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## Thursday, May 8, 2014

## Chair

**Mr. Ben Lobb**

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● (0850)

[*English*]

**The Chair (Mr. Ben Lobb (Huron—Bruce, CPC)):** Good morning, ladies and gentlemen, and welcome. We have another meeting this morning for our study.

Welcome here everybody. We have three different groups today, one in person, one by teleconference, and one by video conference, so we're testing all of our technological skills this morning. I think as we normally try to do at this committee, we'll try to talk with the people who are connected remotely first, so that if there are any issues with technology we can catch up with them later on.

We have Dr. Trevor Theman by teleconference from Edmonton.

Thank you very much for getting up early this morning. Can you hear us okay, Doctor?

**Dr. Trevor Theman (President-Elect, Federation of Medical Regulatory Authorities of Canada):** I can hear you very well.

**The Chair:** Okay, we'll go ahead. All of the committee members are here. You have around 10 minutes. Carry on, please.

**Dr. Trevor Theman:** Thank you.

Good morning, Mr. Chair and committee members. We thank you for the opportunity to speak to you today on the issue of marijuana for medical purposes. This is a topic of significant importance to FMRAC and its members. As you noted, my name is Trevor Theman and I'm the president-elect of the Federation of Medical Regulatory Authorities of Canada, also known as FMRAC. My day job is that I'm the registrar of the College of Physicians and Surgeons of Alberta.

FMRAC itself provides a national structure for its members, the 13 provincial and territorial medical regulatory authorities, to present and pursue issues of common concern and interest; to share, consider, and develop positions on such matters; and to develop services and benefits for its members.

I'm now going to go directly into our brief on marijuana, and I want to emphasize that our job as medical regulatory authorities is to exercise our authority, which is given to us through provincial and territorial legislation, in the best interests of the public. Our overriding interest is the protection and safety of patients and the quality of care they receive from the physicians we regulate.

So one of our roles is to provide guidance to physicians in their day-to-day practice. So what do we tell practising physicians about marijuana for medical purposes? We've been concerned with the direction that Health Canada has provided with respect to this approval, or permission, or authorization for the use of marijuana for many years—indeed from the beginning, and the beginning goes back over 10 years. At that time our members of FMRAC approved the following policy, and that policy still holds true today. The policy states:

> The Federation of Medical Regulatory Authorities of Canada strongly believes that the practice of medicine should be evidence-based, and that physicians should not be asked to prescribe or dispense substances or treatments for which there is little or no evidence of clinical efficacy or safety.

Here's the big challenge: marijuana is a substance for which good scientific evidence about its safety and effectiveness in the treatment of medical conditions is sadly lacking. We're not against the use of marijuana per se; in fact, if appropriate studies had been carried out to demonstrate its effectiveness and safety and to determine proper dosaging, we would view this file very differently. But that's not the case, not even 10 years after we've started down this path.

We note that Minister of Health Ambrose has stated that marijuana is not an approved drug or substance. I don't need to remind this group that there is no drug identification number assigned to marijuana, and you don't pick it up from your pharmacy, and that says it all from our perspective.

So why are we here? We are aware of and certainly we understand, at least to a degree, the drivers for Health Canada's actions, but that does not make the decision that was taken correct. We believe the new federal medical marijuana regulations puts patients and the general public at risk. In our submissions to the draft regulations in February 2013, and again in the summer last year, when the new regulations came into effect, we stated that in our view the new regulations as presented were an abdication by Health Canada in its role in patient safety and public protection. Without clinical evidence of efficacy and safety, we as representatives of the medical regulatory authorities of Canada will continue to oppose the federal government's new medical marijuana regime. To do otherwise would be an abdication of our duty.

We are not aware of any new medical evidence that would warrant a change in our position. Thus the medical and health care communities remain without clear clinical guidance. Without such clear clinical guidance, FMRAC and the medical regulatory authorities will continue to advise physicians, our members, to exercise extreme caution when considering this question of approving marijuana for medical purposes for their patients.

I have repeatedly stated our position. Not only is there minimal evidence to support such a use for marijuana, there is indication that it may be very unsafe for some patients. Of particular concern are patients who are prone to addiction; very young and very old patients, who may be more sensitive to the drug; and those engaged in activities where alertness is a key safety factor. And this whole question of impairment from the use of marijuana, especially in safety-sensitive occupations, has received almost no attention. I think that is a significant oversight.

We are encouraged by Health Canada's commitment to work with an expert advisory committee to improve physician access to comprehensive, accurate, up-to-date information on the use of marijuana, thereby facilitating informed decision-making. This is long overdue. In fact, we may ask why it has taken so long, when the original regulations have been in place for many years.

What is really needed here is clear clinical guidance based on evidence, to advise physicians about the use of marijuana for medical conditions where a benefit is likely to happen. Such a document may also be of use to us, the medical regulators, in the event that a complaint is received regarding the quality of practice of physicians who participate in the program.

I would add that the new regulations diminish the role of the physician while advertising the program as being for medical purposes. While we were also opposed to the previous regulations, at least they required our members to identify and state the condition or symptoms from which the patient was suffering and for which marijuana might be effective. The current regulations remove that requirement and make physicians only a signing authority.

Health Canada would be well advised to recognize that giving physicians more and better information will not reduce the expectations, at times inappropriate, on the part of patients, to have access to marijuana for their medical conditions.

FMRAC and its members are encouraged by recent direction given by the Honourable Minister Rona Ambrose to Health Canada to modify the existing regulations, the intent of which is to require licensed producers to share information about those physicians who provide authorizations with us, the regulators, so it can be reviewed for quality assurance and complaint review processes.

In the interim, many of our members, the provincial regulatory authorities, have put in place mechanisms to allow them to monitor the activities of physicians who are providing approvals for patients to use marijuana.

In general, physicians must be aware of the lack of evidence to support the use of this substance for this purpose, and to inform patients of that. They must document the approval in the context of an established physician-patient relationship, and we belive this is key. That relationship includes making a proper diagnosis, considering all available management options, and ensuring regular follow-up. There's no point in offering any type of prescription or treatment unless one actually checks to see if it has worked. Finally, physicians are to submit information to the medical regulator on this activity.

In closing, on behalf of FMRAC and its members, the thirteen provincial and territory medical regulatory authorities of Canada, I want to extend our appreciation to your committee and the Government of Canada for its interest in this issue. This is about safety for the patient, the population of Canada, and possibly for physicians and other health care providers. As of today, there is insufficient evidence to warrant the use of marijuana for medical purposes, although we remain open and willing to be convinced otherwise.

I appreciate your attention, and I'd be pleased to answer any questions you may have.

● (0855)

**The Chair:** Thank you very much for the presentation.

Next, we'll go to the video conference. We have three guests this morning. I understand each of them has a presentation that they're going to deliver.

Dr. Le Foll, if you want to start, we'll just work our way across the table. That would be great.

Go ahead, sir. Can you hear us?

**Dr. Bernard Le Foll (Professor, University of Toronto, As an Individual):** Yes, thank you.

**The Chair:** Great. We can hear you too.

**Dr. Bernard Le Foll:** Thank you, Mr. Chair and committee members, for the invitation to speak to the standing committee.

First, I will start with some information on my background. I am a clinician scientist working primarily on drug addiction. I am trained as an addiction physician, and my focus is primarily alcohol and tobacco. I am trained also as a pharmacologist. I am a professor at the University of Toronto, and I am currently the head of the Alcohol Research Treatment Clinic at CAMH, the Centre for Addiction and Mental Health, and head of the Translational Addiction Research Laboratory in the neuroscience department. We have been doing basic research on the cannabinoid system for the last 10 years and some clinical research on how to improve treatment of cannabis dependence.

The first statement I would like to make is that marijuana is a generic term. The plant contains multiple substances. Delta-9-THC is responsible for the euphoria, the addictive property, stimulating the CB1 and CB2 receptors. But there are also other ingredients like cannabidiol. Most of the research has been done on plants that contain high levels of THC but also cannabidiol. So there is a lack of research on many of the strains that are currently available. So what I will be saying on the addictive risk of marijuana or on the mental health risk may not be applicable to all strains of marijuana that are now available. That's an important statement.

On the somatic risk, considering the health risk, somatic risks such as to the respiratory and cardiovascular systems, as well as a risk of developing cancer, are due to the fact that marijuana is used in the smoked form. Toxicity is due to inhalation of carcinogens, toxic substances, and carbon monoxide. So this toxicity is very similar to the toxicity induced by tobacco.

As you know, 50% of tobacco smokers will die prematurely due to inhalation of smoke. It has been difficult to collect the same evidence for marijuana toxicity due to smoke because marijuana is often smoked in combination with tobacco, making the causality of the relationship difficult to establish. However, I would think that experts would agree that inhalation of smoked marijuana exposes the smoker to the same risks as smoking tobacco. One important point to consider is that there is no linear relationship between quantity smoked and consequences. What I mean by that is even small quantities smoked are enough to cause a significant impact on health.

One example for this is that it has been shown now that inhalation of second-hand smoke is enough to cause cardiovascular disorder. So there may be strong misconceptions in the public on this toxicity. Lots of people believe marijuana is a plant and don't see how a plant could be toxic to their bodies. It is important to realize that this toxicity can be reduced or potentially eliminated by the use of a vaporizer or pharmacological ways of delivering cannabinoid products.

I would like to make a statement on the risk of overdose. It's often an important point when we talk about addictive drugs, and there is no overdose with cannabis. So this is very different from alcohol, opiates, or even nicotine, which is a poison at very high doses.

The risk of addiction: I will be spending some time on this issue. It has been debated in the past whether or not cannabis is as addictive as other drugs of abuse. I would like maybe to explain very quickly how we now define substance use disorder and how we have defined it in the past. Most of the research has been done on either drug dependence or drug abuse. Drug dependence consists of the most severe phenomena and is an association of different symptoms. I will briefly cite those symptoms. They include tolerance, withdrawal, including difficulty controlling quantities or amount and length of use; the persistent desire to cut down or control consumption; a great deal of time obtaining, using, and recovering from the effects of the drug; important social, occupational, and recreational activities being given up because of the drug; and continued use despite knowledge of the harm associated with its use.

● (0900)

Drug abuse is defined as less severe and consists of failure to fulfill major obligations at work, school, or home; recurrent use in situations in which it is physically hazardous; recurrence of substance-related problems; or continued use despite social interpersonal problems caused or exacerbated by drug use.

There are some clear data coming mostly from an epidemiological study based on the U.S. population. I will mostly cite those data to cover the risk of addiction.

The research study indicates that at most 8% of past-year users have cannabis dependence. There is clear evidence that the younger the age of initiation of use is, the higher the risk of dependence is. This increased risk is seen as highest for those who are below age 14, and then it gradually decreases until the person reaches the age of 18. If the initiation of cannabis is started after the age of 18, that's where the risk of having secondary dependence is the lowest.

In terms of the risk of dependence, it is much lower-risk compared with heroin, cocaine, or psycho-stimulant drugs. It is roughly the same range as seen with alcohol.

In terms of use, it is important to realize that cannabis is used at a much higher rate than other illicit drugs. It is important to consider the percentage who will lose control over use after being exposed to the drug.

If you look at the range of dependence and abuse—the two combined—which includes developing a substance use disorder over a lifetime following ever smoking a joint of cannabis, the rate is relatively high. About 40% of users will develop, at some point in their life, problems controlling its use: either abuse or dependence.

I would like to point out that most of those subjects will present these difficulties in controlling use only at a certain point of their life, that they will be transitory, and that they will not require treatment to be cured. The problem is most prevalent at young and young adult ages. Most of the users will have problems of abuse, and only a minority will have problems of dependence.

Based on those findings, it appears that marijuana has clear addictive properties and that a large fraction of users will develop difficulty controlling use at some point in their life, but around 7% or 8% of current users will have severe problems.

I would like to make a statement on psychiatric risk, but my colleague will be covering this more in depth.

I would like to indicate that some research suggests that marijuana use can precipitate schizophrenia and psychosis. This may be due to worsening of pre-existing situations or to predisposing genetic risks, but it's not excluded at this point that a small number of cases may be induced by the drug exposure. It appears that in this regard other drugs such as psycho-stimulant drugs produce much higher rates of psychosis.

There are clear cumulative effects and a decrease of general motivation seen in daily users. There seems to be a negative impact on IQ after early exposure, and there are some clear effects on functional quality of life. I think the risks associated with driving abilities have been already covered before this committee.

What is striking is that there is very high comorbidity with those presenting mental health issues and cannabis dependence. It may be that these subjects are more vulnerable to developing addiction, but it may be that they are self-medicating their disorder or that the drug is creating the psychiatric condition.

● (0905)

I'm not sure we can conclude firmly on this. There is some evidence from animal studies that elevating endocannabinoid tone can have anxiolytic and anti-depressant properties, but there have not been enough studies directly performed on subjects that have anxiety and depression to study these impacts of cannabis products.

In terms of the high rate of frequency, it has been estimated that persons with a mental illness will consume roughly 80% of all cannabis consumed. So this is highly comorbid and co-occurring.

The major points I would like to make are the following.

Compared to alcohol and tobacco, cannabis is creating a much smaller impact on society and on individuals right now.

The use of cannabis is here to stay, and if anything, it will increase.

Marijuana is a product that has clear addictive potential and the potential to create somatic impacts due to smoke inhalation, and possibly some psychiatric issues.

We know we can reduce some risk by delaying the age of initiation, reducing the harmful effects by avoiding the smoke when using the product. Some people with mental health disorders are certainly at risk for that.

A regulated system delivering marijuana could decrease the harm on society better than an unregulated system.

I think we also need more research on the different strains and their impact on the human subject: brain, addiction, cognition, driving ability. The addictive property of different forms of cannabis. The role of the different ingredients in cannabis. The comorbidity between mental health and cannabis use. I think we could potentially use taxation and a regulated system to support education and research in those areas.

I suggest also that a centre for research on cannabinoids should be set up in Canada as well as specific funding opportunities to grow the number of researchers in the area. I think the example of tobacco is instructive here. Tobacco use has been decreasing a lot in the Canadian population due to dissemination of information on the risk and taxation. So similar success would be obtained with using a similar policy with cannabis, but that will require a regulated system.

I think people need to be educated better on the health risk, the benefits risk, notably associated with smoking the product, and we could use financial incentives to promote the use of less harmful ways such as a vaporizer, and differential pricing of the product could be used to allow this.

Another point is the addictive risk could potentially be reduced by reducing the THC content in the plant. As you know, the THC content has been increasing gradually. Currently, we cannot regulate the content in the plant because it's an unregulated system, but there could be less addictive risk by allowing the dissemination of plants that contain less THC, and that could be obtained by a regulated system.

Thank you for the invitation to speak in front of this committee.

● (0910)

**The Chair:** Thanks very much.

Dr. Mizrahi, you're up next, please.

**Dr. Romina Mizrahi (Assistant Professor of Psychiatry, University of Toronto, As an Individual):** Hello. Thanks for inviting me to speak at this table.

I'm Romina Mizrahi. I am an associate professor of psychiatry at the University of Toronto and I work as a clinician-scientist at the Research Imaging Centre in CAMH, the Centre for Addiction and Mental Health, and in the new Focus on Youth Psychosis Prevention Clinic at CAMH.

Today I'm going to focus on the effects of cannabis on the brain, in particular on its relation to increased risk for psychosis. I will not talk about any cannabis-related harms related to addiction, including dependence or abuse, as my colleagues here today have more expertise in this area.

First I'm going to describe the brain system within which cannabis acts in the brain. It is called the endocannabinoid system or eCB. Then I will briefly discuss the data linking the eCB to schizophrenia. Finally I will integrate this into the critical timeframe of adolescence, given the maturational times for the eCB system in the brain and the concurrent time for psychosis emergence.

Cannabinoids—the active components of cannabis—exert their effects on the brain by acting on the eCB system, the endogenous or internal cannabis system. Among other functions, the eCB system is involved in neuro-protection, modulation of pain, control of certain phases of memory processing, modulation of immune and inflammatory responses, and stress and appetite regulation.

One important characteristic of the eCB is that it acts on demand; that is, it works when and where it's needed to modulate neurotransmitter release, including of dopamine, which is a key neurotransmitter in schizophrenia and its treatment.

Over the years, a number of separate lines of research have converged on cannabinoids, including eCB, as potential contributors to schizophrenia. Before I briefly summarize the data, I would like to draw your attention to my wording. I have said, “contributors”, and this is important, as none of the studies I will soon mention have shown cannabis to be sufficient or necessary to cause schizophrenia. A short summary follows.

First, very well-replicated epidemiological studies show a twofold increase in the incidence of schizophrenia with early cannabis use, with the maximum reported effects to be around a sixfold increase in risk, and increased reported risk with early use—before 15 years of age—and in a dose-dependent fashion. That is, the younger the youth, the more the risk.

Second, altered levels of peripheral eCB markers in both CSF—cerebrospinal fluid—and blood are found in patients with schizophrenia, including dramatic elevations of anandamide, which is an endogenous cannabinoid.

Third, epidemiological studies suggest an interaction between cannabis use and the number of genetic polymorphisms, conferring an elevated risk of developing schizophrenia upon a genetically vulnerable population.

Fourth, there is an association between eCB and genetic polymorphism in schizophrenia.

Fifth, there is increased CB1 receptor binding in the frontal cortex and anterior cingulate cortex, as shown in post-mortem studies.

Sixth, there is elevated CB1 binding in vivo in patients with schizophrenia, as measured by two positron emission tomography studies worldwide. While that technology is still in its infancy, these studies, while sometimes inconsistent, point to a prominent role for eCB in schizophrenia.

Patients with schizophrenia and those at risk for the disease exhibit alarmingly high levels of drug use, most commonly of cannabis, despite increased risk of psychotic experiences. In accounting for this apparent paradox, evidence derived from animal studies implicates the eCB in regulation of the stress response. Cannabinoids elicit behavioural as well as neurochemical changes that are dependent on the environmental conditions under which they are administered.

For example, cannabinoids administered to rats housed in stressful conditions alter dopamine uptake and metabolism, whereas such an effect is absent is rats housed in normal conditions.

● (0915)

Further to this point, cross-sensitization between THC and stress has been reported, suggesting that the physiological and psychological effects of cannabis may be altered in individuals experiencing environmental adversity. It is conceivable that social stress in individuals vulnerable to psychosis leads to a dampened or blunted eCB system, further increasing cannabis use and in turn stimulating CB1 receptors by exogenous cannabis use, which may disregulate the stress response.

This would suggest that cannabis use in psychosis and in those at risk for the disease could represent an attempt to regulate an abnormal stress response. While this hypothesis may be a reasonable explanation for the observed elevated cannabis use in those at risk and in schizophrenia patients, it does not explain why cannabis use itself may lead to psychosis in risk populations. There is no data as yet that would answer these questions.

In fact, our understanding of the eCB in psychosis and in cannabis users is very limited. Notably, the human cortical eCB system undergoes dramatic changes in early life and adolescence, with both synthesis and hydrolysis increasing until early adulthood.

These early changes in the eCB system could potentially explain the sensitivity of this age group to cannabis use and the effect of social stress on those vulnerable to schizophrenia. In line with this, it has been shown that cannabis use before the age of 15 years leads to increased risk of psychosis, while later use may not. In this regard, understanding the role of the eCB system, particularly during adolescence, may provide a better understanding of the effects of cannabis on the developing brain.

Advances in our understanding of schizophrenia underscore both its complexity and its heterogeneous nature. That it is now conceptualized as a neurodevelopmental disorder speaks to this, given that the illness does not routinely declare itself until late adolescence or early adulthood. Numerous influences may play a contributing role during the interval, which in turn could contribute to its marked heterogeneity, reflected across presentation, symptomatology, and illness trajectory. The marked variability in response to current treatment underscores these points.

In summary, cannabis use, genetic vulnerability, social stress, and other social and environmental risk factors interact in a complex, age-dependent manner, leading to the observed epidemiological link between cannabis and schizophrenia.

Research of this sort faces considerable challenges. Imaging approaches appropriate for investigating the eCB system in the living brain are in very early stages of development, with a specific PET radioligand to target the system only becoming available in the last three to five years. Over the coming years, research using those novel agents and PET are likely to provide insights and greatly advance our understanding of the molecular-level changes in the brain elicited by cannabis use.

Furthermore, the eCB is very sensitive to multiple environmental perturbations, including social stress, making measurement in clinical populations challenging. The complex of the temporal aspects of the progression towards disease and the resulting challenge in capturing this critical window may also hinder relevant investigations.

Additionally, the number of components of smoked cannabis makes understanding complex. For example, while THC has been shown to produce psychotic-like experiences even in normal individuals, cannabidiol, another major component of cannabis, has been reported to have an anti-psychotic effect.

Focusing on adolescents with multiple risk factors as a starting point, social programs addressing the potential risks associated with cannabis use could impact the way schizophrenia is perceived and managed within society.

● (0920)

Investigating how these potential factors affect molecular targets in the brain may provide ways to treat schizophrenia, perhaps even prevent it.

**The Chair:** Okay, thank you very much.

Next, Dr. George, go ahead, sir.

**Dr. Tony P. George (Professor of Psychiatry, University of Toronto, As an Individual):** Yes, thank you to the Chair and the members of the committee for allowing me to speak. In fact, my colleagues Doctors Le Foll and Mizrahi have covered a lot of background that I think is very relevant to understanding addiction risk with cannabis and also its mental health affects.

I am an addiction psychiatrist by training who focuses on treating and understanding substance use disorders in people with serious mental illness like schizophrenia and bipolar disorder. I'm a professor in the Department of Psychiatry here at the University of Toronto, as well as the Chief of the Schizophrenia Division, and Medical Director of the Complex Mental Illness Program here at CAMH, which treats the majority of people with serious and persistent mental illness.

I've been involved in research in these populations for about 20 years now, and what I want to focus on is the necessity for treatment of cannabis use disorders, particularly in those who have high vulnerability to initiating and maintaining these disorders, such as people with mental illness like schizophrenia. We know that there are much higher rates for use of cannabis and other drugs. Most of my career has been spent on tobacco use in psychiatric populations, but the reasons for this increase and their inability to quit are less clear. I want to talk to you about some studies we've done in cannabis patients with schizophrenia that really point to the need for getting these people into treatment.

Over the last couple years, we've done a series of studies trying to understand what cannabis use does to the symptoms of schizophrenia and cognitive function—cognitive function being processes like memory, attention, concentration, judgment, and planning. Basically, what our studies have shown is that if you look at cognitive functions in these patients as a function of whether they are currently using cannabis and are dependent, whether they have a history of abusing but have recently stopped, or have never used it, you actually find no significant differences in cognitive functioning, particularly as assessed by certain forms of memory, like working memory.

However, what's of concern is that we find that the more people use cannabis over time—what we call cumulative use; that is total exposure over time—the more of that cumulative exposure over time, the more impairment of frontal lobe cognitive functioning such as working memory, judgment, attention they have. We think of the frontal lobes as sort of the master or CEO of the brain.

In fact, cannabis use over time impairs it in our patients, and we know that they have pre-existing deficits, so to know that cannabis use over time, heavy and persistent cannabis use over time, will further impair their cognitive function, which we know is associated with their success in functioning in the community. So that's of great concern to us.

At the same time, some of our studies have suggested that in those patients who have quit using cannabis for at least six months, those cognitive functions actually are restored and those deficits produced by heavy and persistent cannabis use actually start to normalize and reverse. So that's very important from a treatment implication because it suggests that we can develop effective pharmacological, that is medication, and behavioural treatments for treating cannabis-use disorder. We can significantly help outcomes in these high-risk patients with psychiatric disorders like schizophrenia.

We're in the midst of doing a study to look at what cannabis truly does by taking patients who are currently using cannabis and are dependent on it and withdrawing them from cannabis for up to 30 days. This is the first time that anyone, to our knowledge, has done this, and that data should be complete by this time next year. We're hoping to know truly what cannabis does to cognitive function, clinical symptoms, and outcomes in people with schizophrenia who are cannabis dependent, and non-psychiatric controls as a comparison route.

The other thing I want to point out, as Dr. Mizrahi says, is that many of these young people that go on to develop psychotic disorders like schizophrenia may be genetically predisposed to cannabis-induced worsening or initiation of their psychosis.

● (0925)

For example, there is a gene called catechol-O-methyltransferase, COMT, for short, that at least one form, which is present in about 36% of the general population, makes you five to ten times more vulnerable to having psychosis when you use cannabis. In fact, from a prevention point of view, if we knew something about the genetic background of these individuals—which is a controversial thing because having this kind of genetic information from a population base needs a lot of thinking in terms of how we would do it. However, suffice to say that if we had this information available to those who are at risk, we could design and tailor interventions, like behavioural interventions, to increasing knowledge about how cannabis could potentially worsen this subset of individuals.

The other thing I'll say, clinically, as an administrator here at CAMH, is that one of the in-patient units we have is called the early psychosis unit, and most of the young people who develop early psychosis, or have their first experience with psychosis, end up being admitted to this unit. We know that at least 50% of those admissions are associated with cannabis use. That's concerning, and again speaks to the importance of prevention.

I'll leave you with the following issue. In terms of decriminalization as relevant to this population, the concern with the current regulations is that to penalize this group who are vulnerable to cannabis addiction through legal penalties is potentially deleterious and could very well prevent these people from seeking treatment, which I hope we have underscored is the important thing.

The other point is that we know from the studies that have been done on decriminalization versus continued criminalization of cannabis that there is little or no evidence that decriminalization increases rates or uptake of cannabis. The concern has been that this would be seen in young people, whom Doctors Mizrahi and Le Foll have said that we worry cannabis can affect brain development in a negative way. However, we have seen little evidence of an increase in cannabis use with decriminalization.

Moreover, we tend to see that it's those people, who would have gone on to use cannabis anyway, who might start using at an earlier age. But, in fact, you see no increase in the rates of use. Again, it conjures to me the importance of a treatment approach, a public health integrated approach, and also educating young people about the potential harm.

There is the *Monitoring the Future* study, in the United States, that for many years has very clearly shown that if you can increase the perception of harm among youth, the rates of cannabis use goes down, and when harm is considered to be low, that's when cannabis use goes up. It speaks to the importance of a targeted public health and treatment-based approach. It is a call for us, as Canadians and as Canadian society, to embrace the fact that there is harm associated with cannabis, but it can be mitigated with proper education and treatment strategies.

Let me stop there. Thank you for the opportunity to speak to you.

● (0930)

**The Chair:** Thank you very much. That concludes our presentations.

Ms. Lefebvre is here with the regulatory body to answer any questions, as well as Dr. Theman. We can go on from there.

We have our lists set for questions, and we have a seven-minute round first.

I will ask our members of Parliament, if they're asking a question —because we do have the trifecta of teleconference, video conference, and also a live guest here today—that you point your question directly to who it is and what you'd like to know. If at any time anybody on video conference or teleconference can't hear or doesn't understand, just ask that the question be rephrased. We'll put the time back on the member's time.

Ms. Davies, go ahead, for seven minutes, please.

**Ms. Libby Davies (Vancouver East, NDP):** Thank you very much, Chairperson, and thank you to all of our presenters for being here today. I particularly appreciated hearing the comments that Dr. Tony George just made, because I think they help give us some context about the issue we're dealing with.

Just as sort of a preamble, I would think it's fair to say that most drugs, whether they're legal or not, whether they are prescription drugs or what we have deemed as illicit, pose risk. Most times when you get a prescription, there are warnings such as “don't do this” or warnings about operating machinery, driving a car, and being alert. I think there is a very important principle here, and that is to understand that all substances, whether alcohol, tobacco, licit drugs, or illicit drugs, pose risks. Some are greater and some are lesser. It's really the context and the relativity of what we're talking about that are, I think, important.

For heaven's sake, even driving a car is probably the most dangerous thing we do every single day, which is why we have rules and regulations about driving and wearing seat belts.

I have two questions I'd like to get at. One is to further discuss the question of the relative harm of marijuana use compared with, say, alcohol use or smoking.

For example, let me ask the three witnesses on videoconference, particularly Dr. Le Foll and Dr. George, how many people die from using marijuana. Do we know that?

I think, Dr. Le Foll, you said that no one dies from overdoses. Can you put that into context with us, say in terms of alcohol? How many people die from drinking too much alcohol? What is the death rate?

In terms of addiction, what is the relative difference there; which of these substances would you say are more harmful? I think this issue, as Dr. George just said, is really about managing the risk and mitigating the harms. Could you address that, in terms of the harms of marijuana relative to alcohol and smoking particularly?

Secondly, how much does prohibition itself contribute to the harms we look at? You spoke some about youth and what that means. It seems to me that when we say it's taboo and that there is prohibition or zero tolerance, while in reality people do use marijuana, whether recreationally or medicinally, without any rules or regulations or any real information, it's all based on fear and not being able to come forward, so that there's a huge amount of stigma. How much does that contribute to the harms we see, particularly for young people?

Let me put these questions to the three folks on the videoconference.

**Dr. Bernard Le Foll:** I can try to answer this question.

I think one principle is that the more widely the drug is used, the more the impact on society. You have a different rate of impact based on the type of drug. Some drugs will create a more pronounced impact on mortality itself, some others will create more impact socially, such as car accidents or problems at work or calling in sick or violence. It's a little bit difficult to do those comparisons because you end up with different ratings how you weight each component of the impact; if you consider society or individuals and the medical consequences.

Overall, when you look at number of deaths, tobacco is clearly the main killer. After tobacco, then it's alcohol. That is because they are widely used. Right now, tobacco is used mostly by 20% of the Canadian population and alcohol is used by 80% of the Canadian population. In comparison, cannabis use is much lower than that.

When I mentioned the risk of inhalation, tobacco is killing half of the users due to the fact they inhale. It is possible that cannabis is also producing some mortality due to inhalation, but the numbers are much smaller and many cannabis users also smoke tobacco. When you try to calculate the number of deaths created by marijuana overall, the experts that have done those calculations—and we can send you the latest update because that was published in *The Lancet* one year ago—I don't have the number in front of me, but the number of deaths is minimal compared to alcohol and tobacco—that's clear.

I would say maybe the number of deaths is in the range of 2% to 5% compared to tobacco or alcohol.

● (0935)

**Ms. Libby Davies:** Thank you very much.

Is there maybe a minute that Dr. George could also respond to the question?

**Dr. Tony P. George:** Maybe I'll speak to the issue of prohibition and whether that increases harms.

Dr. Le Foll nicely pointed out that of the folks that try cannabis, only about 10% go on to become addicted to it or dependent on it. That's much lower than with tobacco, which is about 30% to 32%, and alcohol, which is between 15% and 20%.

Alcohol and tobacco are licit; they're legal substances that have regulation. I think one of the problems with cannabis' being illegal and a prohibition approach is that in order to get cannabis, which you know, as I said, has modest harm, essentially exposes people to other illicit drugs and other illicit drug circles, which, you know, leads to crime and other harms. Oftentimes, when you see people who use cannabis as their prime drug, the trouble they get into is where they get exposed to those circles and try other, harder drugs, like cocaine, heroin, etc. It's been called a "gateway drug", which has come under some fire, but I think it does speak to this issue. It questions how a prohibition strategy is actually doing useful things.

The experiments around the world where they've removed prohibitions have not let to the bad outcomes that have been thought to be associated with that.

**The Chair:** Thank you very much, and it was pretty close to a minute.

Mr. Wilks, go ahead, for seven minutes.

**Mr. David Wilks (Kootenay—Columbia, CPC):** Thank you very much, Mr. Chair.

Thank you to the witnesses for being here.

My first question is to Dr. Theman or to Ms. Lefebvre; whoever can answer this.

Yesterday, there was a news article in the *National Post* with regard to the first vending machine to provide medical marijuana in Vancouver. It has come with some ire from the minister, who I believe may be saying something today.

Could you give some clarity on your position. Dr. Theman? You said that monitoring physicians who provide marijuana to patients are to ensure that the patient is aware of the lack of evidence with regard to marijuana, with regard to the approval of patient/physician understanding of the drug, and to submit info to the medical regulator with regard to the physicians involved in the program.

Could you talk about the vending-machine type of scenario?

● (0940)

**Dr. Trevor Theman:** I didn't see the article and I don't know how it operates, but the idea that one would simply use one's coinage for marijuana is completely out of the medical sphere, as well as I can tell. That sounds like legalized access to marijuana.

The biggest part of the issue we have around all of what's happened here is the medicalization of this. What you've heard a lot of, I believe, is the lack of evidence, the scanty evidence, the suppositions, the thinking that we'll get this and possibly this. How will our members know when it's going to be an effective drug and where it would be effective?

We spoke about risks, but we need to balance those with benefits. A physician doesn't prescribe a drug or any treatment without some understanding that there may be some benefit from it. Ideally that benefit-to-risk ratio is going to be overwhelmingly in favour of a benefit. With marijuana, we're asking where it might have a benefit, and that is where the evidence is lacking.

The idea that you simply get your drug from a vending machine and you don't have an established relationship is the same as going to get your OxyContin from a vending machine without having an ongoing relationship with a physician who is going to help you monitor whatever the condition is that you're getting drugs for.

**Mr. David Wilks:** Thank you very much.

I didn't quite hear the end of that, Mr. Chair, but I wonder if we could go back to Dr. George and Dr. Le Foll with regard to the question that was put forth by my colleague Ms. Davies.

I believe the question was on overdose with regard to cannabis, marijuana, or THC. You stated that you don't believe there have been any documented cases of overdose from cannabis, marijuana specific to THC, or cannabinoids.

With regard to cigarettes, has there ever been a documented case of tar or nicotine overdose?

**Dr. Bernard Le Foll:** Yes, nicotine overdose happens. This is becoming more frequent now that people can get access to nicotine in liquid form, such as in electronic cigarettes.

**Mr. David Wilks:** But that doesn't happen through the smoking of a cigarette?

**Dr. Bernard Le Foll:** No, it would not happen, because the reality is that the only way you can get an overdose from a cigarette would be if you boiled the cigarette and then drank the contents. When you inhale, before getting an overdose, you would have so many side effects you would stop inhaling it.

**Mr. David Wilks:** Thank you. That was my question.

Dr. George, you spoke about prohibition. Would you agree with the statement that legalization equals commercialization?

**Dr. Tony P. George:** I think it probably depends on how it's done. The probable path is that legalization would suggest there's some need for control. I suppose commercial interests would probably respond to assisting Health Canada and the Canadian government by ensuring that, in a legalized framework, the quality and constituents of the marijuana were under control. So I suppose that would be equated with a commercial aspect.

**Mr. David Wilks:** We'll agree to disagree on this.

I think decriminalizing or legalizing it would not in fact control any forms of THC or cannabinoids, because you would still have the black market. This is still a multi-billion dollar business, whether it's for the Hells Angels or any other—

● (0945)

**The Chair:** We have a point of order here.

[*Translation*]

**Mr. Dany Morin (Chicoutimi—Le Fjord, NDP):** I respect my Conservative colleague a great deal—

[*English*]

**The Chair:** Pardon me for just a second. Go ahead.

[*Translation*]

**Mr. Dany Morin:** I respect my Conservative colleague from across the way a great deal. However, I think we are studying marijuana's health risks, not its commercialization. My Conservative colleague's remarks and comment are off topic, because we are studying the health risks, not the commercialization and criminal use of marijuana.

[*English*]

**The Chair:** Well, those are fair enough comments.

We have a minute left for Mr. Wilks.

Go ahead, sir.

**Mr. David Wilks:** Thank you very much, Mr. Chair.

I'll maybe qualify some of my comments, by saying that in my twenty years as a police officer and three years as a undercover drug officer, I was also qualified before the Supreme Court of British Columbia with regard to the amounts required for trafficking and being able to identify marijuana without having it being sent to a lab. I believe that when we talk about decriminalization and legalization, it is imperative to understand that when we go down that road, we cannot control the THC levels specific to the black market.

Dr. George, I'm curious to understand the difference, as you understand it, between decriminalization and legalization. If you are aware of it, would you agree with the Canadian chiefs of police, who are looking for a ticketable offence with regard to small amounts of cannabis/marijuana?

**The Chair:** It was for Dr. George?

**Mr. David Wilks:** Yes.

**The Chair:** A brief response, maybe a 30-second response, please. We're up on the time.

**Dr. Tony P. George:** In my statement I said that there are particular subsets of the population, young people, and those in particular who may be at risk of psychiatric disorders, where I think we could have a bit of a coalescence of views. I think if there was a ticketing system that diverted people into getting evaluation and treatment, and not incarceration, I think that would be a positive step forward. I don't think our views are that opposed.

**The Chair:** Okay. Very good.

Ms. Bennett, welcome to the committee. You have seven minutes, please.

**Hon. Carolyn Bennett (St. Paul's, Lib.):** Thank you very much.

I thank all the witnesses.

I was very pleased that we were having an adult conversation about this based, hopefully, on evidence, but I was quite concerned that our medical colleagues are again having to deal with the fact that there is no evidence on so many things, when obviously the Government of Canada has a responsibility for funding and to get that evidence. As a physician who knows that many of my patients were using marijuana in order to not use what we now have come to find might be and have been proven to be more harmful pharmaceuticals, I have to say that we actually need to provide physicians with the evidence.

Expert advisory committees still don't have evidence with which to advise. I think it is becoming clearer and clearer from multiple sclerosis and so many of these other drugs, that patients have seen—and there has been huge anecdotal evidence from those of us who felt obligated to listen to our patients—what works and what doesn't work. Actually, we're very impressed with what happened.

In listening to the witnesses, it's also interesting that really what's been cited in terms of schizophrenia and predisposition is a genetic predisposition that I think we are now hearing about all pharmaceuticals and all medications: that in the future of personalized medicine we will be able to identify people at certain risk of various medications. Again, I think that kind of research is imperative right now.

I think we've also heard that it's the delivery system of the cannabis or the THC that is of concern to the physicians in terms of health concerns, and that for the vaporized or other delivery systems for the people who need this medicine to be able to function in society, we have evidence that they would prefer to use a different delivery system. That a lot of them don't want to smoke has been very educational, but I think what we've also heard from the witnesses is that there's a need for more education on risks and also a need for more regulation in terms of what people are actually getting.

It's very clear that if the government is in charge of regulating this product, people would actually know what they're getting, and again, if you can get a clean, regular product, why would you go to the black market? My Dad was 93 when he died, previously a policeman, and he didn't understand why all of this was criminalized. He thought this was a therapeutic conversation that needs education and regulation, and that it's the role of society to be doing this.

I am interested in the physicians, maybe, and particularly the physicians who have been interested in the prevention. Take a drug like Champix, where we've actually ended up killing patients or having patients suicide in unbelievable numbers, in terms of the FDA study. How do you put this study where we're only looking at risks and harms.... I still don't understand how a parliamentary committee can look at only one side of an issue. Can you tell me, compared to the risks associated with pharmaceuticals, where cannabis and THC rest in terms of the real risks that come from approved pharmaceuticals to the people of Canada?

● (0950)

**Dr. Bernard Le Foll:** To whom are you addressing the question?

**Hon. Carolyn Bennett:** I guess you'd be a good person to start with, because a lot of you have been involved with the anti-nicotine drug trials. I think you were all pretty concerned about what happened after it had been approved.

In terms of post-market surveillance, we found that we don't do a good job on post-market surveillance, and a whole bunch of people died when trying to come off a drug. I just think we should put this study in perspective in regard to where the pharmaceutical industry is and why there has been no research on this drug because there's no pharmaceutical company pushing studies for this kind of evidence.

**Dr. Bernard Le Foll:** Yes. I can comment on this.

For the pharmaceuticals the situation is clear, because there are expert groups like the FDA or Health Canada that will evaluate the benefits risk. It is also true that these risks, when it's done, when the product comes to the market, may evolve with pharmacovigilance and as side effects occur in populations. That is something that needs to be done at the beginning, but also repeatedly over time.

The issue with cannabis is that it's not a product that can be patented, because it's a natural plant, so there has been limited interest by pure pharmaceuticals to do research on it. That's why we have much less research done on the cannabis product, as compared to cannabinoid, in the form of pharmaceuticals.

We now have cannabinoids that are on the market. Those products have been shown to have a good benefits ratio, and that's why they get approval and are approved for human use.

I think the issue, as you pointed out, is that with cannabis it is in smoked form, so that if you put this product to the same standard as a pharmaceutical, it will never get approved because there is so much toxicity from the inhalation route. Then the benefits risk becomes immediately not in favour of the product. That's why I think the enteric routes of delivery are critical here.

● (0955)

**The Chair:** I'm sorry, Ms. Bennett, we are over time, but thank you.

Mr. Young, your seven minutes now.

**Mr. Terence Young (Oakville, CPC):** Thank you, Chair.

With regard to the previous questioner, my colleague from across the floor, I hope that our doctors are warning their patients what we have heard at this committee, that marijuana can lead to psychosis, schizophrenia, deadly heart arrhythmia, and double the risk of vehicular accidents; and can lead to addiction, cancers, and permanent damage to the prefrontal cortex of their brains. I hope that's what our doctors are telling patients, that is, the doctors who are prescribing marijuana or are asked questions about it.

Dr. Le Foll, you said that the more widely a drug is used, the more impact it has on society, and that in terms of harm, alcohol is second after tobacco because of the rate it's used.

So conceivably, if marijuana is used at a higher rate, for example at the same rate alcohol is, it could over time be proven, by epidemiological studies, to be as deadly as alcohol or tobacco. Is that correct?

**Dr. Bernard Le Foll:** It is correct that if the use increases to very high levels, then it may produce much more harm, but we are far from the rates of prevalence of tobacco and alcohol.

**Mr. Terence Young:** I understand, but I said that if it were used at the same rate as alcohol, it could conceivably be proven to be just as deadly.

**Dr. Bernard Le Foll:** Yes. I would think the analogy with tobacco may be better, but because of the damage caused it is probably in the same type of order. Yes. I agree. If you add widespread use, the damage will be higher compared to what we see right now.

**Mr. Terence Young:** Thank you so much.

Dr. George, you said youth are five to ten times more vulnerable to schizophrenia when they use cannabis. We also heard, in previous days, that marijuana users have double the risk of vehicular accidents.

Do you ever prescribe marijuana for anyone? Why or why not?

**Dr. Tony P. George:** I do not prescribe marijuana. I'm not licensed to do that. I have had some clinical situations where I have had patients with mental health disorders who were heavy cannabis users, and I tried to put them on other cannabinoid drugs such as nabilone, which is Cesamet, in trying to reduce their cannabis use.

**Mr. Terence Young:** Thank you. So just to reduce harm, but not to introduce the drug to treat any condition?

**Dr. Tony P. George:** No.

**Mr. Terence Young:** Thank you. Would you recommend that the Government of Canada do anything that would make marijuana more widely available to our youth?

**Dr. Tony P. George:** In terms of legal...?

**Mr. Terence Young:** We've heard a great deal of evidence in previous days that, for example, they have made marijuana legal in one of the U.S. states—I think it's Oregon.

**A voice:** Washington and Colorado.

**Mr. Terence Young:** Sorry, Washington and Colorado. That evidence thus far has shown that, by legalizing it, it makes it more readily available to youth.

I can tell you for instance that in parts of the GTA, the teenagers have what they call pill parties. They bring a bunch of pills from their parents' pill bottles, etc., they throw them in a dish, and they just take them, which is an extremely dangerous practice. So it doesn't surprise me.

My original question is would you recommend that the Government of Canada do anything to make marijuana more readily available to our youth?

**Dr. Tony P. George:** No, I don't think we want to do that directly, but I think we need to educate about harms.

**Mr. Terence Young:** Yes, thank you. Okay.

I'd like to ask Dr. Mizrahi, and thank you for coming, by the way, what happens to someone who becomes schizophrenic. Can they become suicidal or homicidal?

**Dr. Romina Mizrahi:** Yes, they can.

**Mr. Terence Young:** Okay. What else happens to them?

**Dr. Romina Mizrahi:** They can have delusions, which are abnormal beliefs, and they can also have perceptual abnormalities.

**Mr. Terence Young:** Are they at risk, then, from their condition?

**Dr. Romina Mizrahi:** Of course—

**Mr. Terence Young:** And people around them are at risk as well?

**Dr. Romina Mizrahi:** Yes.

**Mr. Terence Young:** Is that the same for schizophrenia? If someone has a psychotic event, I should say, could they become suicidal, homicidal, or a danger to others?

● (1000)

**Dr. Romina Mizrahi:** Yes.

**Mr. Terence Young:** Okay.

What else happens to them?

**Dr. Romina Mizrahi:** Psychosis, of course, is a very complicated issue. This is what I wanted to allude to before, and similarly the risks that cannabis poses to these populations are also very complex. Youth in general do not use cannabis alone.

In those who develop a psychotic episode, of course, the risks for themselves and others are increased. However, at the national level, the suicide and homicide rates for schizophrenia are not necessarily higher than for the general population. There is a lot of media related to this. But, yes, during the psychotic episode there are increased risks.

**Mr. Terence Young:** Okay, thank you.

Are you familiar with the psychiatry around mass shootings or mass crimes?

**Dr. Romina Mizrahi:** Partially.

**Mr. Terence Young:** Okay. I'll tell you that from the research I've done on my own, in the vast majority of cases either street drugs or prescription drugs are involved. The shooters or the people who are involved in these mass crimes are either on anti-depressants, anti-psychotics, or street drugs. Are you familiar with that?

I see Dr. George shaking his head. Would you like to comment?

**Dr. Tony P. George:** Yes.

There are one or two studies now that have looked at people with schizophrenia who either use substances or not and the risk of violence. The overall message from those studies is that 90% of the violence committed by people with schizophrenia is under the influences of substances typically alcohol and stimulant drugs like cocaine.

**Mr. Terence Young:** Thank you.

I think it was Dr. Mizrahi who commented that people might be genetically pre-disposed to schizophrenia or to psychosis when they use marijuana. But I think in addition to that—and please correct me if I'm wrong—you said there's some evidence that it can happen to people who are not pre-disposed genetically.

**The Chair:** Sorry, a brief response and then the time is up.

**Dr. Romina Mizrahi:** In the studies that have controlled for genetic status, it was shown that genetics play a role, but there are other studies that have not looked into this and have also shown that there is an association between cannabis use, particularly early and heavy, and increased risk for psychosis.

**The Chair:** Okay, thank you very much.

The next up is Mr. Morin.

We're now into five-minute rounds. Go ahead, sir.

**Mr. Dany Morin:** Thank you very much.

My question would be for the Federation of Medical Regulatory Authorities of Canada. It is related to the risks and harms associated with the use of medical marijuana.

Currently, in the federal program the types of patients who can get a prescription for medical marijuana are those with the following symptoms and conditions: severe pain and/or persistent muscle spasms from multiple sclerosis, spinal cord injury or spinal cord disease; severe pain, cachexia, anorexia, weight loss, and/or severe nausea from cancer; severe pain, cachexia, anorexia, weight loss, and/or severe nausea from HIV/AIDS infection; and also severe pain from severe forms of arthritis or seizures from epilepsy. There's also another category for patients who have debilitating symptoms associated with a treatment of that medical condition.

Basically, for those patients with severe medical conditions, are the harms and risks associated with the use of medical marijuana worth the benefits that they get from using medical marijuana?

**Dr. Trevor Theman:** The simple answer from my perspective is that we don't know. Marijuana is not the first line of treatment for any condition of which I'm aware. So when you're potentially using it, say, for chronic pain or multiple sclerosis, it's going to be because the patient has tried and failed with other conventional, evidence-based therapies and has not found improvement.

We're not saying that you can't use it in those conditions. In fact, this is one of the small elements of the previous regulations that we had no particular difficulty with, the fact that Health Canada had identified a list of conditions in which marijuana might be of benefit. The fact is that the new regulations make no such requirement, and we're in fact being told by Health Canada that they never looked to see what was on the form. They never checked to see if the patient had a condition for which it was a so-called “approved condition”.

We don't oppose our members using it as a last-line treatment when other treatments have failed and when you look at their condition. That's why in palliative care it's never been an issue. We all know there it's a matter of comfort because death is inevitable. The challenge is just that it's wide open now.

● (1005)

**Mr. Dany Morin:** I have a follow-up question regarding what you said. You said that we don't know much about the health risks. Do you think it would be appropriate for Health Canada to do studies on the medical use of marijuana, because they do have a program that makes it legal to possess medical marijuana?

**Dr. Trevor Theman:** Yes, absolutely. The need for scientific evidence is overwhelming.

[*Translation*]

**Mr. Dany Morin:** My next question is for Bernard Le Foll.

You talked about a number of risks associated with the use of marijuana. The medical marijuana program, which was in place until March 31, 2014, allowed people to grow their own marijuana at home. They could have four plants in the winter—

[*English*]

**Mr. David Wilks:** A point of order.

**The Chair:** Mr. Morin, we have a point of order.

**Mr. David Wilks:** Thank you, Mr. Chair. The bells are ringing.

**The Chair:** All right. We'll just wait for a second here.

There's a vote in the House at 10:35. We'll seek the committee's opinion here, but I guess we will probably have to say that this is the conclusion of our meeting today.

Does anybody else have any thoughts on that? There's not much else we can do.

**Some hon. members:** Agreed.

**The Chair:** I apologize to our witnesses, both by teleconference and video conference. There's a vote in the House in about 30 minutes. By the time we vote and get back, our committee will have wrapped up. So this will be the conclusion of our meeting. I do apologize.

All of the information you provided will be recorded in the blues and will be valuable for our study. If you have any follow-up thoughts or anything else you want to contribute to the study coming out of the meeting today, please forward it to us.

Again, we do apologize. This is may be the first time in a couple of months that this has happened. That's the way it is here in Ottawa. We thank you for your time.

At this point in time, the meeting has concluded.

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