Seeing Through the Smoke: Current Understanding of Marijuana Use, Science, Effects & Intervention Strategies

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With special acknowledgement to Win Turner PhD

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Course Objectives

- Understand cannabis use (and its risks) from a public health perspective.

- Increase understanding of cannabis science and culture

- Identify "motivators for cannabis use and recovery".

- Learn about the development and use of the Cannabis Intervention Screener tool.

- Become familiar with a new paradigm for helpful interactions with cannabis users.

Why is learning more about cannabis important to you?

Be aware….

- Many written materials on cannabis *including scientific studies are contradictory….A conclusion is made with absolute certainty in 2012 that is proven wrong in 2017.*

- Critical thinking is strongly encouraged.

Marijuana Affects Cognitive Function… but Only for 72 Hours

Public support for marijuana is growing. Will lawmakers follow?

Opioids and Pot: Inside the Fight for Real Research

ASU research uncovers surprising data on teenage pot use

Pot During Pregnancy? Not A Lot Is Known, But New CU Research Suggests A Risk

Cannabinoids for treatment of chronic non-cancer pain; a systematic review of randomized trials.

Researchers find that just one puff of cannabis can treat depression

And unfortunately

- Few places in science have we found such divergent findings as have been found in cannabis research related to its risks for adverse consequences.

- Prime examples of divergent findings include highway safety, enduring cognitive impairment, schizophrenia and a pillar of prevention science: reduced perception of harm leads to increased cannabis use.

INTRODUCTION

The changing landscape concerning the legal and regulatory status of cannabis increases the need for research about innovative strategies to address cannabis misuse..

At present, limitations in the research make it difficult to approach these crucial choices in an evidence-based manner.

Fundamentally, the tactics and curricula that proved effective in the past, may no longer work, and new approaches may need to be tested and developed.

Prevention Efforts

Prevention science regarding risk and protective factors will need to be refined and perhaps redefined to account for changes in cannabis culture.

That is, new research is needed on prevention approaches to complement community strategies that speak to both local conditions and broader population health considerations.

Recognize what we still do not know much about cannabis and its benefits and harms and **some of the current "evidence" is contradictory.**

Culture of Cannabis Quiz

1. What are the two primary active compounds in marijuana?

2. How many northeastern states have now legalized *recreational* cannabis?

3. What % of users vaporize vs. smoke cannabis?

4. What is the slang term for the person who helps you purchase cannabis at a dispensary? (hint: like a bartender)

5. What the average % THC in weed today? What was it 10 years ago?

6. What are some of the reasons why it is so hard for people to quit using even when they want to?

History of Cannabis

▶ Since 5000 BC – 1930's: Cannabis viewed as a medicinal, spiritual and recreational substance.

▶ 1930's to mid-1990's: most Americans viewed marijuana use as harmful.

▶ 1970's: Cannabis made illegal.

  ✓ DEA Categorizes as a Schedule 1 Drug

▶ 1996: Medical Marijuana legalized.

  ✓ 84% of Americans Now Believe Cannabis has Medical Value

▶ 2012: Recreational Marijuana 1st legalized.

  ✓ 60 plus% vs. 30% think marijuana use is ok

(Booth, 2003)

Culture of Cannabis

A cultural shift is taking place based on changing opinions, increasing information, but with limited long-term (unbiased) scientific understanding.

▶ We are only just beginning to understand the short and long-term benefits and consequences of using cannabis.

▶ We are just beginning to understand the subtle but important differences in types of marijuana, THC:CBD ratios, dosage, method of use and the individualized responses.
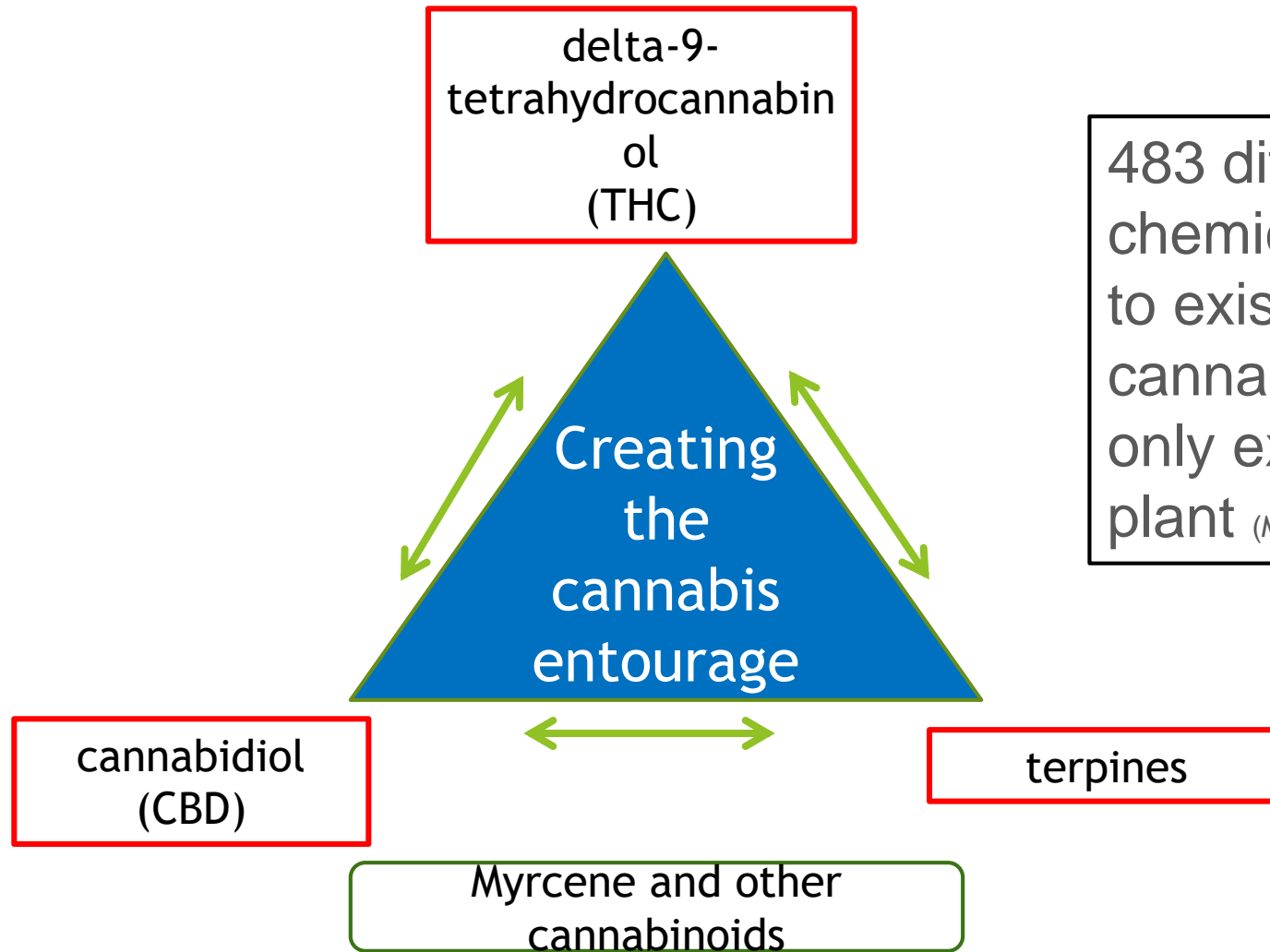
Science and Cannabis

▶ Genomic mapping has determined 91 different strains of cannabis, each with differing expressions of THC, CBD, terpenes and other cannabinoids

▶ **THC** is primarily associated with intoxicating effect and pain relief, can have certain bi-phasic effects

(Medicinal Genomics, 2016)

▶ **CBD** is primarily associated with anti-inflammatory, neuroprotective, mediates effects of THC and possible anti-carcinogenic factors

▶ Terpenes help to create the overall cannabis effect and possess preventive effects, antimicrobial, antifungal, antiviral, anti-hyperglycemic, anti-inflammatory, and antiparasitic activities.

What is in cannabis?

delta-9-tetrahydrocannabinol
(THC)

Creating the cannabis entourage

cannabidiol
(CBD)

terpines

Myrcene and other cannabinoids

483 different identifiable chemical constituents known to exist in cannabis with 80 cannabinoids (known), that only exist in the cannabis plant (Medicinal Genomics, 2016).

Entourage effect

▶ The whole plant effect of marijuana is referred to as **the entourage effect** referring to the interplay of cannabinoids (THC, CBD and others), terpenes and other plant-based content

▶ Research has demonstrated that whole plant cannabis preparations have greater therapeutic effect than isolating or synthesizing THC or CBD alone.

Science and Cannabis Use

▶ The average THC potency of cannabis has been increasing over the last 30 years. *Why?*

　➤ Domestic production means fresher product due to breeding, growing, and curing technical expertise.

　➤ People now use mostly sinsemilla (unfertilized flower) instead of the branches and leaves = stronger potency.

▶ 18% average THC in cannabis for those individuals who smoke ¼ gram per bowl/joint

　➤ For every gram of cannabis you have roughly 180 mg of THC.

　➤ At least 60 percent loss due to burning, you can expect a full bowl to deliver 18 mg of THC. Split it with a friend, and you each get almost 10 mg.

▶ *10mg = estimated equivalent dose.*　(Lankenau et al. 2017)

Methods of Cannabis Use

Methods of Use

1. **Smoking (90 plus%)** *joints more efficient than bowls*

2. **Edibles (15%)** *(food infused with cannabis) Dosing harder to predict (Average dose = 10mg. of THC)(medicinal CBD oil 15-30mg.).*

3. **Vaporizers (20%)** *(flower and extract) more efficient than joints up to* 70% THC dependent on device.

4. **Dabbing (a concentrated form of cannabis that is heated quickly on a very hot surface, vaporized, and then inhaled through a special apparatus, sometimes called a "dab rig" or an "oil rig.") (less than 4%)** *(up to 40-60% THC) loss due to burn method.*

Top Reasons for Use

- Enjoyment, Celebration = 62%

- Experimentation, Novelty, Risky = 41%

- Social Enhancement, Conformity = 42%

- Boredom = 25%

- Relaxation = 24%

- Coping 13%* (only potential negative?)

- Altered Perception = 10%

(Lee et al. 2007)

Reasons for Cannabis Use

Responses culled from social media.

▶ I smoke weed for the same reason anyone has a beer. Sometimes you just want to **kick back and relax**.

▶ I smoke weed and **meditate**. It gives me a unique perspective.

▶ Some days marijuana just helps me relax. Some days it **inspires my creativity** while I draw, do crafts, or just clean the house. Over time it has eliminated what used to be nearly constant **migraines**. But today I want to give you a glimpse of the real reason I smoke every day…. **To quiet the demons in my head.** My childhood and teens were full of abuse and pain.

(Reddit.com)

The "Why" Question asked...

Responses culled from social media.

▶ Weed works best for my **medical issues.**

▶ I'm using weed to treat my **anxiety and depression.**

▶ I love weed! **I like the way it feels to have a buzz on.**

▶ It does more than just help me relax after a long hard day. At least for me, weed allowed me **to look deep within myself** and realize how badly I treat some people without even knowing it. I'm a better person today.

▶ Since starting on medical cannabis, I have been able to **stop all prescription pain killers**.

(Reddit.com)

Why does this matter?

A brief discussion about medical cannabis

Medicinal Cannabis History

▶ Despite some commonly held beliefs, cannabis use for medicinal purposes did not begin with stoners living in a school bus.

Although, that is one totally awesome school bus!

Medical Cannabis - Today

Meet the physician described as the "Godfather" of modern medical cannabis:

Dr. Raphael Mechoulam, Professor of Medicinal Chemistry at the Hebrew University of Jerusalem

Beginning in the 1950s, he brought rigorous scientific method to the study of cannabis and its potential medical benefits. The US government has funded his research since the 1950s.

Important to Note: Because of the barriers and prohibitions placed on medicinal cannabis research in the US, most research for decades takes place outside the US.

Recorded medicinal use of cannabis dates back over 5000 years

- ▶ It was a mainstay in Chinese medicine recommended for more than 100 conditions.
- ▶ Hebrew, Egyptian and Indian Cultures used cannabis for a variety of conditions.
- ▶ Greece used cannabis for pain and inflammation.
- ▶ Commonly used throughout Europe 1500s and Brought to US in 1621.
- ▶ Registered in 1850 as part of the US Pharmacopeia.
- ▶ A common medicinal throughout much of the 19th and early 20th century in US.
- ▶ Used in support of opium withdrawal/detox.
- ▶ In recent times, received first medicinal recognition in US in 1976.
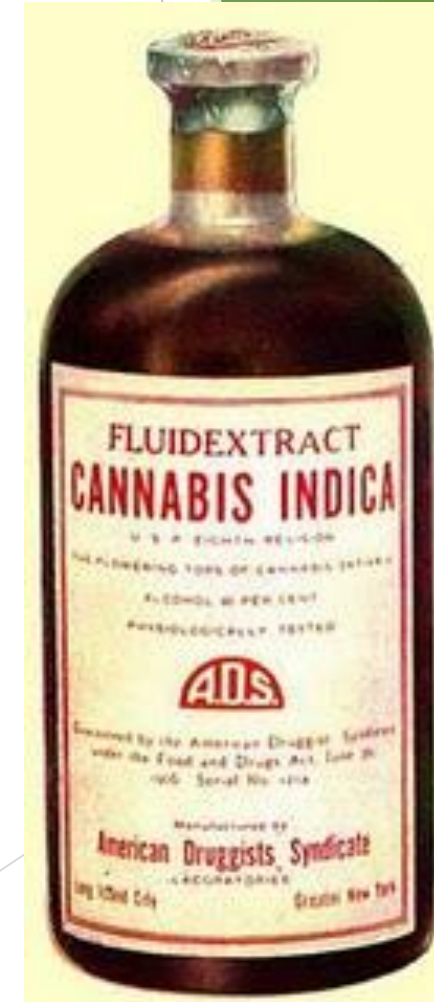
(Booth, 2003)

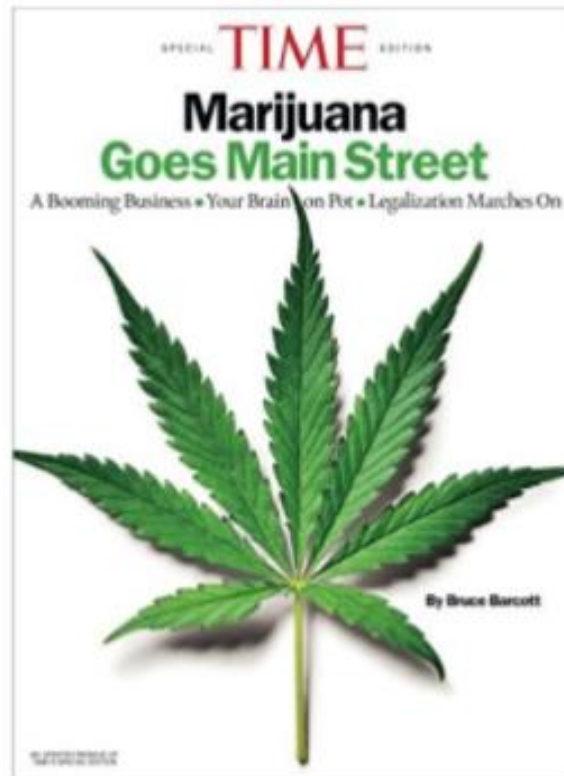# Research Evidence of Medical Benefits of Medicinal Use of Cannabis

140 randomized control trials studying the medicinal use of cannabis have now been completed or are in process• (National Academy of Science 2017)

http://dx.doi.org/10.1080/07352689.2016.1265360

	THC (delta-9-tetrahydro-cannabinol)	CBD (cannabidiol)
Glaucoma	√	
Anti-emetic	√	
Appetite stimulant	√	
Analgesic	√	√
Anti-inflammatory		√
Anti-seizure		√
Anti-spasmodic		√
Neuroprotective		√
Cancer*		√
Sleep	√	√

For further information on medical cannabis, two good sources:

▶ *The debate over medical cannabis has largely been dominated by vested interests, lobbyists and advocacy groups on either side – while patients' voices have been either silent or ignored.*

SPECIAL TIME EDITION

Marijuana Goes Main Street

A Booming Business • Your Brain on Pot • Legalization Marches On

By Bruce Barcott

The Health Effects of Cannabis and Cannabinoids

THE CURRENT STATE OF EVIDENCE AND RECOMMENDATIONS FOR RESEARCH

Committee on the Health Effects of Marijuana:
An Evidence Review and Research Agenda

Board on Population Health and Public Health Practice

Health and Medicine Division

A Report of
The National Academies of
SCIENCES · ENGINEERING · MEDICINE

Summary

▶ Cannabis is the most commonly used illicit substance in the U.S.

▶ Most people (approximately 90 percent) consume cannabis by smoking; however, increasing numbers of people are also using alternative methods.

▶ People are motivated to use cannabis for a variety of desired recreational, medicinal, or psychosocial effects.

▶ Studies on the medicinal value of cannabis are limited, but evidence exists for its utility with some medical conditions.

▶ Correlations between cannabis use and psychiatric disorders have been identified but are not yet understood.

Impacts on Behavioral Health

- ▶ Cannabis Use Disorder
  - ✓ Approximately 9% of cannabis users have some degree of a use disorder.
- ▶ Neurocognitive effects
- ▶ Risky behaviors
- ▶ Biphasic Reaction

Effects on Cognition

- ▶ Short-term effects on neurocognitive performance are well know:
  - ✓ Learning & Memory
  - ✓ Processing speed
  - ✓ Executive Functioning (attention, planning)
  - ✓ Sustained abstinence appears to return users level of cognitive functioning

All of these impacts can negatively affect school, work and social performance and may adversely impact life trajectories for youth and adults.

Impacts of Use on Physical Health

- Lung Health

- Sleep

- Hyperemesis Syndrome (cyclical vomiting)

- Severe Cannabis Intoxication often with biphasic reaction (ED admissions)

Relationship of Cannabis and Mental Health Symptoms

- Cannabis has a **robust and dose-dependent** (high doses of THC) association with psychotic symptoms (hallucinations).

- However, psychotic disorders (i.e. schizophrenia, bipolar) are **highly heritable** accounted for by genetic factors.

- In the short-term, **high doses of THC can cause anxiety and panic** symptoms.

- Little evidence exists that cannabis causes anxiety disorders.

(Buckner et al., 2012)

Cannabis: DUI Risk

▶ National Institute on Drug Abuse (NIDA) advises that there is evidence demonstrating marijuana use impairs motor coordination, reaction time and judgment.

Source: NIDA. (2018, May 2). Marijuana. Retrieved from https://www.drugabuse.gov/publications/research-reports/marijuana on 2018, June 18

Source: Compton, R. (2017, July). Marijuana-Impaired Driving - A Report to Congress. (DOT HS 812 440). Washington, DC: National Highway Traffic Safety Administration

Risks of Cannabis Use – In conclusion

▶ **Marijuana use does not have the same health risks of other substances but has its own set of risks.**

▶ **The most common marijuana risks are in domains of: social, emotional, learning, and risky behavior while under the influence**

Prevention and Brief Intervention Strategies for Cannabis Risk.

Responding to a need for more potent interventions, the two questions we asked our selves:

- *Are we asking the right questions?*

- *Are we using the best approach to evoke client motivation for change?*

Introducing the Cannabis Intervention Screener (CIS)

Our healthcare providers asked us to help them to have more meaningful conversations with marijuana users.

 In response, our team collaborated to develop and validate the CIS tool. Our goals are:

- To better identify cannabis use risk within a public health framework
- To stratify cannabis use risk aligned with DSM5
- To build a more potent intervention strategy

Cannabis Intervention Screener

The Cannabis Intervention Screener © (CIS) was developed (2015-2017) by the Center for Behavioral Health Integration LLC (C4BHI) and allows practitioners to screen and better engage patients regarding their cannabis use

Targeted motivational intervention strategies provide practitioners with proven tools to motivate patients with risky and problematic use to make change.

What are the Motivators for Change

- ► Peer disapproval of use
- ► Lack of motivation
- ► Social skills
- ► Intensify both positive and negative mood
- ► Self Esteem
- ► Work and school performance

Negative social consequences are consistently the greatest motivator for change.

Summary of CIS Validation Study

- Engaged national subject matter psychometric expert to guide validation protocol and tool design

- Reviewed literature including 6 lengthy validated marijuana assessment tools

- Reviewed literature to identify why someone chooses to stop use

- Created CIS to elicit frequency of use, methods of use, reasons for use and impacts of use

- Validation conducted in states of Vermont, Iowa and Washington healthcare settings, administered the CIS (and the DAST 10 as a control) with 600+ patients

- Data were analyzed in Summer and Fall 2017

- Findings have undergone peer review and are being published in upcoming APA monograph

Findings

- CIS significantly increased # of endorsed negative impact responses compared to DAST providing better sensitivity

- A frequency of use prescreen is successful at triaging out those with little to no negative impact

- <u>Weekly Use</u> as a <u>cut off is a good predictor</u> for # of impacts

- Using multiple times daily (**<u>Binge Use</u>**) = highest CIS Impacts

- Use for mental health reasons associated with increased # impact

- Trying to "control use" is a significant indicator of "Binge Use"

- Impact scores align with DSM5 for risk stratification

Three domains in the CIS Tool

▶ Frequency and methods of use

▶ Reasons for use

▶ A ten question survey of negative impacts due to cannabis use

CIS Triage Questions

	Never	Monthly or Less	Several Days per Month	Weekly	Several Days per Week	Daily
1. How often have you used marijuana **in the past year**? (including smoking, vaping, dabbing, or edibles)	☐	☐	☐	☐	☐	☐

If you chose **"Never"** please **STOP HERE**. Otherwise, go to the next question.

	One	Two	Three	Four or More
2. When you use marijuana, how many *times per day* do you typically use?	☐	☐	☐	☐

	Smoke (joints, bong, pipe)	Vape	Dab	Edibles
3. How do you use marijuana? (check all that apply)	☐	☐	☐	☐

## CIS Secondary Screening Questions

Part 1	Yes	No
A. Have you used marijuana for personal enjoyment and/or recreational reasons?	☐	☐
B. Have you used marijuana for medical or physical health reasons such as pain, cancer, or epilepsy?	☐	☐
C. Have you used marijuana for mental health reasons such as trouble focusing, worries or anxiety, stress, negative or sad emotions?	☐	☐
D. Do you have a medical marijuana card?	☐	☐

CIS Part 2

Different things happen to people when they are using marijuana, or as a result of their marijuana use. Read each statement below carefully and check 'Yes' if it happened to you in the last year, even if it was only once. Check 'No' if it never happened to you in the last year.

In relation to your marijuana use in the past year...	Yes	No
1. Have you tried to control your marijuana use by smoking only at certain times of the day or certain places?	☐	☐
2. Have you worried about the amount of money you've been spending on marijuana?	☐	☐
3. Have you gone to work or school high or stoned?	☐	☐
4. Has your family, friends, or a health provider expressed concern about your marijuana use?	☐	☐
5. Have you, on more than several occasions, driven a car or other vehicle, including a bicycle, after using marijuana?	☐	☐
6. Have you noticed that your memory is not as good as it used to be?	☐	☐
7. Have you continued to smoke marijuana when you promised yourself you would not?	☐	☐
8. When you have stopped using marijuana for a period of time (even several days), have you experienced any of the following: irritability, restlessness, anxiety, depression, loss of appetite, sleep problems, pain, shivering, sweating or elevated body temperature?	☐	☐
9. Have you used larger amounts of marijuana over time, or used marijuana more frequently over time?	☐	☐
10. Have you ever seen a counselor or other professional as a result of your own concerns, or concerns that someone else had, about your marijuana use?	☐	☐
Scoring Guide indicated responses: Lower Risk (at-risk) (2-3) – Brief Intervention Moderate Risk (4-5) – Brief Intervention and Brief Treatment Severe Risk (6+) – Brief Intervention and Treatment	Total:	

The Cannabis Risk Pyramid

6 +
Severe
(6%)

4-5
Moderate
(14%)

2-3
Lower/At-Risk
(32%)

0-1
Affirm
(48%)
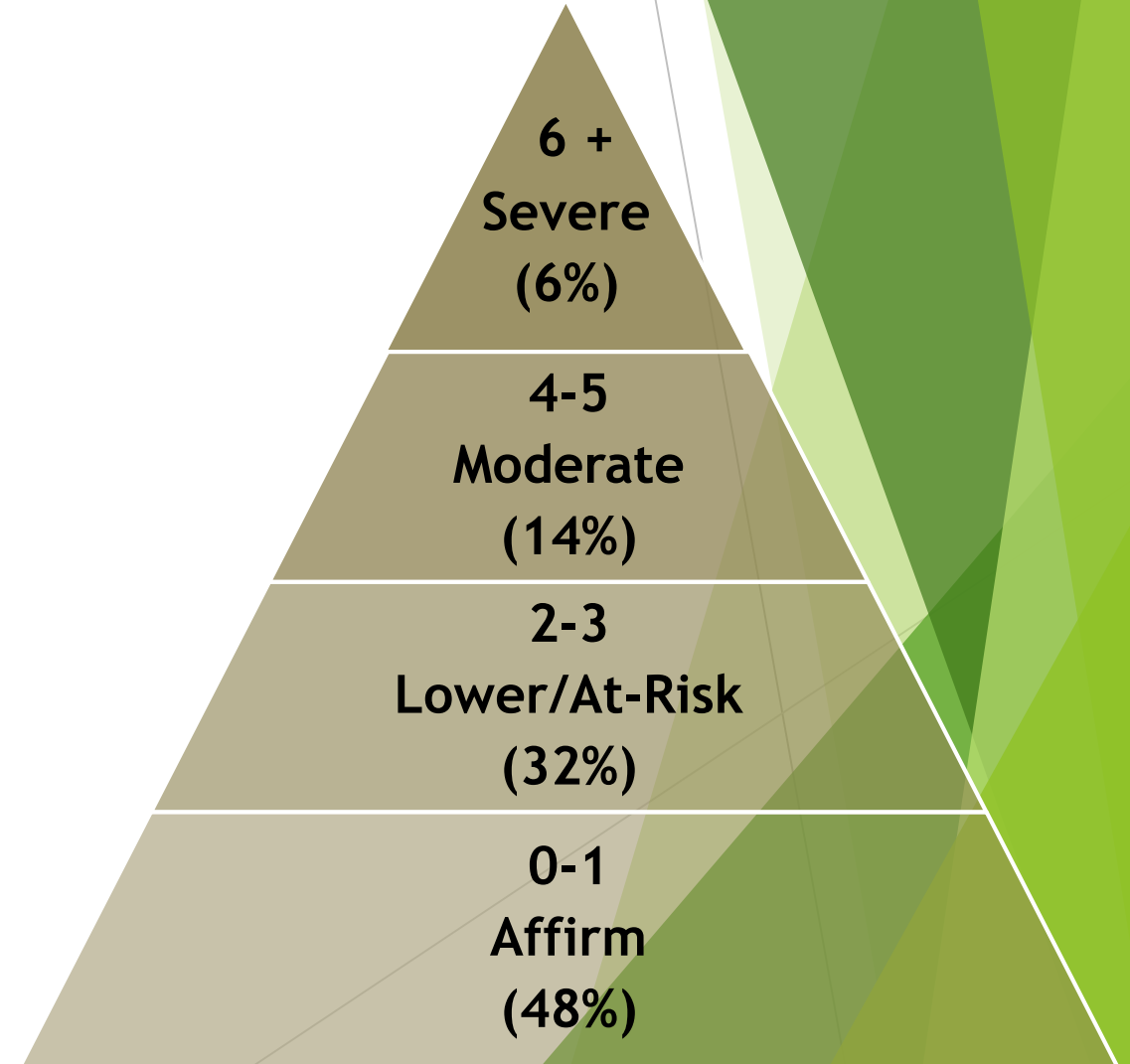
Summary of the CIS

▶ Social, emotional/psychological, financial, education and occupational impacts are most frequently associated with increased motivation to change behavior.

▶ Long-term health and legal risks is not great for motivating of change.

▶ Using a single prescreen question about frequency of use to triage respondents.

▶ Patients who used daily or multiple times a day endorsed the most negative impacts

▶ Patients who endorse use for mental health reasons or mental health/physical health may benefit from screening for co-occurring conditions.

▶ CIS endorsements of *reasons* for cannabis use can best focus and initiate motivational interventions with patients.

▶ Patients with CIS scores of 4 and higher, indicating moderate to severe CUD, should be referred for further assessment and treatment.

Cannabis Brief Negotiated Interview (BNI) Algorithm

▶ Motivational Interviewing (MI) is well supported in clinical research as one of the most effective approaches for activating patient internal motivation for change

▶ Engage, Focus, Motivate, and Plan. The cannabis-specific brief intervention is best delivered when framed by these four phases, with special emphasis on topics specifically related to cannabis use

▶ The most widely utilized (SBIRT) brief intervention, the Brief Negotiated Interview (BNI), adopts these strategies and emphasizes several MI techniques to better develop discrepancies and elicit change talk

(D'Onofrio et al., 1996; D'Onofrio et al., 2005)

Engage Phase

"Good morning _____. I am _____. We are meeting today to discuss results of the wellness survey you completed. But before we get started, I would like to take just a few minutes to get to know each other. How does that sound to you?

✓ Asking permission is both respectful and disarming

✓ Provides an opportunity to build rapport and collaboration

✓ Does not need to be a lengthy conversation

✓ Genuine interest and curiosity

Focus Phase

- (Ask Permission) Is it OK if we discuss the health and wellness questionnaire you completed?

- (Pros and Cons of use) Based on your screening responses seems like you smoke nearly everyday and you responded that it helps you copy with negative feelings. Can you tell me what else you like using?

- Can you share with me some of the negatives you've noticed about using?

- (Double Sided Reflection) So what I am hearing is on the one hand what you like about marijuana use is_____ but on the other hand the down side is_____.

- *The Focus phase hones in on why you are meeting: to review and better understand screening results (i.e., benefits, consequences, and possible coping areas).*

Motivating Phase

The goal is for the person to find his or her own personal and compelling reasons for change

▶ Summarize the pros and cons

▶ *The Motivate Phase leverages patient-identified negative consequences, norms, and other information about marijuana use, such as social and health impacts and provider concerns.*

▶ The patient's immediate concerns (sleep, money, memory issues, being high at work/school, concerns with friend and family, driving risks) are prime points for discussion.

▶ The readiness ruler strategy is used to enhance internal and external motivation to change marijuana use behavior for risk reduction.

Motivation Phase- Readiness Ruler

The readiness ruler strategy is used to enhance internal and external motivation to change marijuana use behavior for risk reduction or to support treatment engagement.

Instructions: Show your patient a ruler and say "On a scale of 1 to 10, how ready are you to make a change your cannabis use? With one being not at all and 10 I am ready to start now.

1	2	3	4	5	6	7	8	9	10
Not at all ready				Somewhat ready					Extremely ready

The strategy of the readiness ruler may seem counterintuitive. If the patient says, "I am at a 5," rather than asking why not a higher number, you should respond with affirmation; for example, "Great, it sounds like you're 50 percent of the way there."

Planning Phase

▶ Plan phase the practitioner briefly summarizes risks and consequences (real and potential), describes readiness to make a change, and elicits a commitment to reduce risks and consequences through a number of actions.

▶ Clients will often back pedal in planning phase. Stay with the process and revisit pros and cons and readiness.

▶ Actions in the Plan phase typically are based on known successful risk reduction and recovery strategies, such as monitoring use, avoiding certain places and situations, taking holidays from using (i.e., an agreed-upon period of abstinence), reducing use to below harmful levels, adopting new coping and replacement activities, and increasing connections to non-using family/peers.

▶ Write down the plan and schedule a follow-up.

When further assessment and intervention is indicated

The vast majority of persons with CUD are usually treated as an outpatient unless there are other risk factors.

A Strong Referral to Appropriate Treatment Provider Is Key

When the individual you are working with is ready—

▶ Make a plan with the individual.

▶ You or your staff should actively participate in the referral process. The warmer the referral handoff, the better the outcome.

▶ Decide how you will interact/communicate with the provider.

▶ Confirm your follow-up plan with the patient.

▶ Decide on the ongoing follow-up support strategies you will use.

- Frequency of cannabis use is a critical factor in negative impacts of cannabis and cannabis use disorder.

- When conducting a brief intervention, the clinician must first build rapport and then seek to understand the patient's perceived benefits of use.

- The clinician can use potential concerns elicited in the screening process to help engage in nonjudgmental reflective conversations.

- Concerns most often endorsed by patients included money spent, using at work/school, memory issues, or driving risk. However, any patient concern is worth exploring and reflecting.

- Match action plans for reducing cannabis use to patient readiness for change and use known strategies that work.

- An integrated MET/CBT model has the best efficacy for CUD treatment.

Thank You~

The Cannabis Intervention Screener is available for use at no charge. However, C4BHI does seek to collect ongoing data on its clinical utility.

For more information about the *Cannabis Intervention Screener, cannabis intervention contact:*

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Win Turner - Email: wincturner@gmail.com

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