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Chair

Mr. Neil Ellis

Standing Committee on Veterans Affairs

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● (1530)

[*English*]

The Chair (Mr. Neil Ellis (Bay of Quinte, Lib.)): Everybody, I'd like to call the meeting to order.

Pursuant to Standing Order 108(2), we are conducting a study of mental health and suicide prevention among veterans. Today we have three different groups joining us. From the Department of National Defence, we have Brigadier General Hugh MacKay, surgeon general and commander of the Canadian Forces Health Services Group; and Lieutenant Colonel Andrew Currie, section head of the communicable disease control program, and the director of Force Health Protection. From the Department of Health, we have Dr. John Patrick Stewart, director general of the marketed health products directorate in the health products and food branch. From the Public Health Agency of Canada, we have Dr. Barbara Raymond, interim director general of health security integration in the health security infrastructure branch.

Thank you, everybody, for joining us today. We'll start with a panel, and each of you will have up to 10 minutes for testimony and then we'll have questions.

We'll start with the Department of National Defence.

Good afternoon.

Brigadier-General Hugh MacKay (Surgeon General, Commander, Canadian Forces Health Services Group, Department of National Defence): Mr. Chair, and members of the Standing Committee on Veterans Affairs, thank you for the opportunity to present specifically on the use of medications for the prevention of malaria within the Canadian Armed Forces.

Canadian Armed Forces personnel can deploy to areas of the world where malaria presents a significant threat to individual health and to mission success. Malaria is a significant infectious disease transmitted by a very determined mosquito vector that requires us to use multiple approaches to prevent disease.

The World Health Organization estimated that globally in 2015, there were 214 million cases of malaria and around 438,000 deaths attributed to this infection. In addition to personal protective measures, which are vulnerable to penetration and difficult to sustain in operational settings, it is critically important to provide the additional protection of malaria chemoprophylaxis, or medications. When used appropriately, chemoprophylactic medications can safely reduce the risk of malaria by more than 90%.

[*Translation*]

In developing our approach to malaria prevention and treatment in addition to our own assessment, we seek the advice and guidance of experts in this field, such as the Canadian Committee to Advise on Tropical Medicine and Travel. This committee has developed evidence-based clinical guidelines.

Those best medical practices address the very real threat that malaria presents, while taking into consideration the safety and effectiveness of the medications involved. This committee, along with similar authorities such as the United States Centers for Disease Control and Prevention, Public Health England and the World Health Organization, recommend several medications, including mefloquine, as suitable drugs for the prevention of malaria, depending on the regional susceptibility of the malaria and appropriate patient screening.

● (1535)

[*English*]

The Canadian Armed Forces, following the advice of the Canadian Committee to Advise on Tropical Medicine and Travel and other expert bodies, has included mefloquine as one of the suitable options available to patients to prevent malaria for several decades. Our other two main options at this time include doxycycline and a combination of atovaquone and proguanil, also known by trademark as Malarone. Each of these medications has its own advantages and disadvantages as well as potential side effects.

The selection of a potential anti-malaria medication for each mission involves an assessment by our Directorate of Force Health Protection to determine the risk of malarial infection and identify medication resistance in the region. Clinicians then work with the patients to discuss the risk of malarial infection along with a discussion of the advantages, disadvantages, and potential side effects and precautions of each of the medication options and a screening for potential contraindications before an informed choice is made by the patient as to the medication that fits their preferences and the situation.

The potential for medication side effects can impact the patient and their operational readiness, which is why it is so important that we appropriately educate and medically screen Canadian Armed Forces personnel. We want our people to make an informed and medically supported choice when selecting a drug to protect themselves against malaria.

[*Translation*]

In the Canadian Armed Forces, we have seen a decrease in the selection of mefloquine during the last decade. In the early 2000s, mefloquine was the most often used antimalarial. This started changing in the mid-2000s, and now mefloquine is our least often selected medication. It accounts for about 5% of our current antimalarial prescriptions, whereas atovaquone/proguanil, first licensed in 2002, now accounts for about 80%. The remainder of prescriptions are for doxycycline.

[*English*]

More than 17,000 Canadian Armed Forces personnel and tens of millions of people worldwide have received mefloquine since it was first licensed to prevent and treat malarial infection. We are aware of the potential short-term side effects of mefloquine; however, even given this extensive use of mefloquine, severe neuropsychiatric adverse effects have very rarely been associated with its use.

We are also aware of the assertions of some regarding their theories that mefloquine might cause long-standing neurological damage and mental health issues, which they themselves suggest requires more research to support. Our assessment of their assertions, at this time, is that they are not sufficiently supported through direct scientific evidence for us to remove mefloquine as an option for patients to protect themselves from malarial infection, particularly if they have used it safely in the past.

This assessment is consistent with the recommendations with respect to malaria chemoprophylaxis of the Canadian Committee to Advise on Tropical Medicine and Travel, the U.S. Centers for Disease Control and Prevention, Public Health England, and the World Health Organization.

As you are likely aware, mefloquine remains an option for malaria prevention for many militaries around the world. We do, however, remain vigilant and open to assessing any new evidence related to mefloquine and other antimalarial medications.

We also have confidence that our drug regulator and the Canadian Committee to Advise on Tropical Medicine and Travel will update their advice in a timely and appropriate way if or when new and credible scientific and medical evidence emerges.

We will, accordingly, update our approach to malaria prevention in a scientifically sound manner and with an emphasis on critical appraisal of the evidence.

Thank you for the opportunity to appear before the committee today.

The Chair: Thank you.

Next, we'll call upon the Department of Health.

Dr. John Patrick Stewart.

Dr. John Patrick Stewart (Director General, Marketed Health Products Directorate, Health Products and Food Branch, Department of Health): Thank you.

[*Translation*]

Good afternoon, everyone.

Thank you for the opportunity to appear today. I'm pleased to be here today to speak on the regulatory history of mefloquine.

● (1540)

[*English*]

Malaria is a serious life-threatening illness. Even with modern effective treatments and intensive-care support, as many as 20% of patients die when affected with the most severe form of malaria. Over the past three years, there have been approximately 65 cases of severe malaria per year in Canada. Preventing the infection is an important strategy for reducing malaria's impact on travellers.

Mefloquine is a prescription medication that is recommended as one of the few options for malaria prevention by the Public Health Agency of Canada's expert advisory Committee to Advise on Tropical Medicine and Travel, CATMAT, and by most public health and travel medicine authorities around the world. Mefloquine is a tablet taken by mouth and its once-weekly dosing may help with compliance, compared with other drugs that must be taken every day. These other available options, which include Malarone, doxycycline, and primaquine, are generally as effective in preventing malaria but have serious side effects as well. The benefits and risks of each option should be considered by the prescriber, and ultimately the decision on which drug to prescribe to a particular patient rests with the physician in discussion with the patient.

I would like to now speak about how Health Canada has monitored the safety profile of mefloquine since it came to market in 1993, and how it took steps to update, when needed, mefloquine's safety profile in the Canadian “Product Monograph”, the document listing information about uses, dosing, and side effects.

The side-effect information in the monograph is obtained from clinical trials as well as from market experience with the drug. Rare adverse events are usually only detected after a drug is launched onto the market as more patients are exposed to it. Health Canada relies on several sources of information, including its Canada Vigilance Adverse Reaction Online Database , the published literature, and communications from other regulatory authorities to monitor the safety of marketed drugs.

Through mefloquine's life-cycle, its safety information has been continuously monitored by Health Canada. As such, it has been periodically assessed to determine if current labelling appropriately reflects the drug's safety profile. The original monograph, introduced in 1993, included a warning to advise that patients with a past history of psychiatric disturbance or convulsions should not be prescribed mefloquine for malaria prevention. As a result of post-market adverse drug reaction reports, in January 1997 these warnings were moved into the contraindication section of the monograph.

In 1998, an article was published in Health Canada's *Canadian Adverse Reaction Newsletter*, describing four reports of neuropsychiatric adverse events with mefloquine use.

This action was followed in 1999 by a safety review that examined all Canadian adverse events in association with mefloquine, which resulted in an addition of suicidal thoughts as a listed side effect. Health Canada also decided at that time to assess all adverse events associated with mefloquine every six months.

Additional information on neurologic and psychiatric adverse events associated with mefloquine, including that they may continue long after mefloquine has been stopped, was added to to the monograph in 2003. This included the addition of a patient-information section as well as a wallet card describing the neurologic and psychiatric side effects and advising patients to consult a physician should these effects emerge. These changes were prompted by a similar update carried out by the U.S. Food and Drug Administration.

In 2005, two related public advisories, a “Dear Healthcare Professional” letter and a “Dear Pharmacist” letter, were issued by the manufacturers of mefloquine in collaboration with Health Canada.

[*Translation*]

The safety profile and product labelling were formally assessed again in 2006. This review concluded that no additional risk minimization measures were required. The department has since then continued to monitor the safety of mefloquine in a standard manner.

[*English*]

As mentioned before, Health Canada also monitors and assesses the actions taken by other regulatory authorities. In 2013, the U.S. Food and Drug Administration published a risk communication highlighting a boxed warning on neurologic and psychiatric adverse events in the U.S.'s mefloquine prescribing information. Health Canada reviewed the safety data at that time and determined that the safety issues were already adequately labelled in the product monograph.

In 2014, Health Canada introduced its plain language labelling initiative, setting out a new format for the Canadian product monograph. Following this, Health Canada requested that the sponsor update the mefloquine monograph to reflect this new format. The update was completed in August 2016, allowing for a clearer presentation of information. For example, the new product monograph and wallet card now include more prominent boxed warnings indicating that mefloquine may cause neurological and psychiatric adverse reactions that can persist after the product has been discontinued. The box warnings also state that if psychiatric or neurological symptoms occur, mefloquine should be discontinued and an alternative medicine substituted.

To conclude, malaria is a serious, life-threatening infection with a mortality rate of 20% in patients with severe malarial infection. Mefloquine is a very effective antimalarial drug when it's tolerated by travellers and when the drug is prescribed and taken as directed in the product monograph. Health Canada will continue to monitor its risks and take steps to address the safety issues in a timely manner. The benefit/risk profile of mefloquine for malaria prevention based on current information is considered positive.

● (1545)

[*Translation*]

I would like to thank the committee for the opportunity to speak to you today.

[*English*]

I will now turn to Barbara Raymond, from the Public Health Agency of Canada, to provide her remarks.

The Chair: Thank you.

Dr. Raymond, the floor is yours.

Dr. Barbara Raymond (Interim Director General, Health Security Integration, Health Security Infrastructure Branch, Public Health Agency of Canada): Good afternoon, and thank you for the opportunity to speak specifically about the Committee to Advise on Tropical Medicine and Travel, CATMAT, and its role and process in developing medical, scientific, and public health advice relating to tropical disease and health risks associated with international travel.

The committee, more commonly referred to as CATMAT, is an expert advisory body to the Public Health Agency of Canada and is made up of health professionals, all volunteers, in the fields of tropical medicine, travel medicine, travel health, infectious disease, and epidemiology. Also included are liaison members from relevant associations, including the Association of Medical Microbiology and Infectious Disease Canada and the Canadian Paediatric Society. In addition, we have ex officio representatives from Health Canada and the Department of National Defence who participate in the committee's activities.

In developing its guidelines, the committee undertakes a very thorough review of the scientific literature and also reviews recent research and international and national epidemiological data to tailor its recommendations to the Canadian context. Influencing factors in its recommendations include the drugs available for use in Canada, Canadian-specific travel patterns, and related disease epidemiology or patterns of disease.

CATMAT considers the need for protection and weighs that against the potential for adverse effects that could be associated with treatment or prevention therapies and the values and preferences of Canadian travellers and health care providers. CATMAT regularly reviews and updates its guidelines as new information becomes available so that Canadian health care providers have the information they require to provide appropriate guidance to individual travellers.

With respect to the “Canadian Recommendations for the Prevention and Treatment of Malaria”, these were last developed and published by CATMAT in 2014. CATMAT includes in that edition mefloquine along with doxycycline, atovaquone, and proguanil as drugs of choice for the prevention of malaria in travellers to regions that have strains of malaria that are resistant to chloroquine, another drug that is used to treat some strains of malaria.

The current CATMAT guidelines advise that mefloquine is generally well tolerated and that severe reactions are rare. They stipulate that individual risk assessments are required prior to use, and the Public Health Agency of Canada advises travellers who are going to malaria-affected destinations to discuss the benefits of taking antimalarials with their health care professionals, preferably six weeks before departure.

As part of its regular review schedule, CATMAT is currently reviewing the recommendations for the use of antimalarials, including mefloquine. The review of CATMAT's malaria guidelines is expected to be completed in 2017, and at that point, the Public Health Agency of Canada will review its advice to Canadian travellers based on those updated recommendations.

Thank you for your attention, and I return the floor.

The Chair: Thank you.

We'll start with questions now.

I'll turn the floor over to Mr. Kitchen.

● (1550)

Mr. Robert Kitchen (Souris—Moose Mountain, CPC): Thank you, Mr. Chair, and thank you all for coming today. I appreciate your comments.

I come from a military family, and my father was the military attaché to Pakistan, Afghanistan, and Iran, with the high commission there. When we were sent there, I was just a teenager. Basically, we were told that when you're going there, you have to take malaria pills.

When my two sons travelled to Africa, one son talked to his doctor, a South African doctor who was very aware of malaria and suggested he take doxycycline. The other son was given mefloquine. It happens: doctors give out what their preferred drug may be.

My question is really dealing with informed consent. General, can you describe to us what the informed consent process would be for our soldiers when they go into theatre?

BGen Hugh MacKay: The current process is dependent on the size and nature of the deployment.

If we have small numbers of people going off as UN military observers, for example, they would have a briefing with a preventative medicine technician about the risks of the region they're going to, which would include the risk of malarial infection, if it were there. Then those small groups of individuals would have a face-to-face encounter with a physician or a pharmacist at which there would be discussion about all of the options available in the region to which they are going to combat malaria.

That discussion would include the medications available, the advantages, the dosing schedules of each of those types of available medications, as well as a discussion of the risks of adverse effects and the types of adverse effects they might experience with the medications being considered. Then, in a discussion with them about what their preferences would be with respect to advantages and disadvantages and the potential for adverse effects, they'll make a decision about which medication to go with.

If there are larger groups, there will probably be a larger presentation to a company-size or platoon-size group given by a medical provider, probably a pharmacist. They wouldn't have that individual session up front, although they would fill in a questionnaire that identifies the risk factors we need to consider for each of the medications, and there would then be a review of what they report with respect to their risk factors and the antimalarial they might want to select. We will then have them sit down with a health care provider to receive these medications.

Mr. Robert Kitchen: And were these policies in place all the way back to Somalia?

BGen Hugh MacKay: I can speak to having this policy in place since 2004. I can't speak to the exact policy that was in place back to the time of the deployment to Somalia. I think, though, that there have been reviews by the Auditor General and the commission of inquiry for Somalia that have identified that those processes were not in fact followed at that time.

Mr. Robert Kitchen: What sort of documentation would there be to support that? Is it still in existence today? Is it archived? Is it in medical records?

BGen Hugh MacKay: I'm not sure what information they used to generate their evaluations in reports. If there has been an encounter with a health care provider with respect to counselling on a medication and a prescription, it should end up in a medical record, and it would have been a policy that a record be made in the health record at that point in time.

Specific to malaria prophylaxis discussions, I'm not sure what the policy was.

● (1555)

Mr. Robert Kitchen: I might be able to go back into the archives to find out what medication I took back in 1972-73, because I can't remember. Records are available, possibly archived.

BGen Hugh MacKay: Medical records are possibly archived, yes.

The Chair: You have one minute.

Mr. Robert Kitchen: Very quickly Dr. Raymond, in public health there are issues with civilians dealing with mefloquine, because it is a drug out there for civilians as well as for our veterans. We are hearing about people having serious side effects.

Would it be of interest for the Public Health Agency to do a long-term national study and keep records of these side effects to see exactly what is going on with the medication?

Dr. Barbara Raymond: The Public Health Agency's role with respect to this is to develop the guidance and the recommendations for health care practitioners to use when they are prescribing for individuals, taking into account all the issues that relate to that individual and so forth. The agency does not engage in long-term studies monitoring drug use or adverse events over time.

Mr. Robert Kitchen: Dr. Stewart, would there be an interest by Health Canada in that?

Dr. John Patrick Stewart: That type of information would be very helpful. The mandate, as defined under the Food and Drug Act and regulations, is that Health Canada doesn't carry out research. It may support research through funding through CIHR, the Canadian Institutes of Health Research, but as far as practice guidelines and so forth are concerned, generally that type of research is carried on outside of Health Canada. Sponsors will come in with information to update their monographs, so they may do individual studies, but currently that's not part of the mandate of Health Canada.

Mr. Robert Kitchen: Thank you.

The Chair: Mr. Bratina.

Mr. Bob Bratina (Hamilton East—Stoney Creek, Lib.): Thank you.

We have following comment by General MacKay:

> We are also aware of the assertions of some regarding their theories that mefloquine might cause long-standing neurological damage and mental health issues, which they themselves suggest requires more research to support. Our assessment of their assertions, at this time, is that they are not sufficiently supported through direct scientific evidence for us to remove mefloquine as an option for patients....

Dr. Raymond, does that statement by General MacKay sound reasonable?

Dr. Barbara Raymond: As I noted, the CATMAT committee undertakes a very rigorous review of the scientific evidence that is available, and if that scientific evidence is available, it would be accounted for in their recommendations.

At this point, the balance of information does not allow for that conclusion to be drawn.

Mr. Bob Bratina: In our committee we have heard some disturbing testimony regarding the effects on our veterans, and the veterans of course are our concern in this committee.

Anecdotally it was interesting for me to hear from a person in uniform at a military event that, yes, they had been in malarial areas and had taken mefloquine and decided after three or four times that they didn't like the bad dreams, or words to that effect.

General MacKay, has there been consistent feedback on how different people react to things such as mefloquine, in this particular case? Do you get the sense that some people go through their military careers and have been in malarial settings and taken drugs and didn't get malaria and some have had terrible side effects, which apparently have been lasting, according to the testimony we heard, but for others, it's not been so. Does that coincide with your understanding of this issue?

BGen Hugh MacKay: Just as with any medication that has adverse effects, we have seen some patients take mefloquine who didn't like the side effects. Often it is about the dreaming. Sometimes it's about nausea and dizziness. We always give them the option of being able to change their medication to make sure that we are still able to protect them from malarial infection.

In our experience patients have had adverse effects that cause them to ask to change.

● (1600)

Mr. Bob Bratina: At our committee, of course, we're now dealing with the veteran, someone who was released from service or who retired from the service and who may have been dealing with the effects that are possibly directly related to mefloquine. Post-traumatic stress disorder is a different and difficult and complicated issue.

Perhaps I could ask Dr. Raymond if there's any way of approaching the post-traumatic stress disorder problems, or the subsequent issues related to medicines, in terms of therapies or treatments that might be available to these veterans. Is that a fair question?

Dr. Barbara Raymond: It really wouldn't necessarily be a question within the purview of the Public Health Agency of Canada. I could speak to it in terms of the committee looking at evidence for this being associated with mefloquine, and there has been no evidence sufficient to support that.

As well, post-traumatic stress disorder is considered as a very separate entity from toxicity that might be associated with medication, so the two aren't well aligned.

Mr. Bob Bratina: All right. Thank you.

With regard to the active personnel, the percentages are striking. At 5% of our current antimalarial prescriptions, mefloquine is now our least-selected medication, but in the overall evaluation of the medicine, would it be fair to say that it was a very low percentage of unanticipated extreme effects for the personnel who used it? Is that what the numbers tell us? That it is a low percentage of extreme effects?

I'm trying to extrapolate that from the material you've given us. How hard is this—

Go ahead.

BGen Hugh MacKay: On the number of 5%, on the fact that we've gone from a high percentage of people using mefloquine down to 5%, it's difficult for me to speculate as to why that has happened.

I think it is really about making sure that we're educating patients about the risks of malaria and the benefits and the potential adverse effects of the medications. I believe that all of the publicity around mefloquine is impacting people's decisions. The concern, just as we saw with people making statements about vaccines and anti-vaccine campaigns, is that there's always a risk of people interpreting information too severely, such that we cause people to make choices that aren't necessarily based on really sound science, but based more on what's going on in the discussion publicly.

Mr. Bob Bratina: Thanks very much.

The Chair: Thank you.

Ms. Mathyssen.

Ms. Irene Mathyssen (London—Fanshawe, NDP): Thank you, Mr. Chair.

Thank you very much for all of this information. It's important to have the best information available, so I appreciate it.

I have a number of questions.

First, at the time mefloquine was given, what information was given to military personnel? What were they told at that time in regard to possible side effects? What are people told today in that regard? In the past, and I guess in the present, too, have they been given other options in regard to anti-malaria drugs?

BGen Hugh MacKay: Is that question for me?

● (1605)

Ms. Irene Mathyssen: Whoever feels most comfortable in answering is fine.

BGen Hugh MacKay: I can only speak to the military context. I can't speak to what was told to people back when we initiated mefloquine in I guess 1992.

I can tell you that today what we use is the information that comes from the monograms for all of the medications. As I said before, we talk about the risks, benefits, and side effects that are listed in trying to give them information as to what percentage of people may experience some of those side effects. We also discuss with them the real risk of malaria in the region they're going to. In some cases, the risk is much higher than in others. It's really standard practice to advise somebody on a medication choice in this regard.

Ms. Irene Mathyssen: There was some discussion of records, so I take it that records going back to 1992 are not helpful in regard to what people were told. Is that what you think?

BGen Hugh MacKay: I can't comment on what was put in the records.

Often a physician, when counselling a patient, will make annotations about the nature of the discussion. They may not annotate all of the specific details of each of the adverse effects they may have discussed. Oftentimes, that's what a physician will put in a clinical note after a patient encounter. The paper record system that we had at that time was different from the electronic health record that we have today, and I think that today we are able to produce far better records because of our electronic health record. It's much easier to recall information from our electronic health record than from what we had in the past.

Ms. Irene Mathyssen: Thank you.

What happens if a member of the Canadian Forces is supposed to go on a specific mission to a place that has a high level of malaria—they are informed of the risks in terms of taking the drugs that, I take it, they need to take in order to embark—and they say that they are not prepared to take those risks?

BGen Hugh MacKay: If the risk of malarial infection is high enough.... Malaria has significant morbidity and mortality risks associated with it, so we would probably make a decision not to permit the individual to deploy unprotected into a situation where there is a risk of malarial infection.

Ms. Irene Mathyssen: Is there any negative impact on that individual's record because they said that they did not wish to take the drugs and therefore couldn't be deployed?

BGen Hugh MacKay: A decision would have to be made, either at the personnel or the chain of command level, as to whether or not it was considered to be reasonable to take that decision, given their current personal situation. There may, in fact, be some action with respect to whether or not they continue to meet universality of service, if they are not prepared to accept the proper protective measures to go into a deployment scenario.

Ms. Irene Mathyssen: So they could lose their career if they felt very strongly about not taking these drugs.

BGen Hugh MacKay: I don't make decisions about whether or not somebody would lose a career—it's our personnel area that does that—so I would be cautious about making a comment there. There would be an evaluation of the individual's continued satisfaction of the universality of service requirement. If you don't meet the universality of service requirement, there are potential career implications.

Ms. Irene Mathyssen: Thank you.

Dr. Raymond, you said that health care providers are advised about concerns or issues with a drug.

What is the process? How are doctors informed about any concerns or changes to recommendations regarding these quite significant drugs that have a potential negative impact?

Dr. Barbara Raymond: Health care providers have access to product monographs, which are overseen by Health Canada. In terms of the CATMAT guidelines, these are published online and made available to physicians, and there is a communication strategy for those guidelines to ensure that practitioners who see travellers and who practice travel medicine and so forth are aware. It's a very basic, commonly known resource for health care practitioners who are counselling travellers.

● (1610)

Ms. Irene Mathyssen: Would anyone know what instructions were given by Health Canada to DND in regard to tracking and recording the outcomes of the medication, and what kind of follow-up was done in order to see exactly what impact it had?

The Chair: You'll have to make it a very quick answer on that one, please.

Dr. John Patrick Stewart: The requirements and regulations under the Food and Drugs Act are that the manufacturer of a drug has a mandatory obligation to report on serious and unexpected adverse drug reactions.

There is a way to voluntarily report. Users of products—physicians, hospitals, pharmacists—can submit adverse drug reaction reports to Health Canada directly, but the obligation is on the manufacturer to report on the use of the product after it's authorized.

The Chair: Mr. Fraser.

Mr. Colin Fraser (West Nova, Lib.): Thank you very much, Mr. Chair.

Thank you, everyone, for your attendance today and for your very good information. It will help us understand this a little bit better.

I appreciate, and I think everyone does, the dangers associated with malaria and the need to make sure that our Canadian Forces and veterans are protected against malaria in tropical theatre deployments. I appreciate that backgrounder.

With regard to what's being prescribed now as antimalarials, do we have a sense of the number of people in the forces using mefloquine and the number being prescribed other types of antimalarials right now?

BGen Hugh MacKay: Andrew is my expert on this. Fifty-one individuals were prescribed mefloquine in 2013. We're down to 42 persons who were prescribed mefloquine after a discussion with a clinician. Sixteen times that would have received Malarone.

Lieutenant-Colonel Andrew Currie (Section Head, Communicable Disease Control Program, Directorate of Force Health Protection, Department of National Defence): It is Malarone and doxycycline.

Mr. Colin Fraser: The overwhelming number are receiving the other types.

BGen Hugh MacKay: Only 4.3% now, I think, of the prescriptions for people who receive medications to protect against malaria are for mefloquine. The vast majority of the rest are for Malarone, followed by doxycycline. As I said, the numbers are small. It was 43 who had mefloquine. About 800 got other types of antimalarials.

Mr. Colin Fraser: Do we know if the ones prescribed mefloquine right now and taking mefloquine, or who did in the recent past, had been using the other types of anti-malaria drugs and for whatever reason, as a drug of last resort, for example, are now using mefloquine because of the side effects of those other types? Do we know how many used different drugs before using mefloquine, of the ones who are using it now?

BGen Hugh MacKay: I don't have that information available.

Mr. Colin Fraser: Could we find out?

LCol Andrew Currie: Our pharmacy people actually track that. Although I don't have the numbers strictly in front of me, we're talking about ones and twos who actually do that crossover.

Interestingly enough, you actually get the same sort of crossover when people who don't tolerate one medication cross over to mefloquine, or maybe they like the dosing regime. You will also get people crossing over from the other. Sometimes that actually happens in theatre.

Mr. Colin Fraser: That was going to be my next question. You only take mefloquine once a week.

LCol Andrew Currie: Correct.

Mr. Colin Fraser: Some people prefer that, so you'll see crossover and people switching to mefloquine or between both types.

● (1615)

LCol Andrew Currie: Correct.

The other aspect is how long you're going to stay. For example, for someone who's going to be 10 days some place, it probably makes more sense to use a daily product as opposed to....

Mr. Colin Fraser: Right.

This could be a dumb question, but how is the drug actually prescribed? What doctor do they see to get it prescribed, and how many doctors are prescribing this stuff before our forces are sent into theatre?

BGen Hugh MacKay: That would be very mission specific.

Any of our physicians could be called upon to prescribe anti-malaria medication. We also, though, have recently permitted, as is the case across many of the provincial jurisdictions, pharmacists to have that discussion and provide malaria chemoprophylaxis to patients.

Mr. Colin Fraser: Before a prescription would happen, though, the individual would meet with probably a doctor, a physician in the forces, and have a discussion about possible side effects and the pros and cons of the different types of antimalarials. Would that be the norm?

BGen Hugh MacKay: There are two processes. The small number of people who are going away, as I explained earlier, will likely have that encounter with a physician.

When we have larger groups of personnel going out, there may be a larger body of people brought together for a briefing by either a physician or a pharmacist about all aspects of the medication with respect to dosing, advantages, disadvantages, and adverse effects. That group of people would also fill in a screening form we have, which we would then review on an individual basis. We would then have them see a clinician, either a physician or a pharmacist, to receive the medication.

Mr. Colin Fraser: Thank you.

Dr. Stewart, let me move to you. You touched on mefloquine, one of its advantages being that it only requires one dosage a week. Are there other reasons to explain why someone would choose mefloquine over another malarial?

Dr. John Patrick Stewart: Each anti-malaria prevention therapy has its own advantages and disadvantages. Compared with some of the other therapies, if you have kidney problems, if you have photosensitivity, if you have a history of allergy or cardiac problems, mefloquine may be a better choice. It's really a conversation.

Each has its own side-effect profile, and what Health Canada does in the product monographs is present in the document what the drug is indicated for, the dosage, and the warnings, precautions, contraindications, and so forth. It's up to the physician and the patient to sit down and look at the options to see what works best for them.

There are a number of considerations. They all have side effects; none of them is side-effect free. You have to consider the unique circumstances of a patient—the situation, the duration, and so forth.

The Chair: I'm sorry, you're out of time.

Mr. Eyolfson.

Mr. Doug Eyolfson (Charleswood—St. James—Assiniboia—Headingley, Lib.): Thank you, Mr. Chair.

Thank you all for coming. My first question is for Dr. Stewart. This is a perfect lead-in to what I was going to ask.

We've spent a lot of time talking about these rare but serious side effects of mefloquine. Can you briefly describe some of the more serious side effects that you might have with Malarone and doxycycline? I know that photosensitivity is one of them with doxycycline.

Dr. John Patrick Stewart: They're listed in the product monograph and they vary. You can go by organ system, and they're listed. They can include severe allergic reactions that can be life-threatening; they can include excessive toxicity, skin reactions, GI reactions—vomiting, and diarrhea. Malarone can cause a chronic cough. Doxycycline is an antibiotic, so it can also cause GI side effects—clostridium difficile, diarrhea.

They both have the possibility of photosensitivity. In many of the areas where malaria is prevalent, there is high sun exposure. These are concerns.

This is why it's important that the physicians involved with prescribing these drugs understand the various side-effect profiles. Many of the severe risks associated with all of them are quite rare, but when they happen, they're quite serious. You have to be aware and have to inform the patient to seek advice from their practitioner; that's why the guidelines are there. The document that CATMAT puts out lists all the considerations of the various drugs that are extracted from the product monograph that Health Canada puts out and from other international information. It really is a consideration at the interface between the physician and the patient, however, as to the best choice and what the strategy is if that choice is not optimal once the patient starts it.

Mr. Doug Eyolfson: Sure.

This may be a very difficult if not impossible question to answer. Generally if you're looking at risk-benefit profiles, would all three be equivalent? Even though they're rare, would you say there are more, or a higher frequency, of these rare side effects with mefloquine compared with the others. I'm a physician myself and I hate it when someone asks this question, but if you were prescribing these and comparing the risk versus benefit of all three, can you think of one that you would say has the best risk-benefit profile of all three?

Dr. John Patrick Stewart: My role is to represent Health Canada. It's not the role of Health Canada to do that; the role is to provide the information effectively. Then, at the interface with the patient, that decision has to be made, and there are many considerations in that regarding, including patient tolerance, side effects, their health, economics—it's all there. So I wouldn't say that one is better than the other.

That's why we have organizations, such as CATMAT, that can sit down.... It takes a number of experts to sit together and consider it and then put out the recommendations. I wouldn't say that Health Canada has a best drug to recommend; its role is to explain the evidence around each product. Then, one of the uses of practice guidelines is that they inform practitioners about what the considerations of a given illness are, what products are available, and what you need to understand before you choose one.

It wouldn't be fair to say that one is better than the other.

● (1620)

Mr. Doug Eyolfson: No, I understand.

General, again, I seem to be in the habit of asking very difficult questions, and I don't know if there's data about this. We do know that PTSD itself is an unfortunate and tragic occurrence in personnel who deploy in any combat situation. We have personnel who deployed in different theatres in different parts of the world, in some of which malaria is not an issue, so you wouldn't be prescribing antimalarial prophylaxis because they wouldn't need it.

Do we have any data on rates of PTSD diagnosis in soldiers in theatres where they've served and this was not an issue, and we know we would not have had any antimalarial prophylaxis because it wasn't an issue, versus in theatres where you had to have such prophylaxis?

BGen Hugh MacKay: Unfortunately, it's only been probably in the last 10 to 15 years that we've really started to track what's going on with respect to mental health outcomes. The best data we have with respect to mental illness as a result of deployment really starts around the Afghanistan time frame. I do know, though, that for our deployment to Bosnia there were no antimalarial medications, and we certainly have seen mental illness as a result of the deployment to Bosnia. Our use of antimalarials in Afghanistan was limited. We did a very strict risk assessment through the Directorate of Force Health Protection. Although the American forces were almost all on antimalarials, we gave them only to those who were going out into small regions on foot patrols in areas in which we thought they would potentially see malaria. Even given the limited use of antimalarials, which were primarily Malarone or doxycycline, we are still seeing a fairly significant amount of mental illness as a result of our efforts in Afghanistan.

Mr. Doug Eyolfson: All right. Thank you very much.

The Chair: Mr. Brassard.

Mr. John Brassard (Barrie—Innisfil, CPC): Thank you, Mr. Chair.

I'm certainly glad that this conversation has evolved into a national conversation, because the evidence that we're hearing is that more and more of our veterans and our servicemen and service-women have been affected by this.

Brigadier-General MacKay, I'm trying to work out the timeline here. I know in your testimony today you spoke about the decrease in the selection of mefloquine during the last decade. In the early 2000s, mefloquine was the most often used antimalarial. This started changing in the mid-2000s. That would be about 2005, I would assume. Then you also said, in response to a question about why this is happening, that it may be more publicity about this than anything else.

This really didn't start becoming an issue until about 2013 or so, and here we are in 2016. In 2013, the issue of suicide became a little more prevalent. Mr. Dowe brought that to the forefront. We had Mr. Dowe here last week to discuss this. Why did we see such a drastic reduction in the use of mefloquine within the military in that period? It wasn't publicity, I would suggest. I would suggest it was more perhaps that the effects of the drug were starting to be known.

I'm just wondering if you can speak specifically about that reduction.

● (1625)

BGen Hugh MacKay: My initial comment about the reduction was not about the media. My initial comment was about the fact that we, in 2004, started to really sit down and educate all of our patients around the risks, benefits, and potential adverse effects of all of the choices for antimalarials, which, I believe, made a difference.

Mefloquine has been controversial since the nineties. We saw that fall out of the Somalia inquiries and the discussion around mefloquine at that time. I think that my statement with respect to media impact is not just from, I believe you said, 2013, since when there has been some discussion about it. Throughout the nineties and 2000s there has been controversy around mefloquine, which, I believe, shaped some people's decisions, in addition to, as I said, the education and discussions that we started to have seriously with patients in 2004.

Mr. John Brassard: Thank you, Brigadier General MacKay.

Dr. Stewart, we had Dr. Remington Nevin speak on this issue last week as well. He spoke about the United States in particular and the fact that U.S. Special Operations Command issued an order acknowledging that the effects of mefloquine may confound the diagnosis of PTSD and TBI. It also directed that commanders and medical personnel address and assess the possibility and impact of mefloquine toxicity within their population.

General MacKay and Dr. Raymond, given the fact that the product monograph was changed, what type of instructions would be given to the military or for those who dispense mefloquine, for example, as a result of those changes to the product monograph? How does that work?

Dr. John Patrick Stewart: The product monograph is a document that provides information on the indications, the use, contraindications, warnings, precautions, and side effects. It has a part two, which has information for patients, and it has a central part, which has evidence that supports the market authorization.

As I mentioned in my opening remarks, it's a living document in the sense that as we learn more, as there is more exposure to mefloquine in broader populations, the importance of side effects becomes better understood. The document was upgraded and certain things in it were changed from the original.

A history of psychiatric or neurological problems, which was a warning, was moved to becoming a contraindication. The fact that suicidal ideation being seen was also included. The fact that these side effects could persist after the drug was stopped was added.

If you look at the history of when that was done in the U.S. and when it was done in Canada, there was a very similar progression of the product monograph.

We don't then talk to prescribers, other than to alert them that the product monograph has changed, or as I pointed out in my opening remarks, in 2005 we put out a risk communication with the manufacturers to ensure that health care providers were aware that this was changing. But the responsibility is also on the prescribers to see when things are changing, to invest in the discussion around the safety of medication, and to adjust their prescribing patterns accordingly.

● (1630)

Mr. John Brassard: How would you determine there are potential effects for up to three years? Would that be based on studies that other countries have presented, which you've studied up to this point? Where would that data come from, that there could be effects three, four, and five years after a person has stopped taking the medication?

Dr. John Patrick Stewart: Again, as I pointed out in my opening remarks, we look at our own ADR events that are coming in, and we look at what the literature and international regulators are doing, and what the manufacturer may be telling us. We were seeing in the reports coming in—in other jurisdictions as well as in Canada—the description of the severe events, and also the point that these persisted after the drug was stopped. To sort it out ultimately and do a causality assessment to determine whether the product is causing or directly related to the symptoms the patient is describing is a very challenging type of work to do and to determine, because many different factors are involved.

For instance, depression is a diagnosis that happens in individuals who aren't on medication and for those who are on medication. If depression occurs while you're taking a medication and then continues, the medication may be playing a role. But there may be other psychosocial factors and genetic factors involved. We know that mental illness happens in the population that isn't on medication, so it's often challenging to say, when someone makes a report, that there's a direct causal relationship with the medication. But when we're seeing a number of reports, then we will look at the labelling and see whether it should be in there to alert physicians that this may have a role.

Some of the reports of adverse events with neuropsychiatric symptoms said that the symptoms persisted afterwards. It's not clear whether that's been caused by the medication, but it's there, so it's in the monograph to alert practitioners that this is something to consider when they're thinking of prescribing the drug.

Mr. John Brassard: Thank you, Chair.

The Chair: Ms. Lockhart. I believe you're splitting your time.

Mrs. Alaina Lockhart (Fundy Royal, Lib.): Yes.

Thank you all for your testimony today. It's been very helpful.

Let's assume they've gone through the briefing and made their choice. After a drug is prescribed, what type of follow-up is there in the theatre for mental health and impacts of drugs?

BGen Hugh MacKay: Usually when a medication is prescribed that people are taking in theatre, members of the Canadian Armed Forces are advised that if they're having some concerns with any effects they may think are attributable to the drug, they should come forward and tell us about those so that we can help to understand whether or not those are related to the medication or some other confounding factor as a result of their deployment.

We don't specifically go and do a follow-up screening for those who have received mefloquine. It's not part of our process.

With respect to mental health, it depends on the size of our deployment. In Afghanistan, at our role 3 hospital, we had a psychiatrist, a social worker, and a mental health nurse right in the hospital available to assist anybody who might have some mental health symptoms.

But when we have smaller missions, we still often have physician assistants or physicians who are also capable of helping people with mental health issues, at least in the initial phases, and of making a decision as to whether or not they need to come for more advanced care.

Mrs. Alaina Lockhart: So there's no scheduled mental health check-ins or follow-ups? They're just on an as-needed basis? Is that correct?

BGen Hugh MacKay: We do have a scheduled post-deployment enhanced screening that occurs between three and six months after a six-month deployment. We don't do specific screening while they are in theatre. They are aware and have access to health care providers should they start to have some symptoms that they are concerned about, so they can come forward to see us there.

As they are leaving theatre, we start to get them ready with some briefings on the changes that they may experience as they're returning home. Some of that talks about the potential for mental health impacts. Then again, at three to six months after they're home, we go through an individual one-on-one assessment with them to see whether or not they have any follow-up mental health impacts.

We've been finding that about 50% of the people who screen positive for potential mental health effects in that post-deployment screening have already come in and sought care before that screening has occurred, so that's been a good sign for us that some of our education and messaging on mental health is working.

● (1635)

Mrs. Alaina Lockhart: Thank you.

The Chair: Mr. Rioux.

[*Translation*]

Mr. Jean Rioux (Saint-Jean, Lib.): Thank you, Mr. Chair.

My thanks to the witnesses for providing us with their scientific opinions.

Dr. Stewart, you said that, in 1993, the drug was not supposed to be prescribed to patients with a past history of psychiatric disturbances or convulsions. Then, there were four reports of neuropsychiatric adverse effects. The review showed that the drug produced suicidal thoughts that could continue long after treatment was discontinued.

Last week, we heard from people, whose stories were very moving. Doctors told us that they had been diagnosed with post-traumatic stress disorder, but that the diagnosis was very different in that it was directly related to taking the drug.

Given the situation, should more research be conducted? Based on what we were told last week, the U.S. seems to be open to that.

Dr. John Patrick Stewart: Thank you for the question.

[*English*]

It's important to point out that with any medication, after it is market-authorized, there is increasing exposure to the drug as more and more patients use it. In clinical trials that were done to prove the therapy, there may have been slight signals of a concern. As you get greater exposure, you learn more, so the neuropsychiatric side effects associated with mefloquine became better defined and better described as use persisted.

We see that globally in the labelling of the product in many countries increasing from a warning of “don't prescribe it to people with neuropsychiatric problems”. We started to see that a small number of people who, before starting the drug, did not apparently have neuropsychiatric problems developed these while on the drug. Not only should it not be given to people who have pre-existing problems, but in a very small number of individuals without a history, we were getting reports that it actually induced neuropsychiatric problems, some of them severe. That's why the labelling got tighter and tighter.

I agree that there should be research. It's a very important area to explore. The question is who is best positioned to do that? The role of Health Canada is to monitor each drug and the information we have on it, and to make sure it's labelled. If it reaches a point where the benefit-risk profile is not positive, then we will take affirmative action. At this point, as signalled by its still being listed as one of the choices to treat falciparum malaria in chloroquine-resistant areas, the profile is not that severe. But we would support and encourage additional research into this area, absolutely.

The Chair: Thank you.

Mr. Clarke, go ahead.

[*Translation*]

Mr. Alupa Clarke (Beauport—Limoilou, CPC): Thank you, Mr. Chair.

It's a great honour to be here today.

Good afternoon, everyone.

Brigadier-General, my first question is for you. I imagine that the Canadian Forces Health Services group includes psychologists and psychiatrists. Is that the case?

Yes, great.

The officers under your command who are psychologists and psychiatrists provide diagnoses, meet soldiers and produce reports, which are confidential, of course. As commander, do you receive statistical reports? For instance, a report said that 31% of members who came last year had post-traumatic stress disorder or that 15% of members were depressed. Do you receive statistical reports from the medical staff under your command?

● (1640)

[*English*]

BGen Hugh MacKay: The approach we've taken to get a good understanding of the mental health burden in the Canadian Armed Forces is that we had a very significant survey done through Statistics Canada in which members of the Canadian Armed Forces were interviewed to identify those who had symptom complexes that were representative of mental illness. Through that, we were able to see that the 12-month prevalence of post-traumatic stress disorder had changed from 2.7% in 2002 to 5.4% in 2013. We did see, though, that there was no real change in the percentage of Canadian Armed Forces personnel suffering from depression—which is still our number one cause of mental illness in the military—which was around 8% in 2002 and still the same in 2013. I don't get an annual report on the statistics.

Mr. Alupa Clarke: On page 2, for example, you talk about the neuropsychiatric effects of mefloquine, and you say that those are rare. What numbers does the word “rare” correspond to? Would it be possible for us to know the statistics?

BGen Hugh MacKay: I'm using the information we have, not just from within the Canadian Armed Forces. I believe what we have, writ large, for those who have received mefloquine is that one in 11,000 or one in 13,000 persons may experience a severe reaction to mefloquine.

Mr. Alupa Clarke: So that's where the word “rare” comes from, one out of 11,000.

BGen Hugh MacKay: Yes.

Mr. Alupa Clarke: Was it one over 1,100 that you said?

BGen Hugh MacKay: It's one out of 11,000.

Mr. Alupa Clarke: Okay.

Last week I wasn't here, but I know that there were veterans who came here to talk about the mefloquine effects on their own lives. I also know that one of them said, at least to me, that he basically made a connection between the use of mefloquine and the criminal behaviour that was perpetrated by some of our military in Somalia.

Have your officers heard these kinds of connection stories often? Is this something that goes around in the circle of your commanding group?

BGen Hugh MacKay: It's not a common story that we hear. We hear often about the effects of our operations, whether in a conflict, in providing humanitarian assistance, or in undertaking disaster response, on mental illness. This is why it is very difficult to say that there's a causal relationship between what our military members and veterans really suffer from—and to try to care for them is the reason we're here—and saying that it is mefloquine rather than what they experienced in Somalia over and above that.

It is evident, certainly from the commission of inquiry for Somalia, that there were significant issues with respect to leadership and discipline in the unit way before they were given mefloquine, in the buildup to that operation.

Mr. Alupa Clarke: I see. That's interesting.

BGen Hugh MacKay: So there are confounding factors that you have to take into consideration.

Mr. Alupa Clarke: Thank you very much, Brigadier General.

Mr. Stewart, Madame Raymond, do you have any information that mefloquine has been related to any acts of physical violence?

Dr. John Patrick Stewart: We get ADR reports around neuropsychiatric behaviours that have occurred with individuals when they're taking mefloquine. These have been reported not just to Health Canada but to other jurisdictions. I can't speak to whether violence is one or not—I don't have that information in front of me—but there have been a number of different types of reports. Depression, aggression, psychoses, agitation, restlessness, and hallucinations have all been reported.

● (1645)

Mr. Alupa Clarke: Are there any reports of extreme violence?

Dr. John Patrick Stewart: I can't answer that question; I don't know.

The Chair: Thank you.

Ms. Mathyssen.

Ms. Irene Mathyssen: I'd like to go back to a question I asked before.

I understand what Dr. Stewart said about an individual about to deploy being given all kinds of information with respect to the drug, but what I wondered is, when CF members were given mefloquine as part of the medical trial, what were those CF members told? Were they told about the potential side effects? Were they given the information that is currently given to CF members?

Were they told?

Dr. John Patrick Stewart: I can't speak to what happened at the clinical trial site that DND was supervising. The information I have is that Health Canada approved the trial. The trial was submitted by the manufacturer, Hoffmann-La Roche, and as part of that trial there was a protocol, there was an informed consent document, and there was responsibility on the part of the manufacturer or sponsor of the trial to carry out the trial in the manner described in the protocol, which included informed consent.

Given the experience in Europe and in the U.S., because the product was already market-authorized there, there was already an understanding that there was potentially a problem if you had neuropsychiatric problems. The information that would have been available from those product monographs, I assume, would have been in that informed consent.

I don't have access to that document, but it was the responsibility of the clinical trial site coordinators or investigators to inform patients in the trial. I can't speak to how that may have been transmitted to the military personnel who were involved in the trial.

Ms. Irene Mathyssen: That's what troubles me: there's this lack of clarity. You made reference to DND's being on the ground there. I wonder whether they were recording. Were they collecting data?

Does anyone know whether they were actually watching what was happening to these individuals and collecting the data so that there could be a response to it?

Does anyone know?

BGen Hugh MacKay: I don't know what actually happened, personally, with respect to the clinical trial. I have read the Auditor General's report, and I have no reason to not believe what our Auditor General reported at that time with respect to the trial. That is a matter of record already, I think.

Ms. Irene Mathyssen: Who would know? Is there someone we should be talking to who might be able to answer that question?

BGen Hugh MacKay: The medical records of the day of those individual patients may show whether there was a consultation with a clinician in accordance with the clinical trial, but beyond that, I'm not sure what else you could look at.

Ms. Irene Mathyssen: Okay.

Dr. John Patrick Stewart: What I could tell you is that as a follow-up to the recommendations coming from the OAG audit, there was a recommendation to Health Canada to put in place better oversight of clinical trials. The federal government introduced Division 5, which is clinical trial regulations, in 2001, which put more responsibility on the sponsor in the oversight of clinical trials. The year after that there was a clinical trial site inspection program put in place. So as of 2002, Health Canada has a good clinical practice inspection program running. Some of the changes to Division 5 and inspections were a follow-up to some of the recommendations in that report, recommendations that were specific to Health Canada. I can't speak to the DND side.

The Chair: Thank you. That ends our round of questioning.

We'll give each organization a minute or so to wrap up if you wish. We can start with Dr. Barbara Raymond from public health.

● (1650)

Dr. Barbara Raymond: I would simply thank you for your attention today and for the questions, and I would reiterate that the recommendations are undergoing a comprehensive review. We anticipate that the next iteration of the recommendations for malaria prevention and treatment will be available at some point in 2017.

Thank you.

The Chair: Thank you.

Next we'll go to the Department of National Defence and Brigadier-General MacKay.

BGen Hugh MacKay: Again, I'd just like to reiterate my thanks for the opportunity to be here with you to speak and for your concern about the health and well-being of our veterans. We work very hard with Veterans Affairs Canada to try to make sure that those who suffer illness as a result of their work within the Canadian Armed Forces are looked after as best as we can.

We, as I said, are certainly cognizant of the work that's ongoing with respect to mefloquine and the opinions out there. We are always vigilant in trying to track what's going on, in conjunction with our regulator and the advisory committee, in order to make decisions about how we will continue to move forward with malaria chemoprophylaxis. Thank you.

The Chair: Thank you.

Now from the Department of Health, Dr. John Patrick Stewart.

Dr. John Patrick Stewart: As per my two colleagues, I'd like to thank the committee for the opportunity to appear before it to try to provide clarity on the role of Health Canada in the oversight of products, and, as their safety profile evolves, on the steps we take to ensure that the labelling adequately represents the evolving understanding of the benefits and risks. Hopefully, the information we provided today has helped the committee understand. This is a very complex study you're carrying out. We look forward to the recommendations.

The Chair: Thank you.

I just want to remind all the witnesses that if there's anything you want to add to your testimony, if you would email it to the clerk, the clerk will distribute it to the committee.

On behalf of the committee, I'd like to thank all of you for what you've done for the men and women who have served, and for coming to the committee today.

I also want to mention that we kicked off in the Senate today the 21st annual Veterans' Week. All members here will be back in our ridings next week thanking the men and women who have made this country the great country it is. On behalf of the committee, I'd like to thank all the men and women who have served.

I'd like to pause now. We will come back in about five minutes for committee business in camera.

[*Proceedings continue in camera*]