Clearing the Haze: What’s Next for Medical Marijuana in the U.S. and Canada?

Mike Sullivan
Chief Executive Officer
Cubic Health
Toronto, Ontario
Disclaimer

- **Speaker has no conflicts to disclose**
- Speaker has **no** client relationship with and/or investment in any medical or recreational cannabis entity or related stakeholder
- Speaker is neither encouraging nor discouraging coverage of medical cannabis under benefit plans—intent of this presentation is simply to provide objective information for consideration
### Where Are We Today?

<table>
<thead>
<tr>
<th>UNITED STATES</th>
<th>CANADA</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 States + DC allow medical cannabis use, Fed laws don’t allow (possession and use unlawful), 16 States w/ Low-THC/High-CBD</td>
<td>Medical cannabis legal since 2001</td>
</tr>
<tr>
<td><strong>MDs cannot prescribe under CSA (Sched 1)</strong></td>
<td><strong>Recreational legal in 2018 (expected)</strong></td>
</tr>
<tr>
<td>Each State unique in terms of limits, production, distribution, registration and MD involvement/eligible conditions</td>
<td>No Drug Identification Number (DIN)</td>
</tr>
<tr>
<td><strong>Not eligible as tax-exempt health benefit</strong></td>
<td><strong>Access to medical cannabis 3 ways:</strong></td>
</tr>
<tr>
<td>FSAs cannot reimburse expenses given IRS not considering cannabis as medical care</td>
<td>• Through Licensed Producer</td>
</tr>
<tr>
<td><strong>Rohrabacher-Farr amendment to prohibit DoJ interference with state medical cannabis laws</strong></td>
<td>• Grow @ home w/ Health Canada license</td>
</tr>
<tr>
<td>No National Drug Code (NDC)</td>
<td>• Designate a grower (with HC license)</td>
</tr>
<tr>
<td></td>
<td>Quantities limited to the lesser of 30 days supply or 150 grams of dried cannabis</td>
</tr>
<tr>
<td></td>
<td><strong>No requirement to state diagnosis</strong></td>
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<tr>
<td></td>
<td>Any licensed MD can prescribe</td>
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<tr>
<td></td>
<td><strong>Eligible medical exp. for income tax credit</strong></td>
</tr>
<tr>
<td></td>
<td>Coverage under HSA for insured plans</td>
</tr>
<tr>
<td></td>
<td>Coverage can be customized for ASO plans</td>
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</tbody>
</table>
The Science of Cannabinoids

Cannabinoid receptors found in the human body

CB1, CB2, TRPV1, TRPA1

Tissue-specific Localization

CB1 receptors are concentrated in the brain and central nervous system, but are also present in nerves and some organs.

CB2 receptors are mostly in peripheral organs, especially cells associated with the immune system.

TRPV1 receptors are concentrated in the blood, bone marrow, tongue, kidney, liver, stomach and ovaries.

TRPA1 receptors are concentrated in the skin, muscle, kidney, stomach, and lungs.

Compounds found in cannabis

THC, CBN, CBG, CBC, CBD
The Science of Cannabinoids

The Human Endocannabinoid System

CBD, CBN, and THC fit like a lock and key into existing human receptors. These receptors are part of the endocannabinoid system which impact physiological processes affecting pain modulation, memory, and appetite plus anti-inflammatory effects and other immune system responses. The endocannabinoid system comprises two types of receptors, CB1 and CB2, which serve distinct functions in human health and well-being.

CB1 receptors are primarily found in the brain and central nervous system, and to a lesser extent in other tissues.

CB2 receptors are mostly in the peripheral organs especially cells associated with the immune system.

Receptors are found on cell surfaces

 THC
Tetrahydrocannabinol

 CBD
Cannabidiol

 CBN
Cannabinol

CB1

CB2

Source: www.the-hemp-solution.org
## Medical Cannabis

<table>
<thead>
<tr>
<th><strong>Tetrahydrocannabinol (THC)</strong></th>
<th><strong>Cannabidiol (CBD)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Cannabis is composed of 750 different chemicals, more than 100 are active cannabinoids.</td>
<td>- Mainly non-psychoactive.</td>
</tr>
<tr>
<td>- THC is the most well known, main psychoactive component, causes many of physical and psychotropic effects.</td>
<td>- CBD of greatest interest to plan sponsors because of opportunity to mitigate impairing effects of TBD dominant strains.</td>
</tr>
<tr>
<td>- Level of THC can vary widely among strains.</td>
<td>- May be synergistic or antagonistic to THC effects depending on dose and ratio.</td>
</tr>
<tr>
<td>- Effective in pain, spasms, and nausea.</td>
<td>- Anti-inflammatory, analgesic, anti-emetic, anxiolytic and anticonvulsant properties.</td>
</tr>
</tbody>
</table>
## Existing Evidence

| Conclusive/ Strong Evidence to Support Use of Medical Cannabis | • Chronic Pain  
| • Chemotherapy Induced Nausea and Vomiting (CINV)  
| • Spasticity Symptoms in MS |
|---|---|
| Moderate Current Evidence to Support Use of Medical Cannabis | • Pediatric Treatment Resistant Epilepsy  
| • Reducing opioid dosing for Chronic Pain  
| • Short-term sleep disturbance in Sleep Apnea  
| • Fibromyalgia  
| • Chronic Pain (related to MS) |
| Weak Current Evidence to Support Use of Medical Cannabis | • Appetite and Weight Loss in HIV/AIDS  
| • Tourette Syndrome  
<p>| • Anxiety in Social Anxiety Disorders |</p>
<table>
<thead>
<tr>
<th>Existing Evidence</th>
<th>Insufficient Current Evidence in terms of Effectiveness of Medical Cannabis in treatment of:</th>
</tr>
</thead>
</table>
|                   | • Cancers (including Glioma)  
|                   | • Cancer-related Anorexia Cachexia & Anorexia Nervosa  
|                   | • Inflammatory Bowel Syndrome (IBS)  
|                   | • Crohn’s Disease  
|                   | • Epilepsy (General)  
|                   | • Symptoms of ALS  
|                   | • Symptoms of Huntington’s Disease  
|                   | • Motor symptoms in Parkinson’s Disease  
|                   | • Dystonia  
|                   | • PTSD  
|                   | • Mental health outcomes in Schizophrenia |
| Current Evidence that Medical Cannabis is I NEFFECTIVE in treatment of: | • Improving symptoms of Dementia  
|                     | • Improving intraocular pressure in Glaucoma  
|                     | • Reducing depressive symptoms in patients with Chronic Pain or MS |
Existing Evidence

- Current evidence base will only continue to grow given capital invested into this area and ever-increasing interest in this space
- 182 clinical trials involving cannabis currently underway worldwide
- This will become a consideration for all plans
• Medical cannabis can be considered Specialty Drug when looking at annual cost.
• Although dosing is individualized and highly variable, assuming average price of $8-$9/gram for a high-quality, consistent product:
  – At 3g/day, **annual cost can approach $9K-$10K**
• Newer dosage forms and high concentration CBD products have price premium.
## Dosage Form Comparison

<table>
<thead>
<tr>
<th></th>
<th>Smoking</th>
<th>Vaporization</th>
<th>Oral</th>
<th>Sublingual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Entering Blood Stream</td>
<td>10 to 50%</td>
<td>10 to 50%</td>
<td>10 to 20%</td>
<td>10 to 20%</td>
</tr>
<tr>
<td>Onset of Action</td>
<td>Within secs</td>
<td>Within secs</td>
<td>30 - 60 mins</td>
<td>30 - 60 mins</td>
</tr>
<tr>
<td>Duration of Action***</td>
<td>2 - 4 hours</td>
<td>2 - 4 hours</td>
<td>5 - 8 hours</td>
<td>5 - 8 hours</td>
</tr>
<tr>
<td>Advantages</td>
<td>Quick onset of effect</td>
<td>Quick onset</td>
<td>More approp. dosage form for workplace</td>
<td>More approp. dosage form for workplace</td>
</tr>
<tr>
<td></td>
<td>• Less exposure to harmful chemicals</td>
<td>• More frequent administration required</td>
<td>• Higher risk of intoxication due to delayed onset</td>
<td>• Higher risk of intoxication (delayed onset)</td>
</tr>
<tr>
<td>Disadvantages</td>
<td>Harmful respiratory effects</td>
<td>More frequent administration required</td>
<td>Higher risk of intoxication due to delayed onset</td>
<td>Higher risk of intoxication (delayed onset)</td>
</tr>
</tbody>
</table>

*** Duration of action has significant implications for safety of driving after an administered dose.
Dosing Considerations

• Edible cannabis has not been included in any formal clinical studies to date for any disease indications—its use is strictly based on extension of available studies.

• Interestingly, THC is hydroxylated to 11-OH-THC (a potent psychoactive metabolite) by liver and is found in higher concentrations when cannabis is ingested as opposed to inhaled.
Safety: Drug Interactions

- THC metabolized by CYP2C9, 2C19 and 3A4 in liver
- Drugs that inhibit these enzymes can materially impact THC levels/adverse effects (e.g. some antidepressants, PPIs, antibiotics, antifungals, blood pressure medications, protease inhibitors)
- Cannabinoids can inhibit CYP1A1, 1A2 and 1B1 which can impact metabolism of some Rx meds

All evidence of the need for appropriate individual assessment of claims.
Safety: CBD vs. THC

• Interaction between THC and CBD is complex and not yet fully understood.

• Research suggests at certain ratios of CBD:THC, there appears to be an attenuation of effects of THC by CBD, but at other ratios appears to be a potentiation of the effects of THC by CBD.
Safety: Utilization Not For Everyone

• Different medical associations have slightly different criteria for defining medical cannabis eligibility.

• College of Family Physicians of Canada list that medical cannabis is generally inappropriate for patients who:
  – Are under the age of 25
  – Have personal history or strong family history of psychosis
  – Have current or past cannabis use disorder
  – Have an active substance use disorder
  – Have cardiovascular (angina, arrhythmias) or respiratory disease
  – Are pregnant, planning to become pregnant or are breastfeeding
Measuring Returns

• In cases where a financial ROI needs to be met in order to support case for medical cannabis coverage, different metrics/data inputs need to be considered in U.S. vs. Canada
  – Canada:
    Major driver of savings = Absence and disability
  – U.S.:
    Major driver of savings = Reduction of medical spend
## United States Taxation Considerations

Taxation of medical cannabis can vary significantly between States

<table>
<thead>
<tr>
<th>State</th>
<th>Taxation on Rec Cannabis</th>
<th>Taxation on Medical Marijuana</th>
<th>Tax Deductible Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colorado</strong></td>
<td>As of July 1, 2017, 15% state retail marijuana excise tax + 15% state retail marijuana sales tax</td>
<td>2.9% state sales tax</td>
<td>NO</td>
</tr>
<tr>
<td><strong>California</strong></td>
<td>When legalized Jan 1, 2018, Prop 64 states a 15% excise tax will be placed on rec cannabis + 7.4% sales tax</td>
<td>When rec cannabis is legalized only 15% excise tax will be applied. No sales tax.</td>
<td>NO</td>
</tr>
<tr>
<td><strong>Oregon</strong></td>
<td>State tax rate is 17%, and municipalities can enact an additional tax of 3% with approval of voters.</td>
<td>In 2016, Senate Bill 1601 declared that sales to medical cannabis cardholders not subject to taxation.</td>
<td>NO</td>
</tr>
</tbody>
</table>

IRS Section 502 states you cannot include in medical expenses amounts you pay for controlled substances (such as marijuana) that aren't legal under federal law, even if such substances are legal by state law.
Supply Considerations

• In considering processes to review claims, eligible products, dosage forms are key

• Another key consideration is suppliers
  – Canada: Concerns around consistent supply and availability of high CBD products from LPs
  – US: No federal licensing of producers like in Canada, significant quality disparities, and consistency of product
Medical Cannabis Distribution: CAN vs. U.S.

Figure 3: Canada's current MMJ supply chain

CULTIVATION

LEGAL

Licensed Producers

Overseen by Health Canada

MANUFACTURE

Home Growing

DISTRIBUTION

Prescribers

Illegally registered and medical note required to register as a patient

ACCESS

Growers

Illegal storefronts
### Medical Cannabis Distribution: CAN vs. U.S.

<table>
<thead>
<tr>
<th></th>
<th>California</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year of Medical Cannabis Legalization</strong></td>
<td>1996</td>
<td>2014</td>
</tr>
<tr>
<td><strong>Product Regulation</strong></td>
<td>Currently no restriction on medical cannabis products, with minimal regulatory oversight</td>
<td>Department of Health (DOH) has authorized non-smoke forms of medical cannabis, including oils and capsules</td>
</tr>
<tr>
<td><strong>Medical Cannabis Producers</strong></td>
<td>Many producers in CA &amp; home growing is permitted</td>
<td>5 state-selected producers, all products must be tested by an independent lab</td>
</tr>
<tr>
<td><strong>Distribution</strong></td>
<td>Medical cannabis distributed through cooperatives and collectives operating as non-profit entities</td>
<td>Medical cannabis is dispensed by trained pharmacists in state-selected dispensaries, DOH regulates pricing and profit levels</td>
</tr>
<tr>
<td><strong>Clinical Considerations</strong></td>
<td>Physician rec required for access with list of suggested eligible conditions, but physicians have full prescribing discretion</td>
<td>Physician must register with DOH in order to issue certificates to patients with list of 10 qualifying conditions to help guide physicians in certifying patients</td>
</tr>
</tbody>
</table>

**Note**: California currently undergoing dramatic regulatory reform, coinciding with pending legalization of recreational cannabis.
Plan Design Considerations

• Need to establish defined, evidence-based criteria for coverage
• Implement rigorous clinical review of individual cases at a disease-state level
• Need to consider financial restrictions, dosage restrictions, and eligible dosage forms/products
• Need to document and measure health impacts and review cases every 6-12 months
• Is HSA coverage enough?
Case Study: Veterans Affairs

- The Federal Gov’t. in Canada began covering medical cannabis in 2008
- Coverage initially set to max of 10 grams/day with no strict cost limits
- After dramatic increase in program costs, amounts are now limited to 3 grams/day and $8.50/gram maximum

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Veterans</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>5</td>
<td>$19,088</td>
</tr>
<tr>
<td>2009-2010</td>
<td>15</td>
<td>$43,365</td>
</tr>
<tr>
<td>2010-2011</td>
<td>23</td>
<td>$63,057</td>
</tr>
<tr>
<td>2011-2012</td>
<td>37</td>
<td>$103,424</td>
</tr>
<tr>
<td>2012-2013</td>
<td>68</td>
<td>$284,632</td>
</tr>
<tr>
<td>2013-2014</td>
<td>112</td>
<td>$408,809</td>
</tr>
<tr>
<td>2014-2015</td>
<td>628</td>
<td>$5,160,747</td>
</tr>
<tr>
<td>2015-2016</td>
<td>1762</td>
<td>$20,538,153</td>
</tr>
</tbody>
</table>
Workplace Policy Considerations

- Written policies need to be in place requiring employees to disclose use of substances that may impair ability to safely perform duties
- Policies around eligible dosage forms and medical cannabis products at work vs. at home (CBD dominant strains and non-smoked products more compatible with workplace administration)
- Commuting risk and policies/guidelines to mitigate impaired driving
- In Canada, as per the Federal Occ. Health and Safety legislation, employers have duty to accommodate for disability, medical conditions or related treatments (including medical cannabis), as long as accommodation does not cause undue hardship to the company or safety risks to employees or the public
ADA prohibits employers from discriminating against qualified individuals on the basis of disability. Requirement to provide reasonable accommodations to the disabled employee, provided there is no undue hardship on the employer.

Section 12114(a) of the ADA states that accom does not apply to an employee engaging in the illegal use of drugs.

“Illegal use of drugs” is defined as the use/possession/distribution which is unlawful under the Controlled Substance Act (CSA) but excludes use of a drug taken under the supervision of a medical professional.

Medical cannabis is a Schedule I substance under the CSA.

There is room for interpretation of this legislation and the definition of “under supervision of a medical professional”. As a result, different states have developed different policies on employers’ duty to accommodate.
Plan sponsors in the U.S. should consider following steps to determine responsibilities regarding accommodation of medical cannabis:

• Determine if workplace regulated by Drug Free Workplace Act (zero tolerance)
• Obtain legal opinion to determine if state-level statutes have specifically addressed accom. of medical cannabis. In states where statutes do not address the issue, courts generally determined that employers are not required to accommodate (e.g. Emerald Steel vs. Bureau of Labor and Industries in OR)
• In states that have enacted laws related to medical cannabis accom., legal opinion will be required to determine the approach with medical cannabis patients and how to address those plan members who are in safety sensitive positions (e.g. NY legislation stating “a certified patient shall be deemed to be having a disability under the state’s human right laws.”)
Potential Impact of Recreational Cannabis

- Rec cannabis can have a dramatic impact on the effectiveness and legitimacy of medical cannabis
- Once rec cannabis was legalized in OR, there was a substantial drop in the number of patients with marijuana medical card (77,000 down to 67,000)
Questions

Thank You