinism is a disease, that chronic quinoline encephalopathy is a medical condition caused by the poisoning of the brain by these drugs.

The symptoms that I have been describing, the symptoms that are acknowledged as being potentially long term in individuals who take mefloquine, are not just side effects. These symptoms are not just adverse reactions to the drug. These symptoms and the signs that accompany them are manifestations of an underlying disease that has been caused by the poisoning of the central nervous system by these drugs.

There are many reasons why we believe that. The symptoms and signs clustered together, for example, are evidence of a disease. However, we have an increasing understanding with time of the pathophysiology, meaning the disorder in structure and function, of the central nervous system that underlies these signs and symptoms.

When you have a putative pathophysiology, when you think you understand how the body—or in this case, the brain—is being disordered and you have consistent signs and symptoms, you have a disease. It's not merely a syndrome. These aren't merely side effects. It's a disease.

The term “quinism”, the disease quinism, encompasses the entirety of the symptoms that are experienced by veterans suffering from mefloquine poisoning.

The Chair: Thank you.

Mr. Bratina.

Mr. Bob Bratina (Hamilton East—Stoney Creek, Lib.): Thanks for being here, both of you.

I'm going to carry on with mefloquine toxicity. Perhaps I could ask Dr. Ritchie, what is the physical manifestation of the toxicity that we're talking about? It's confusing to us to determine the exact link in the conversation about the behaviours and acting out of these soldiers and the direct connection.

Does the medical literature define mefloquine toxicity in a specific way, as opposed to our attempt to determine what it is?

I'm not phrasing the question very well. I think I'm just asking the same question again.

How would you define mefloquine toxicity?

Dr. Elspeth Ritchie: You maybe asking the same question, but as a clinician and as a psychiatrist, let me say how I put it together.

There are lots of drugs, either illegal or legal, that cause things like hallucinations—things like LSD. There are things like PCP that cause hallucinations. PCP can also cause long-term problems. One thing that confused me initially when I was looking at it..... We knew about the insomnia, the bad dreams, the anxiety and the hallucinations. That was pretty obvious back then. More recently, we've learned that people will actually pop two or three of these drugs because they want the hallucinations. We knew about the technicolour dreams.

In the medical and psychiatric literature there is a lot of information about the neuropsychiatric side effects of all these things I'm talking about. What we are just beginning to put together in the literature are the neurological side effects and chronic psychiatric side effects specifically of mefloquine. Although, again, we know that with other things like PCP, you can have flashbacks and insomnia for a long period afterwards.

One thing that confuses many of us, perhaps, is that we got PTSD after the end of the Vietnam War. To remind you, we all know that the symptoms of that are flashbacks, the feelings of being numb and distant, and intrusive thoughts. What we haven't totally sorted out is that in Vietnam, many of our veterans were also on variations of the quinolones. We don't know if that actually confused the picture and we didn't recognize it back then. We labelled it all PTSD.

As I've gone along on this journey and learned more about the neurological side effects, the distinction between psychological and physical becomes blurry. It's all in the brain, whether or not it's the damage to the neurons, which we're seeing more and more of. Is it the psychological trauma? We're going down the road that this is really a toxin to the brain.

Did I answer your question?

It wasn't quite how you asked it.

● (1605)

Mr. Bob Bratina: Thank you. You're helping me along the way for sure.

Are we ultimately going to try to determine that the use of this drug causes a physical manifestation such as a lesion on a brain stem?

What would those specific manifestations of the use of mefloquine be?

Dr. Elspeth Ritchie: Yes, I think we are. Our technology is fairly crude right now. We've gone from CAT scans, to MRIs to PET scans and SPECT scans. One thing we looked at in the study at the VA was some of the more sensitive ways of looking at things. They're sensitive, but we don't necessarily know what the answer is. Most of the research that has been done in the past has been done by cutting up rats, staining their brains and looking at them. We haven't done that yet.

I think the further we go down this field, the more we are going to find the anatomical lesions, whether we can just look and see the vacuoles—like we can in the rat brains—or whether they're smaller and harder to tease out.

I believe we will find damage.

I'm going to turn to Dr. Nevin because I have a feeling he will want to jump in here.

Dr. Remington Nevin: Thank you.

So we know that mefloquine and the related quinolines are neurotoxic and we know that this neurotoxicity is demonstrated in animal models. It affects very specific areas of the brain stem and limbic system. As Dr. Ritchie was alluding to, on animal model studies, these drugs cause microscopic lesions in particular areas of the brain and brain stem, and based on our knowledge of neuroanatomy and neurophysiology, we would expect that lesions in those areas manifest as certain signs and symptoms.

For example, if there were tiny microscopic lesions in the vestibular nuclei in the brain stem that control the balance sense and that contribute to our orientation in space, such lesions would manifest as chronic disequilibrium, dizziness, a sense of vertigo and an abnormal gait. This is precisely what we see in veterans who complain both of psychiatric symptoms from mefloquine and of these symptoms.

These veterans who return home complaining of persistent nightmares, anxiety, depression and cognitive dysfunction, on careful examination by clinicians such as neuro-optometrists or neuro-otologists, are found to have evidence of central—meaning brain stem—visual or vestibular dysfunction.

We have a mechanism to explain this. It's not just PTSD. It's not just traumatic brain injury. The most parsimonious explanation for this is that they were exposed to a neurotoxicant that resulted in permanent dysfunction in their brain stem, and this explains the chronic disability.

The Chair: Thank you.

Ms. Blaney.

Ms. Rachel Blaney (North Island—Powell River, NDP): Thank you so much for being here. I really appreciate the testimony.

I'm going to start with you, Dr. Nevin. One of the things that you talked about so clearly was the warning label, basically the monograph, which I think you referred to, that Health Canada now has on mefloquine. I'm just wondering if you know when that was actually added.

Dr. Remington Nevin: Thank you. The product monographs for any drug are routinely updated on the basis of new safety signals and the need to warn the public of drug safety risks.

I am more familiar with the history of the U.S. label, but I believe the Canadian label language closely mirrors that of the United States. I can say that in general, beginning with the first availability of mefloquine in the late eighties, early nineties, the product insert should have said that if during prophylactic use of the drug—meaning for prevention of malaria—anxiety, depression, restlessness or confusion are noted, these either may or must be considered prodromal to a more serious event, and the drug must be discontinued.

In fact, in pretty much every jurisdiction where mefloquine, then marketed as Lariam, was available, this language existed in the product insert. We have known all along that mefloquine can produce a toxic encephalopathy that manifests with these symptoms and that the early manifestation of these symptoms predicts the development of more serious encephalopathy that can over time contribute to this risk of permanent neurotoxicity and disability. I think this is what permitted Roche—the original manufacturer of Lariam—to minimize their legal exposure such that they could with confidence market an inherently dangerous product. I think if you ask lawyers they will say that Roche has some very limited exposure, because they have warned all along that you are to stop taking this drug if you develop anxiety.

But the question remains. How is one supposed to use a drug in a military setting, a drug designed for military use, that has to be discontinued at the onset of anxiety? Isn't anxiety a ubiquitous emotion in deployed settings? How is one realistically to distinguish between anxiety from a toxic encephalopathy from mefloquine and anxiety from being deployed? It suggests the drug is inherently defective for the indications for which it was developed.

Now, that being said, that language was never emphasized. It was never understood by rank-and-file troops. It was never understood by military psychiatrists in the field, and certainly soldiers taking the drug were never told to discontinue the drug at the onset of those symptoms.

● (1610)

Ms. Rachel Blaney: That is perfect for me because the next thing I want to ask is about informed consent. Right now about 5% of military personnel can get it if they ask for it or if they can't take something else. One of the concerns I have is, are they receiving the informed consent to take that?

The second part goes back to what you said about needing to let people know because a lot of veterans currently may or may not have any clue that this is what's happening to them. It concerns me deeply. I hope you can table with this committee that letter you received from the minister's office because we need to see that. That's so important because it's about letting them know.

My first question is about informed consent. What would that look like? What recommendation do we need to give to the current military personnel who are receiving that?

Second, what would you recommend in terms of identifying and helping veterans who may not know that this is one of the realities that they're living with?

Dr. Remington Nevin: I believe, today, we have mostly addressed the problem of improper use of mefloquine. I would suggest that there are individuals out there who have taken mefloquine many times and, for whatever reason, they are simply not susceptible to the adverse effects of this drug. We don't know why some people are susceptible and some aren't. A sizable minority of us are susceptible to this toxic encephalopathy, the neurotoxic effects of mefloquine. The drug is what we call an idiosyncratic neurotoxicant, meaning some are susceptible and some aren't, and we don't know why that is. In due course we'll determine that.

Until we determine that, we have the next best thing. We have the development of prodromal symptoms to warn us who is susceptible. It could very well be that the 5%, or however many per cent, of the current force that is choosing mefloquine are individuals who have, through experience, determined that they are not susceptible. For example, I have many colleagues in the malariology community who have used mefloquine and they seem to be fine and they wish to continue taking it. I suppose as long as the drug is available and licensed for use, that's fine. I wouldn't recommend that someone who hasn't taken mefloquine take it for the first time, because there's always a risk—even with the very first tablet—that they could develop a permanent disability. I would ague that, even if one has tolerated it in the past, we don't know if certain environmental exposures or the taking of drugs or any number of things might introduce a new susceptibility. I think it's just an inherently risky drug that we probably shouldn't encourage the use of.

I think a case can be made that the current labelling, while not perfect, is far improved over what it had previously been. If the labelling is followed; if one does immediately discontinue the drug at the onset of psychiatric or neurologic symptoms, that should reduce the risk of long-term disability. I don't think it reduces it to zero, because again, there are reliable reports of permanent disability from even a single tablet, but there has been considerable improvement in the labelling in recent years.

● (1615)

The Chair: Thank you.

Do you have something quick to add, Dr. Ritchie?

Dr. Elspeth Ritchie: Yes, I'll add something quickly.

I think the whole concept of informed consent for a military member is problematic. In the past, people have been given a handful of pills on the plane. Even now, if you want to achieve rank, if you want to do well in your career and not be staying stateside, you're going to take the medication.

The other point that I'd like to make is that we don't know what brings somebody into more risk. One of the hypotheses I have is dehydration. I believe that, perhaps, part of the reason that the Somalia veterans suffered so much more, having been over there, is that we didn't have water, and the water we had was crappy; it smelled of salt. People didn't drink it. In a deployed environment, you can never guarantee a good supply of food and water, so the risks are too great and, in my opinion, if people can't take one of these other medications, they should not be deployed to a war zone.

The Chair: Thank you.

Mr. Sheehan.

Mr. Terry Sheehan (Sault Ste. Marie, Lib.): Thank you very much for both of your presentations. I'm a guest here today, and I find this very interesting and important, this discussion that we're having.

I'm from Sault Ste. Marie, and we have the 49th Field Artillery Regiment there and the 33 Service Battalion. Many of the members are my friends, and some go on to the regular forces and have seen service all over the world.

Dr. Elspeth Cameron Ritchie, in some of your testimony you said you can't go into the clinical because there's not enough data out there but you can hypothesize about some of this. Those friends that I'm talking to are both men and women. You said that you have some theories or you might be able to hypothesize what the different effects of this particular drug are on men and women.

Dr. Elspeth Ritchie: Women in the military, by and large, are of child-bearing age, so you're concerned about things like pregnancy and breastfeeding. We have a little bit of data that the use of mefloquine causes a higher rate of miscarriage in Somalia veterans. Women who are deployed are not supposed to be pregnant, but sometimes they're pregnant before they go and they don't pick it up in time, and sometimes they get pregnant when they're there. I think it's inherently very risky. Then there's the question about the expression of mefloquine through breast milk.

The other thing is that women tend to have a higher lipid concentration, so again, one would hypothesize that you might have more of it that goes through the blood-brain barrier. We know that in traumatic brain injury or others, women have different reproductive cycles. Obviously, you've got the estrogen and other hormones, so how could that influence it? There are a lot of questions about passing on mefloquine. There are a lot of medications we try not to use in pregnancy because there's the risk of fetal abnormalities. All of those I would be concerned about.

For better or worse, so far, we don't have that much data because not many women, to the best of my knowledge, have been deployed on mefloquine and have been pregnant.

Mr. Terry Sheehan: That's very interesting.

In some of the data that I was reading before coming here, it mentioned that, in the Canadian Armed Forces, mefloquine accounts for less than about 5% of malaria prevention prescriptions.

This is going to go into some of the discussion that you were having earlier, so I want both of you to make some comments on this. Since June 2017, mefloquine has been recommended only when members requested it themselves or when the use of other drugs is contraindicated.

To both of you, are you satisfied with this decision? Then, of course, you may wish to expand on your opinion as to how the Canadian Armed Forces could adopt other measures than what has transpired since June 2017.

Perhaps Dr. Nevin will start.

Dr. Remington Nevin: I am surprised. That number seems a little high. Five per cent is much higher than the rate of use in other countries. For example, in the United States military—the United States developed mefloquine—we use mefloquine so rarely now that it accounts for, I believe, less than one half of one per cent of new anti-malarial prescriptions. That change is a result of a number of policy changes beginning in 2009, when the U.S. Army began to move away from mefloquine and, by 2013, the other services had agreed to that policy, and mefloquine was formally declared a drug of last resort. Funding became available to pay for the more expensive, generally better tolerated daily drug atovaquone proguanil.

As I mentioned, there are individuals who have previously tolerated mefloquine and who prefer it. I suppose, as long as the drug is available, indicated and licensed for prevention, if those individuals have an informed discussion with their physician and are aware of the risks, they can continue taking the drug. I would not recommend that, and I would not recommend that service members taking an anti-malarial for the first time take mefloquine, because of the inherent risks involved with using mefloquine and the unique risks of using mefloquine in an operational environment where one needs to identify the onset of any psychiatric or neurological symptom as being potentially prodromal to the development of permanent disability. That is a risk I just don't think can be justified in any setting.

● (1620)

Dr. Elspeth Ritchie: This is an area we disagree on, and we disagree on a few. I don't think service members should be deployed on mefloquine at all, not just because of the risk to themselves, but because of the risk to others. For a long time we have not had aviators fly on mefloquine. It's against the rules. Well, that makes sense to me. You don't want somebody who has hallucinations at the wheel or stick of an airplane, but I also don't want that person driving a tank. I don't want that person having a machine gun.

I think what you saw with Staff Sergeant Bales and his killing of 16 Afghan villagers, which we still don't know is related to mefloquine or not.... If you're deploying service members on mefloquine, you're leaving yourself and the Canadian military vulnerable to that kind of question.

In my opinion, they should not deploy on mefloquine. We know it's a hallucinogen. There's no question. The risk of deploying people on hallucinogens is too great for the military to tolerate. Or at least it is for our military, and I would make the assumption that it would be for the Canadian military as well.

The Chair: Thank you.

Mr. Bratina.

Mr. Bob Bratina: Thanks, Mr. Chair.

I want to share a question with my colleague Mr. Robert-Falcon Ouellette.

Mr. Robert-Falcon Ouellette (Winnipeg Centre, Lib.): Dr. Ritchie and Dr. Nevin, thank you very much.

I'm a former service member and served 23 years in operational units. Obviously, when you have personnel, and you want to manage personnel, often you have a large number of troops who you're trying to deploy very quickly sometimes, and you need to prescribe drugs.

I was very interested, Dr. Ritchie, that you say it shouldn't be prescribed at all. Could there be circumstances when this drug should be prescribed in operations? It doesn't have to be taken every day; it has to be taken on a periodic basis. If you are in operations, and you don't have access to the prescription medication that you might need in theatre, could there be occasions when it should be prescribed?

Dr. Elspeth Ritchie: The argument for a long time was that mefloquine is taken on a weekly basis rather than a daily basis, therefore compliance will be better, therefore you don't have to have as big a pill bottle. If you're going for 180 days you have a weekly dose instead of 180 pills. That's part of the reason the military kept using it. However, we found people fear mefloquine, therefore they don't take it; they're non-compliant, so they get malaria.

Again, if we are deploying people with weeks and months worth of MREs, rations, bullets, ammunition, I think we can deploy them with enough medication that they can take that bottle with 180 pills. You can make the argument that they may not be compliant with a daily dose, but we have seen that because there is such fear out there about mefloquine, often people won't take it.

Again, I'd like to emphasize one more time that this drug in the short term, not the long term, is a hallucinogen. You hear so many people talk about vivid, cartoonish dreams; you see some people abusing it for the recreational side effects. That's why I don't think it makes sense to use it in an operational environment where people have big weapons. The consequences of what they do, whether it's friendly fire or shooting other people, maybe not obeying the rules of engagement, the irritability—that's one thing we haven't talked about that I think is important—and the short fuse that you get, you hear over and over again when people are on mefloquine. Mefloquine rage is a very common term.

● (1625)

Mr. Robert-Falcon Ouellette: You mentioned there are people who don't take it in theatre. Do you have numbers on the number of personnel who do not take the prescription? Obviously if people get malaria you might not be able to accomplish the mission, and that poses a significant risk to accomplishing what was set out for you by the government and command.

Dr. Elspeth Ritchie: Usually the information on people not taking it is anecdotal because if you're ordered to take it you're not going to raise your hand and say you're not taking this.

However, I believe, Dr. Nevin, you have some data on malaria emergence. Can you speak a little more to that?

Dr. Remington Nevin: Let me turn the question around. Health Canada and the product manufacturer very clearly state you must discontinue this drug at the onset of any psychiatric or neurological symptoms. This means that Health Canada is telling us if you develop anxiety, depression, restlessness, confusion, insomnia, nightmares or abnormal dreams you must immediately stop taking the drug.

Let's look back and ask if the Department of National Defence has been seeing this happening in practice. We know from carefully designed and implemented randomized control studies that symptoms of anxiety or depression, for example, will occur in 4% of those taking mefloquine prophylactically. Abnormal dreams and nightmares will occur in over 10% of individuals taking mefloquine. We should be seeing a sizable minority of our deploying forces given mefloquine presenting to their doctors and stating they are having those symptoms and requesting that the drug be discontinued. For the last 25 or 30 years of this drug's use in operational settings in militaries around the world, we weren't seen anywhere near 10% or more of troops presenting, requesting that the drug be switched.

We've known all along, or we should have known all along, that this drug was not being used operationally in accordance with the manufacturer's guidance.

You said that if a soldier becomes ineffective due to malaria that's a bad thing. Granted it is, but if a soldier becomes ineffective due to permanent disability as a result of misuse of mefloquine, that's also bad. It would be nice if we had a safe and effective anti-malarial that we could dose weekly or monthly. That would be very good. We don't have that drug. We've never had that drug. Mefloquine is not that drug.

Mr. Robert-Falcon Ouellette: You've also mentioned the permanent brian damage. Has research been done trying to reverse any of that brain damage or toxicity in the system?

Dr. Remington Nevin: Some common manifestations of what we believe is the brain stem dysfunction caused by mefloquine neurotoxicity are such things as central vestibulopathy and central visual disorders: chronic dizziness, chronic vertigo, chronic disequilibrium, visual impairment caused by the neurotoxic effects of this drug. These disorders, these disabilities, are somewhat amenable to rehabilitation. Individuals who are examined by neuro-optometrists and neuro-otologists can sometimes receive therapy that improves their quality of life, reduces the incidents of complications from this disability, but it's never reversed completely; it's simply managed. Their quality of life is improved somewhat, but it's never back to what it was before the neurotoxic injury.

Neurotoxicity, brain damage, cannot be undone.

The Chair: Thank you.

Mr. McColeman.

Mr. Phil McColeman (Brantford—Brant, CPC): Thank you, Chair.

Thanks to the witnesses for being here.

You mentioned, Dr. Nevin, that you had a response from the Minister of Veterans Affairs Canada, and you offered to share that with the committee.

Can I ask you to do that? As a housekeeping thing, can I ask that every member of this committee receive a copy of that response from the minister?

Dr. Remington Nevin: Yes, I'd be happy to submit that.

● (1630)

The Chair: What you do is submit it to the clerk and the clerk will get it to us.

Mr. Phil McColeman: I have five minutes and I have a lot I want to cover.

When I think of toxicity, I think of poison. You've used the word “poison”.

I relate to a very personal situation with my son, at two years of age, having very aggressive chemotherapy. Very toxic drugs were put into his body, and he has brain damage as a result.

Is quinism associated with any cancer treatments that you're aware of, toxic drugs used in cancer treatments? This would be 30 years ago.

Dr. Remington Nevin: The term “quinism” was coined to describe the disease caused by poisoning by quinoline drugs. These are mefloquine, chloroquine, tafenoquine, we believe, and primaquine, the synthetic drugs used in World War II. This disease is a consequence of what we believe is the inherent toxicity of this class of drug—the quinoline class of drug.

Quinolines make effective anti-malarials, and it just so happens that the quinolines are also toxic in a particular way to the brain.

Mr. Phil McColeman: My question very clearly— I don't want to make a false connection—is whether there is anything you're aware of as a medical professional that is used with the basis of this drug in cancer treatments, or in the history of cancer treatments.

Dr. Remington Nevin: Interestingly, mefloquine and related quinoline anti-malarials have recently begun to be explored as treatments for certain types of central nervous system cancers. This makes sense, because these drugs readily penetrate the blood-brain barrier. They readily concentrate—sometimes at very high concentrations—in the brain, and they're neurotoxic; they kill brain cells. If brain cells are rapidly multiplying, as they do in cancer, drugs like mefloquine can have some theoretic benefit to treating those cancers.

The same property that renders these drugs inherently dangerous, in my opinion, when given to healthy service members, may make them very effective cancer agents.

Mr. Phil McColeman: Based on the packaging requirements that you talked about, on the fact that the U.S. has it down to less than 0.5%, I think is what you said, we still have 5% of our serving members taking this drug.

There is the reluctance of any of the military to recognize it and acknowledge it, which was your testimony here today. Based on the fact that it is a poison because it is toxic, instead of making veterans go to court, which they're doing right now—the lawsuit has been filed—why does it make any sense for a government to deny veterans the acknowledgement that this is a poison that they've taken?

Dr. Remington Nevin: The simple answer is that it makes no sense.

Health Canada, one portion of your government, is very clearly stating that in some cases this drug is acting as a poison; it's causing permanent central nervous system dysfunction. It's very obvious from the product monograph and the implications of the updated language in the product monograph that we, the prescribers—the Canadian military, the U.S. military, travel medicine communities around the world—for many years were not using the drug in the most safe manner, and disability resulted as a result of that.

It's as clear as day to me. It would seem very straightforward for those in positions of authority to acknowledge that some damage has been done as a result of the use of the drug, that some disability—we don't know how much—has resulted from our use and misuse of mefloquine.

I suppose there are many reasons why it's very difficult in some cases to make that acknowledgement, and those circumstances will differ depending on the jurisdiction and the unique history.

Mr. Phil McColeman: One of the things people continually talk about is giving our veterans the benefit of the doubt about whether or not their condition is related to something that happened during their service. We hear that over and over again. Yet, when it comes to something as serious as this—and this is very serious.... This is not something to just brush over and try to sweep under the carpet, saying, “Well, no, maybe you're suffering PTSD or something else that is not related to this.” That is absolutely.... I don't know the word to use. I'm lost for words.

I am very upset by this, because I can see things like anxiety and suicide—some of the worst things that these veterans have to deal with day in and day out. They are coming forth in good faith to say, “I had this experience with this drug.” I want to put that on the record, because this is, as you have said, “poisoning of the brain, and poisoning of the central nervous system”. This happened to certain individuals.

● (1635)

Dr. Elspeth Ritchie: Sir, obviously, your question is a good one, and somewhat rhetorical. I believe we would all want to do what's best for our veterans, and give them the benefit of the doubt.

One thing we haven't touched on here is the possible harmful side effects of the wrong treatment. We try to distinguish mefloquine toxicity, or quinism. What is PTSD? What's TBI? If we misdiagnose it as PTSD, for example, we treat it with selective serotonin reuptake inhibitors. Those are anti-depressants. They can be useful, but they have sexual side effects. I've seen suicides related to the sexual side effects. We might treat it with anti-psychotic agents, because we think it's a psychosis, and don't recognize that. The anti-psychotic agents also have their own side effects. It's really important to make sure that we are diagnosing as best we can.

Coming back to our theme of screening and diagnosis, you need to inform your providers to be looking for this, as well as the veterans themselves, to be able to come up and say, “Hey, doc, you said I have PTSD, but did you consider this?” That can take the conversation to a whole new level.

Mr. Phil McColeman: Thank you.

The Chair: Mr. Chen.

Mr. Shaun Chen (Scarborough North, Lib.): Thank you, Mr. Chair.

I want to thank our witnesses, Dr. Nevin and Dr. Ritchie, for being here today.

From headaches and diarrhea to anxiety, hallucinations and depression—you've called it poisoning of the brain and poisoning of the central nervous system. Dr. Nevin, you said that 5% usage in the Canadian Armed Forces is tremendously higher than in the U.S. It's been pointed out that in the U.S., it's less than 1% usage.

In the Canadian Armed Forces press release, it says that “Mefloquine will now only be recommended for use if a CAF member requests it.” Why on earth would anyone request this drug? From your experience, can you speak to why this is? I know it's from the CAF. Why would it be given out? Why would somebody request this drug?

Dr. Remington Nevin: It's an excellent question.

The fact is there are individuals who, for whatever reason, and we don't understand why—are fortunate to have escaped the horrific adverse effects that other veterans and service members have experienced from this drug. Good for them. Thank goodness they haven't gone through what some service members have gone through. There are intelligent individuals, doctors and senior officers, who I think we can all agree have made a fully informed decision to take mefloquine. As I mentioned, the drug is licensed. It is approved by Health Canada for prevention of malaria, so there would have to be some sort of policy, and some very good reason, for that drug to be denied to service members.

I think a very strong case can be made that even if an individual states a preference for the use of mefloquine on deployment, and they have previously tolerated the drug—again, fortunately, for whatever reason—the residual risks to the military, and to that individual, from their subsequent use of mefloquine are simply too high to permit them to make that choice. A reasonable argument can be made for policy to restrict the use of that drug in operational settings.

I don't believe Canada has such a policy. At times, military organizations have implemented such a policy. For example, soon after the boxed warning in the United States in 2013, U.S. Army special forces, presumably on the basis of their long experience with bad things having happened from the drug, banned its use outright. I don't oppose those policies. I think those policies are quite wise. The drug simply isn't worth the risk in operational settings.

● (1640)

Mr. Shaun Chen: If there are servicewomen and servicemen who can take the drug and not experience the potential adverse effects of it, Dr. Nevin, you said there is a risk with taking the very first tablet that there can be the development of a permanent disability.

Dr. Remington Nevin: Yes, that's correct. For someone who has never taken mefloquine, who has no experience with how they personally tolerate the medicine, or more specifically who has no experience with how susceptible their central nervous system is to the drug's toxicity, there is a very real possibility that with that very first tablet, which contains quite a bit of mefloquine—50 milligrams is a lot of mefloquine—the drug, for whatever reason, could accumulate in their brain and act as a central nervous system toxicant that could lead to permanent disability after that single tablet.

Those individuals who have previously taken mefloquine on deployments seemingly tolerated it well. Presumably, if they return for a second or third deployment and they take mefloquine again, they may presume that first tablet on second or third deployment not likely to be harmful. But you never know. We don't know. There have been cases that I'm familiar with. I have reviewed several cases where individuals who have deployed multiple times on mefloquine, for whatever reason, on a subsequent deployment experienced the very same symptoms, and subsequently suffered permanent disability as a result.

Mr. Shaun Chen: Thank you.

Dr. Ritchie, in terms of the U.S., where there is less than 1% usage of mefloquine, can you speak to any information you have in terms of how the U.S. armed forces might better inform or educate members of their military with respect to the side effects? How do we account for the difference in usage of mefloquine?

Dr. Elspeth Ritchie: I want to jump in and talk about, coming back to your point, informed consent. I don't know whether that 5% is really informed. If you look at the Peace Corps, they traditionally have been offered their choice of medications, and more recently they're supposed to be warned about the side effects of mefloquine. But if you ask the average Peace Corps volunteer, they say they never really got true informed consent. I took mefloquine in Somalia. I did not know then what I know now. If I had known it then, I would never have taken it, even though likely I would have been court-martialled or at least restricted from deployment for not taking it.

I think one of the things that happened in the U.S. is there has been enough press, especially around, say, Staff Sergeant Bales, that people are really sensitive to not wanting.... There's also all the anecdotal information. It's widely known that the unit who took mefloquine on Monday would all have bad dreams and nightmares at night. It's not a secret. What I don't know, again, is with your 5% what are the reasons for choosing that?

The Chair: Thank you.

Ms. Wagantall.

Mrs. Cathay Wagantall: Thank you.

Dr. Ritchie and Dr. Nevin, you're both aware of the circumstances around Somalia, where tens of thousands of mefloquine tablets were given to our Canadian Airborne Regiment. In 2017, in the Canadian Armed Forces surgeon general's report, he said, “The CAF members deploying to Somalia did not participate in the SMS study, since the guidelines of the study were not compatible with the operational requirement to deploy to Somalia,” and yet they still gave it to them. Not only did they give it to them, they were forced to use this drug. This has resurfaced since 2016.

Dr. Nevin, you know one of the Canadian airborne heard you speaking and the realization came to his mind that this is what impacted him. Since then, this committee has heard tons of anecdotal evidence, plus more than that coming to my office, of these individuals, but they continue to be ignored. We talk about anecdotal evidence. If you don't have it, you don't have a reason to do a study.

In my mind, why is it, then, that this was shut down in that inquiry? Why have VAC, DND and Health Canada refused to do what you are saying they fully need to do to deal with this issue, with the screening. No one has talked to our veterans since these changes came about with that report and with Health Canada's views on this. It's very frustrating to me, and I am not a veteran who was in those circumstances.

Again, with the benefit of the doubt for these individuals who have come forward, and with all the research taking place now, should they not be receiving proper screening, proper diagnosis, all these things that you're discussing?

● (1645)

Dr. Elspeth Ritchie: Absolutely they should.

Dr. Remington Nevin: The use of mefloquine in 1992 among deploying members of the Canadian Airborne Regiment to Somalia is extremely problematic. I don't understand the legal basis for the Canadian military's use of mefloquine in that population. Drugs cannot be prescribed or distributed without a legal basis.

The drug became available to the Canadian Forces under the guise of an existing small-scale clinical research protocol that, up until that point, had resulted in the distribution of the drug to dozens of Canadian Forces personnel after they had completed informed consent and after they had reviewed information that included the warning to discontinue the drug at the onset of symptoms such as anxiety.

Clayton Matchee and about 1,000 other deploying members of the Canadian Airborne Regiment received industrial quantities of mefloquine that were ordered under that protocol. The Canadian Forces readily admits they had no intention of abiding by the terms of that clinical research study. They were not victims of a botched clinical study. The clinical study was not being performed. The clinical study was the mechanism by which the Canadian Forces obtained industrial quantities of the drug that they otherwise could not have obtained.

The legal basis for the use of that drug has never, I think, been properly explored, but the consequences of not abiding by the clinical protocol have been profound to your country.

They have been profound because Clayton Matchee, for example, was never told that when he began to experience restlessness, anxiety and hallucinations he was to stop taking the drug. In fact, when he told others that he was experiencing those symptoms—when he returned home on leave, for example—and family members expressed concern, he said that he couldn't stop taking the drug. We all know what happened in subsequent weeks, don't we?

We know that led to the disbandment of the Canadian Airborne Regiment, which is something that could have been prevented had the Canadian Forces not taken what I think were extreme liberties with the law.

Mrs. Cathay Wagantall: Thank you.

The Chair: Ms. Blaney.

Ms. Rachel Blaney: We've had very powerful testimony today.

A couple of things keep coming to me. One of them is a comment that one of you made about how just knowing about the exposure can be a relief to the person. Realizing that there are veterans in this country who don't know right now why they have these symptoms, I'm very concerned about them receiving the wrong treatment that can perhaps aggravate it.

We also have heard from other testimony that the records are poor and that it's often hard for veterans to find out that information.

I want to go back to what we need to do for veterans in this country who have not been screened. Do we need to do an awareness campaign? I really want to make sure that there's a recommendation in this report that guides the next steps.

Dr. Elspeth Ritchie: We mentioned that we just had a symposium, and we had veterans from both Canada and the U.S. there. I don't want to name any names, but what several people told me quietly was that as a result of this, they had extreme homicidal thoughts about killing their most intimate family members. That they were scared to sleep with their wives because of fears that they would choke their wives, dreaming of bayoneting their babies, massacring their whole families.

This was very discongruent to them. How could they be thinking of this? The people who were there had not committed suicide but they talked of others who they believed had committed suicide rather than murder their families and those whom they loved.

That is just profoundly, deeply, morally troubling. So what could we do about it? Again, I'm from a different country. I can make only a few suggestions, but a public education campaign, using your media, reaching out, not being ashamed and trying to cover it up but rather saying, “Okay, we didn't know enough; in whatever happened, whether it was legal or not, we didn't do the right thing and now we want to make it right. So come in and talk to us.”

Again, it's also a provider education piece. Make sure that the psychologists, psychiatrists, primary care.... I'm a psychiatrist in my office. Somebody comes in to me with complaints of bad dreams from the war. My first instinct is to say, “Oh, it must be post-traumatic stress disorder”. Maybe I've read up and I know a little bit about people who get their vehicle blown up and they hit their head. So I'll do some screening for TBI. But what can you do to make sure?

This is medical school curriculum, as well as for advanced practice nurses, medics and physician's assistants, just so they all have the knowledge to at least ask the question, “Did you take anti-malarial agents?” Then if the answer is yes, either weekly dose or refer them to the next level of care. You can model it depending where they are. But a mass level of education, I think, would go a very long way.

● (1650)

The Chair: That ends our time for today.

I'd like, on behalf of—

Yes?

Mr. Phil McColeman: These are the experts who have come a long distance to be here. I know our committee meeting typically lasts two hours. Could I ask if I could get unanimous consent that we continue asking these experts questions up to the time that we exhaust everybody's questions? It's been limiting in terms of time for everyone, and I just think I'd like to ask the committee to consider and approve continuing this meeting.

The Chair: Does anybody have any more questions, or is it just Phil? Also I see Bob and Cathay.

Okay, we'll just do a short round then of five minutes each.

Mr. Phil McColeman: Can I start first?

The Chair: Okay.

Mr. Phil McColeman: I was searching my brain for a drug that was a cancer treatment. I googled it and I remember what it was. It's called vincristine. Have you heard of vincristine?

Dr. Elspeth Ritchie: I believe vincristine comes from periwinkle, that little blue flower that they discovered some years ago would be useful in cancer treatment. I don't know of any connection between vincristine and mefloquine, though.

Mr. Phil McColeman: Okay, it's not part of that family of quinines that you're talking about. That's fair enough. It's described as a very toxic drug that kills all the good cells as well as helping kill the bad cells in that situation.

I know the word I was looking for earlier when I was feeling somewhat emotional about this. It's my outrage about the fact that we've got, right now, veterans who have had to go and join together and do a class action lawsuit against this government for not recognizing this and acknowledging this.

That's where my outrage exists when I listen to you, the experts, talk about the undeniable connections here of this drug to symptoms that you've seen, leading—which really just absolutely sends me over the edge—to permanent disability because they were forced to take a drug that has this kind of poison in it. That's where I was heading there.

I have just one last question. Is there any connection to seizure with this drug?

● (1655)

Dr. Elspeth Ritchie: There are all kinds of neurological effects of the drug. We don't have good prevalence data, but we certainly have case reports. As a matter of fact, at our conference a young lady had a seizure, and I ended up calling the ambulance and going to the hospital with her. She was in the Peace Corps, not a veteran. Again, I don't want to give much identifying information, but her seizures had started after exposure to mefloquine.

Mr. Phil McColeman: Thank you.

The Chair: Mr. Bratina.

Mr. Bob Bratina: I'm going to share with my friend.

Dr. Nevin, you made a statement that the Matchee incident and the closure, the disbandment of the airborne was a result of mefloquine, basically. Do you have real evidence that this is exactly the reason those things happened?

Dr. Remington Nevin: Yes. This committee, several years ago, heard, either in person or in written briefs, from at least two witnesses describing the symptoms that Clayton Matchee had been experiencing in the weeks prior to the killing of Shidane Arone. He had been actively hallucinating, having visual hallucinations of, for example, camel spiders in the bunker, in the moments before he killed Shidane Arone; of a fang-toothed monster at the foot of his bed, as he was home with his wife Marj in the weeks prior to the killing. This man was floridly psychotic in the days and weeks prior to the killing of Shidane Arone, and his psychosis almost certainly arose as a direct result of the misuse of mefloquine.

Mr. Bob Bratina: You just said “almost certainly”.

Dr. Remington Nevin: I think that standard of proof is adequate for these purposes.

Dr. Elspeth Ritchie: May I add a piece to it? One thing we use to distinguish schizophrenia from drug toxicity of a number of types is that schizophrenia tends to have hearing voices, auditory hallucinations, while mefloquine is marked by visual hallucinations, as are other hallucinogens. I think the relationship of seeing the visual hallucinations when somebody's on mefloquine...that seems very likely.

Mr. Bob Bratina: And “very likely” again...but we're not a scientific group here. Let me ask you what recommendation you think that our committee would be able to make, based on the science that exists on this issue, or should our recommendation be, perhaps, that more study is needed?

Dr. Remington Nevin: Our group, The Quinism Foundation, has made our recommendation to the Canadian government very clear—and we do represent Canadian veterans and Canadian constituents. In a press release published on September 19, 2018, we called on Veterans Affairs Canada to screen recent Canadian veterans for symptomatic mefloquine exposure. That is our recommendation. That is the single most effective thing we think can be done to improve the situation of Canadian mefloquine veterans. By implementing screening for symptomatic mefloquine exposure systematically, meaning as a result of some directive from the Minister of Veterans Affairs or some decision at VAC, this would serve as a tacit acknowledgement that the government recognizes this is a problem. It would permit clinicians to begin to identify those who may be suffering disability from this condition.

Dr. Elspeth Ritchie: There are always more studies that can be done. People can set up a registry. That's been done in other settings. I wouldn't want the need for more studies to delay the public education that you were talking about earlier.

Mr. Bob Bratina: Well, we are educating, and thank you for the kind of testimony that you're bringing forward so we're all more aware of things than we were. What we ultimately need to know is the science. Exactly where is the science today on this?

Dr. Remington Nevin: In my opening statement I shared with you what your own government scientists have said is true. I shared with you the logical implications that follow from the science that they have acknowledged is true. I don't know how much more clear I can make this. Your own scientists are implying, as clear as day, through the updated product monograph language, that there must be some degree of permanent disability as a result of your military service members' use of mefloquine. It stands to reason. How can this not be?

● (1700)

Mr. Bob Bratina: Standing to reason is.... Well, anyway, thank you.

I have some time left. I think Borys wanted to ask a question.

The Chair: You have 60 seconds.

Mr. Borys Wrzesnewskyj (Etobicoke Centre, Lib.): I'd like to follow on this line of questioning.

What sort of methodology would be required to do a definitive study, so there would be no questions?

Dr. Remington Nevin: There is no question that mefloquine use causes long-term, psychiatric and neurologic symptoms.

Now, there is a question of what percentage of individuals who took mefloquine correctly—meaning, they discontinued the drug at the first onset of any neurologic or psychiatric symptom—are disabled to some degree? How many have a psychiatric or neurologic diagnosis of some kind that we can attribute to mefloquine as a result of that correct use? Those are questions that can be asked and answered.

We should also ask the question of individuals who did not use mefloquine correctly, such as service members who were ordered to continue taking mefloquine even after they developed horrific nightmares, anxiety and depression. What percentage of those individuals are disabled to some degree as a result of those continued, persistent symptoms?

These are questions we can ask.

Mr. Borys Wrzesnewskyj: Those would be very helpful studies. You would agree.

Dr. Remington Nevin: Yes, they would be.

Mr. Borys Wrzesnewskyj: These are high-stress environments that we're sending our best into. You referenced—and it's acknowledged—that there's significant substance abuse in some of those environments. Have there been any studies looking a the correlation between alcohol, marijuana or other drugs, and mefloquine?

Dr. Remington Nevin: The simple answer is no. However, your question raises a broader point. If we are acknowledging that there is alcohol use in theatre and if we are acknowledging that there is some degree of recreational drug use in theatre—and I certainly hope that's not the case, very commonly—

Dr. Elspeth Ritchie: But it is.

Dr. Remington Nevin: Let's assume that we all recognize this, and let's assume, furthermore, that the Department of National Defence recognizes this. Let's suppose further that the Department of National Defence recognizes and acknowledges that symptoms such as insomnia, anxiety and depression will be not uncommon in operational environments.

Then the question that needs to be asked is: by what logic and reason can they justify the use of a drug whose safe use—or more accurately, whose safer use—requires that the drug be immediately discontinued at the onset of those symptoms?

I would propose that if we are arguing that those conditions exist in theatre—and they certainly do—then we really shouldn't be using mefloquine in that environment.

Mr. Borys Wrzesnewskyj: Dr. Ritchie.

Dr. Elspeth Ritchie: Let me take your question another way.

There are all kinds of ways to look at these issues. There are cross-sectional studies. There are longitudinal studies. The U.S. Army has done a very nice job of doing some of the surveys in theatre. We call them mental health advisory teams. Unfortunately, we didn't look for the use of mefloquine. We looked for barriers to care in depression and anxiety. For a lot of the time here, we really weren't using mefloquine—especially in Iraq. It was an oversight on our part.

I think that your epidemiologists and our epidemiologists would be happy to go back and flesh out the picture of how many people exactly get symptoms.

Back to the question about women, I'd love to see some longitudinal studies of female veterans—not just exposed to mefloquine, but all female veterans. There's a paucity of data there.

We could recommend some ways to get some more hard data.

The Chair: Thank you.

Ms. Blaney.

Ms. Rachel Blaney: Again, thank you so much for this. I think this is very informative.

I have two questions, but first, I would like to start with the statement that I'm very good with “very likely”, and I'm also very comfortable with what Health Canada put out. I think we must acknowledge that this is not something that we need to spend a lot of time speculating about.

My first question is about when we look at how we're going to connect with veterans and in terms of screening, I know that a lot of veterans in Canada move to rural and remote communities. Access to those kinds of supports and services can be a challenge. I just want to talk about how to make that more accessible.

The second question for you is that what I have learned from this process is that what we don't know is very concerning. What type of research actually would be helpful for us? Earlier I think I heard one of you talk about why some people are more sensitive and some are not. That would be interesting to know.

Is there any specific research that would really help active members and also veterans?

● (1705)

Dr. Remington Nevin: Canadian mefloquine veterans have been fairly consistent in recent years in calling for three things that they need from the Canadian government: acknowledgement, outreach and research, in that order.

As I mentioned initially, acknowledgement is the single most important thing that can occur. So much will come from an acknowledgement, a *mea culpa*, or a statement from someone in a position of authority simply stating the obvious that follows naturally from what is in the product monograph and simply acknowledging what is very clearly true.

Individuals within the halls of government who know mefloquine is dangerous, who have patients that they would like to write case reports on, and who would like to fund and conduct research with existing funds will feel empowered to do this. Clinicians will feel empowered to diagnose on paper and for the record what they already know to be true, when previously they had perhaps been hesitant.

Acknowledgement must come first. Someone must say that this drug has caused disability among our troops. It's as obvious as day.

Then there is outreach. With that acknowledgement, which individuals are not reached by the media and which individuals are not reached by social media and word of mouth? We can identify these individuals. We should know who has deployed in the last 25 to 30 years to areas where mefloquine may have been used. Hopefully there's a postal mailing address or some other way to get in touch with them. It could be as simple as saying, “Did you take mefloquine? Did you have problems on the drug? Then call this number and we'll get you the support that you need.”

Then there is research. Research comes in many flavours and varieties. The type of research that you will hear about from government scientists and others who manufacture doubt about the dangers of this drug is not good, quality research. It's retrospective research. It's based on existing data. If we don't ask the right questions about symptoms experienced by individuals who have taken mefloquine and if we don't ask specifically about their mefloquine experiences, the existing data on which many of these studies are based is not going to capture what actually happened. New prospective research at patient level that is conducted with the involvement of clinicians is going to be essential.

It really begins with case finding and empowering individual physicians to identify those veterans who are suffering the long-term adverse affects of this drug. Then it is getting them the type of sophisticated testing that I believe one of your earlier witnesses had discussed, fully describing the extent of their symptoms, and then beginning to count them and figure out what they have in common with each other to identify these risk factors that we're alluding to.

The first step is not to ask Veterans Affairs to look at the existing data again or look at the existing research again and come to the very same conclusions. To solve this problem, we need acknowledgement, outreach and research. A component of that is the screening process that we described.

Dr. Elspeth Ritchie: I will take part two of your question, which was what the big issues are. Again, suicide is an obvious one. In the United States military, it has grown over time, although not all related to mefloquine. I understand that suicides in the Canadian military have also increased over time. I don't know if it's related to mefloquine. That's one of the most tragic aspects when it does happen. If you looked at suicides—and you may have already been doing this; I haven't heard of it being done in the same way that we have in the States—it would inform a lot of things besides just the mefloquine question.

● (1710)

The Chair: Ms. Wagantall.

Mrs. Cathay Wagantall: Can I put on record a little bit about the Somalia affair? It was in 1993, a military scandal. It peaked with the beating to death of a Somali teenager at the hands of two Canadian soldiers participating in humanitarian efforts in Somalia. The act was documented by photos and brought to light internal problems within the Canadian Airborne Regiment. Military leaders were sharply rebuked after a CBC reporter received altered documents, leading to allegations of a cover-up. Eventually a public inquiry was called. Despite being controversial, it was cut short by the government. The Somalia inquiry cited problems with the leadership of the Canadian Armed Forces. It led to the disbanding of our elite Canadian Airborne Regiment, greatly damaging the morale of the Canadian Forces, marring the domestic and international reputation of Canadian soldiers, and leading to the immediate reduction of Canadian military spending by nearly 25%.

The concluding observations of the inquiry “Dishonoured legacy: the lessons of the Somalia Affair” were that, “If mefloquine did in fact cause or contribute to some of the misbehaviour that is the subject of this Inquiry, CF personnel who were influenced by the drug might be partly or totally excused for their behaviour.” In other words, they were never given the opportunity to do the proper study of the impact of this drug mefloquine.

In other words, a conclusion has already been made on this without doing the proper study. If you go to the Canadian War Museum, yes, there were issues within the regiment, but it blames the Canadian Airborne Regiment being racist for this happening. We have people here who have been smeared because they did not have the opportunity to do what needed to be done, however long ago.

Given what we know, I want to know whether, in your opinion, it is possible that Clayton Matchee was experiencing a neuropsychic event that led to the death of Shidane Arone.

Dr. Remington Nevin: Almost certainly he was. There is no more logical or likely explanation for what happened to Clayton Matchee. He was floridly psychotic in the days to weeks prior to the killing of Shidane Arone. Had the Somalia Commission of Inquiry investigated the role of mefloquine, interviewed Marj Matchee and interviewed others on their experiences with mefloquine, this point would have been obvious. Clayton Matchee was hallucinating the presence of camel spiders in the bunker. He was whacking the camel spiders, and that led to the beating death of Shidane Arone.

This needs to be explored more. The lack of curiosity as to the role of mefloquine in the events of that era, the critical events of that era, is remarkable. It's such an important event in the history of Canada. I am from Canada. I was born here. I was a teenager during the Somalia affair. I distinctly remember how ashamed I felt as a Canadian when that happened. I distinctly remember that. Imagine how the disgraced members of the Canadian Airborne Regiment feel. I believe we owe it to them to fully investigate this matter. Now, knowing what we do about how prevalent symptoms from mefloquine were among that group, aren't we owed the benefit of our 25 years of accumulated experience to go back and re-examine the role of the drug in the events of that era?

Our group has long called for a reopening of the Somalia Commission of Inquiry. I wrote to your Prime Minister several months ago. I did not receive a reply, but I simply don't understand how one can accept these questions being unanswered for so long.

Dr. Elspeth Ritchie: Clayton Matchee was not an isolated event. We have so many reports of not only hallucinations but also rage and irritability. It wasn't a one-off. He got the most attention, but a lot of other bad things have happened because of mefloquine.

Mrs. Cathay Wagantall: We had Roméo Dallaire here giving testimony. I asked him, on the basis of his experiences, whether we should be doing more studying. His response was, “Absolutely not. Get rid of the drug.” I think he would concur with what you're saying.

● (1715)

The Chair: Mr. Chen.

Mr. Shaun Chen: Thanks, Mr. Chair.

This has been incredibly powerful testimony. I want to thank the witnesses again.

I want to go back to the issue of informed decision-making of servicewomen and servicemen taking mefloquine.

According to the American Society of Health-System Pharmacists, mefloquine is contraindicated for individuals with a recent history of psychiatric disorders. Given that service women and men are potentially out in the field experiencing events that can be traumatic, how could we continue to give out this drug? As has been pointed out earlier, 5% of servicemen and servicewomen in this country are taking this drug.

How are we able to give them that informed decision-making if they are put in circumstances that could potentially create situations where they are being exposed to trauma and very challenging situations that increase their risk of the adverse side effects of this medication?

Dr. Elspeth Ritchie: I don't think you can do informed consent.

We've looked at related militaries, the Australians, the Irish. I've heard, and I assume you have as well, this was back when mefloquine was given more commonly. They've thought if they didn't take mefloquine, they wouldn't be able to go. They want to go to wherever....

The Chair: Excuse me, stop. We've have bells.

I'll need unanimous consent to finish.

Some hon. members: Agreed.

Dr. Elspeth Ritchie: I'll just finish briefly.

If you're looking at a paycheque and feeding your wife and kids and all the other things that come with being in the military, I don't think you can give informed consent.

Mr. Shaun Chen: So you're suggesting this drug should not be used or prescribed.

Dr. Elspeth Ritchie: Yes.

The Chair: Robert.

Mr. Robert-Falcon Ouellette: Obviously Somalia was a grave crisis within the military leadership. It led to major changes within the non-commissioned members' ranks. They called it leadership 2020, reformatting the military college and a lot of training. It was also related to a lot of hazing incidents that also occurred at that time. Multiple variables led to the disbandment of the regiment. I remember that quite well because I joined the military at exactly the same moment. I'm very proud to have served in the military for 23 years.

I was in the 5th Field Ambulance in Valcartier in the medical field. I wanted to talk about your awareness of the medical training for military medical personnel in their evaluation of military members as well as the medical personnel who work in Veterans Affairs.

Do they have adequate training in relation to the differentiation between PTSD, other disorders and other areas?

Obviously, you have more of an understanding in the United States.

Are there things we could be doing to better diagnose and better treat people who are veterans here in Canada, also who are currently serving in the Canadian Armed Forces?

Dr. Elspeth Ritchie: The short answer to do they have enough training is no. I mentioned, as a military psychiatrist I was not familiar with mefloquine when I was deploying to Somalia with a combat stress control unit. I think that has improved over time. We have been part of that improvement. We have given numerous lectures at various military medical conferences.

In the VA—and I worked for them for a while—I think the knowledge in the U.S. is still very rudimentary. That's been another of our efforts: how can we educate veterans' health affairs personnel to be doing that screening. So far we have been successful in spots, but not across the country.

Dr. Remington Nevin: With formal acknowledgement by a senior official at the Department of National Defence or Veterans Affairs Canada, the clinical education will naturally follow. It will be recognized that this is a priority among leadership. Individuals will perform a review of the literature and share this with their colleagues spontaneously without further direction. Organizations respond to the priorities identified by their leadership. If leaders at DND and VAC make the acknowledgement of this problem a priority and empower their personnel to begin to solve it, your civil servants, your physicians, your staff will go a long way toward solving it independently.

● (1720)

Mr. Robert-Falcon Ouellette: Within the Canadian Forces during the mission in Afghanistan and the war there, it was quite clear that PTSD was a high priority. With regard to psychiatric services and social workers, there was a ramping up of obtaining those services for veterans who needed to be treated. Then suicide prevention and working with...and how we actually deal with disciplinary issues even within the armed forces changed quite a bit. Obviously, this is something that perhaps not a lot of people are aware of. Where should they obtain this training?

Dr. Remington Nevin: We are happy to assist in providing resources. Our mission is to promote and support education and research on this condition, but I don't think you need us. We're happy to help. For example, in the letter to your Minister of Veterans Affairs, I suggested one possible method of implementing screening for symptomatic mefloquine exposure. We've developed an instrument. We believe it has validity, and we've offered to make it available to use systematically among your population. However, you don't have to use our instrument; you can develop your own instrument.

The response that I received was that they don't think our instrument is very good. However, they didn't say, “We're going to develop our own.” They simply said that ours is no good, in their opinion, so they're not going to do anything. That is why I'm disappointed in the minister's response. Again, this is a reflection of the fact that they haven't acknowledged the problem. Once there is acknowledgement, then much of the problem will be solved by the existing resources.

Dr. Elspeth Ritchie: I believe you already have a number of institutions that focus on deployment health. We certainly do in the U.S. I wouldn't create new institutions. I would use the ones that taught you about PTSD and suicide. I would say, "Hey, this is something more that we've learned", and use those venues to roll out information and education. At least, that's what I'd do in the U.S.

The Chair: Thank you.

Mr. McColeman.

Mr. Phil McColeman: It's just some housekeeping, Mr. Chair, through you to Mr. Nevin. I just want to button down and be sure that I get the letter that he's offered.

The Chair: We have it.

Mr. Phil McColeman: To you then, Mr. Chair, what's a reasonable amount of time? Can we get—

The Chair: Tomorrow? It has to go to translation.

Mr. Phil McColeman: Can we get it before the next committee meeting?

The Chair: Before the end of the week.

Mr. Phil McColeman: Thank you.

The Chair: Okay, that's all.

Could we have a motion to adjourn?

Thank you, Mr. Chen.

The meeting is adjourned.