



Canadian Centre
on **Substance Use**
and **Addiction**

Evidence. Engagement. Impact.

www.ccsa.ca • www.ccdus.ca

A Standard THC Unit in Canada

Recommendations for Implementation

June 2024

A Standard THC Unit in Canada

Recommendations for Implementation

This document was published by the Canadian Centre on Substance Use and Addiction (CCSA).

Suggested citation: Wood, S., & Gabrys, R. (2024). *A standard THC unit in Canada: Recommendations for implementation*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction.

© Canadian Centre on Substance Use and Addiction, 2024.

CCSA, 500–75 Albert Street
Ottawa, ON K1P 5E7
613-235-4048
info@ccsa.ca

Production of this document has been made possible through a financial contribution from Health Canada. The views expressed herein do not necessarily represent the views of Health Canada.

This document can also be downloaded as a PDF at www.ccsa.ca

Ce document est également disponible en français sous le titre :

Une unité standard de THC au Canada : recommandations pour la mise en œuvre

ISBN 978-1-77871-162-6



Table of Contents

Executive Summary	1
Meeting Description	1
Key Topics of Discussion.....	1
A Vision for Defining and Implementing a Standard THC Unit in Canada	2
Background.....	3
Context	3
Meeting Rationale.....	4
Implementing a Standard THC Unit in Canada: Recommendations.....	5
Theory of Change	5
Key Actions	6
Enablers.....	8
Desired Outcomes.....	9
Desired Impact.....	9
Applications and Considerations in Research, Monitoring and Surveillance.....	10
A Standard THC Unit to Advance Public Education and Health Interventions.....	11
Public Health Messaging.....	11
Lower-Risk Use Guidelines and Recommendations.....	12
Health Interventions.....	12
Roadmap of Implementation: Timeline	15
Conclusion & Next Steps	16
References	17
Appendices	19
Appendix A: List of Participants.....	19
Appendix B: Meeting Summary.....	20



Acknowledgements

We respectfully acknowledge that the offices of the Canadian Centre on Substance Use and Addiction are located on the traditional, unceded territory of the Algonquin Anishnaabe people. The Anishnaabe Algonquin Nation has been present on and nurturer of this land since time immemorial. We are grateful to have the opportunity to be present in this territory.

We acknowledge the Indigenous Peoples as traditional knowledge keepers, and that our greater society benefits from the sharing of Indigenous Peoples.

We strive for respectful partnerships with all Indigenous Peoples, as we look to do better and search for collective healing and true reconciliation.

We also wish to acknowledge the significant contributions of our partners in developing and shaping the recommendations contained in this report. For a list of those who have played a key role through their participation in this meeting and providing additional support, see Appendix A.

Conflict of Interest

Authors have no conflict of interest to declare.



Executive Summary

Meeting Description

The legalization of non-medical cannabis and the growing diversity of available cannabis products present obstacles to understanding cannabis products, making decisions about consumption, and measuring cannabis use and associated health outcomes. As such, there has been an increasing interest across many sectors in standardizing cannabis measurement and establishing a standard THC unit in Canada.

On March 25–26, 2024, the Canadian Centre on Substance Use and Addiction (CCSA) hosted a two-day meeting to discuss the potential implementation of a standard THC unit in Canada, with a focus on areas that impact public health and safety. The meeting brought together 20 partners working across the intersection of cannabis research, policy, public health, and public safety.

The objectives of the meeting were to identify a path toward implementing a standard THC unit in Canada with key actions and to co-create recommendations to support Health Canada and other decision makers in moving forward with this initiative.

Three international experts presented on their research and knowledge related to this topic. Through a series of facilitated discussions, the group co-created a roadmap, which outlines a critical path along a timeline for implementation. The focus was on actions that will enable implementation in areas that affect public health and safety.

Key Topics of Discussion

Discussions and presentations emphasized the necessity of a standardized unit for cannabis to provide consumers with clear, consistent, and relevant guidance.

Dr. Tom Freeman highlighted the importance of informed decision-making, and Dr. Susan Weiss emphasized the need for improved data collection and measurement. Dr. Valentina Lorenzetti shared emerging data that addresses some of the challenges in understanding, measuring, and monitoring cannabis consumption and related harms. Difficulties implementing a standard THC unit across diverse cannabis products, methods of administration, and large variations in consumption patterns were acknowledged and discussed.

Partners attending the meeting spoke to the importance of:

- Creating a common language across various sectors — including different research communities, health and public health partners, clinical spaces, industry and retail professionals, consumers, etc. — to bridge gaps in understanding and communication around THC consumption.
- Ensuring the relevance of the standard THC unit for frequent and infrequent cannabis consumers, particularly in the context of diverse legal markets. Effective harm reduction strategies will require tailored public health messaging for different consumer groups, acknowledging varying levels of experience and potential risks associated with cannabis consumption.
- Engaging with communities, especially marginalized and racialized groups that have been adversely affected by cannabis prohibition, people with lived experience of cannabis use, and other priority populations. Meaningful participation of communities and people who use



cannabis will be critical in effectively using the standard THC unit in various ways (public health messaging, health interventions, etc.) that are community and culturally specific and relevant.

A Vision for Defining and Implementing a Standard THC Unit in Canada

The vision for implementation that emerged from the meeting can be conceptualized as a theory of change that includes key actions and enabling factors leading to desired outcomes and impact.

Key Actions:

- Define a standard Canadian THC unit.
- Identify potential areas of implementation.
- Enact relevant policy and regulatory amendments (e.g., incorporate THC units on product labels).
- Engage diverse partners, stakeholders, people with lived experience, and community members in relevant and meaningful ways throughout.
- Implement effective knowledge mobilization and communication strategies.
- Continue to generate and synthesize evidence.

These key actions will be **enabled** by:

- Research,
- A focus on harm reduction and health promotion,
- Coordinated, collective action from key partners,
- Research funding and human resources, and
- An iterative approach by monitoring outcomes and adjusting as needed.

The **main outcomes** that may result from the actions include:

- A common understanding of a standard THC unit,
- Harmonized research and data collection,
- Improved consumer understanding and literacy,
- Evidence-based risks and harms associated with THC unit consumption amounts, and
- Integration of the standard THC unit into lower-risk and clinical guidelines, public education, and health interventions.

The **overall impact** of implementing a THC unit is to prevent and reduce cannabis-related harms and improve public health and safety for people who live in Canada.

Recommendations detailed in this report build out the key actions and offer additional suggestions for areas of implementation that affect public health and safety. Overall, creating a national framework for rollout, education, and engagement, supported by robust research and evaluation efforts, can facilitate successful implementation of a standard THC unit in Canada.



Background

Context

Since cannabis was legalized in Canada for non-medical purposes, the legal cannabis market has expanded significantly, and the types of products available to consumers continues to diversify. The wide range of products not only varies substantially in methods of administration, but also in strength (i.e., concentration of delta-9-tetrahydrocannabinol [THC]). This presents difficulty for people who use cannabis to make informed decisions about what products they want to buy and how much to consume. Many consumers have trouble with dosing and overconsumption; and adverse health effects are common (Marquette et al., 2024; Hammond, 2021). The diversity of cannabis products also presents challenges for monitoring and measuring cannabis consumption and dose-dependent health outcomes. Accordingly, there has been growing interest in standardizing cannabis measurement and in developing a standard THC unit.

In 2021, the National Institutes of Health in the United States endorsed a 5 mg standard THC unit proposed by Freeman and Lorenzetti (2020) for use in research. The aim was to increase consistency of research practices, facilitate meta-analyses, and strengthen the quality of evidence (Freeman & Lorenzetti, 2021).

A review of evidence and previous engagements with partners highlighted key priority areas and considerations for implementation of a standard THC unit within Canada (Canadian Centre on Substance Use and Addiction, 2023; Wood et al., 2024). Compared with other countries, Canada is relatively unique in legalizing cannabis for non-medical purposes at a federal level and in its relatively diverse legal cannabis market, both in terms of product availability and access (accounting for variations in provincial and territorial regulations). This presents Canada with the opportunity to implement a standard THC unit across a broader range of areas, as compared to jurisdictions with more restrictive regulatory frameworks or where cannabis remains illegal.

A standard THC unit can be used to:

- 1. Improve research, monitoring, and surveillance.**

Implementation of a standard THC unit in research could enhance monitoring of cannabis consumption at both the market and consumer levels. It can also improve understanding of how cannabis consumption impacts diverse health outcomes, help harmonize the collection of cannabis data across different product types and allow for the comparison and synthesis of findings.

- 2. Inform health interventions related to cannabis use.**

A deeper understanding of the health effects of cannabis consumption, which includes a measure of THC and amount of cannabis used, could enhance lower-risk use and clinical practice guidelines, along with screening methods for identifying high-risk use and cannabis use disorder.

- 3. Support increased consumer understanding and informed decision-making.**

Identifying a standard THC unit would provide a concrete basis for a consumer to understand the amount of THC there is in a product and make decisions about the products they purchase and consume. A stronger understanding amongst consumers will also allow them to report their THC consumption more accurately on surveys or other data collection



instruments. It can strengthen or clarify public health messaging and be used to improve labelling on products and other messaging in retail settings, including online cannabis stores.

Meeting Rationale

Implementing a standard THC unit in Canada has emerged as a recommendation from several sources (Canadian Centre on Substance Use and Addiction, 2023; Mental Health Commission of Canada & Canadian Centre on Substance Use and Addiction, 2023, 2024). The Legislative Review of the *Cannabis Act* Final Report of the Expert Panel (Health Canada, 2024a) recently tabled in Parliament by the Minister of Health included the following recommendation:

Health Canada should develop a “standard dose” or “unit dose” (as appropriate for different classes of cannabis). The development of a standard dose should be prioritized and accompanied by regulatory amendments to require it as an element on cannabis product labels. (p. 11)

The expert panel recommended that Health Canada facilitate the consultations and research required to establish a “standard dose” and implement associated labelling requirements.

CCSA aims to reduce harms and improve health for people living in Canada who use substances. We provide guidance to decision makers by bringing together research, knowledge, and diverse perspectives.

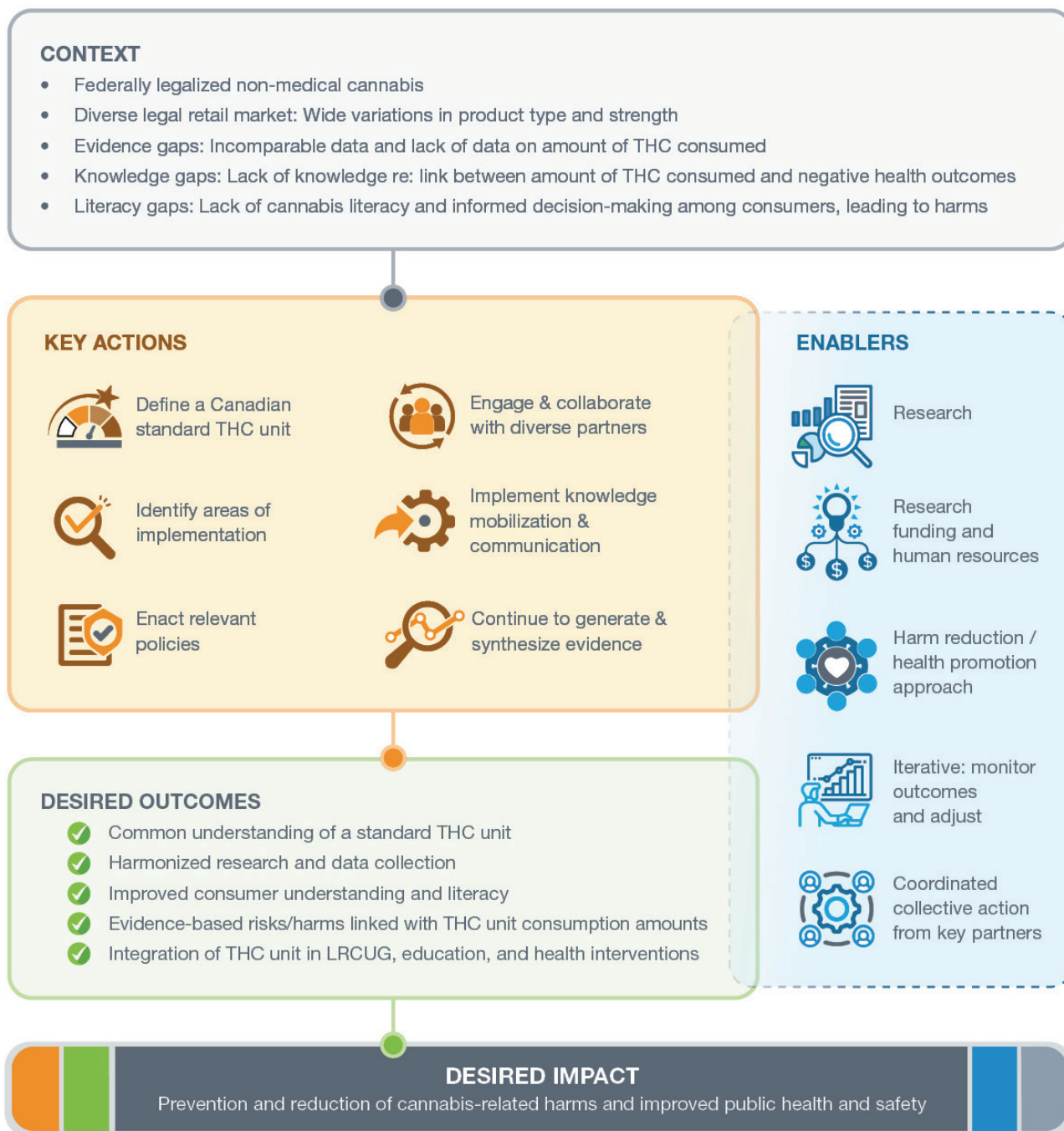
Accordingly, on March 25–26, 2024, CCSA hosted a meeting to discuss potential implementation of a standard THC unit in Canada, with a focus on areas that impact public health and safety. The meeting brought together 20 partners working at the intersection of cannabis research, policy, and public health and safety. There was representation from jurisdictions across the country.

The objective of the meeting was to identify a path with key actions toward implementing a standard THC unit in Canada and to co-create recommendations to support Health Canada and other decision makers to move this initiative forward. For an overview of the meeting agenda with details on the processes used to generate these co-created recommendations, see Appendix B.



Implementing a Standard THC Unit in Canada: Recommendations

Theory of Change





Key Actions

Define a Standard Canadian THC Unit

There are several considerations for defining a standard Canadian THC unit:

- The amount of THC that constitutes a standard THC unit in Canada must be evidence-based. In this regard, partners indicated that sufficient evidence and information exists to inform the selection of a standard THC unit in Canada.
- The standard THC unit should align with the main objective of the *Cannabis Act*, which is to protect public health and public safety. Notably, about 36% of cannabis consumers in Canada use cannabis less than monthly (Health Canada, 2024b), suggesting a relatively large population of inexperienced or infrequent consumers. Selecting a standard THC unit should prioritize minimizing harm among inexperienced or infrequent consumers, who likely require more guidance with cannabis consumption than those who use cannabis more frequently.
- Establishment of a Canadian THC unit can be informed by the same principles as the standard THC unit (Freeman & Lorenzetti, 2020). It should reflect THC in milligrams and be applicable across all product types and methods of administration. The standard THC unit should be compatible with the standard THC unit endorsed by the National Institute on Drug Abuse (NIDA) for use in research (NIDA, 2021; Volkow & Weiss, 2020). It does not need to be the same as the NIDA-endorsed 5 mg THC unit, but it was suggested that the number be easily converted as a fraction of this to facilitate harmonization of reporting practices and data synthesis.

Defining a Standard THC Unit for Canada

Given these considerations, **CCSA¹ recommends setting the standard THC unit in Canada at 2.5 mg of THC.** This recommendation is based on the evidence that 2.5 mg of THC can reliably produce a psychoactive effect in most consumers different from baseline with minimal risk of adverse effects. It is in line with the call to prioritize public health and safety (especially that of inexperienced consumers), and it is compatible with the THC unit endorsed by NIDA. See Wood et al., 2024, for a summary of relevant research.

It is important to clearly define what a standard THC unit is and what it is not.

The Canadian standard THC unit can be defined as a unit of measurement consisting of 2.5 mg of THC. This unit of measurement is utilized across various sectors — different research communities, health and public health partners, clinical spaces, industry and retail professionals, consumers, etc. — to establish a common language and bridge gaps in understanding and communication around THC consumption.

A standard THC unit is **not a recommended dose in itself**. Although it may be associated with a “serving size” of a cannabis product (e.g., one lozenge contains one standard THC unit), or be used to inform eventual lower-risk use recommendations, the number of units a person consumes

¹ Though setting the standard unit at 2.5mg is CCSA's position and was echoed by many partners who participated in this meeting, it was not shared unanimously among those who attended and is not meant to represent a recommendation on behalf of this full group. However, all agreed on the need to prioritize identifying and defining a standard THC unit (including what it is and what it is not).



is based on a variety of personal factors. The standard THC unit does not constitute a starting point nor an upper limit to guide consumption. It is a unit of measurement that, once properly understood, can be used to understand and make informed choices about one's own cannabis consumption. The word "dose" is used in certain contexts, especially by those who do clinical work or research, and who commonly dose according to research or medical protocols. Based on this clinical association, we recommend consistently using the term "unit" to reinforce its definition as a unit of measurement and to account for the use of THC in non-medical or recreational contexts.

Identify Potential Areas of Implementation

Policy and decision makers across various groups and jurisdictions will need to consider areas of implementation that are within their scope. Through presentations and discussions, partners identified several areas where implementing a standard THC unit would provide value, including:

- Cannabis product labels and other consumer information or education,
- Public health messaging,
- Clinical research and population-level surveys (data collection and analysis),
- Monitoring of trends in product purchasing, impaired driving, healthcare presentations, etc.,
- Lower-risk use guidelines and recommendations,
- Health interventions, and
- Additional policy levers to reduce health harms (e.g., per-unit pricing).

Enact Relevant Policy and Regulatory Amendments

Partners acknowledged Health Canada's central role in consulting on and enacting policy and regulatory changes related to implementation of a standard THC unit, which may include:

- Use in product labelling and retail materials,
- Implications for taxation, and
- Implications for per-unit pricing.

Engage Individuals and Communities in Relevant and Meaningful Ways

During Health Canada's consultation process, it will be essential that individuals and communities directly impacted by any regulatory amendments are adequately consulted.

Once the standard THC unit is identified, effective implementation of it should involve meaningful engagement and collaboration among diverse stakeholders and communities, especially marginalized and racialized groups that have been disproportionately impacted by cannabis prohibition. Community engagement will be central across all areas of implementation, especially in tailoring the utilization of the standard THC unit to be community and culturally appropriate, ensuring its relevance and effectiveness in areas such as public health messaging and health interventions.



Implement Effective Knowledge Mobilization and Communication Strategies

Implementation should be accompanied by a national cohesive communication strategy to foster a shared understanding of a standard THC unit.

Beyond this, our partners recommended tailored, community-relevant support across all areas of implementation, with health promotion being the focus. To develop common and consistent resources, there may also be value in collaboration among federal, provincial and territorial health authorities, Elders, knowledge keepers and community leaders, and cannabis retailers and industry professionals.

Continue to Generate and Synthesize Evidence

A standard THC unit can play an important role in harmonizing some aspects of cannabis measurement and research in Canada and internationally. It can also deepen our understanding of how cannabis consumption impacts health outcomes. Thus, integrating standard THC units into cannabis data collection and reporting (e.g., in population surveys, experimental or clinical studies) should be considered, where possible.

There is also value in evaluating the utility of a standard THC unit in various areas of implementation such as public education and health interventions. For example, assessing whether standard THC units are an effective way of communicating information about cannabis consumption could inform strategies aimed at promoting lower-risk cannabis use.

When enacting the required regulatory amendments, Health Canada should build in a mechanism for monitoring and evaluating related policy outcomes, such as if the use of a standard THC unit on labels increases consumer understanding when purchasing products and deciding how much to consume.

Enablers

Enablers are factors that need to be in place for actions to be successfully implemented. Our partners identified five key enablers that can support successful implementation of a standard THC unit in Canada.

- **Research**
Setting a standard THC unit should be based on the best available evidence, with ongoing research dedicated to refining and advancing our understanding of its utility and relevance. With that said, partners clearly indicated that we should not wait for more evidence to establish a standard THC unit in Canada. They emphasized that further *delays have the potential to cause significant harm* based on the current state (including low cannabis literacy and difficulty with dosing, the inability to harmonize research to create a clear picture of the amount of cannabis used, and the potential associated health outcomes, etc.).
- **Harm reduction and health promotion approaches (rather than economic or other)**
Keeping the goal of reducing harms for people who use cannabis central throughout the phases of implementation will enable decisions to be approached and assessed in terms of their impact on people's well-being.
- **Coordinated, collective action from key partners**
As previously noted, coordinated and collective action from key partners and the involvement



of diverse voices and communities is a critical factor required for successful and effective implementation of a standard THC unit in Canada. Considering and addressing cultural safety and health equity factors during implementation is critical.

- **Research funding and human resources**

The first recommendation offered from the expert panel charged with the legislative review of the *Cannabis Act* was for the Government of Canada to allocate sufficient funding and resources to support aspects of the cannabis framework and address emerging needs and issues (Health Canada, 2024a). To meet the desired outcomes (listed below), our partners saw continued funding support for research that utilizes a standard THC unit and for organizations working to develop public education, prevention education, and health interventions as a critical factor. Consider requiring funded research to utilize a standard THC unit in measurement and reporting (as implemented by the National Institutes of Health [2021]), which would further enable progression toward the outcomes.

- **Iterative approach: Monitor outcomes and adjust as needed**

The willingness to reflect on what is working well and what needs adjustment to stay aligned with the desired outcomes and impact is necessary when trying something new. Canada is in a unique position with a federally regulated recreational cannabis market. Implementing the use of a standard THC unit across a broad range of applications beyond research (such as the areas of implementation described above) is innovative and novel. Monitoring impacts through evaluation and adopting an iterative approach for quality improvement will help to stay focused on the goal of reducing harms for people who use cannabis.

Desired Outcomes

Key actions supported by the enabling factors described above should result in the following outcomes:

- A common understanding of a standard THC unit,
- Improved consumer understanding and cannabis literacy, particularly around dosing,
- Harmonized research and data collection,
- Evidence-based risks linked to THC unit consumption amounts, and
- Integration of the standard THC unit into lower-risk cannabis use guidelines, public education and health interventions.

Desired Impact

If these outcomes are achieved through the key actions supported by the enabling factors listed above, this will result in the desired impact of **prevention and reduction of cannabis-related harms and improved public health and safety for people who live in Canada.**



Applications and Considerations in Research, Monitoring and Surveillance

Inconsistency in measuring cannabis consumption across research studies has limited our ability to compare or aggregate data on cannabis consumption, especially across jurisdictions with access to a wide range of cannabis products. The utility of a standard THC unit in research settings was addressed in presentations by Dr. Tom Freeman, Dr. Susan Weiss, and Dr. Valentina Lorenzetti, and explored further through group discussions.

Five key areas of application within research, monitoring, and surveillance were identified:

1. Harmonizing Data Collection and Reporting

A standard THC unit can be a relatively simple, standardized way of assessing and reporting cannabis consumption (mainly, THC exposure) across clinical, experimental, and epidemiological research. This in turn can enhance the precision of meta-analyses and systematic reviews aimed at evaluating the effects of cannabis consumption on health outcomes.

2. Monitoring Population-Level Trends

Efforts to standardize cannabis measurement, including the adoption of a standard THC unit, can enhance comparability of cannabis consumption across jurisdictions. This is especially pertinent for evaluating various approaches to cannabis legalization and regulation, an area gaining increased relevance in light of the global trend toward cannabis legalization. Monitoring trends enables emerging issues of concern to be detected and addressed.

3. Economic and Market Analysis

Cannabis licence holders, distributors, and retailers are required to submit monthly cannabis tracking reports, which include information on packaged units sold. Estimating consumption amounts based on these data often requires some assumptions about the THC levels in various product forms, which are converted into “dried flower equivalents.” Requiring sales data to also be reported in standard THC units would provide a consistent and reliable means of monitoring the product market in ways that account for the increasing diversity of products.

4. Clinical and Medical Cannabis Research

A standard THC unit may be useful in evaluating treatment outcomes (e.g., reductions in consumption amount or potency) related to interventions for cannabis use disorder or high-risk cannabis use, especially when abstinence is not the patient’s goal. A standard THC unit might also be valuable in clinical trials assessing the efficacy THC-based drugs, particularly in understanding dose-dependent effects.

5. Understanding and Measuring Cannabis Intoxication and Impairment

Research protocols should consider using doses equivalent to or a multiple of the standard THC unit when assessing pharmacological effects (e.g., intoxication and impairment) of cannabis products. This can facilitate comparisons of equivalent THC doses across various product formats and methods of use and enhance our ability to compare results across different studies.



A Standard THC Unit to Advance Public Education and Health Interventions

With cannabis legal at the federal level and a regulated market with increasingly diverse product formats, there is an opportunity to utilize a standard THC unit in a broad range of applications beyond research and monitoring. Potential implications for advancing public health education and interventions were of particular interest for CCSA's partners, who built out recommendations for four specific areas: public health messaging, lower-risk use guidelines and recommendations, health interventions, and labels and packaging.

Public Health Messaging

Leadership, Accountability and Evaluation

- Effective public health messaging relies on establishing strong leadership to move this forward and co-ordinate with health system partners and communities to facilitate effective and tailored messaging.
- Leadership is also needed to ensure accountability through evaluation and quality improvement.

Defining the THC Unit

- Create a clear definition that forms the basis for future standardized and targeted messaging.

Standardized Messaging

- A coordinated approach to communicating what a standard THC unit is in Canada (and what it's not) and ways it can be used will be helpful.
- This includes a shared vocabulary and messaging that is aligned across interested and impacted parties (e.g., people who use cannabis, industry, and public health).

Targeted Messaging and Listening

- Listening to and working with communities to create relevant and helpful public health messaging around the standard THC unit will be key.
- The participation of advisory groups (e.g., a youth advisory group) and community-led initiatives will strengthen impact.
- Particular groups and priority populations will benefit from customized messaging, including elderly, youth, equity-deserving groups, women, etc.
- Harm reduction or health promotion messaging can utilize a standard THC unit across the substance use spectrum (Health Canada, 2022). For example, those who engage in lower-risk cannabis use may benefit from the message "start low and go slow," which is quantified based on the standard THC unit of what constitutes "low" and what is meant by "slow" in terms of incremental increase. People who engage in higher-risk use may benefit from similar messaging found in the *Canadian Guidance on Alcohol and Health* (Paradis et al., 2023), which is that any reduction in the amount of THC units you consume is better for your health or "less is better."



- Targeted messaging should aim to reduce stigma and advance equity while helping people make informed choices about cannabis and their health.

Diverse Channels

- Using diverse channels for public health messaging is necessary to reach both specific and broad audiences. For both standardized and targeted messaging, utilize the strategies available to mobilize information and key messages in ways that help to increase understanding and the ability to make informed decisions around cannabis. Strategies may include newsletters, knowledge exchange or sharing sessions, publications, social media, mail-out campaigns, committee bulletins, etc.

Lower-Risk Use Guidelines and Recommendations

Define & Quantify

Strengthening the *Lower-Risk Cannabis Use Guidelines* (Fischer et al., 2017) needs to start with a clear definition of a standard THC unit, how it relates to the message “start low and go slow” (as noted above), and integration into research that will eventually inform the updated guidelines. Further research may inform the inclusion of frequency and quantity-of-use parameters based on a standard THC unit.

Assess Risk

Evaluate THC dose-dependent effects and health outcomes in emerging research to create a risk assessment or continuum of risk. This is similar to how the *Canadian Guidance on Alcohol and Health* (Canadian Centre on Substance Use and Addictions, 2023) provides evidence-informed guidance based on a standard drink. This would focus mainly on recreational use. The medical use of cannabis will involve an additional set of considerations.

Population Specific Recommendations

Tailor recommendations for different groups with specific needs or risk factors. This may include youth, women, and marginalized or under-served populations, and take into consideration inter-individual variability in the effects of THC and other related factors (including methods of administration).

Consider the Spectrum of Use

It will be necessary to provide guidance and recommendations across the substance use spectrum (Health Canada, 2022). Consider relevant, evidence-based guidance for people whose use of cannabis ranges from beneficial use to cannabis use disorder, providing support for where their use sits on the spectrum and as that position shifts throughout their lifetime. This may involve eventual applications to the use of cannabis and cannabinoids for medical purposes to properly address and support people who consume cannabis for various purposes across this spectrum.

Health Interventions

Screening and Outcomes

The standard THC unit could be integrated into screening, brief intervention, and referral to treatment across a continuum of care in settings such as primary care clinics and emergency



departments. Examples include Alcohol, Smoking and Substance Involvement Screening Test, and the Severity of Dependence Scale.

Once there is sufficient evidence linking levels of THC consumption with various health outcomes, screening for the amount of THC units one consumes could help to assess risk levels across the risk curve, creating an opportunity to discuss harm reduction strategies and reducing THC consumption in accordance with patient goals. The standard THC unit could also be used to assess outcomes for treatment of cannabis use disorder (including and beyond abstinence).

Medical Guidance

A future application of the standard THC unit may be to support guidance on using cannabis for medical purposes. It may be integrated into educational materials and dosing guidelines for medical prescribers.

Literature has outlined several key benefits of pharmacist management and dispensing of cannabis for medical purposes, including professional oversight, reduced high-risk use, and timely access (Canadian Pharmacists Association, 2016). Understanding the scope of the evolving role of pharmacists, healthcare providers, and other practitioners involved in team-based care in offering guidance for people who use cannabis may reveal new ways that the standard THC unit can be used in a medical context.

Evidence and Integration

Within the context of receiving healthcare and monitoring outcomes, a standard THC unit could offer additional data and be integrated into existing tools and systems, such as emergency department integration, drug interaction tools, and self-monitoring of THC unit consumption.

More evidence is needed to establish links between THC consumption and potential adverse health outcomes, and this integration could support monitoring these trends and building the evidence base.

Labels and Packaging

While robust consultation is needed on labelling and packaging implementation, partners discussed ways that the standard THC unit could be utilized in this context. They emphasized the following:

- **Bundle Regulatory Changes:** Several updates and changes to labels, packaging and communicating contents and ingredients have been recommended by the expert panel who oversaw the legislative review of the *Cannabis Act* (Health Canada, 2024a). We acknowledge that to reduce burden and adjust efficiently, regulatory changes in this area must be bundled into one process that does not solely focus on implementing a standard THC unit.
- **Label and Packaging:** Updates to the label and packaging that might increase consumers' overall cannabis literacy include:
 1. Linking the amount of standard THC units to visual images (pictorial representation or symbols for potency level),
 2. Keeping information simple and consistent,
 3. Including updated and product-relevant health warnings, and



4. Considering ways packaging can be updated to offer clarity on the number of units within a product and package or dispense product in units (depending on product type).

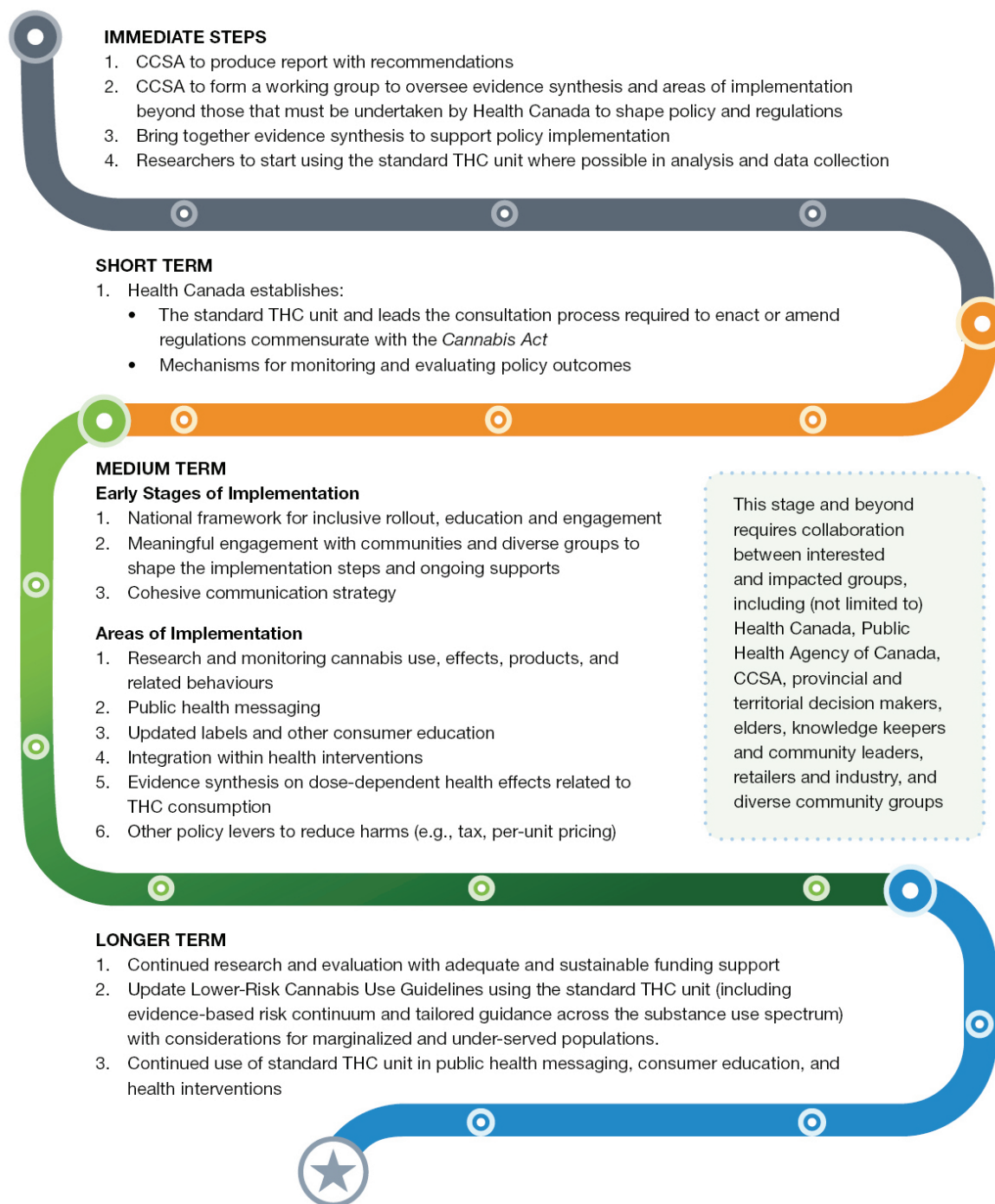
Partners also emphasized that simplicity and consistency is key to these processes.

- **Content and Ingredients:** Consider aligning labels with pharmaceutical labelling practices, for example over the counter products that list both active and inactive ingredients. This may include listing other cannabinoids beyond THC and CBD.
- **Education:** Integrating information on a standard THC unit within staff training for “budtenders” and other retail staff will support implementation and common use of the THC unit. Consider providing additional product information to educate consumers through the inclusion of a QR code on packaging and knowledge translation products.



Roadmap of Implementation: Timeline

Through a series of discussions, key actions were mapped out across a timeline for steps needed to facilitate implementation in areas impacting public health and safety.





Conclusion & Next Steps

The meeting hosted by CCSA met its objectives of envisioning a path to establishing a standard THC unit in Canada and co-creating recommendations for implementation with key partners. The result is a clearly articulated set of desired and achievable outcomes along with defined actions and enabling factors that will support them. We hope that these recommended actions and the roadmap outlined above — along with the relevant evidence syntheses (e.g., Wood et al., 2024) — will support Health Canada and other decision makers to move forward with implementation efforts that are within their scope.

In line with its mandate and purpose, CCSA commits to leading aspects of standard THC unit implementation that have an impact on substance use health for people living in Canada. These generally fall into two main categories:

1. **Working with priority partners to support implementation of a standard THC unit in Canada,** particularly aspects related to substance use health. This is included in Immediate Steps of the implementation roadmap detailed above. This involves:
 1. producing this report, which contains recommendations from partners and has been validated through their peer-review.
 2. forming a working group to oversee an evidence synthesis and areas of implementation beyond those that must be undertaken by Health Canada to support a public health and safety approach to implementing a standard THC unit.
2. **Co-ordinate a consumer or public education campaign related to a standard THC unit in Canada.** This item will likely occur after Health Canada has begun to implement a process for regulatory amendments. During this work, we will draw on the recommendations detailed in this report and continue working with a diverse group of partners, including community members and people who use cannabis. As previously noted, their participation in the creation of customized and relevant public health messages and resources will be critical to support people in making evidence-informed decisions about their cannabis use, which are in alignment with their goals, using a standard THC unit.



References

- Canadian Centre on Substance Use and Addiction. (2023). *A standard THC unit and its value in cannabis research, public education and regulation in Canada* [Summary report]. Ottawa, Ont.: Author <https://www.ccsa.ca/standard-thc-unit-and-its-value-cannabis-research-public-education-and-regulation-canada>
- Canadian Pharmacists Association. (2016). A pharmacy dispensing model and the status quo. https://www.pharmacists.ca/cpha-ca/assets/File/cpha-on-the-issues/Cannabis%20Costing%20Report_Pharmacy%20Dispensing%20and%20Status%20Quo%202016.pdf
- Fischer, B., Russell, C., Sabioni, P., van den Brink, W., Le Foll, B., Hall, W., & Room, R. (2017). Lower-risk cannabis use guidelines (LRCUG): A comprehensive update of evidence and recommendations. *American Journal of Public Health*, 107(8). <https://doi.org/10.2105/AJPH.2017.303818>
- Freeman, T. P., & Lorenzetti, V. (2020). 'Standard THC units': A proposal to standardize dose across all cannabis products and methods of administration. *Addiction*, 115(7), 1207–1216. <https://doi.org/10.1111/add.14842>
- Freeman, T. P., & Lorenzetti, V. (2021). A standard THC unit for reporting of health research on cannabis and cannabinoids. *Lancet Psychiatry*, 8(11), 944–946. [https://doi.org/10.1016/s2215-0366\(21\)00355-2](https://doi.org/10.1016/s2215-0366(21)00355-2)
- Hammond, D. (2021). Communicating THC levels and 'dose' to consumers: Implications for product labelling and packaging of cannabis products in regulated markets. *International Journal of Drug Policy*, 91, Article 102509. <https://doi.org/10.1016/j.drugpo.2019.07.004>
- Health Canada. (2022). *Substance Use Spectrum*. Ottawa, Ont.: Government of Canada. <https://www.canada.ca/en/health-canada/services/publications/healthy-living/substance-use-spectrum-infographic.html>
- Health Canada (2024a). *Legislative review of the cannabis act: Final report of the expert panel*. Ottawa, Ont.: Government of Canada. <https://www.canada.ca/en/health-canada/services/publications/drugs-medication/legislative-review-cannabis-act-final-report-expert-panel.html>
- Health Canada. (2024b). Canadian Cannabis Survey 2023: Summary. Ottawa, ON.: Health Canada. <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/research-data/canadian-cannabis-survey-2023-summary.html>
- Marquette, A., Iraniparast, M., & Hammond, D. (2024). Adverse outcomes of cannabis use in Canada, before and after legalisation of non-medical cannabis: cross-sectional analysis of the International Cannabis Policy Study. *BMJ Open*, 14(1), Article e077908. <https://doi.org/10.1136/bmjopen-2023-077908>
- Mental Health Commission of Canada & Canadian Centre on Substance Use and Addiction. (2023). *Cannabis, mental health and substance use health research knowledge exchange event: March 1, 6 and 7, 2023, summary report*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. <https://www.ccsa.ca/cannabis-mental-health-and-substance-use-health-summary-report>



- Mental Health Commission of Canada & Canadian Centre on Substance Use and Addiction. (2024). *Our shared future: Priorities for cannabis research — Cannabis networking event summary report*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. <https://www.ccsa.ca/our-shared-future-priorities-cannabis-research-cannabis-networking-event-summary-report-2024>
- National Institutes of Health. (2021). Notice of Information: Establishment of a Standard THC Unit to be used in Research. <https://grants.nih.gov/grants/guide/notice-files/NOT-DA-21-049.html>
- National Institute on Drug Abuse. (2021). Establishing 5mg of THC as the standard unit for research. <https://www.drugabuse.gov/about-nida/noras-blog/2021/05/establishing-5mg-thc-standard-unit-research>
- Paradis, C., Butt, P., Shield, K., Poole, N., Wells, S., Naimi, T., Sherk, A., & the Low-Risk Alcohol Drinking Guidelines Scientific Expert Panels. (2023). *Canada's Guidance on Alcohol and Health: Final Report*. Ottawa, Ont.: Canadian Centre on Substance Use and Addiction. <https://www.ccsa.ca/canadas-guidance-alcohol-and-health>
- Volkow, N. D., & Weiss, S. R. (2020). Importance of a standard unit dose for cannabis research. *Addiction (Abingdon, England)*, 115(7), 1219.
- Wood, S., Gabrys, R., Freeman, T., & Hammond, D. (2024). *Canada's THC unit: Applications for the legal cannabis market*, 128, 104457. <https://doi.org/10.1016/j.drugpo.2024.104457>



Appendices

Appendix A: List of Participants

Name	Affiliation
Bernard Le Foll	Centre for Addiction and Mental Health
C'fine Okorochukwu	Canadian Centre on Substance Use and Addiction
Chase Simms	British Columbia Centre for Disease Control
Doug Beirness	Canadian Centre on Substance Use and Addiction
Francis Kangata	Nova Scotia Health
François Gagnon	Canadian Centre on Substance Use and Addiction
Hanan Abramovici	Health Canada
Heather McIver	Prince Edward Island Chief Public Health Office
Jamil Ramji	Alberta Health Services
Jennifer Donnan	Memorial University
Justine Renard	Canadian Centre on Substance Use and Addiction
Kim Hellemans	Carleton University
Mark Ware	McGill University Health Centre
Natalia Gutierrez	Centre intégré universitaire de santé et de services sociaux du Centre-Sud-de-l'Île-de-Montréal
Robert Gabrys	Canadian Centre on Substance Use and Addiction
Sergio Rueda	Centre for Addiction and Mental Health
Shea Wood	Canadian Centre on Substance Use and Addiction
Susan Weiss	National Institute on Drug Abuse
Tom Freeman	University of Bath
Valentina Lorenzetti	Australian Catholic University

Additional support and feedback provided by David Hammond (University of Waterloo), Myles Maillet, and Kate Vallance (British Columbia Cannabis Secretariat).



Appendix B: Meeting Summary

This section outlines the key agenda items that informed and contributed to the development of the recommendations put forth above. It is provided for context and transparency of process in our collective approach to shaping suggestions contained in this report.

<i>Agenda Item</i>	<i>Brief Description</i>
Opening remarks	<p>Dr. Alexander Caudarella, CCSA CEO</p> <p>Dr. Caudarella welcomed all participants and opened the session with an acknowledgement of the meeting taking place on unceded territories of the Anishinaabe Algonquin Nation. His introduction emphasized the necessity of a standard THC unit in Canada, recognizing its importance for many sectors, and noting the necessity of people being able to make informed choice about substance use.</p>
Opening presentations and discussions: Establishing and adopting a standard THC unit	<p>Dr. Tom Freeman, University of Bath</p> <p>Dr. Freeman provided a rationale for a standard THC unit along with the factors that motivated him and Dr. Lorenzetti to recommend the adoption of a standard unit of 5 mg THC to improve and standardize cannabis data collection. Key points include:</p> <ul style="list-style-type: none">• Consumers require clear, consistent, and relevant guidance on dosing cannabis products.• A standard unit is necessary to provide lower-risk guidelines for quantity of cannabis use. Two people can follow Canada's Lower-Risk Cannabis Use Guidelines by using "low THC products 4 days/week" and consume considerably different amounts of cannabis and THC.• A standard unit should:<ol style="list-style-type: none">1. Reflect the amount of primary pharmacological constituent2. Apply to all products and methods of administration• There is a need to balance the risk of adverse effects from consuming a single unit (if it is set too high) while ensuring it maintains credibility/relevance to consumers.• 5 mg was chosen based on a variety of factors, including evidence from experimental studies demonstrating this amount is intoxicating with minimal risk of adverse effects, and is compatible with existing regulations in USA and Canada (e.g., max 5mg/10mg for edibles). <p>Dr. Freeman also noted ongoing and future work related to expanding the use of a standard THC unit beyond research to inform lower-risk use guidelines and per-unit pricing of cannabis products to improve public health.</p>



	<p>Dr. Susan Weiss, National Institute on Drug Abuse (NIDA)</p> <p>Dr. Susan Weiss also addressed the purpose of implementing a standard THC unit of measure within cannabis research while noting the obstacles posed by the variability in routes of administration and types of cannabis products, the emergence of other cannabinoids of interest, and complex pharmacokinetics. She provided an overview of the consultation process that took place and various partners' opinions on the road to NIDA endorsing a 5 mg standard THC unit and mandating researchers report findings with this metric.</p> <p>Dr. Weiss emphasized that the standard THC unit is a unit of measurement, and while a significant opportunity exists in using it to better inform people who use cannabis, it is not a recommended dose.</p> <p>Both Dr. Freeman and Dr. Weiss emphasized the importance of establishing a standard THC unit in Canada, the potential applications, and the need for collaboration in the evolving cannabis field.</p>
Presentation and discussion: Toward a Canadian THC unit	<p>Dr. Shea Wood and Dr. Robert Gabrys, CCSA</p> <p>Dr. Wood provided an overview of the meeting rationale, mapping the contextual factors in Canada that support the establishment of a standard THC unit. Dr. Gabrys discussed some of the opportunities and obstacles that have been articulated previously in research, partnership meetings, and other sources, including the ability to improve cannabis literacy and research on health outcomes along with the complexity of the cannabis plant and diverse products.</p> <p>Overall, Dr. Wood and Dr. Gabrys addressed the critical need for informed decision-making, collaboration among stakeholders, and targeted efforts to address challenges in the evolving landscape of cannabis regulation and consumption in Canada.</p>
Facilitated discussion: Defining successful implementation	<p>This interactive discussion walked participants through a process of (1) imagining an ideal "future state" of standard THC unit implementation in Canada, (2) defining our current state and the conditions that exist with the lack of a standard THC unit, and (3) identifying key actions for bridging the gap between current state and future state.</p>
Facilitated discussion: applications and considerations in research and monitoring	<p>A facilitated small group discussion that prompted participants to explore the question: How would you use a standard THC unit in your research or monitoring of trends in your jurisdictions? What are some barriers and facilitators?</p>
Presentation and discussion: Reporting THC content in cannabis products	<p>Dr. Valentina Lorenzetti, Australian Catholic University</p> <p>Dr. Lorenzetti shared the findings of unpublished research, an ongoing Delphi study that utilizes this methodology to build consensus around ideas and perspectives, which are in this case, related cannabis measurement and the standard THC unit.</p> <p>The consistent mismeasurement of cannabis use (quantity and frequency) was highlighted by Dr. Lorenzetti as she presented the</p>



	perspectives from the Delphi participants on how to improve this and better report the number of THC units, percentage of concentration, and other metrics.
Facilitated discussion: Deep dive into areas impacting public health and safety	<p>A multi-phase interactive discussion brought participants through a series of conversations to deeply explore aspects of implementation within four key areas impacting public health and safety:</p> <ol style="list-style-type: none">1. Health interventions (e.g., tools that screen for Cannabis Use Disorder or problematic or high-risk cannabis use, treatment plans, and tracking tools for people wishing to change their use patterns)2. Lower-risk use guidelines and recommendation (e.g., existing Lower-Risk Cannabis Use Guidelines; LRCUG-PSYCH, and lower-risk recommendations around certain scenarios or behaviours like driving or parental health)3. Public health messaging (e.g., different types of public education campaigns and resources that amplify key messages around harm reduction)4. Labels and other consumer education (e.g., ways consumers could be educated on what a standard unit is and what it means for them [i.e., how much of a product to take], this could be on packaging, labels, materials available on retailer websites, etc.)
Final facilitated discussion: Roadmap to implementation	This final discussion guided participants to bring together the pieces of their previous discussions to make a practical, concrete set of recommendations for next steps across a timeline to create a roadmap for implementing a standard THC unit in Canada.