Hello and welcome to CDA Oasis. Today, I have the pleasure to welcome once again, Dr. Jose Lanca, assistant professor in the Faculty of Dentistry and the Faculty of Medicine at the University of Toronto. He is an expert with extensive research in the area of substance abuse and for that reason he has prepared a presentation for us on cannabis. As Canada prepares for the legalization of cannabis, we at CDA Oasis would like to keep our dentists informed about the impact of such a process has on the profession of dentistry. Dr. Lanca, it’s a pleasure to see you and host you again on Oasis. Thank you for taking the time to speak with me and to prepare this presentation for our audience.

So, before we go and see the presentation, can you give our audience a brief overview of what you will be speaking about?

Dr. Lanca: Sure. today's presentation is going to basically address four points. We will start by having a brief overview of the cannabinoid system and medical use of cannabis. Then point 2 will be the prevalence of cannabis use in Canada. Point 3 a is the one that we are going to expand on with some degree of detail, which is the legal framework for the non-medical use of cannabinoids in Canada. And, finally, point 4 is reflections on prevention and management of cannabis use and/or abuse.

Dr. Lanca: So, today's presentation is entitled Cannabis implications for clinical practice. Some of the aspects of the topic that will not be addressed in this presentation have been presented specifically in terms of cannabinoid system, in one of my previous presentations on Oasis Discussions entitled Marijuana Use Relevance to Clinical Practice and also as part of the comprehensive article published in the CDA Essentials magazine in 2017 volume 4 issue 6. So, at this point, I'm just going to review that very briefly. We have discussed and pointed out some of the oral adverse effects of smoking cannabis. The high frequency adverse effects are: increases in periodontal disease and dental caries, xerostomia, and stomatitis among others. With lower frequency, we have situations, such as Leukoplekia, inflammation and edema of the Uvula, alveolar bone loss, again, just to mention some of them. The endo-cannabinoid system or the endogenous cannabinoid system has two main receptors, the CB1 receptor, which is primarily found in the brain and central nervous system, and to a lower extent in other tissue. and the cannabinoid 2 receptor which is primarily located in peripheral tissues.

Dr. Lanca: Now, the cannabinoid compounds of marijuana that will bind to these receptors are THC or tetrahydrocannabinol and cannabidiol or a CBD. How does that relate to the naturally occurring neurotransmitters in the brain? Well, in the endogenous cannabinoids, we have to discuss two of them, which is the neurotransmitter Anandamide and 2AG which is an abbreviation for 2-Arachydonyl Glycerol. So, both Anadamide and 2AG bind to the CB1 and CB2 receptors, and because they have a higher affinity for CB1, they will target the brain. The cannabinoids of marijuana as I have pointed out, are primarily THC, the Tetrahydrocannabinol and the cannabidiol, CBD. THC is a agonist, so it stimulates or bind to the CB1 and CB2 receptors and it's the main psychoactive constituent of
cannabis. The CBD has different properties and also bind to the CB1 and CB2 receptors and it's usually considered as not triggering psychotropic effects.

Dr. Lanca: So, how does that relate to the prescription of synthetic cannabinoids? We have mainly two that are available in Canada by prescription: Nabilone commercial name Cesamet and Nabiximols commercial name Sativex. Nabinol is a synthetic THC is analog and Nabiximols is a mixture of THC and CBD. Finally, there is a third medication that's not available presently in Canada, the commercial name is Marinol, generically Dronabinol. So, let's focus on the ones that are available. Nabinol is an agonist, primarily a CB1 receptors and the therapeutic indication approved by Health Canada and the FDA as well is as an antimitic medication. It is used for the prevention of chemotherapy-induced nausea and vomiting, although it's not considered the first-choice medication for the treatment of these conditions. The adverse effects of Nabilone particularly relevant for the industry are xerostomia up to 20%, aphtous stomatitis, and dysgeusia.

Dr. Lanca: Nabiximols therapeutic indication is for the treatment of spasticity and neuropathic pain in multiple sclerosis. As well, it is an adjunct analgesic in cancer patients, although it's only recommended for patients not effectively managed with opioids. The adverse effects of these medicines are again xerostomia 14%, glossodynia or oral pain 2% to 3%, ulcerations and pharyngitis (2% to 3%), and others, such as dysgeusia or throat irritation. So, now the question, we can start asking in today's presentation after this brief overview is the following: how common is cannabis use in Canada? It is the most commonly used illicit drug and approximately 43% of Canadians have used marijuana at some point in their lives. 12.2% of Canadians, 15 years or older have used marijuana in 2012. If we focus on the younger population of 15 to 19, we see that the value of usage is approximately 25%, and in this group, 20% of these individuals use it daily or almost daily.

Dr. Lanca: In children, ages 11 to 15, it is about 28% usage. So, what are the outcomes or what is the relevance of discussing this? Well, the increased frequency of consumption during adolescence leads to a decrease in cognitive functioning, a decrease in educational and personal accomplishment, it increases the risk of dependence and harm to developing adolescent brains, the increased rates of psychosis and other neuro-psychiatric disorders, particularly bipolar and anxiety disorders, and it increases the risk of other substance abuse, namely alcohol, tobacco and opioids. Now, the increased risk of substance abuse by chronic or repeated cannabis consumption has to be clarified: the majority of marijuana users have not used illicit drugs in their lifetime. However, it is interesting that if we look at other individuals that use other illicit drugs, 97%, almost 98% have also used marijuana in their lifetime.

Dr. Lanca: So, what does it mean? It means that although the risk of the chronic use of marijuana is not necessarily leading automatically to the use of other drugs, very often common users and repeated users of marijuana will 'graduate' to the use of other drugs. So, now the question we may ask is what are the possible outcomes for the legalization of marijuana? And I can look at a number of states in united in United States and I will for
example, report information that was published in the Journal of American Medical Association of Psychiatry in 2017 about Washington state. After legalization, there was an increase in use among students in grades 8 to 9. There was an increase of approximately 20% among students in grade 12. The conclusion overall from this study as well as many other studies from different states in United States where marijuana has been legalized, is that the rates of cannabis use and cannabis use disorders (CUD) have increased as compared to states that have not legalized.

Dr. Lanca: So, now, the next question we may ask is what is the legal framework for the non-medical use of cannabis in Canada? So again, non-medical being a euphemism for recreational use of cannabis in Canada. This is information from the government and there is a poster available that basically states that the status of cannabis laws in Canada currently is that it is illegal to possess and sell cannabis for non-medical purposes and that will only change until legislation and new rules are in place. The goal of the government according to the legislation proposed or being discussed, is to legalize, strictly regulate and restrict access to cannabis for non-medical purposes; restrict access of cannabis to youth, as well decrease illegality in selling. You may ask what happens to an individual that currently illegally has been prescribed marijuana for medical purposes and is driving? The legislation in Ontario states that just because somebody has been prescribed marijuana for medical purposes, it doesn't give them the green light to use it without certain restrictions.

Dr. Lanca: What about general legislation, which is the Bill C45? The proposed approach to the regulation of cannabis will take into consideration that impaired driving is the leading criminal cause of death and injury in Canada and the changes in the criminal code are also aimed at including use of marijuana. And the drug-impaired offence according to the drug impaired driving legislation to be approved is that the levels should be set for THC between two and five nanograms. The lower-level offence is a precautionary approach that takes into account the best available scientific evidence related to cannabis. This offense would be punishable by a maximum fine of $1,000.

Dr. Lanca: So where do these numbers come from? It has been tested that with up to five nanograms of THC concentration per milliliter of blood, there is only minor or moderate motor impairment. If it is five nanograms or higher, that is going to be considered an offense which will be prosecuted either by indictment in more serious cases or by summary conviction in less serious cases. Now we may ask the next question: what about drug interactions? They are the very same drug interactions that we have to take into account when a medication is prescribed. And, the one that is mentioned in the proposed law is that 0.05 alcohol concentration in conjunction with a level of THC greater than 2.5 reading, within two hours of driving, will also be a hybrid offence.

Dr. Lanca: So, again, offenders will be prosecuted either by indictment in more serious cases or summary conviction in less serious cases. In addition to levels of blood concentrations, there is a pilot project for oral fluid drug screening devices. So, basically the idea is to reliably measure the THC concentration in an individual's the saliva. The next question
is: considering that it is planned to legalize cannabis for non-medical recreational purposes in the near future, what can we do in terms of recommendations for prevention in management of those conditions? And several studies have already been conducted. The benefits for the general population in terms of developing an educational strategy are: an educational strategy will have the benefits of decreasing the burden on law enforcement, increasing tax revenues, which quite frankly in my opinion is not a medical argument, decrease the stigma of use and decrease the uncontrolled high concentrations of THC marijuana, so regulate the level of THC in the legal marijuana.

Dr. Lanca: What are the risks? The risk is that because marijuana will be legalized, it may lead to a decreasing perception of risk. Some results from several states in the United States, we could see increasing rates of cannabis use, prevalence, and drug abuse disorders. There is still the issue of trying to develop more standardized road tests as uncontrolled THC concentrations have been seen in the United States and other jurisdictions. So, we have to limit, as I pointed out, the THC potency or concentration and that will require clear product labeling, developing a strong program for the education of the public and the healthcare professionals about the risks of high doses off the THC, particularly at risk populations: youth, pregnant women, and patients with neuro-psychiatric or pre-existing neuro-psychiatric conditions or potential/family history of mental health conditions.

Dr. Lanca: We have to define the minimal age for legal recreational use of recreational cannabis. It has been recommended that it be a minimum age of 19 years old similar to the national legal drinking age. However, the Canadian Medical Association has recommended the minimum age of 21 for the purchase and use of recreational cannabis according to the new legislation. So, we need to develop also a national surveillance strategy before as well as after legalization to monitor the rates of impaired driving after legalization, monitor the rates of cannabis use disorders, and monitor the rates of psychiatric disorders. That of course is going to imply that the medical facilities and the medical institutions will have the capacity to treat problems of use and abuse and it's mental implications. So, we know that to address that issue, it is necessary to increase the awareness and training of the healthcare professionals to diagnose and treat the conditions, increase the resources in financing of mental health institutions by the government in order to develop adequately the capacity to treat the problematic use and the mental health implications, and develop new and effective pharmacological and behavioral treatments for cannabis use disorders.

Dr. Lanca: There is also the need for an evidence-based training of physicians of indications and limitations of medical cannabis as well as the possible non-medical use and abuse of cannabis. So, in order to do that, and this was particularly aimed at the medical profession, there a need to include this type of information in the post graduate medical education curriculum. And of course, these same guidelines and general approach should be taken into consideration by other health profession curricula, including dentistry, pharmacy and nursing for example.
Dr. Lanca: It is necessary to conduct high quality studies on the therapeutic effects of cannabis on conditions such as nausea and vomiting, chronic pain, neuropathic pain, fibromyalgia and spasticity in multiple sclerosis, to see if cannabis therapy is effective since to a certain extent, some studies show the possible benefits. However, it is important to stress that within the frame of medical marijuana, the door shouldn’t be open to that idea that the recreational use of marijuana is justified in those conditions without medical supervision.

Dr. Lanca: I would like to share with you some interesting results that would be to a certain extent a reflection. These are the conclusions of the study conducted by a group of researchers, physicians, in California. The study focuses on the state of Hawaii. Since the legalization of marijuana, the THC positivity among multi-vehicle crash fatalities has tripled. THC positivity among patients presenting to the highest-level trauma center has doubled. THC positive patients are less likely to use protective devices such as seat belts or helmets and more likely to rely on publicly funded medical insurance.

Dr. Lanca: These findings will have implications nationwide, not just in the United States, but after legalization in Canada, the same principles certainly apply. These findings underscore the need for further research and policy development to address the public health effects and the cost of cannabis related trauma. With these sobering words and after giving you and sharing with you this overview of the legal framework and possible consequences of cannabis for non-medical or recreational purposes. I would like once again to thank Dr. Guessaier on behalf of the CDA for inviting me to Oasis Discussions to present such a relevant topic for you. Thank you very much.