

Canadian Guidelines on Cannabis Use Disorder Among Older Adults

2019

ccsmh.ca



Canadian Guidelines on Cannabis Use Disorder Among Older Adults

Disclaimer:

This publication is intended for information purposes only, and is not intended to be interpreted or used as a standard of medical practice. Best efforts were used to ensure that the information in this publication is accurate; however, the publisher and every person involved in the creation of this publication disclaim any warranty as to the accuracy, completeness or currency of the contents of this publication. This publication is distributed with the understanding that neither the publisher nor any person involved in the creation of this publication is rendering professional advice. Physicians and other readers must determine the appropriate clinical care for each individual patient on the basis of all the clinical data available for the individual case. The publisher and every person involved in the creation of this publication disclaim any liability arising from contract, negligence, or any other cause of action, to any party, for the publication contents or any consequences arising from its use. The views expressed herein do not necessarily represent the views of Health Canada.

We encourage the copy and distribution of these guidelines; provided that the appropriate attribution is given. Please see the suggested citation below.

Suggested citation: Canadian Guidelines on Cannabis Use Disorder Among Older Adults. Canadian Coalition for Seniors' Mental Health, Toronto, Canada (2019)

Acknowledgements:

Funding for the Canadian Coalition for Seniors' Mental Health (CCSMH) Substance Use Disorder Guidelines was provided by Health Canada, Substance Use and Addictions Program. The CCSMH gratefully acknowledges Health Canada for its ongoing support and continued commitment to the area of seniors' mental health.

In addition, special thanks to the Co-Leads and individual Working Group members who dedicated a countless number of hours and engaged in the creation of guidelines and recommendations.

We would also like to thank Dr. Michael Beazley, Dr. Kim Corace, and Dr. Meldon Kahan for their support in reviewing and for providing their perspectives on this document.

We would like to thank the Canadian Centre on Substance Use and Addiction and the Behavioural Supports Ontario Substance Use Collaborative for their support and contributions throughout the development of the Guidelines and Tonya Mahar (Manager, Library Services, Baycrest) for her assistance with literature searches.

Finally, the CCSMH would like to acknowledge the continued dedication of its Steering Committee members and the outstanding contributions of our Director, Claire Checkland and our Project Coordinators: Indira Fernando, Natasha Kachan, and Marc-André LeBlanc.

The CCSMH is a project of the Canadian Academy of Geriatric Psychiatry.

Cannabis Use Disorder Among Older Adults Guideline Development Working Group

**Jonathan Rajeevan Bertram BSc(HON)
MD CCFP(AM)**

Co-Lead
Clinical Lecturer, Dept. of Family & Community Medicine,
University of Toronto
Consultant Physician,
Concurrent Outpatient Medical & Psychosocial Addiction Support Services,
Centre for Addiction & Mental Health
Consultant Pain & Addiction Physician,
Clarington Family Health Organization

Amy J. Porath, PhD

Co-Lead
Director, Research
Canadian Centre on Substance Use and Addiction

Dallas Seitz, MD, PhD, FRCP

Co-Lead
Associate Professor, Department of Psychiatry, Hotchkiss Brain Institute and O'Brien Institute for Public Health
Cumming School of Medicine,
University of Calgary

Harold Kalant, CM, BSc(Med), MD, PhD, FRS(C)

Professor Emeritus, Faculty of Medicine
University of Toronto
Research Director Emeritus, Centre for Addiction and Mental Health
Member, Alumni Advisory Board,
Canadian Centre on Substance Use and Addiction

**Ashok Krishnamoorthy MD,
MRC Psych, FRCPC, DABAM**

Associate Professor (Clinical)
University of British Columbia
Geriatric Addiction Psychiatrist,
Vancouver Coastal Health Authority

Jason W. Nickerson, RRT, FCSRT, PhD

Clinical Investigator,
Bruyère Research Institute,
Adjunct Professor,
Centre for Health Law,
Policy and Ethics, Faculty of Law,
University of Ottawa

Amanjot Mona Sidhu, MD, FRCPC

Geriatrician, Hamilton Health Sciences
Assistant Clinical Professor
McMaster University

Andra Smith, PhD

Full Professor, School of Psychology,
University of Ottawa
Brain Imager and Neuroscientist at the
University of Ottawa Brain and Mind
Research Institute

Rand Teed BA, BEd, ICPS, CCAC

Director, Drug Class
Person with Lived Experience

CCSMH Substance Use Disorders Guidelines Project Steering Committee:

Chair, CCSMH: **Dr. David Conn**

Co-Chair, CCSMH: **Dr. Kiran Rabheru**

Director, CCSMH: **Claire Checkland**

Co-Leads, Alcohol Use Disorder Among Older Adults **Dr. Peter Butt and
Marilyn White-Campbell**

Co-Leads, BZRA Use Disorder Among Older Adults **Dr. David Conn and
Dr. David Hogan**

Co-Leads, Cannabis Use Disorder Among Older Adults **Dr. Jonathan Bertram,
Dr. Amy Porath and
Dr. Dallas Seitz**

Co-Leads, Opioid Use Disorder Among Older Adults **Dr. Launette Rieb and
Dr. Zainab Samaan**

Table of Contents

Scope	4
Definition of Key Terms.	4
Summary of Recommendations and Grades	6
Rationale.	9
Background	10
Prevention of Cannabis Use Disorder	11
Clinician Education	11
Patient and Family/Caregiver Education.	12
Screening for Cannabis Use Disorder	16
Assessment of Cannabis Use Disorder.	17
Treatment of Cannabis Use Disorder.	18
Future Directions	19
References.	20

[Guideline Methodology](#) and [Introduction to Substance Use Disorder Guidelines](#) documents can be found on our website at ccsmh.ca

Canadian Guidelines on Cannabis Use Disorder Among Older Adults

Scope

The Canadian Coalition for Seniors' Mental Health (CCSMH) received a grant from the Substance Use and Addictions Program (SUAP) of Health Canada to create a set of four guidelines on the prevention, assessment, and treatment of **substance use disorders (SUDs)** among older adults on the topics of [alcohol](#), [benzodiazepine receptor agonists \(BZRAs\)](#), cannabis, and [opioids](#). The GRADE approach was utilized in the creation of these guidelines. The methodology can be found in a separate document at [ccsmh.ca](#).

An introduction to these guidelines which highlights issues of relevance to all four can also be found at [ccsmh.ca](#).

These guidelines are not intended to provide a comprehensive guide on the use of these substances either by medical authorization or non-medical use.

The goal of this document is to provide useful guidance for clinicians on either preventing the development of Cannabis Use Disorder (CUD) or optimally assessing and treating older adults who have developed such a disorder. These guidelines have been developed due to the paucity of information that surrounds the relationship between cannabis use and the impact of aging processes such as changing physiology, metabolism, and the increase in polypharmacy. These guidelines should be used as a complement to other reliable sources of information. While clinicians may choose to authorize cannabis for medical purposes in older patients this document will not focus on possible medical uses, but instead it seeks to address issues of non-medical cannabis use and CUD in older adults.

Definition of Key Terms

Cannabis Use Disorder: According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), Cannabis Use Disorder (CUD) is a problematic pattern of cannabis use leading to clinically significant impairment or distress as manifested by at least two of the criteria below occurring in a 12-month period (American Psychiatric Association, 2013). It is important to note that among older adults, some of these criteria may be modified by the aging process or their social roles (e.g., retirement from work), resulting in more subtle presentations (Kuerbis et al., 2014).

- + Cannabis is often taken in larger amounts over a longer period than was intended.
- + There is a persistent desire or insignificant effort to cut down or control cannabis use.
- + A great deal of time is spent in activities necessary to obtain cannabis, use cannabis, or recover from its effects.
- + Craving or a strong desire or urge to use cannabis.
- + Recurrent cannabis use resulting in failure to fulfill major role obligations at work, school, or home.
- + Continued cannabis use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of cannabis.
- + Important social, occupational, or recreational activities are given up or reduced because of cannabis use.
- + Recurrent cannabis use in situations which are physically hazardous.
- + Cannabis use is continued despite knowledge of having persistent or recurrent physical or psychological problems that are unlikely to have been caused or exacerbated by cannabis.

✦ Tolerance, as defined by either:

- A need for markedly increased amounts of cannabis to achieve intoxication and desired effect, or
- A markedly diminished effect with continued use of the same amount of cannabis.

✦ Withdrawal, as manifested by either:

- Characteristic withdrawal symptoms (i.e., autonomic hyperactivity, hand tremor, insomnia, nausea or vomiting, transient sensory hallucinations or illusions, psychomotor agitation, anxiety, and/or seizures) OR
- Cannabis (or a closely related substance) is taken to relieve or avoid withdrawal symptoms.

Diagnosis

- ✦ 1 symptom or less, no diagnosis
- ✦ 2–3 symptoms, mild Cannabis Use Disorder
- ✦ 4–5 symptoms, moderate Cannabis Use Disorder
- ✦ 6 or more symptoms, severe Cannabis Use Disorder

Remission

- ✦ Following treatment, 3–12 months of abstinence is considered early remission.
- ✦ More than 12 months is considered sustained remission.

Summary of Recommendations and Grades

We used the GRADE approach (Grading of Recommendations, Assessment, Development and Evaluation) as a method of grading the quality of evidence and the strength of recommendations. In following the GRADE process, the initial step was to grade the quality of available evidence supporting each recommendation. Subsequently, we identified the overall strength of the recommendation taking into account the quality of the evidence but also other factors such as the potential to do harm, the cost and feasibility.

We have also developed a separate category for recommendations which are not primarily based on empirical evidence; but have agreement that they represent best clinical practice. Examples would include: optimal assessment processes and those related to education and/or policy. These recommendations have been categorized as “C” for consensus. We did not use the GRADE process for these recommendations. Other guideline groups have used a similar approach e.g. British Association for Psychopharmacology Guidelines (Lingford-Hughes et al., 2012). While such recommendations lack empirical evidence, we believe they are also useful and important.

GRADE

QUALITY OF EVIDENCE	STRENGTH OF RECOMMENDATION
The quality of evidence for each recommendation is determined through an examination of the following factors: (1) Study design and the quality of the studies that were included, (2) the directness of the evidence (generalizability or applicability) and (3) the confidence that patients will benefit from the treatment.	The strength of each recommendation is determined through an examination of the following factors: (1) The balance between benefits and undesirable effects/ risks, (2) uncertainty or variability of patient values and preferences and (3) the resources associated with management options.

****High quality evidence doesn't necessarily imply strong recommendations, and strong recommendations can arise from low quality evidence.*

QUALITY OF EVIDENCE

HIGH	Further research is unlikely to change confidence in the estimate of effect
MODERATE	Further research is likely to have an important impact on the confidence in the estimate of effect and may change the estimate
LOW	Further research is very likely to have an important impact on the confidence in the estimate of effect and is likely to change the estimate

Note: Meta analyses and Randomized Controlled Trials are considered high quality vs. Observational studies which are considered low quality

STRENGTH OF RECOMMENDATION

STRONG	Strong recommendations indicate high confidence that desirable consequences of the proposed course of action outweigh the undesirable consequences or vice versa.
WEAK	Weak recommendations indicate that there is either a close balance between benefits and down sides (including adverse effects and burden of treatment), uncertainty regarding the magnitude of benefits and down sides, uncertainty or great variability in patients' values and preferences, or that the cost or burden of the proposed intervention may not be justified.

(Adapted from Guyatt et al, 2008)

RECOMMENDATION #1:

Cannabis should generally be avoided by older adults who have:

- a. A history of, or are currently experiencing, mental health disorders, problematic substance use, or Substance Use Disorder (SUD). [GRADE: Evidence: Moderate; Strength: Strong]
- b. Cognitive impairment, cardiovascular disease, cardiac arrhythmias, coronary artery disease, unstable blood pressure, or impaired balance. [GRADE: Evidence: Moderate; Strength: Strong]

RECOMMENDATION #2:

Clinicians should be aware of the following:

- a. The current evidence base on the medical use of cannabis is relatively limited, and cannabis and most derivative products have not been approved as therapeutic agents by Health Canada, with the exception of two pharmaceutical grade cannabinoid products. Clinicians should keep informed about new evidence regarding possible indications and contraindications for cannabis and cannabinoid use. [GRADE: Evidence: High; Strength: Strong]
- b. The common signs and symptoms associated with cannabis use, cannabis-induced impairment, cannabis withdrawal, CUD, and common consequences of problematic cannabis use. [GRADE: Evidence: High; Strength: Strong]
- c. The potential adverse effects of cannabis use in older adults, such as changes in depth perception risking balance instability and falls, changes in appetite, cognitive impairment, cardiac arrhythmia, anxiety, panic, psychosis, and depression. [GRADE: Evidence: Moderate; Strength: Strong]
- d. Mental health disorders which are commonly comorbid with CUD such as depression, anxiety, and schizophrenia/psychosis. [GRADE: Evidence: Moderate; Strength: Strong]

RECOMMENDATION #3:

In order to support the retention of information, clinicians should provide education and counselling with regard to cannabis and cannabinoids to older patients and their family members/caregivers both verbally and in writing. [Consensus]

RECOMMENDATION #4:

Clinicians should counsel patients, caregivers, and families to be aware that older adults can be more susceptible than younger adults to some dose-related adverse events associated with cannabis use. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #5:

Clinicians should advise patients, caregivers, and families about potentially increased risks associated with higher potency delta-9-tetrahydro-cannabinol (THC) extracts, or higher potency strains of cannabis when compared to those with lower THC content. [GRADE: Evidence: Low; Strength: Strong]

RECOMMENDATION #6:

Clinicians should advise patients, caregivers, and families of risks associated with different modes of use of cannabis and cannabis products (e.g., smoking, vaporizing, oils, sprays, etc.) and counsel patients on these risks. [GRADE: Evidence: Moderate; Strength: Strong]

RECOMMENDATION #7:

Clinicians should educate patients to avoid illegal synthetic cannabinoids (e.g., K2 and SPICE,) because of the potential to cause serious harm. [GRADE: Evidence: Low; Strength: Strong]

RECOMMENDATION #8:

Clinicians should educate patients on the risk of cannabis-induced functional impairment especially if the patient is cannabis-naive or titrating to a new dose. It is recommended that the starting dose should be as low as possible and gradually increased over time if needed. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #9:

Clinicians should counsel patients on the potential long-term effects of frequent cannabis use including respiratory problems, precancerous epithelial changes, and cognitive impairment. Patients should also be counselled on the risk of exacerbation of mental health conditions with CUD, especially when high THC strains are used. [GRADE: Evidence: Moderate; Strength: Strong]

RECOMMENDATION #10:

Clinicians should advise patients, caregivers, and families that:

- a. Cannabis may impair the ability to safely drive a motor vehicle for up to 24 hours. [GRADE: Evidence: High; Strength: Strong]
- b. The use of both cannabis and alcohol together results in synergistic impairment, increases risks for driving, and should be avoided. [GRADE: Evidence: High; Strength: Strong]
- c. It is dangerous to ride as a passenger with a driver who has used cannabis within the previous 24 hours. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #11:

Patients, caregivers, and families should be provided with information about the signs, symptoms, and risks of cannabis withdrawal. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #12:

Clinicians should initiate non-judgmental discussions related to cannabis and cannabinoid use. Careful histories should be obtained from patients, caregivers, and families about signs and symptoms of CUD that may be similar to those of age-related nervous system changes, such as drowsiness, dizziness, memory impairment, and falls. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #13:

All patients regardless of age should be screened for:

- a. The use of non-medical and medically authorized cannabis and cannabinoids, and illicit synthetic cannabinoids as well as tobacco, alcohol, and other drugs. [GRADE: Evidence: Low; Strength: Strong]
- b. The amount and type of cannabis or cannabinoid used, and its frequency, by those who acknowledge any use. Those who acknowledge any *recent* use (any in the past month) should then go on to targeted screening using the Cannabis Use Disorder Identification Test (CUDIT). [GRADE: Evidence: Low; Strength: Strong]

RECOMMENDATION #14:

Clinicians should be aware that the diagnostic accuracy of some screening tools may be variable given that some of the symptoms of aging may overlap with those of CUD. [GRADE: Evidence: Moderate; Strength: Weak]

RECOMMENDATION #15:

Assessment of CUD in older adults should evaluate:

- a. Modes of use: i.e., ingesting, smoking, vaping, use of extracts, topicals, nabilone, and nabiximols, etc., and consider the risks/benefits/harms of all that apply to the patient. [GRADE: Evidence: High; Strength: Strong]
- b. Frequency and dosage. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #16:

Clinical assessment of CUD in older adults should evaluate the signs and symptoms of cannabis withdrawal, with consideration that the rapid reduction or abrupt discontinuation of cannabis use may also be associated with withdrawal symptoms. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #17:

When assessing patients, clinicians should be aware of the risk of cannabis hyperemesis syndrome in association with chronic cannabis use, especially with higher potency preparations. [GRADE: Evidence: High; Strength: Strong]

RECOMMENDATION #18:

The Screening, Brief Intervention, and Referral to Treatment (SBIRT) approach should be considered for assessing and managing CUD similarly to other SUDs. [GRADE: Evidence: Low; Strength: Strong]

RECOMMENDATION #19:

Peer support programs should be considered for individuals with CUD. [GRADE: Evidence: Moderate; Strength: Strong]

RECOMMENDATION #20:

It is recommended that a variety of psychosocial approaches be considered for harm reduction or relapse prevention including: Cognitive Behavioural Therapy (CBT), Motivational Interviewing (MI), Mindfulness Based Relapse Prevention (MBRP), Motivational Enhancement Therapy (MET), and Contingency Management (CM). [GRADE: Evidence: Moderate; Strength: Strong]

RECOMMENDATION #21:

There are currently no established pharmacological treatments that have been demonstrated to be safe and effective for either cannabis withdrawal symptoms or CUD. [Consensus]

RECOMMENDATION #22:

Accredited residential treatment should be considered as appropriate for treating CUD if the individual is unable to effectively reduce or cease their cannabis use. [GRADE: Evidence: Low; Strength: Strong]

Canadian Guidelines on Cannabis Use Disorder Among Older Adults

Rationale

Cannabis use for medical purposes has become a topic of great interest in recent years. Increased attention has been paid to the many product types available (dried product, oils, edible cannabis, etc.) as well as its effects. However, evidence is limited with regard to the potential benefits and harms of cannabis use, especially among older adults. Those who were born between 1946-1964, many of whom are now older adults, have a higher lifetime prevalence of use and past year use than any generation that precedes them (Simoni-Wastila & Yang, 2006). This lack of evidence and increased lifetime exposure of many adults, coupled with the recent legalization of non-medical cannabis use in Canada and subsequent increase in public interest, has driven concern for potential problematic cannabis use and Cannabis Use Disorder among older adults.

Much of the limited evidence related to cannabis is due to its longstanding classification as an illegal drug. This has impeded clinical research on its use, the effects of its use, and its potentially beneficial and adverse health outcomes. It is important to consider these questions broadly, but also specifically for different patient groups, such as older adults. Older adults face unique physical and socioeconomic circumstances that may influence their response to cannabis use. Physiological changes that impact sleep, mobility, diet, exercise, and overall quality of life, along with issues such as polypharmacy and cognitive decline are all confounding factors in the effects and response of cannabis use in this population. All of these factors should be taken into consideration in the clinical evaluation of the patient and in decision-making when considering cannabis.

As the current state of evidence on cannabis use in older adults is largely absent, further clinical investigation is needed to understand the extent of effects, specifically within the context of substance use and aging. Despite this, there is an abundance of anecdotal (and sometimes conflicting) advice available to consumers, based on personal and collective narratives acquired over decades of use. There is a clear need to not only reconcile anecdotal and self-reported experiences (positive and negative) with the evidence to guide clinical decision-making, but also to more fully understand the impact of physiological

and socioeconomic implications of cannabis use among older adults. Applying some of the available evidence for younger adults in the counselling of older adults and cannabis use is necessary until we are able to fully understand the effects of cannabis use and aging.

Aging presents unique considerations for cannabis use particularly when coupled with multiple comorbidities, the use of multiple medicines, and the use of a psychoactive substance by a population more prone to vision, mobility, and cognitive issues, among other concerns. These factors coupled with the ongoing diversification of the cannabis market present a rapidly changing landscape where little is known of consumer habits and emerging products. As such, healthcare professionals need to be aware of the fact that older adults do use cannabis, should be asked about it, and need guidance for helping ensure that they can use cannabis safely and access appropriate treatments if their use is problematic.

The information contained within this document is based on the most current and reliable English language research at the time of publication. With the amount of variability in reliability of data surrounding medical and non-medical cannabis use there is a need for unbiased information and systematic evidence-based approaches to clinical practice. It is in this setting that we hope this guideline will support health care professionals, patients, and families alike.

KEY POINTS FOR THIS GUIDELINE

- ✦ The evidence base for harms and potential benefits associated with cannabis use in older adults is limited but growing.
- ✦ Given that the adverse effects of cannabis may vary considerably based on routes of administration and subtype of strain, as well as the lack of evidence regarding older adults, we have developed these guidelines utilizing a cautionary approach.
- ✦ Hopefully as research advances and capacity improves in the upcoming years, the risks and benefits of cannabis use among older adults, as well as the risk of developing Cannabis Use Disorder, will be better understood.

Background

Cannabis is a plant that contains hundreds of compounds including cannabinoids, which act on the endogenous cannabinoid (endocannabinoid) system. This complex system is involved in bonding, sleep, appetite, immune response, and pain regulation. Certain cannabinoids act by influencing reward, motivation, and substance-related cues. Delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD) are two cannabinoids that have the most available literature. They exert various effects by binding to the cannabinoid receptors; CB1 is located centrally in the brain, and CB2 is located primarily peripherally and on the circulating immune system throughout the body. The primary psychoactive ingredient in cannabis is THC, which mimics the endocannabinoid anandamide and binds to cannabinoid-1 (CB1) receptors in the brain, often producing a high or sense of euphoria. THC is also vasoconstrictive to blood vessels in the heart and brain and as such may increase the risk of cardiovascular events including stroke, cardiac arrhythmia, and myocardial infarction. In contrast, CBD binds weakly to CB1 receptors and may interfere with the binding of THC, resulting in a lack of euphoric and reinforcing effect (Cohen & Weinstein, 2018). Also, CBD has been shown to be an agonist similar to another endocannabinoid, 2-AG, and binds primarily to CB2 receptor sites.

It is important to note that the cannabinoid composition of a cannabis plant is wide ranging and varies by strain. Some are higher in CBD and others contain more THC. As a result, the effects of cannabis use are also wide ranging and exhibit a variety of psychosomatic properties. While neither taking CBD nor THC has been found to be directly fatal in adults, there have been overdoses in children who have ingested edible cannabis derivative products (e.g., gummy bears), and there is an increased risk of a variety of problems in adults that can lead to harm and even death, among them motor vehicle collisions in those driving after using cannabis and psychosis leading to accidents (Els, 2018). Also, high THC use has been linked to long-term negative psychiatric effects, increasing depression, anxiety, worsening post-traumatic stress disorder symptoms, panic attacks, and suicidal ideation, attempts, and completion rates (Volkow et al., 2014; National Academies of Sciences, Engineering, and Medicine [NASEM], 2017). Cannabinoids exhibit differential uptake in the body based on the mode of consumption (inhaling vs. ingesting).

Physicians and other health professionals need to be aware of the most recent research on the use of cannabis for medical and non-medical purposes, as they will find that a number of people they care for choose to use cannabis. In Canada, cannabis use rates in older adults have been rising over the last decade as baby boomers age into their older years, and supply has become more readily available. One study showed the percentage of older adults using cannabis in Ontario doubled from 2005–2015, and has increased fivefold since 1977 (Ialomiteanu et al., 2016; Centre for Addiction and Mental Health [CAMH]). It is critical for clinicians to ensure that their patients and clients are aware that there are potential risks related to cannabis use and medical evidence that use of cannabis (and more specifically certain cannabinoids) may be beneficial for only a small number of clinical indications, including chronic neuropathic pain, nausea and vomiting due to chemotherapy, seizures, spasticity in multiple sclerosis, and stimulation of appetite in patients with severe weight loss due to AIDS and possibly cancer (NASEM, 2017; Allan et al., 2018). There is a growing body of evidence which is supportive of some other possible indications (Kalant & Porath, 2016). The pace and scope of cannabis research may require clinical recommendations, such as those below, to be updated and modified more frequently in order to stay current.

Prevention of Cannabis Use Disorder Among Older Adults

RECOMMENDATION #1:

Cannabis should generally be avoided by older adults who have:

- a) A history of, or are currently experiencing, mental health disorders, problematic substance use, or Substance Use Disorder (SUD).** [GRADE: Evidence: Moderate; Strength: Strong]
- b) Cognitive impairment, cardiovascular disease, cardiac arrhythmias, coronary artery disease, unstable blood pressure, or impaired balance.** [GRADE: Evidence: Moderate; Strength: Strong]

The endocannabinoid system modulates the functions of many organ systems throughout the body. Cannabis and certain cannabinoids therefore affect the central and peripheral nervous systems, respiration, and cardiovascular, skeletal, muscle, and bone function. The effects of cannabis can also resemble the effects of various disease states and age-related changes in these organ systems or can accentuate these conditions in older adults. For example, regular cannabis smoking can lead to chronic bronchitis and respiratory symptoms (Ribeiro and Ind, 2016). Cannabis in other forms may cause osteoporosis and can impair cognitive and motor functions (Health Canada, 2018). Clinical case reports and case series have indicated that regular cannabis use can be associated with stroke even among younger adults without other known risk factors (Hackam, 2015; Hemachandra et al., 2016). Since older adults have a higher frequency of risk factors for stroke, the possibility exists that cannabis use might also increase frequency of stroke among older adults. Therefore, individuals with existing health conditions or age-related physiological changes can have these conditions aggravated by cannabis, and should be advised of these risks and generally advised to avoid cannabis use. The potential benefits of cannabis in certain limited situations where it is medically indicated (e.g., treatment of nausea due to chemotherapy) need to be balanced against potential risks.

There is strong evidence that persons with CUDs have an increased risk of developing alcohol, tobacco, or other SUDs and should be monitored appropriately for these conditions (Choi et al., 2017). Additionally, older adults with other substance use disorders have an increased risk of developing a CUD. Cannabis can precipitate or aggravate mental health conditions such as psychosis, depression, and anxiety,

particularly in those with current experience, a personal history, or a strong family history of these conditions. There has not yet been research distinguishing between THC and CBD as it pertains to specific health outcomes (e.g., psychosis, anxiety, depression, and addiction). As such, we recommend that individuals with current experience, a personal history, or a strong family history of these conditions avoid cannabis (NASEM, 2017).

Clinician Education

RECOMMENDATION #2:

Clinicians should be aware of the following:

- a) The current evidence base on the medical use of cannabis is relatively limited, and cannabis and most derivative products have not been approved as therapeutic agents by Health Canada, with the exception of two pharmaceutical grade cannabinoid products (see below). Clinicians should keep informed about new evidence regarding possible indications and contraindications for cannabis and cannabinoid use.** [GRADE: Evidence: High; Strength: Strong]
- b) The common signs and symptoms associated with cannabis use, cannabis-induced impairment, cannabis withdrawal, CUD, and common consequences of problematic cannabis use.** [GRADE: Evidence: High; Strength: Strong]
- c) The potential adverse effects of cannabis use in older adults, such as changes in depth perception risking balance instability and falls, changes in appetite, cognitive impairment, cardiac arrhythmia, anxiety, panic, psychosis, and depression.** [GRADE: Evidence: Moderate; Strength: Strong]
- d) Mental health disorders which are commonly comorbid with CUD such as depression, anxiety, and schizophrenia/psychosis.** [GRADE: Evidence: Moderate; Strength: Strong]

Although the use of cannabis for medical purposes is legal under the Cannabis Act, Health Canada does not endorse any health claims about the medical use of cannabis or any health benefits associated with it; Health Canada does provide information on the

harms associated with cannabis use (Health Canada, 2018). Thus, dried cannabis (leaves, buds, seeds) and derivative products (oils, butter, waxes, “shatter”, and edible cannabis) have not been approved as therapeutic agents by Health Canada and are not available on prescription. Clinicians should keep informed about new evidence regarding possible indications or contraindications for use of these products. The only Health Canada-approved cannabinoid products are nabilone (Cesamet®), which is synthetic THC, and nabiximols (Sativex®), which is a balance of naturally-derived THC and CBD. These medical products should be considered for prescription first, prior to consideration of non-prescription cannabis products for medical purposes.

A comprehensive systematic review conducted in 2017 (NASEM, 2017) identified only three conditions for which there is conclusive or substantial evidence that cannabis or cannabinoids are effective in treating specific symptoms. These include muscle spasms related to multiple sclerosis, nausea and vomiting associated with chemotherapy, and chronic pain, especially of neuropathic origin (Allan et al., 2018). These findings were supported by a more recent Canadian review of systematic reviews of medical cannabinoids (Allan et al., 2018). Clinicians should be familiar with the distinction between THC and CBD, the different methods of administration for cannabis preparations, and potency and dosage of different cannabis preparations (Health Canada, 2018). All of these elements are very relevant in understanding cannabis administration and require further research to convey an accurate representation of the therapeutic effects of cannabis, as well as a proper understanding of the psychoactive effects and other effects of relevance to older adults. Common symptoms associated with cannabis use, including adverse effects, are described in [Table 1](#).

It is important to review the specific risks associated with cannabis use on an individual basis. This may include the patterns of use as well as the particular kinds of cannabis being used to thoroughly understand the potential risks associated with it. The particular implications of cannabis use among older adults should be considered, including a higher risk of falls, cognitive impairment, confusion, drug-drug interactions, and other factors associated with age- and disease-related physiological changes. However, evidence also suggests that many older adults use cannabis without severe complications or adverse events and the possibility of use within these relatively safe limits should be acknowledged during screening for CUD (Choi et al., 2015).

Comorbid psychiatric conditions, such as depression, anxiety, and schizophrenia, have been associated with CUD and should be assessed clinically.

Patient and Family/Caregiver Education:

RECOMMENDATION #3:

In order to support the retention of information, clinicians should provide education and counselling with regard to cannabis and cannabinoids to older patients and their family members/caregivers both verbally and in writing.
[Consensus]

Available evidence suggests that when presented with relevant, accurate, and properly contextualized information concerning the health effects of cannabis use, adults who use cannabis may moderate the quantity or types of cannabis used and/or the ways in which they consume it (Murphy et al., 2015). Existing guidelines suggest that clinicians should provide education and counseling concerning cannabis use to patients (Allan et al., 2018). Although the evidence concerning educational interventions among older adults is limited, and there are no randomized controlled trials studying the provision of patient education about the risks and benefits specifically related to cannabis use in older adults, the use of written or printed material may help the patient to retain and reinforce this information and facilitate discussions with family members or friends.

RECOMMENDATION #4:

Clinicians should counsel patients, caregivers, and families to be aware that older adults can be more susceptible than younger adults to some dose-related adverse events associated with cannabis use. [GRADE: Evidence: High; Strength: Strong]

Education and counselling are important in order for older adults to avoid potential harms due to adverse effects including changes in depth perception risking balance instability and falls, changes in appetite, cognitive impairment, cardiac arrhythmia, anxiety, panic, and psychosis. The potential for greater harm in older adults exists because of more vulnerable physiology, the prevalence of medical comorbidities, and potential drug interactions when initiating any cannabis use. Patients who intend to use cannabis should be encouraged to seek out products with lower THC content (< 10%) and to introduce use with a “low and slow” approach to watch for side effects and/or complications.

Table 1: The table below lists common adverse effects of cannabis in older adults***

PROBLEM AREA	SYMPTOM
CENTRAL NERVOUS SYSTEM	Dizziness, drowsiness, perceptual alterations, sensory alterations, driving impairment, headaches, short-term memory impairment, attention and problem-solving impairment, falls, decreased reaction time
PSYCHIATRIC	Psychoactive effects such as increased anxiety, paranoia, euphoria, depression; increased risk for psychosis
RESPIRATORY	Chronic bronchitis and bronchial irritation (inhaled formulation), bronchospasm
CARDIOVASCULAR	Palpitations, arrhythmias, tachycardia, bradycardia, postural hypotension
GASTROINTESTINAL	Changes in bowel habits, appetite changes, dry mouth, nausea, vomiting

*** Please note that the majority of existing literature describing adverse effects of cannabis use is focused on the impact of THC. There are common side-effects applicable to both THC and CBD, however much of the information pertains to THC-based products. It is important to note that adverse effects can be experienced with both acute and chronic use, and also vary depending on formulation, concentration, and dose (MacCallum & Russo, 2018).

RECOMMENDATION #5:

Clinicians should advise patients, caregivers, and families about potentially increased risks associated with higher potency delta-9-tetrahydro-cannabinol (THC) extracts, or higher potency strains of cannabis when compared to those with lower THC content. [GRADE: Evidence: Low; Strength: Strong]

There are several forms of cannabis products with higher THC concentrations (e.g., those with street names such as Shatter, Dab, Wax, and Budder), and clinicians should advise patients of the potential harmful effects of using such products. Both patients and clinicians should be aware that these products are not available through the legal avenues for purchasing cannabis such as licensed producers and other government-regulated producers, although some of these products will be regulated under the Cannabis Act in October 2019 and will be available for sale as early as December 2020. Use of products with higher THC content exacerbates the risks associated with acute cannabis consumption including increased risk of motor vehicle crashes, especially fatal collisions (Karila et al., 2014).

RECOMMENDATION #6:

Clinicians should advise patients, caregivers, and families of risks associated with different modes of use of cannabis and cannabis products (e.g., smoking, vaporizing, oils, sprays, etc.) and counsel patients on these risks. [GRADE: Evidence: Moderate; Strength: Strong]

Cannabis products, regardless of THC and CBD content, come in various forms including those that can be inhaled, those that are ingested, and those that can be applied topically. Clinicians should understand the basic pharmacokinetic differences between formulations and their associated risks (Health Canada, 2018). While the evidence is limited for CBD products, clinicians should advise that CBD products may induce some of the adverse effects associated with THC, but CBD's effects on the nervous system differ markedly. For any type of cannabis product, inhaled formulations have a quicker onset of action than ingestible forms (MacCallum & Russo, 2018). Risks associated with chronic use of inhaled formulations include but are not limited to increased risk for bronchospasm mediated by bronchial irritation. Certain cannabis oil pens are made using butane, a carcinogen (Miller et al., 2016).

Ingestible forms of cannabis, such as edibles and oils, have a delayed onset of action and typically have a longer duration of action (NASEM, 2017). This may result in the use of larger than intended doses due to the delayed and cumulative effects from repeated acute ingestions. Patients should be cautioned against using multiple doses of orally administered cannabis in short time periods due to these risks.

Topically administered cannabis products bypass the first phase of hepatic metabolism and some sources have speculated that this route of administration may therefore be associated with fewer adverse effects. However, the evidence for this conjecture is limited and topical formulations require further research (Huestis, 2007). Based on clinical experience, patients rarely report cognitive side effects when using topical cannabis derivatives for pain, especially CBD-only products, so it may be a lower risk starting point for those without contraindications who wish to try a cannabis product.

RECOMMENDATION #7:

Clinicians should educate patients to avoid illegal synthetic cannabinoids (e.g., K2 and SPICE,) because of the potential to cause serious harm. [GRADE: Evidence: Low; Strength: Strong]

Illicit synthetic cannabinoid products such as K2 and SPICE are more potent than other forms of cannabis and present a greater risk of adverse events among older adults. Using these products can lead to severe health problems such as seizures, irregular heartbeat, and hallucinations (Gunderson et al., 2012; Seely et al., 2012; Harris & Brown, 2013; van Amsterdam et al., 2015). In rare instances, death can occur (Seely et al., 2012; Harris & Brown, 2013; van Amsterdam et al., 2015).

RECOMMENDATION #8:

Clinicians should educate patients on the risk of cannabis-induced impairment especially if the patient is cannabis-naïve or titrating to a new dose. It is recommended that the starting dose should be as low as possible and gradually increased over time if needed. [GRADE: Evidence: High; Strength: Strong]

Initiation of cannabis for medical or non-medical use can result in physiological, cognitive, perceptual, and emotional changes, including impairment. The risk of impairment with cannabis is increased with formulations containing higher concentrations of THC. Use of cannabis products with THC concentrations of >20% under any circumstance is unwarranted. Claims made for the potential benefits of cannabis in product promotions may not be scientifically supported and patients should be cautious of information provided by manufacturers or distributors of cannabis products. In addition, caution is advised in reviewing information that is available online as the credibility of sources may

vary. Patients need to be aware of the THC concentration in cannabis preparations and be aware that impairment in attention, reaction time, mood, memory, depth and time perception, and cardiac function are all possible adverse effects that are more common when preparations with higher THC concentrations are used. Only medical grade cannabinoids available on prescription have accurate dosing supported by Health Canada. Caution needs to be applied when purchasing from dispensaries or the illicit market. One study of randomly chosen edible cannabis products available at dispensaries in the United States and tested in an independent laboratory found only 17% were accurately labelled for THC and 0% had accurate CBD labeling (Vandrey et al., 2015).

RECOMMENDATION #9:

Clinicians should counsel patients on the potential long-term effects of frequent cannabis use including respiratory problems, precancerous epithelial changes, and cognitive impairment. Patients should also be counselled on the risk of exacerbation of mental health conditions with CUD, especially when high THC strains are used. [GRADE: Evidence: Moderate; Strength: Strong]

As more older adults begin using cannabis for both medical and non-medical reasons, many may use cannabis chronically rather than intermittently and thus be at increased risk of long-term health effects. These risks can include respiratory and cardiovascular problems (Hall & Degenhardt, 2014), skeletal changes that increase risk of fractures (Sophocleous et al., 2017), emotional and cognitive disorders (NASEM, 2017), and SUDs involving not only cannabis itself but also opioids and other pain relievers (Choi et al., 2017). Though there is no conclusive evidence of a causal link between prolonged use of cannabis and cancer, an association cannot be ruled out as precancerous changes in respiratory epithelium have been observed in people who chronically smoke cannabis (Barsky et al., 1998). Clinicians should be aware that some of the products made by licensed medical cannabis producers in Canada have higher THC concentrations (>20% THC), and should advise patients to avoid such products as they may further increase the risk of mental health problems over time.

RECOMMENDATION #10:

Clinicians should advise patients, caregivers, and families that:

- a) Cannabis may impair the ability to safely drive a motor vehicle for up to 24 hours.** [GRADE: Evidence: High; Strength: Strong]
- b) The use of both cannabis and alcohol together results in synergistic impairment, increases risks for driving, and should be avoided.** [GRADE: Evidence: High; Strength: Strong]
- c) It is dangerous to ride as a passenger with a driver who has used cannabis within the previous 24 hours.** [GRADE: Evidence: High; Strength: Strong]

Due to the varying potencies and durations of effect of different cannabis products, it is important to emphasize the significant impact that cannabis has on driving performance and the high potential to cause impairment while driving. Numerous experimental studies have shown that THC impairs cognition, psychomotor function, and actual driving performance in a dose-related manner (Ramaekers et al., 2004). Furthermore, surveys that established recent use of cannabis by directly measuring THC in blood showed that individuals who test positive for THC, particularly at higher levels of THC, are approximately three to seven times more likely to be responsible for their crash as compared to drivers that had not used drugs or alcohol (Ramaekers et al., 2004). A recent systematic review showed the odds ratio of a motor vehicle collision after using cannabis was between 2.49–2.84 (Els et al., 2019). Of note, the effects of CBD on driving are not well known, and currently most of the evidence on driving impairment is related to THC use (Beirness & Porath, 2019). However, in childhood epilepsy studies where pure CBD was used, 30% of participants reported significant sedation (Ali et al., 2019). Thus Dr. Charl Els and colleagues, in a position paper endorsed by the Occupational and Environmental Medical Association of Canada and the Canadian Society of Addiction Medicine, recommend not using cannabis (with any concentration of THC and/or CBD) within 24 hours of safety sensitive work and 28 days of safety critical work (Els et al., 2018). Specifically, the document notes “it is not advisable to operate motor vehicles or equipment, or engage in other safety-sensitive tasks for 24 hours following cannabis consumption, or for longer if impairment persists.”

Due to the variation of effects of THC on driving as THC/CBD formulations change, it is essential to note that the consumption of cannabis and alcohol together will have a synergistic effect on impairment, and that those who may be below the legal allowable blood alcohol levels may still be unsafe to operate a motor vehicle when alcohol is consumed with cannabis (Neavyn et al., 2014).

RECOMMENDATION #11:

Patients, caregivers, and families should be provided with information about the signs, symptoms, and risks of cannabis withdrawal. [GRADE: Evidence: High; Strength: Strong]

Cannabis withdrawal symptoms will be more pronounced with abstinence after long-term use of higher amounts of cannabis. Most research has investigated symptoms in young adults rather than older adults. Typical symptoms of withdrawal include fluctuating behaviour and mood and physical symptoms such as weakness, sweating, restlessness, dysphoria, sleeping problems, decreased appetite, nervousness/anxiety, irritability, aggression, and craving. The desensitization and downregulation of the CB1 receptors begin to reverse within the first two days of abstinence and return to more natural functioning within four weeks of abstinence. The severity of withdrawal is highly variable and dependent on the amount of cannabis used, sex, and patient and contextual factors.

Screening for Cannabis Use Disorder

Clinicians may underestimate the likelihood of problematic substance use or a SUD among older adults. It is therefore important to conduct a comprehensive history of current and past use of substances, including cannabis and cannabinoids. A comprehensive assessment is recommended when a SUD is suspected.

RECOMMENDATION #12:

Clinicians should initiate non-judgmental discussions related to cannabis and cannabinoid use. Careful histories should be obtained from patients, caregivers, and families about signs and symptoms of CUD that may be similar to those of age-related nervous system changes, such as drowsiness, dizziness, memory impairment, and falls.

[GRADE: Evidence: High; Strength: Strong]

Just as with other substances, discussions with older adults about cannabis use and the possibility of CUD should be non-judgmental and supportive in nature. Ensure that screening for CUD in older adults is age appropriate; employs active listening; is supportive; uses a health or medical frame; accounts for memory impairment or cognitive decline; and is non-threatening and non-stigmatizing. The DSM-5 criteria for Cannabis Use Disorder require impairment in meeting social and occupational obligations and the specific social and functional roles of older adults should be considered when assessing the impact of cannabis use on them. It is important to respect older adults' autonomy and confidentiality but it is also helpful to obtain collateral information from family, friends, and other caregivers, with the patient's consent if it is available, particularly for individuals who may have cognitive impairment due either to cannabis or to comorbid medical or psychiatric conditions. Many symptoms of CUD such as drowsiness, dizziness, memory impairment, and falls are relatively common among older adults without CUD, but CUD should be considered as a potential cause or contributor to these symptoms in older adults (Allan et al., 2018; NASEM, 2017).

RECOMMENDATION #13:

All patients regardless of age should be screened for:

- a) **The use of non-medical and medically authorized cannabis and cannabinoids, and illicit synthetic cannabinoids as well as tobacco, alcohol, and other drugs.** [GRADE: Evidence: Low; Strength: Strong]
- b) **The amount and type of cannabis or cannabinoid used, and its frequency, by those who acknowledge any use. Those who acknowledge any recent use (any in the past month) should then go on to targeted screening using the Cannabis Use Disorder Identification Test (CUDIT).** [GRADE: Evidence: Low; Strength: Strong]

All patients should be screened for cannabis use. Particular attention should be paid to individuals with a past history of substance misuse, recent bereavement, depression, social isolation, significant self-neglect, and chronic pain. Answers to the screening questions may vary according to the individual depending on how the question is asked. Older patients might not think to mention medical use when asked about cannabis. The CUDIT is quite useful for identifying if problems found in a given case may not be attributable to cannabis use. If quantity, potency, and frequency of use are low and there are higher scores in memory or functional issues, the problem may not be related to cannabis.

RECOMMENDATION #14:

Clinicians should be aware that the diagnostic accuracy of some screening tools may be variable given that some of the symptoms of aging may overlap with those of CUD.

[GRADE: Evidence: Moderate; Strength: Weak]

For patients who are using cannabis either medically or non-medically it is important to assess potential for CUD. There are a number of challenges involved in detecting and diagnosing a substance use disorder in older adults (Kuerbis et al., 2014). DSM-5 criteria for SUDs include a number of criteria that measure impairment based on the impact of substance use on fulfilling social or interpersonal roles or performance in areas that are not always applicable to older adults (such as at work, school or while driving).

CUD can also be overlooked because of the increased presence of coexisting medical morbidities whose symptoms may mask CUD in older people.

Assessment of Cannabis Use Disorder

RECOMMENDATION #15:

Assessment of CUD in older adults should evaluate:

- a) Modes of use: i.e., ingesting, smoking, vaping, use of extracts, topicals, nabilone, and nabiximols, etc., and consider the risks/benefits/harms of all that apply to the patient.** [GRADE: Evidence: High; Strength: Strong]
- b) Frequency and dosage.** [GRADE: Evidence: High; Strength: Strong]

Different modes of use are associated with different risks and outcomes, and modes of use should be identified for each individual. Regular inhalation (smoking) of combusted cannabis remains the most common route of administration in Canada (Ialomiteanu et al., 2016). This route adversely affects respiratory health outcomes (Lee & Hancox, 2011; Pletcher et al., 2012; Gates et al., 2014; Tashkin, 2014; Martinasek et al., 2016), and poses the greatest health risk. The use of edible cannabis, liquids, and oils may eliminate respiratory risk but these forms of administration introduce the risk of potential use of larger than intended doses because of the delayed onset of effect (Wang et al., 2013; 2014; Monte et al., 2015). The mode of use should be explored carefully when there is a history of adverse effects that appear to be disproportionate to the effects typically observed with the reported amount of consumption.

Frequency and dose used during each episode of use are strong predictors of the risk of both acute and chronic cannabis-related problems (Solowij et al., 2016). Systematic reviews have found associations between the frequency or dose of cannabis use and various adverse health outcomes, including mental health problems, cardiovascular problems, motor vehicle collisions, suicidality, and cognitive effects (Moore et al., 2007; Reece, 2009; Lorenzetti et al., 2010; Elvik, 2013; Gibbs et al., 2015; Ganzer et al., 2016). In the assessment of CUD, cannabis-related anxiety and cannabis dependence are important to identify. The risk of anxiety and cannabis dependence are strongly associated with daily or near daily use (Coffey et al., 2002; Degenhardt et al., 2013; Silins et al., 2014). Assessment of CUD in older adults should also include comprehensive assessment of potential physical manifestations of CUD or consequences of cannabis use. As with other SUDs, the DSM-5 criteria for CUD may not adequately aid with assessment of severity of CUD in older adults (Budney et al., 2003; Kuerbis et al., 2014).

RECOMMENDATION #16:

Clinical assessment of CUD in older adults should evaluate the signs and symptoms of cannabis withdrawal, with consideration that the rapid reduction or abrupt discontinuation of cannabis use may also be associated with withdrawal symptoms. [GRADE: Evidence: High; Strength: Strong]

Like all substances with addictive potential, cannabis can be associated with a withdrawal syndrome. It can appear when individuals who use cannabis rapidly reduce their use. Cannabis withdrawal syndrome typically emerges after 1–3 days of abstinence from cannabis. Symptoms tend to peak between 2–6 days and can last up to 14 days (Budney et al., 2003). Cannabis withdrawal symptoms can be reliably assessed using the Cannabis Withdrawal checklist (Budney et al., 2003) which includes questions about the commonly observed symptoms such as: shakiness/tremulousness, depressed mood, decreased appetite, nausea, irritability, sleep difficulty, sweating, craving to smoke marijuana, restlessness, nervousness/anxiety, increased aggression, headaches, stomach pains, strange dreams, and increased anger. Cannabis withdrawal symptoms therefore can be confused with some of the self-reported reasons individuals give for using cannabis products. Not unlike alcohol and opioid withdrawal, during cannabis withdrawal, symptom relief can occur with taking the substance once again, thus reinforcing use. Individuals who screen positive for cannabis use should be assessed for withdrawal symptoms.

The frequency of cannabis withdrawal syndrome is dependent on factors such as duration and frequency of use and amount of cannabis used. In most studies, withdrawal reactions occur in approximately 20–30% of individuals who frequently use cannabis (Budney et al., 2003; 2004). The symptoms are frequently severe enough to give rise to a high rate of relapse. Current approaches to treatment of the withdrawal syndrome are discussed in [Recommendation 22](#).

RECOMMENDATION #17:

When assessing patients, clinicians should be aware of the risk of cannabis hyperemesis syndrome in association with chronic cannabis use, especially with higher potency preparations. [GRADE: Evidence: High; Strength: Strong]

Cannabis hyperemesis syndrome is characterized by recurrent episodes of nausea and vomiting accompanied by abdominal pain typically occurring in individuals with prolonged use of high dose

cannabis. The prevalence of hyperemesis syndrome among individuals with CUD is not well known although overall it appears to be a relatively uncommon, although distressing and potentially dangerous, condition. Management of hyperemesis syndrome is largely supportive to ensure adequate hydration and administration of antiemetics. It typically resolves within 48 hours of cessation of cannabis use (Galli et al., 2011). Hyperemesis syndrome can develop in association with any frequency of cannabis use but most often is observed in individuals who have been using cannabis for one year or longer at a frequency of daily to weekly (Sorensen et al., 2017).

Treatment of Cannabis Use Disorder

This section focuses on the treatment of older adults who have developed CUD. Current treatments to date for CUD have focused primarily on psychotherapy and contingency management. Pharmacotherapy trials have been conducted as adjunctive interventions to psychosocial treatment, however, no pharmacologic treatment has emerged as efficacious.

RECOMMENDATION #18:

The Screening, Brief Intervention, and Referral to Treatment (SBIRT) approach should be considered for assessing and managing CUD similarly to other SUDs.
[GRADE: Evidence: Low; Strength: Strong]

The use of SBIRT approaches in the context of CUD treatment has been a relatively unexplored area. However there is significant evidence supporting the use of brief interventions (e.g., motivational enhancement and brief advice) among older adults (Fleming et al., 1999; Gordon et al., 2003; Fink et al., 2005; Schonfeld et al., 2010; Moore et al., 2011; Schonfeld et al., 2015). SBIRT initiatives are known to effectively reduce problem drinking among older adults which might otherwise go unnoticed by substance abuse services (Schonfeld et al., 2010).

RECOMMENDATION #19:

Peer support programs should be considered for individuals with CUD. [GRADE: Evidence: Moderate; Strength: Strong]

Peer support programs can be a valuable recovery tool for patients with CUD (Tracey & Wallace, 2016). One of the factors which exacerbates SUDs/CUD is lack of social connection (Sarkar et al, 2015). Older adults are at elevated risk of losing social connections due to retirement, loss of friends/loved ones, etc. Clinicians need to be aware of what peer support programs are available in their areas and can support patients in their engagement in a program to support their recovery process.

RECOMMENDATION #20:

It is recommended that a variety of psychosocial approaches be considered for harm reduction or relapse prevention including: Cognitive Behavioral Therapy (CBT), Motivational Interviewing (MI), Mindfulness Based Relapse Prevention (MBRP), Motivational Enhancement Therapy (MET), and Contingency Management (CM).
[GRADE: Evidence: Moderate; Strength: Strong]

The most efficacious treatments to date include a combination of MET/CBT/CM including computer-delivered treatments, which show some of the highest abstinence rates to date, comparable to results obtained in treatment of cocaine use disorder, but lower efficacy than with alcohol. One meta-analysis found lower abstinence rates for people who use cannabis compared to people who use cocaine, opiates, and polysubstances (Sherman & McRae-Clark, 2016). A brief online CM self-help intervention showed a significant decrease in past month quantity, frequency of cannabis use, and lower severity of dependence scores (Copeland et al., 2017), though the eligible participants were not all diagnosed with CUD (median age 26, but including adults up to 65). MET has been shown to improve cannabis-related outcomes among treatment-seeking adults, non-treatment seekers, and individuals with co-occurring disorders (Danovitch & Gorelick, 2012). Technology based interventions that deliver CBT, MET, or MI, ideally in combination, have shown similar rates of effectiveness to therapist-delivered modalities (TDM), albeit without the randomization or follow up that are included in the more proven TDM. These should be considered if TDM access is restricted. In a randomized controlled trial where SUDs were broadly addressed using Mindfulness Based Relapse Prevention (MBRP) after intensive inpatient or outpatient treatment, there was demonstration of empirical promise for the feasibility and initial efficacy of MBRP in aftercare treatment of SUDs. Of the participants in this study,

Future Directions

Future research into cannabis use and CUD among older adults needs to start by recognizing and understanding patterns of and motivations for use in this population. It is clear that older adults use cannabis, but what is less clear is how and why this population uses it, what the prevalence of use across the life course is, how multiple factors unique to aging may positively or negatively impact on patterns of use, and the harms associated with it. While the perception that cannabis use poses a significant risk of negative consequences has decreased, it is nonetheless associated with cognitive impairment, increased risk for psychiatric disorders, and other mental health problems. Compounding this are the realities of aging, accompanied by changing physiologies that may alter the way cannabis is metabolized and experienced, a higher prevalence of multi-morbidity that may increase the likelihood of a chronic or acute health condition being exacerbated, or of an unintended drug interaction.

Despite these limitations, clinicians need to discuss cannabis and cannabinoid use with their patients, to help promote healthy behaviours and to identify potential risks or harms or problematic use that warrant follow-up or intervention. Clinicians also need to be mindful of the social context within which cannabis—a widely-used, now legal, and widely-available substance—is situated. This includes anecdotal narratives about its medicinal properties, which although potentially promising, are largely unsubstantiated and open to exploitation. In addition to this; the reality that cannabis occupies a counter culture image that is now being commercialized as legal markets open up poses a risk for older adults to be specific demographic targets in cannabis marketing.

Regulation and quality control within a legal market have arguable benefits for reducing certain harms, but the implications for rates of use remain unknown for the older adult population, even in jurisdictions with a longer history of legal non-medical cannabis.

It is in this context that clinicians must be aware of the current state of evidence and practice in cannabis use disorder and cannabis use in older adults. Keeping in mind that older adults are using cannabis, likely have questions, and deserve evidence-informed answers and guidance. These guidelines provide recommendations on the basis of available evidence and the experience of clinicians, and acknowledge that gaps in the evidence clearly exist. Patients will undoubtedly have questions, and it is important that clinicians have answers grounded in evidence, rather than conjecture or anecdotes about cannabis use.

5.4% cited marijuana as their primary substance of choice (Banes et al., 2014).

RECOMMENDATION #21:

There are currently no established pharmacological treatments that have been demonstrated to be safe and effective for either cannabis withdrawal symptoms or CUD. [Consensus]

Certain medications have demonstrated potential in the area of withdrawal and cravings management. Gabapentin has been shown to address the attenuation of withdrawal symptoms while N-acetylcysteine (NAC) has demonstrated some promise in the reduction of cravings. A review by Sherman et al (2016) suggests some evidence for gabapentin and the most evidence for NAC. The potential side effects of drowsiness, dizziness, and fatigue are cited among others as challenges that outweigh any existing promise, combined with insufficient evidence to demonstrate efficacy for improving withdrawal symptoms or abstinence rates (Marshall et al., 2014; Hassell et al., 2017). However, a systematic review by Werneck et al (2018) concluded that cannabinoid replacement therapy (with nabilone or dronabinol) has sufficient promise to warrant more extensive clinical trials. This off-label treatment should only be considered for highly intransigent cases that have not responded to all other interventions, where benefits are likely to outweigh risks, and very cautious dosing should be applied.

There are no studies on the treatment of insomnia due to cannabis or cannabinoid withdrawal in older adults. In younger adults, trazodone has been used.

RECOMMENDATION #22:

Accredited residential treatment should be considered as appropriate for treating CUD if the individual is unable to effectively reduce or cease their cannabis use. [GRADE: Evidence: Low; Strength: Strong]

Drawing from evidence used for the management of other SUDs that can be applied as reasonable principles for all SUD management, most experienced clinicians may manage older adults with mild to moderate CUD. Patients with more severe or complex disorders may benefit from involvement with a team or program specializing in SUDs including, when available, in an inpatient setting. Subsequently, the threshold to admit an older adult with social, psychological, or physical comorbidities to either residential or hospital care for treatment of CUD or withdrawal management may involve a lower threshold than what would be used for a younger adult.

References

- Ali, S., et al. (2019). Efficacy of cannabinoids in paediatric epilepsy. *Dev Med Child Neurol*, 61(1), 13-18. doi:10.1111/dmcn.14087
- Allan, G. M., et al. (2018). Simplified guideline for prescribing medical cannabinoids in primary care. *Canadian Family Physician*, 64(2), 111-120.
- Allan, G. M., et al. (2018). Simplified guideline for prescribing medical cannabinoids in primary care. *Can Fam Physician*, 64(2), 111-120.
- Banes, K. E., et al. (2014). Changing motives for use: outcomes from a cognitive-behavioral intervention for marijuana-dependent adults. *Drug Alcohol Depend*, 139, 41-46. doi:10.1016/j.drugalcdep.2014.02.706
- Barsky, S. H., et al. (1998). Histopathologic and molecular alterations in bronchial epithelium in habitual smokers of marijuana, cocaine, and/or tobacco. *J Natl Cancer Inst*, 90(16), 1198-1205.
- Beirness, D., & Porath, A. (2019). *Clearing the smoke on cannabis: Cannabis use and Driving – an update*. Retrieved from: https://www.ccsa.ca/sites/default/files/2019-10/CCSA-Cannabis-Use-Driving-Report-2019-en_0.pdf
- Budney, A. J., et al. (2004). Review of the validity and significance of cannabis withdrawal syndrome. *American journal of Psychiatry*, 161(11), 1967-1977.
- Budney, A. J., et al. (2003). The time course and significance of cannabis withdrawal. *Journal of abnormal psychology*, 112(3), 393.
- Budney, A. J., et al. (2003). The time course and significance of cannabis withdrawal. *J Abnorm Psychol*, 112(3), 393-402.
- Canadian Centre on Substance Use and Addiction (CCSA). (2018). *Substance use in Canada: Improving quality of life substance use and aging*. Retrieved from: <http://www.ccsa.ca/Resource%20Library/CCSA-Substance-Use-and-Aging-Report-2018-en.pdf>
- Choi, N. G., et al. (2015). Alcohol and other substance use, mental health treatment use, and perceived unmet treatment need: Comparison between baby boomers and older adults. *Am J Addict*, 24(4), 299-307. doi:10.1111/ajad.12225
- Choi, N. G., et al. (2017). Association between Nonmedical Marijuana and Pain Reliever Uses among Individuals Aged 50. *J Psychoactive Drugs*, 49(4), 267-278. doi:10.1080/02791072.2017.1342153
- Chye, Y., et al. (2019). The Endocannabinoid System and Cannabidiol's Promise for the Treatment of Substance Use Disorder. *Front Psychiatry*, 10, 63. doi:10.3389/fpsy.2019.00063
- Coffey, C., et al. (2002). Cannabis dependence in young adults: an Australian population study. *Addiction*, 97(2), 187-194.
- Cohen, K., & Weinstein, A. (2018). The Effects of Cannabinoids on Executive Functions: Evidence from Cannabis and Synthetic Cannabinoids-A Systematic Review. *Brain Sci*, 8(3). doi:10.3390/brainsci8030040
- Copeland, J., et al. (2017). Comparison of brief versus extended personalised feedback in an online intervention for cannabis users: Short-term findings of a randomised trial. *J Subst Abuse Treat*, 76, 43-48. doi:10.1016/j.jsat.2017.01.009
- Danovitch, I., & Gorelick, D. A. (2012). State of the art treatments for cannabis dependence. *Psychiatr Clin North Am*, 35(2), 309-326. doi:10.1016/j.psc.2012.03.003
- Degenhardt, L., et al. (2013). The persistence of the association between adolescent cannabis use and common mental disorders into young adulthood. *Addiction*, 108(1), 124-133. doi:10.1111/j.1360-0443.2012.04015.x
- Els, C., et al. (2018). *Occupational and Environmental Medical Association of Canada: Position statement on the implications of cannabis use for safety-sensitive work*. Retrieved from: <https://oemac.org/wp-content/uploads/2018/09/Position-Statement-on-the-Implications-of-cannabis-use.pdf>
- Els, C., et al. (2019). *Impact of Cannabis Use on Road Traffic Collisions and Safety at Work: Systematic Review and Meta-analysis* (Vol. 10).
- Elvik, R. (2013). Risk of road accident associated with the use of drugs: a systematic review and meta-analysis of evidence from epidemiological studies. *Accid Anal Prev*, 60, 254-267. doi:10.1016/j.aap.2012.06.017
- Fink, A., et al. (2005). An evaluation of an intervention to assist primary care physicians in screening and educating older patients who use alcohol. *J Am Geriatr Soc*, 53(11), 1937-1943. doi:10.1111/j.1532-5415.2005.00476.x
- Fleming, M. F., et al. (1999). Brief physician advice for alcohol problems in older adults: a randomized community-based trial. *J Fam Pract*, 48(5), 378-384.
- Galli, J. A., et al. (2011). Cannabinoid Hyperemesis Syndrome. *Current drug abuse reviews*, 4(4), 241.
- Ganzer, F., et al. (2016). Weighing the Evidence: A Systematic Review on Long-Term Neurocognitive Effects of Cannabis Use in Abstinent Adolescents and Adults. *Neuropsychol Rev*, 26(2), 186-222. doi:10.1007/s11065-016-9316-2
- Gates, P., et al. (2014). Cannabis smoking and respiratory health: consideration of the literature. *Respirology*, 19(5), 655-662. doi:10.1111/resp.12298
- Gibbs, M., et al. (2015). Cannabis use and mania symptoms: a systematic review and meta-analysis. *J Affect Disord*, 171, 39-47. doi:10.1016/j.jad.2014.09.016

- Gordon, A. J., et al. (2003). Comparison of consumption effects of brief interventions for hazardous drinking elderly. *Subst Use Misuse*, 38(8), 1017-1035.
- Gunderson, E. W., et al. (2012). "Spice" and "K2" herbal highs: a case series and systematic review of the clinical effects and biopsychosocial implications of synthetic cannabinoid use in humans. *Am J Addict*, 21(4), 320-326. doi:10.1111/j.1521-0391.2012.00240.x
- Hackam, D. G. (2015). Cannabis and Stroke. *Stroke*, 46(3), 852-856. doi:10.1161/STROKEAHA.115.008680
- Hall, W., & Degenhardt, L. (2014). The adverse health effects of chronic cannabis use. *Drug Test Anal*, 6(1-2), 39-45. doi:10.1002/dta.1506
- Harris, C. R., & Brown, A. (2013). Synthetic cannabinoid intoxication: a case series and review. *J Emerg Med*, 44(2), 360-366. doi:10.1016/j.jemermed.2012.07.061
- Hassell, C., et al. (2017). Pharmacology of Geriatric Substance Use Disorders: Considerations and Future Directions. *Current Treatment Options in Psychiatry*, 4(1), 102-115. doi:10.1007/s40501-017-0107-z
- Health Canada. (2018). *Information for health care professionals: Cannabis (marihuana, marijuana) and the cannabinoids*. Retrieved from: <https://www.canada.ca/content/dam/hc-sc/documents/services/drugs-medication/cannabis/information-medical-practitioners/information-health-care-professionals-cannabis-cannabinoids-eng.pdf>
- Hemachandra, D., et al. (2016). Heavy cannabis users at elevated risk of stroke: evidence from a general population survey. *Australian and New Zealand Journal of Public Health*, 40(3), 226-230. doi:10.1111/1753-6405.12477
- Huestis, M. A. (2007). Human cannabinoid pharmacokinetics. *Chem Biodivers*, 4(8), 1770-1804. doi:10.1002/cbdv.200790152
- Ialomiteanu, A., et al. (2016). *CAMH Monitor e-Report: Substance use, mental health and well-being among Ontario adults, 1977–2015 (CAMH research document series No. 45)*. Retrieved from: <https://www.camh.ca/-/media/files/pdfs---camh-monitor/camh-monitor-2015-ereport-final-web-pdf.pdf?la=en&hash=A4490B23075FEA9ADF9E3F899B8F62DD90440DB0>
- Kalant, H., & Porath, A. (2016). *Clearing the smoke on Cannabis: Medical use of Cannabis and Cannabinoids – An Update*. Retrieved from: <https://www.ccsa.ca/clearing-smoke-cannabis-medical-use-cannabis-and-cannabinoids-update>
- Karila, L., et al. (2014). Acute and long-term effects of cannabis use: a review. *Curr Pharm Des*, 20(25), 4112-4118.
- Kuerbis, A., Sacco, P., Blazer, D. G., & Moore, A. A. (2014). Substance abuse among older adults. *Clinics in geriatric medicine*, 30(3), 629-654.
- Lee, M. H., & Hancox, R. J. (2011). Effects of smoking cannabis on lung function. *Expert Rev Respir Med*, 5(4), 537-546; quiz 547. doi:10.1586/ers.11.40
- Lorenzetti, V., et al. (2010). Structural MRI findings in long-term cannabis users: what do we know? *Subst Use Misuse*, 45(11), 1787-1808. doi:10.3109/10826084.2010.482443
- MacCallum, C. A., & Russo, E. B. (2018). Practical considerations in medical cannabis administration and dosing. *Eur J Intern Med*, 49, 12-19. doi:10.1016/j.ejim.2018.01.004
- Marshall, K., et al. (2014). Pharmacotherapies for cannabis dependence. *Cochrane Database Syst Rev*(12), Cd008940. doi:10.1002/14651858.CD008940.pub2
- Martinasek, M. P., et al. (2016). A Systematic Review of the Respiratory Effects of Inhalational Marijuana. *Respir Care*, 61(11), 1543-1551. doi:10.4187/respcare.04846
- Miller, B. L., et al. (2016). Exploring Butane Hash Oil Use: A Research Note. *J Psychoactive Drugs*, 48(1), 44-49. doi:10.1080/02791072.2015.1118173
- Monte, A. A., et al. (2015). The implications of marijuana legalization in Colorado. *JAMA*, 313(3), 241-242. doi:10.1001/jama.2014.17057
- Moore, A., et al. (2011). Primary care-based intervention to reduce at-risk drinking in older adults: a randomized controlled trial. *Addiction*, 106(1), 111-120. doi:10.1111/j.1360-0443.2010.03229.x
- Moore, T. H., et al. (2007). Cannabis use and risk of psychotic or affective mental health outcomes: a systematic review. *Lancet*, 370(9584), 319-328. doi:10.1016/s0140-6736(07)61162-3
- Murphy, F., et al. (2015). Baby Boomers and Cannabis Delivery Systems. *Journal of Drug Issues*, 45(3), 293-313. doi:10.1177/0022042615580991
- National Academies of Sciences, Engineering, and Medicine. (2017). *The health effects of cannabis and cannabinoids: The current state of evidence and recommendations for research: National Academies Press*.
- Neavyn, M. J., et al. (2014). Medical marijuana and driving: a review. *J Med Toxicol*, 10(3), 269-279. doi:10.1007/s13181-014-0393-4
- Pletcher, M. J., et al. (2012). Association between marijuana exposure and pulmonary function over 20 years. *JAMA*, 307(2), 173-181. doi:10.1001/jama.2011.1961
- Ramaekers, J. G., et al. (2004). Dose related risk of motor vehicle crashes after cannabis use. *Drug Alcohol Depend*, 73(2), 109-119.

- Reece, A. S. (2009). Chronic toxicology of cannabis. *Clin Toxicol (Phila)*, 47(6), 517-524. doi:10.1080/15563650903074507
- Ribeiro, L. I., & Ind, P. W. (2016). Effect of cannabis smoking on lung function and respiratory symptoms: a structured literature review. *NPJ primary care respiratory medicine*, 26, 16071. doi:10.1038/npjpcrm.2016.71
- Sarkar, S., Parmar, A., & Chatterjee, B. (2015) Substance Use and Successful Aging: Key Issues and Considerations. In *Substance use in Canada: improving quality of life: substance use and aging*. Retrieved from: <https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Substance-Use-and-Aging-Report-2018-en.pdf>
- Schonfeld, L., et al. (2015). Screening, Brief Intervention, and Referral to Treatment for Older Adults With Substance Misuse. *Am J Public Health*, 105(1), 205-211. doi:10.2105/AJPH.2013.301859
- Schonfeld, L., et al. (2010). Screening and brief intervention for substance misuse among older adults: the Florida BRITE project. *Am J Public Health*, 100(1), 108-114. doi:10.2105/ajph.2008.149534
- Seely, K. A., et al. (2012). Spice drugs are more than harmless herbal blends: a review of the pharmacology and toxicology of synthetic cannabinoids. *Prog Neuropsychopharmacol Biol Psychiatry*, 39(2), 234-243. doi:10.1016/j.pnpbp.2012.04.017
- Sherman, B. J., & McRae-Clark, A. L. (2016). Treatment of Cannabis Use Disorder: Current Science and Future Outlook. *Pharmacotherapy*, 36(5), 511-535. doi:10.1002/phar.1747
- Silins, E., et al. (2014). Young adult sequelae of adolescent cannabis use: an integrative analysis. *Lancet Psychiatry*, 1(4), 286-293. doi:10.1016/s2215-0366(14)70307-4
- Simoni-Wastila & Yang. (2006) Substance Use and Successful Aging: Key Issues and Considerations. In *Substance use in Canada: improving quality of life: substance use and aging*. Retrieved from: <https://www.ccsa.ca/sites/default/files/2019-04/CCSA-Substance-Use-and-Aging-Report-2018-en.pdf>
- Solowij, N., et al. (2016). Effects of Cannabis Use on Human Behavior: A Call for Standardization of Cannabis Use Metrics. *JAMA Psychiatry*, 73(9), 995-996. doi:10.1001/jamapsychiatry.2016.1329
- Sophocleous, A., et al. (2017). Heavy Cannabis Use Is Associated With Low Bone Mineral Density and an Increased Risk of Fractures. *Am J Med*, 130(2), 214-221. doi:10.1016/j.amjmed.2016.07.034
- Sorensen, C. J., et al. (2017). Cannabinoid hyperemesis syndrome: diagnosis, pathophysiology, and treatment—a systematic review. *Journal of Medical Toxicology*, 13(1), 71-87.
- Tashkin, D. P. (2014). Increasing cannabis use: what we still need to know about its effects on the lung. *Respirology*, 19(5), 619-620. doi:10.1111/resp.12308
- Tracy, K., & Wallace, S. P. (2016). Benefits of peer support groups in the treatment of addiction. *Subst Abuse Rehabil*, 7, 143-154. doi:10.2147/sar.S81535
- van Amsterdam, J., et al. (2015). The adverse health effects of synthetic cannabinoids with emphasis on psychosis-like effects. *J Psychopharmacol*, 29(3), 254-263. doi:10.1177/0269881114565142
- Vandrey, R., et al. (2015). Cannabinoid Dose and Label Accuracy in Edible Medical Cannabis Products. *JAMA*, 313(24), 2491-2493. doi:10.1001/jama.2015.6613
- Volkow, N. D., et al. (2014). Adverse health effects of marijuana use. *N Engl J Med*, 370(23), 2219-2227. doi:10.1056/NEJMra1402309
- Wang, G. S., et al. (2013). Pediatric marijuana exposures in a medical marijuana state. *JAMA Pediatr*, 167(7), 630-633. doi:10.1001/jamapediatrics.2013.140
- Wang, G. S., et al. (2014). Association of unintentional pediatric exposures with decriminalization of marijuana in the United States. *Ann Emerg Med*, 63(6), 684-689. doi:10.1016/j.annemergmed.2014.01.017
- Werneck, M. A., et al. (2018). A Systematic Review of the Efficacy of Cannabinoid Agonist Replacement Therapy for Cannabis Withdrawal Symptoms. *CNS Drugs*, 32(12), 1113-1129. doi:10.1007/s40263-018-0577-6

ccsmh.ca

