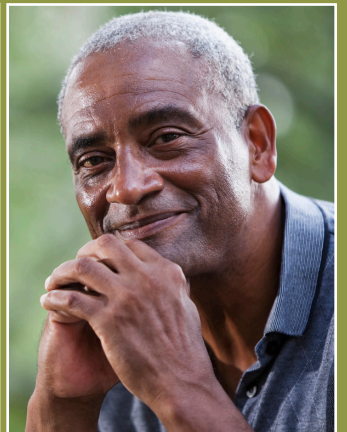
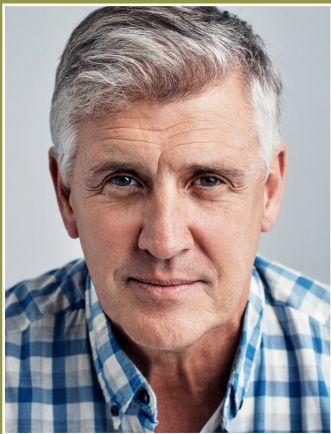


# A PRACTITIONER'S GUIDE FOR CANNABIS INTERVENTION



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### Authors

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## CHAPTER 1: OVERVIEW

Recent decades have seen a dramatic change in our cultural relationship with cannabis. A 2017 Gallup poll found that 64 percent of U.S. adults approve of marijuana legalization—the highest percentage since Gallup began asking the question in 1969 (McCarthy, 2017). Younger generations also demonstrate more acceptance. According to Monitoring the Future, an annual survey of 8th-, 10th-, and 12th-grade students, the percentage of students who do not approve of regular use and perceive “great risk” from using regularly has been steadily declining since 1990 (Johnston et al., 2017).

Clearly, attitudes toward marijuana use have shifted from those of decades past, and this new reality has spurred state-level efforts to change cannabis laws, including decriminalization, development of medical cannabis programs, and legalization of recreational consumption. As of April 2018, 9 states and the District of Columbia allow recreational use, and 29 states have either decriminalized and/or allow medical marijuana use (See Exhibit 2-4 in Chapter 2). At least 12 states are reportedly considering marijuana legalization this year, with more possibly doing so as legislative sessions continue, making 2018 a potentially pivotal year in the burgeoning cannabis movement (Newsweek, 2018).

Marijuana is now easier to obtain and cheaper to buy than at any time since it was recriminalized in the 1970s. It is also stronger in potency, which is measured by the amount of delta-9-tetrahydrocannabinol (THC) present in the dried plant; THC is the primary psychoactive ingredient found in cannabis. Remarkably, cannabis potency has increased by 300 percent in the past 20 years (EISOhly et al., 2016). Today the cannabis strains available across the U.S. contain on average 13 percent THC, while recreational cannabis in Colorado contains on average 17 percent THC (Orens et al., 2015).

Clinical research has not kept pace with the changes in cannabis potency and availability. In fact, most cannabis studies supported by the National Institute on Drug Abuse (NIDA) are based on lower potency cannabis with 3 percent THC potency; the highest potency found in NIDA studies to date is 8 percent (Hudak and Wallack, 2015). Despite this limitation in NIDA sponsored research, the scientific understanding concerning cannabis is rapidly evolving in and outside the US, as indicated by the number of PubMed research citations published in 2017, which totaled 2,286 (based on a PubMed keyword search for “marijuana”).



## A Practitioner's Guide for Cannabis Intervention

Prevalence of use in the U.S. has increased over time. In 2016, it was estimated that 128 million Americans had tried cannabis, of which 24 million were current (i.e., past month) users, making cannabis the most commonly used illicit drug among those age 12 and older (Substance Abuse and Mental Services Administration [SAMHSA], 2017). Additionally, one in six cannabis users met criteria for a diagnosis of cannabis use disorder (CUD), representing 4 million people (SAMHSA, 2017). This represents a shift upward from the 20 million estimated regular current users and an estimated 3.4 million individuals with CUD reported just 10 years earlier (NSDUH, 2007). Most people who meet criteria for a substance use disorder (SUD) diagnosis do not seek treatment (SAMHSA/Surgeon General Report, 2016). The many reasons cited include not being ready to stop, embarrassment regarding use, financial costs associated with treatment, and stigma and negative attitude toward treatment. Clinicians and the general public alike often assume that substance abuse treatment is designed for those who are already committed to change and is not appropriate for the many who are ambivalent about quitting substance use or may wish only to cut down (Hill, 2015; Roffman and Stephens, 2006). Additionally, many people who met diagnostic criteria for a CUD do not believe that they need treatment (Hill, 2015; Greydanus et al., 2015).

These data underline the importance of reexamining the current approach and developing a new, more effective means of discussing cannabis use with patients. Many health care providers are already familiar with SBIRT, that is, Screening, Brief Intervention, and Referral to Treatment. SBIRT was originally developed as a tool to identify and intervene with risky alcohol use, alcohol use disorder, and SUDs generally within the medical primary care setting. With support from SAMHSA, the Vermont SBIRT Team at the Center for Behavioral Health Integration in 2014–2017 developed, tested, and adopted a clinical tool addressing cannabis use that can be integrated into existing SBIRT protocols. Called the Cannabis Intervention Screen (CIS), this tool allows clinicians to screen and better engage patients regarding their cannabis use and helps practitioners motivate patients with problematic use to make change.

This Practitioner's Guide for Cannabis Intervention was developed to make this tool more broadly available. The intended audience is clinicians—behavioral health specialists, alcohol/drug counselors, and providers of health care, including physicians, nurses, and physician's assistants—who seek to gain a more nuanced understanding of the current state of the science related to cannabis and to obtain effective methods of screening and intervention with patients and clients. The guide should be particularly useful for practitioners who will conduct the cannabis-related screening and/or intervention.

### CONTENTS OF THE GUIDE INCLUDE:

- A brief background on the current science and changing culture of cannabis use in the U.S.
- A description of the reasons behind development of the CIS and a brief history of its development.
- Information on how the CIS tool and a brief intervention approach can be used in practice with patients in a variety of medical settings.
- Clinical vignettes demonstrating use of Motivational Interviewing with patients based on screen results.

## CHAPTER 2: WHAT IS CANNABIS?

### Definition

Cannabis is a genus in the family Cannabaceae. It is a sun-loving, flowering plant with fan leaves. Some common names for the plant include herb, ganja, Mary Jane, weed, and bud. Cannabis is referred to by many generally accepted and more local or specific names; however, in this Guide two terms are used: cannabis and marijuana.

Cannabis is most commonly grown to produce hemp fiber, for use as medicine, and for use as a psychotropic drug. Hemp is a material used in clothing, construction materials, paper, and biofuels, while the seed can also be used in the manufacture of bread, protein powder, cosmetics, paint, and animal foods, among other items. As a medicine, it is used to treat nausea in chemotherapy patients, to treat spasticity from multiple sclerosis, and to control chronic pain (National Academy of Sciences, Sciences, Engineering, and Medicine, 2017). Recreationally, it is smoked (such as in joints or blunts or with bongos or hookahs), inhaled (via vaping or dabbing), consumed orally (such as in oils, tinctures, beverages, or foods), or applied topically (with oils).

### History

Records indicate that cannabis has been deeply embedded within human culture since prehistoric times. The word “ganja” for cannabis comes from the Hindu god Gangā, for whom the Ganges River is named. Cannabis is among the oldest domesticated plants in the world, perhaps dating to 12,000 BCE (Warf, 2014). It is thought to have originated in the steppes of Central Asia (modern-day China and Mongolia) before being exported along the Silk Road with Aryan tribes. Scythians adopted it and spread it to South Asia, the Middle East, and Eastern Europe (Warf, 2014).

Traditionally, marijuana seeds, leaves, and flowers were burned for psychoactive effects. Burned seeds have been

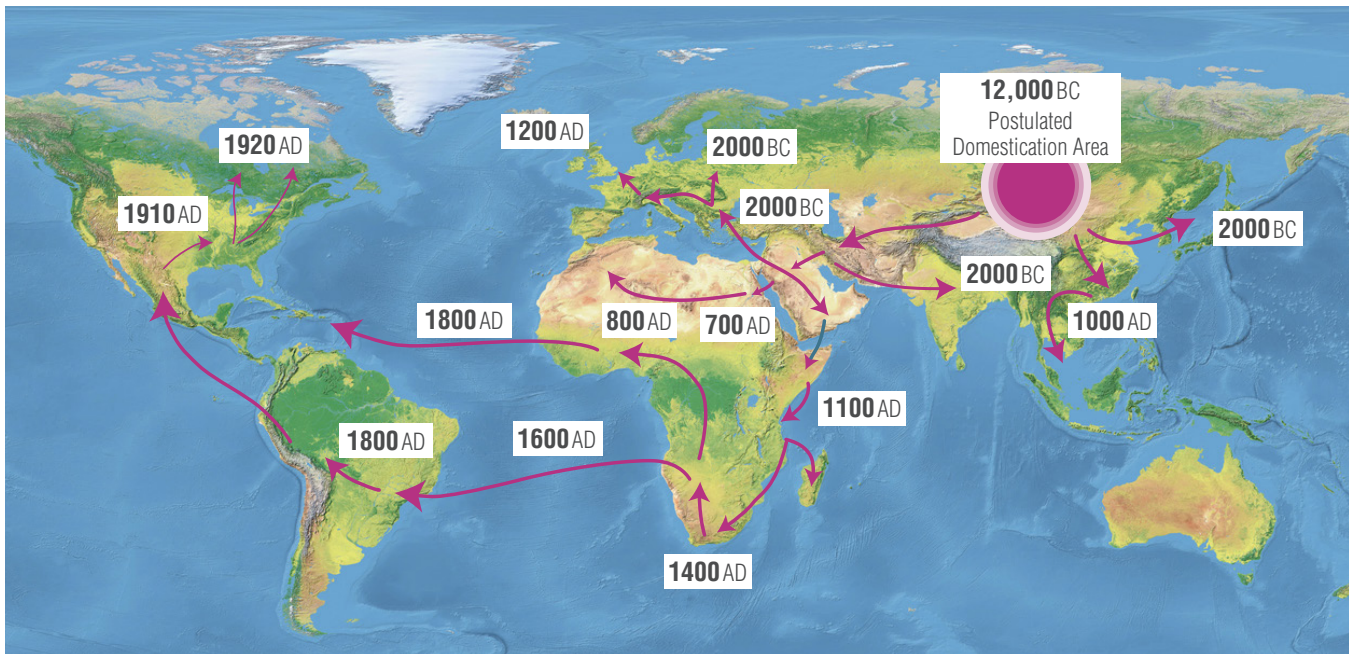


found in Siberian burial mounds dating from as early as 3,000 BCE, and marijuana was found in great quantities within tombs in Xinjiang dating back to 2,500 BCE (Warf, 2014). The world's oldest pharmacopoeia, dating from the first century CE, describes the use of marijuana for rheumatic pain, constipation, and reproductive disorders, and warns that if taken in excess it “will produce hallucinations. If taken over the long term, it makes one communicate with spirits and lightens one's body” (Zuardi, 2006). The spread of marijuana is illustrated in Exhibit 2-1.

Historical accounts (e.g., the *Atharvaveda* and *Bhagavad-Gita*) highlight marijuana's importance in India. Muslim texts describe the medical use of marijuana, including a mention in a text dating from 1464 by Ibn al-Badri, who reported that an epileptic child was treated and stated, “it cured him completely, but he became an addict who could not for a moment be without the drug” (Zuardi, 2006). This citation is the first known mention of addiction in relation to cannabis.

Given these historical accounts, researchers hypothesize that this unique plant, like many long-domesticated animals, may have co-evolved with humans; that is, human cultivation changed the plant, while the evolving strains drove changes in human behavior and habitation (Aggarwal, 2013; Polan, 2003).

**Exhibit 2-1.** Historical Diffusion of Cannabis Sativa



Source: Warf, 2014. Adapted with permission.

**Recent U.S. History**

It was not until the 1860s that cannabis entered Western medical literature. In the U.S. it became valued and readily available for a variety of medical ailments. However, in 1937, due to economic pressures of the time—the wood pulp paper industry experienced economic pressures from lower cost hemp growing—the Marihuana Tax Act was passed. This effectively prohibited at the federal level all use of cannabis (Zuardi, 2006). At that time, cannabis strains varied in quality and content, hindering any real scientific study.

The American Medical Association (AMA) opposed the passage of this first national regulation of marijuana, writing, “How far it may serve to deprive the public of the benefits of a drug that on further research may prove to be of substantial value, it is impossible to foresee” (American Medical Association, 1937). In 1970, the 1937 Marihuana Tax Act was abolished, briefly legalizing marijuana until passage of the Controlled Substances Act in 1973, which prohibited on a federal level use of cannabis and several other psychoactive drugs.

In that same decade, however, several states decriminalized marijuana, and the push began to legalize it for medical use. Beginning in 1996, an increasing number of states have relaxed their marijuana laws.

On a federal level, the pendulum swung back in marijuana’s favor in 2014, when the U.S. Congress passed a bill prohibiting the Drug Enforcement Administration (DEA) from using funds to arrest medical cannabis patients in states with medical cannabis laws as an amendment to the 2014 congressional budget (Rohrabacher–Farr amendment, 2014). Currently, both advocacy organizations and legislators are proposing to move marijuana and its extract THC from the DEA’s list of Schedule 1 drugs (drugs with a high potential for abuse) to a less restrictive list, thus enabling expanded research into marijuana and its hazards and potential benefits. Exhibit 2-2 summarizes the history of cannabis laws, while Exhibit 2-3 presents a summary of evolving public perceptions. A map of cannabis laws by state is presented in Exhibit 2-4.



**Exhibit 2-2.** Summary of Federal and State Laws

**1906–1938:** “Poison laws” place some regulations on sale of cannabis, narcotics, and patent medicines.

**1937:** Marijuana Tax Act effectively criminalizes marijuana.

**1952, 1956:** Federal laws mandate sentences for first-time cannabis possession.

**1970s:** Federal mandatory sentencing laws are overturned, and Marihuana Tax Act is repealed; marijuana is then recriminalized under new statutes, including the federal Controlled Substances Act.

**1973–1978:** Cannabis is decriminalized in 10 states: Oregon, Alaska, Maine, California, Colorado, Mississippi, New York, Nebraska, North Carolina, and Ohio.

**1978:** Medical cannabis is legalized in New Mexico.

**1996–2015:** Medical cannabis is legalized in California, Oregon, Maine, Nevada, Montana, New Mexico, Vermont, Michigan, New Jersey, Arizona, Massachusetts, Georgia, Texas.

**1996:** California opens its first state-licensed marijuana dispensary.

**2012:** Recreational marijuana for adults 21 years of age and older is legalized in Washington and Colorado.

**2014–2015:** Alaska, Oregon, and Washington, D.C. legalize recreational cannabis.

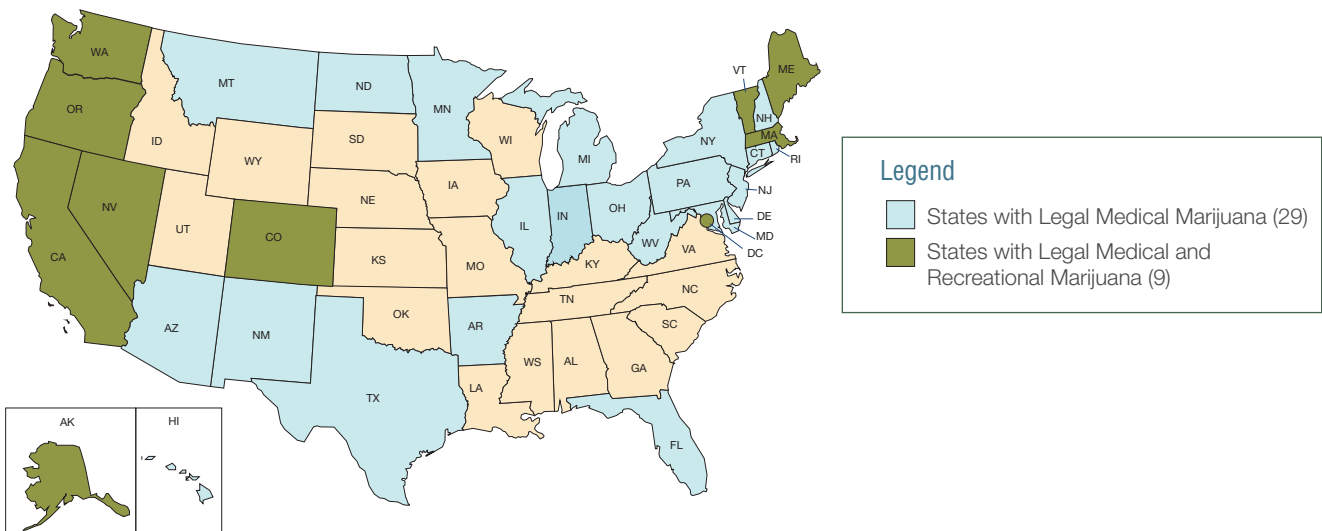
**2017:** Legislation is passed approving recreational marijuana use in California, Maine, Massachusetts, and Nevada.

**2018:** Several other states are expected to legalize recreational marijuana this year.

**Exhibit 2-3.** Summary of Public Perceptions of Marijuana

- From 5000 BCE to the 1930s, humans viewed cannabis as a medicinal, spiritual, and recreational substance.
- From the 1930s until the mid-1990s, most Americans viewed marijuana use as harmful and believed its use should be illegal.
- In 1973, marijuana became a Schedule I drug as part of the Controlled Substances Act.
- From 2000 to 2015, most Americans perceived marijuana as not that harmful compared to other illegal drugs.
- In 2017, 64 percent of U.S. adults favored marijuana legalization.

**Exhibit 2-4.** Cannabis Laws in the United States



Source: ProCon.org. Current as of 11/30/2017

Today, 64% of U.S. adults say the use of **marijuana** should be made legal.

Gallup 2017

Just as perceptions of cannabis have evolved, the production of cannabis has evolved over time. Before the 1980s, most of the cannabis consumed in the U.S. was grown outdoors on Mexican farms; such farming is still predominant. More recent indoor production in the U.S. and Netherlands has led to significant advances in breeding practices, such as using unfertilized female plants and clones (Pollan, 2002). The growing industry also has expanded phenomenally. In February 2016, the New York Times reported: “Two marijuana analysis and investment firms released a summary report that appeared to confirm that the industry has become a gold rush. National legal sales of cannabis grew to \$5.4 billion in 2015, up from \$4.6 billion in 2014, according to the firms, the ArcView Group, based in San Francisco, and New Frontier, based in Washington” (Hauser, 2016).

### Summary

- Cannabis originated in the steppes of Central Asia in approximately 12,000 BCE.
- For most of human history, cannabis has been viewed as a medicinal, spiritual, and recreational substance.
- Early on, cultures recognized both the benefits of cannabis use and the risks of overuse.
- Cannabis co-evolved with human society, and cannabis use has been affected by changes in attitude and policy.
- Cannabis was recognized and used by Western medicine from the 1860s until the 1930s, when public perception changed and it was deemed harmful.
- In the U.S., laws on cannabis and public attitudes toward its use have evolved; the current trend is toward legalization for medical and recreational purposes.

## CHAPTER 3: THE CHEMISTRY OF CANNABIS

### Phytocannabinoids in Cannabis

Two families of chemicals play an important role in the psychoactive effects of cannabis: cannabinoids and terpenes. Cannabinoids, as the name suggests, were first discovered in the cannabis plant. Nonpsychoactive cannabinoids are also found in several other plant materials such as black pepper, chocolate (cocoa), and echinacea.

Three different categories of cannabinoids have been classified:

- Endocannabinoids
- Phytocannabinoids
- Synthetic cannabinoids

Endocannabinoids are produced in the human body and act as neurotransmitters in the brain. Phytocannabinoids are produced by plants, including cannabis, and often affect the same receptors as endocannabinoids. Synthetic cannabinoids are manufactured in the laboratory with the intention of mimicking the effect of endocannabinoids or phytocannabinoids. The emergence and usage of synthetic cannabinoids over the last decade is beyond the scope of this Guide.

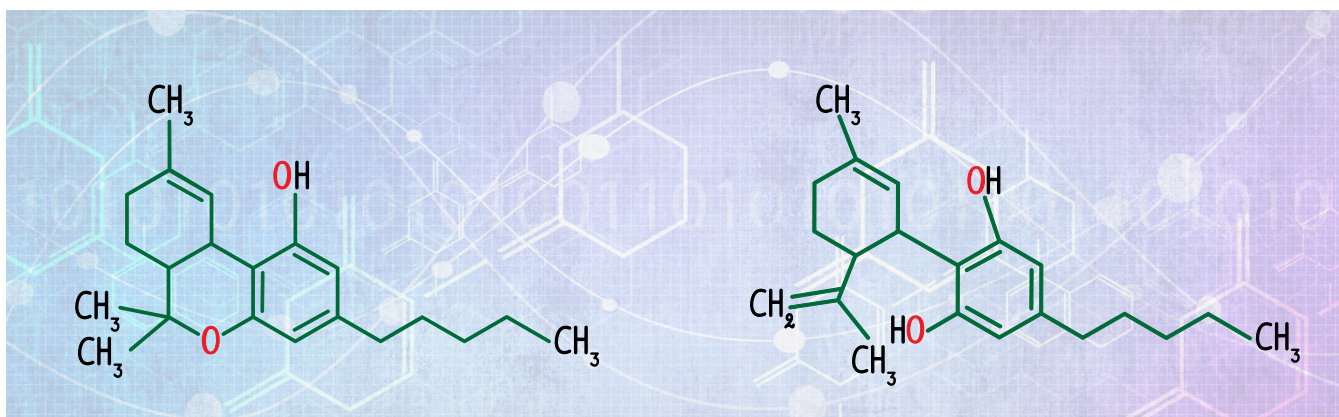
The two most studied and prevalent phytocannabinoids are delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD) (See Exhibit 3-1). THC is the primary psychoactive

cannabinoid in cannabis and is responsible for much of the “high” associated with cannabis. Conversely, CBD is nonpsychoactive and mostly known for its medicinal properties, including anti-inflammatory, antipsychotic, and other potentially therapeutic effects (Campos et al., 2015; Chakravarti et al., 2014; Crippa et al., 2011; Volkow, 2015; Zuardi et al., 2012).

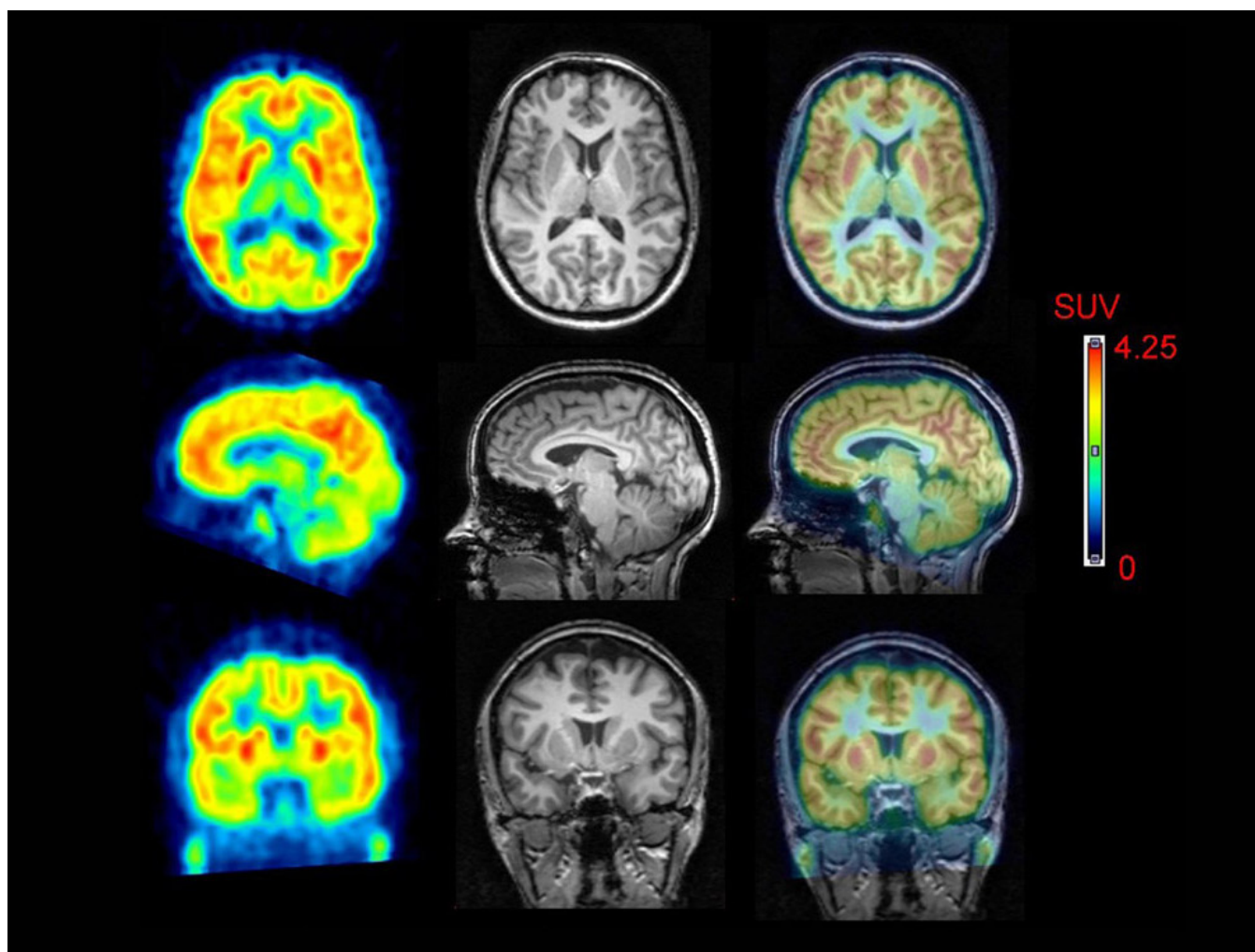
Dozens of different phytocannabinoids have been found to occur in cannabis. Many of these are nonpsychoactive, but still contribute to the overall effect of cannabis (e.g., they are anti-inflammatory or neuroprotective [Izzo et al., 2009]). Many of these chemicals are formed on tiny glandular hairs (i.e., trichomes) that are visible on the flower and young leaves of the cannabis plant. Nearly all available research on the effects of cannabis comes from studies of the phytocannabinoids present in the plant.

Terpenes complicate our understanding of how the cannabis high is created. Terpenes are a group of common phytochemicals (plant-based chemicals) that differ across strains and produce many of the scents we associate with plants and give each cannabis strain its unique flavor and scent. The subjective and medicinal effects of cannabis are likely a product of a complex interaction between the cannabinoids and terpenes known as the “entourage effect” (Russo and Marcu, 2017).

**Exhibit 3-1.** Molecules of THC and CBD



**Exhibit 3-2.** Concentrations of CB1 Receptors (Adapted from Terry et al., 2009)



In the wild, terpenes often serve to protect the plant from parasites and predators. Recent work suggests that terpenes also contribute to the psychoactive effect of cannabis (Russo, 2011). For example, myrcene, a terpene found in cannabis (and in mangoes), is thought to allow THC and other compounds to cross into the brain more quickly, thereby elevating their effect (Russo, 2011). Myrcene may also be responsible for the sedative “couch-lock” effect (immobilization from the high) commonly associated with *Cannabis indica* strains (Russo and Marcu, 2017).

Today there is a bifurcation in cannabis breeding. Some strains have a high THC/low CBD ratio, to give users a strong recreational high. Others have a low THC/high

CBD ratio, directed at capturing more of the medicinal quality of cannabis. As strains reach the upper limits of THC content, breeders are beginning to test some of the different terpene and cannabinoid combinations.

THC along with cannabis has a biphasic effect, meaning that while it may have one effect at low doses, it can have the opposite effect at higher doses. THC at a low dosage encourages sleep and reduces pain, while a high dosage can induce anxiety, disturb sleep, and increase pain perception. Conversely, CBD has little psychoactive effect and actually opposes or reduces the intoxicating effect of THC (Martin-Santos et al., 2012; Pertwee, 2008).

### Effects on the Brain

The endocannabinoid system of the brain acts by controlling the release of other neurotransmitters, thus influencing the emotional and behavioral effects of these neurotransmitters. This modulatory function may explain some of the wide-ranging effects of cannabis.

THC and other cannabinoids act through naturally occurring cannabinoid receptors, CB1 and CB2. The main psychoactive effects of cannabis can be explained by the activation of CB1 receptors, which are found primarily in the brain (see Exhibit 3-2) and spinal cord (Mechoulam and Parker, 2013). The brainstem, which is responsible for basic life-supporting homeostatic functions such as breathing, heart rate, and wakefulness, has remarkably few CB1 receptors. The notable paucity of CB1 receptors in the brainstem helps explain marijuana's lack of overdose potential as compared to other abused substances such as opioids or alcohol, whose receptors in the brainstem affect breathing and consciousness.

CB2 receptors are mostly found in the peripheral organs, immune cells, and glial cells (Pertwee, 2008). Glial cells are the most common cell variety in the brain, outnumbering neurons by 10 to 1, and they are an important part of the immune and neuroprotective machinery of the brain.

The cannabinoids most common in marijuana are fat-soluble compounds that pass through membranes and can be stored in fat. These cannabinoids are slowly released from fat stores, so in heavy and long-term users it can take up to a month for THC levels in the blood to fall (Bonnet et al., 2014).

### Summary

- Cannabinoids and terpenes are the psychoactive chemicals in cannabis that work synergistically to create a complex “entourage effect.”
- THC is the primary psychoactive cannabinoid in cannabis, while CBD may be responsible for much of the therapeutic benefit of cannabis.
- Levels of THC in cannabis have been increasing, often with associated decreases in CBD levels.
- CB1 and CB2 are the body's cannabinoid receptors.
- CB1 acts to modulate other neurotransmitters, with wide-ranging effects.
- CB2 receptors are located throughout the immune and nervous system and related organs.
- The paucity of CB1 receptors in the brainstem, which controls breathing and consciousness, explains why cannabis is not linked to life-threatening overdose.

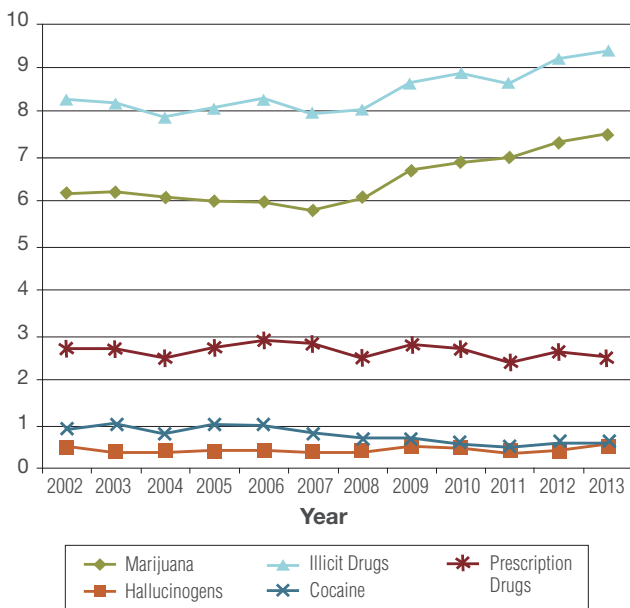
# CHAPTER 4: CANNABIS USE

## Use in the U.S.

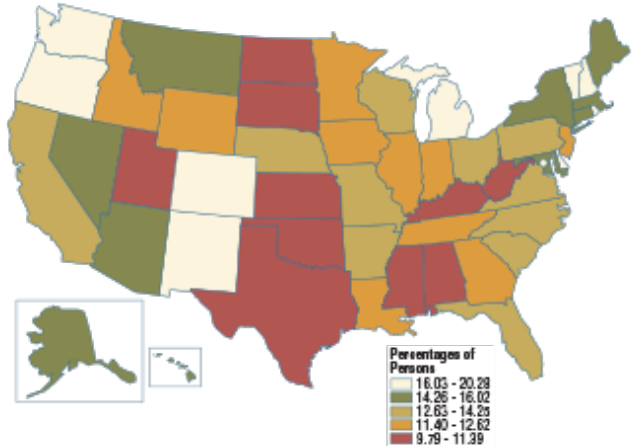
Marijuana is the most commonly used illicit drug in the U.S. with approximately 24 million Americans over 12 years old reporting having used marijuana in the past month in 2016 (representing 8.9 percent of all Americans over 12 years old; Substance Abuse and Mental Health Services Administration [SAMHSA], 2017) (see Exhibit 4-1). More than half of all Americans say they have tried marijuana (Marist Institute for Public Opinion, 2017).

Interestingly, while use of most other drugs among Americans has stabilized or decreased in recent decades (with the exception of opioids), the increase in marijuana use accounts for the rise in the overall use of illicit drugs in the U.S. (National Survey on Drug Use and Health, 2016; see Exhibit 4-2). The percentage of Americans who reported using marijuana in the past year more than doubled between 2001–2002 and 2012–2013, and the increase in the number of individuals meeting criteria for cannabis use disorder (CUD) during that time increased as well (Hasin et al., 2015).

**EXHIBIT 4-1.** Past-Month Use of Selected Illicit Drugs (NSDUH 2016)

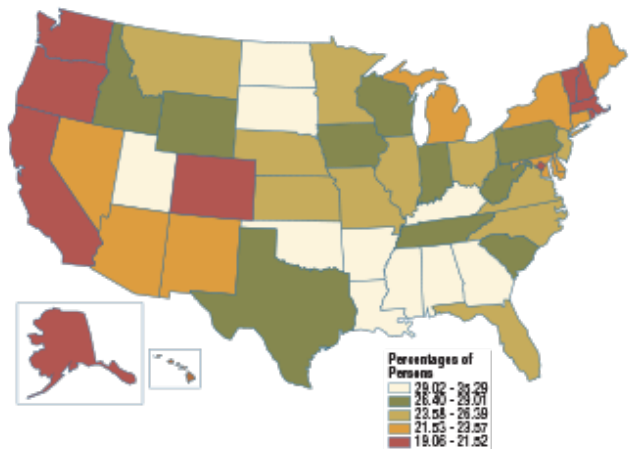


**EXHIBIT 4-2.** Marijuana Use in the Past Year Among Youth Aged 12 to 17, by State: Percentages, Annual Averages Based on NSDUH (2017)



One notable exception to this is cannabis use among youth 12–17, which has declined (SAMHSA, 2017). Fewer youth reported using marijuana in 2016 (with the actual percentage varying by state); at the same time, a fewer perceived that smoking marijuana poses great risk (SAMHSA, 2017) (see Exhibit 4-3).

**EXHIBIT 4-3.** Perceptions of Great Risk of Smoking Marijuana Once a Month Among Youth Aged 12 to 17, by State: Percentages, Annual Averages Based on NSDUH (2017)



Source: SAMHSA, Center for Behavioral Health Statistics and Quality, NSDUH, 2012 and 2013.

## Cannabinoid Extraction Methods

Traditionally and most simply, people have extracted cannabinoids from cannabis by smoking the leaves and flowers of the cannabis plant or collecting the sticky glands together to form hashish (i.e., hash), which is formed into dense blocks of material and can be smoked or ingested in other ways. In a large sample of Americans, of those who use cannabis, “92.1% of the sample reported combusted-only marijuana use” (i.e., smoking) (Schauer et al., 2016).

Other than smoking, cannabis use involves extracting the cannabinoids from the plant to form concentrates of THC or CBD. Infusion into oils (lower-potency extraction) is the oldest method; the oil produced can be applied topically or consumed.



As marijuana gains in popularity, new extraction technologies are emerging. These use a combination of heat and pressure to create a contaminant-free, lower-cost, high-potency concentrate that is topically or orally consumed. Resin extraction devices are now available for sale for as little as a few hundred dollars. One method of developing high-potency concentrates involving flammable butane has led to a rise in injury, and uncertain butane production methods have led to concerns about contamination (Kaste, 2014; Raber et al., 2015).

Public health officials also have concerns that youth will have easier access to these high-potency extracts that are more intoxicating and may have unknown adverse effects on the developing brain.

## Methods of Use

THC and CBD potency varies with the strain of marijuana and the method of use. The most common methods of marijuana use are smoking, vaping, consuming edibles, applying salves, or dabbing.

### Smoking

Smoking remains the most common means of cannabis consumption. There are various ways to smoke marijuana, such as with a joint, a blunt, a bong, or a pipe). A joint is a marijuana cigarette in a paper wrapper (a rolling paper). A blunt is a marijuana cigar, which contains a greater amount of marijuana than a joint that uses a tobacco wrapper to deliver nicotine as well as the cannabinoids. A bong is a water pipe consisting of a neck (i.e., a vertical tube) connected to a chamber that is filled with water or another liquid such as wine, by means of which the smoke is cooled and ash filtered out. Marijuana can also be packed into the bowl of a pipe and smoked.

### Vaping

Vaping is a means of inhaling high-potency cannabis resin through a vaporizer that, when properly set, allows inhalation of cannabinoids with minimal burning (i.e., combustion) of plant material. During vaping, the materials reach the boiling temperature of cannabinoids, turning them into vapor while remaining below the combustion temperature of carbon.

Vaporizers and vape-pens appear to be increasingly preferred by many users because they reduce the particulate load on the lungs, are more discreet, and can be used with both cannabis plant and extract (Lee et al., 2016). Although exact numbers are unknown, a large-sample survey of adult cannabis users conducted

through social media (i.e., Facebook) found that a majority (61 percent) of respondents had tried vaping, and 12 percent reported that it was their preferred method of use (Lee et al., 2016). Anecdotally (personal communications with the author), retail outlets report increasing sales of vaporizers. Vaporizers can be used with either plant matter or extract in mineral oil, similar to e-cigarettes. Little is known about the possible harm-reduction potential and other health effects of vaporizer use (i.e., by reducing number of particulates and possible carcinogens; Budney et al., 2015).

### Consuming Edibles

Cannabis edibles include oils for consuming straight (such as by the dropper or teaspoon) or baking or including in edible goods, such as brownies, cookies, candies, butter, beverages, mints, and chocolates. Edibles are a large and growing market in states with legalized cannabis (Montgomery, 2017). In 2016 in Colorado, 7,250,936 units of edibles were sold in retail stores and 2,117,838 units of edibles were sold through medical dispensaries (Colorado Marijuana Enforcement Division Annual Report, 2016). For medical patients, edibles allow for a better controlled, longer lasting, and steadier form of dosing that does not rely on inhalation. As the medicinal cannabis industry adopts more rigorous quality control practices, the amount of THC and/or CBD in edibles is more precisely controlled.

Public officials have voiced concern that edibles produced to appear like candy or snacks increase the



risks of accidental ingestion by children. In 2009, the Children's Hospital of Denver reported two children under age 12 with cannabis poisoning, while in 2014, this number grew to 16 children. (Wang et al, 2016). Although not life threatening, these poisonings can be frightening experiences, based on the biphasic effect, whereby low doses tend to have an anxiolytic effect, reducing anxiety, and higher doses have an anxiogenic effect, increasing anxiety (Crippa et al., 2009).

### Applying Salves

A salve is a thick and often very greasy medical ointment applied topically. It is typically made with lanolin or coconut butter. Salves are commonly used by persons with specific physical pain, such as a loss of limb, or to heal a skin injury such as a bruise. The salve is applied, and the cannabinoids are absorbed transdermally with anecdotal reports of little to no psychoactive effect. Salves often contain high percentages of CBD and lower percentages of THC (Russo, 2008).

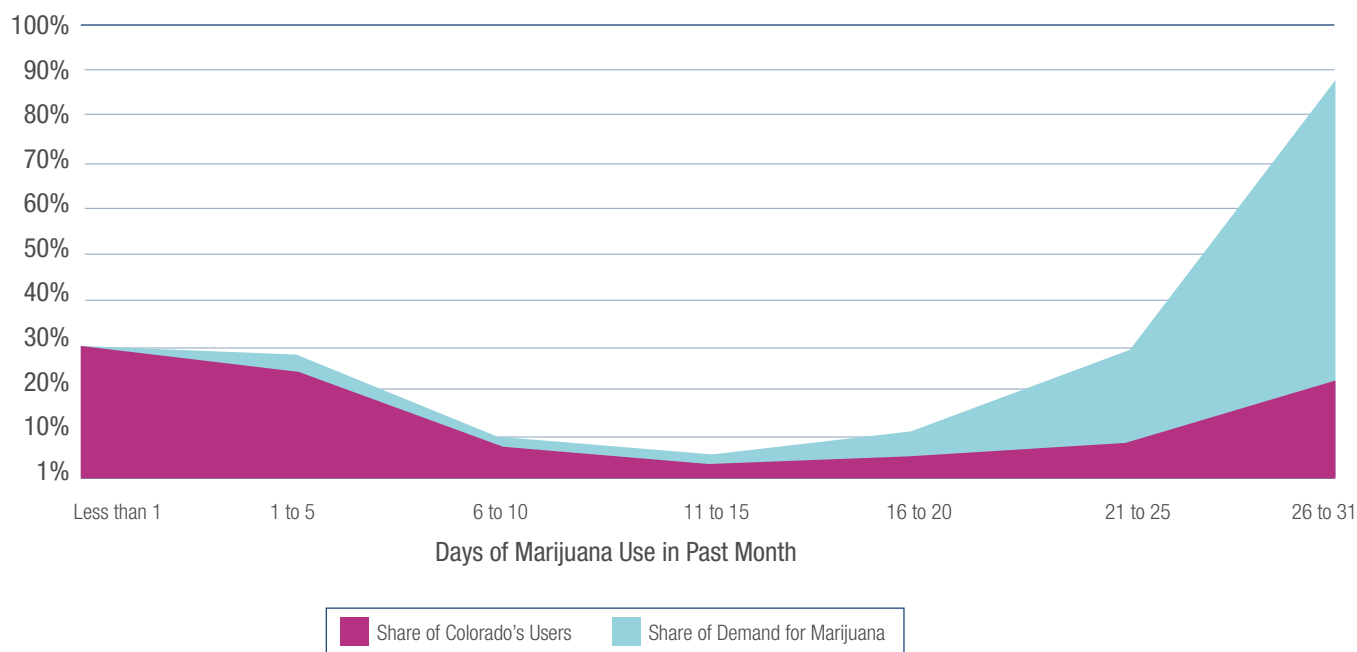
### Dabbing

Dabbing refers to the process of placing small amounts of concentrated cannabis extract (i.e., a dab) on a super-heated nail and inhaling the fumes through a water pipe (i.e., a bong). Made of titanium, glass, or quartz, the nail is commonly heated with a butane torch until it quickly vaporizes the extract. Although both dabbing and vaping result in cannabinoid vapor being inhaled, dabbing results in a single high dose of THC, which floods the available cannabinoid receptors all at once, while use of a vaporizer is more similar to smoking a joint, which produces repeated, less intense waves of THC being carried to the brain.

Based on user descriptions, the result of dabbing is an immediate, intense, and long-lasting high that floods the cannabinoid receptors (Loflin and Earlywine, 2014). The extracts used in dabbing are among the most potent form of cannabis—up to 80 percent THC, although with a wide variability (Raber et al., 2015). The popularity of dabbing remains unknown, but this method of



**EXHIBIT 4-4.** Colorado's 21 and Older Marijuana Users and Their Consumption



(Adapted from Light et al., 2014 using data from the Marijuana Policy Group)

use is widely discussed and promoted on social media (Cavazos-Rehg et al., 2016; Krauss et al., 2015).

Due partly to the novelty of dabbing, little is known about its effects. Users have reported that dabbing leads to higher tolerance and withdrawal symptoms, suggesting that the practice may produce greater dependence (Loflin and Earlywine, 2014).

### Current Usage

Researchers have defined the average joint as 0.5 grams—an ounce is roughly 28 grams—and they define marijuana users as either “light” (smoking 0.5 grams or one joint per day, 1 to 5 times per month) or “heavy” (smoking 0.5 to 1.5 grams per day or smoking 2 to 3 times daily) (Marijuana Policy Group, 2015). Heavy users who consume daily account for almost 60 percent of cannabis consumption, while the one-third of past-month users who consume fewer than four times per month account for just 2 percent of the overall consumption (Hill, 2015; Orens et al., 2015). This may help explain why growers and retailers have focused on high-THC strains preferred by heavy users.

The distribution for frequency of use is best described as bimodal or having two peaks. Approximately 60 percent of users account for less than 10 percent of demand, and 20 percent of users account for more than 60 percent of demand. Exhibit 4-4 demonstrates that in Colorado, 20 percent of the users who are 21 and older smoke daily and make up a disproportionate 67 percent of the total marijuana demand, as compared to 25 percent of users who smoke 1–5 days per month, comprising 3.3 percent of the demand.

### Effect of Laws on Usage

It is too early to determine if loosening legal restrictions on marijuana will result in more adolescent users or more users in all age groups. There is a growing consensus that medical marijuana laws do not significantly increase rates of cannabis use. However, these data cannot be used to understand what happens when recreational cannabis becomes legal (Choo et al., 2014; Harper et al., 2012; Hasin et al., 2015). To date, there are insufficient data to draw conclusions on

the effect on marijuana use of changing laws regarding recreational marijuana.

Much attention has been paid to Colorado, where legalization and regulation of recreational cannabis began January 1, 2012. Early data from Colorado have been mixed. According to data from the National Survey on Drug Use and Health (NSDUH), in the first 2 years after legalization, the prevalence of marijuana use in Colorado increased for adults, but did not change significantly for youth (Center for Behavioral Health Statistics and Quality, 2015).

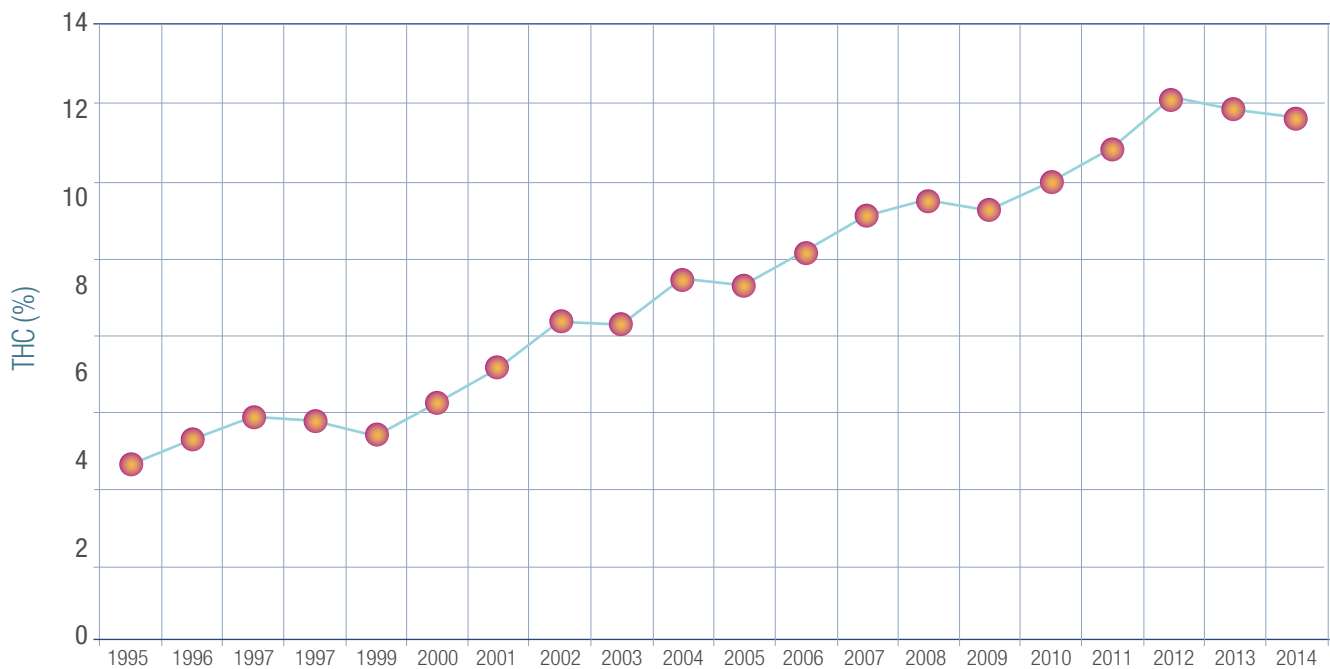
The State of Colorado Healthy Kids Colorado Survey queries 17,000 middle and high school students every other year (as compared to the NSDUH, which surveys approximately 400 Colorado students each year). The Colorado survey indicates that youth cannabis use has declined since 2009 and has remained unchanged since 2013 (Colorado Department of Public Health and Environment, 2015). Indeed, based on these data, Colorado's rate of youth cannabis use is comparable to or slightly below the national average.

## Potency of Cannabis Used Today

While there is wide variability across studies, cannabis appears to be gaining in potency (Cascini, et al., 2012), and today there is ever greater availability of higher-potency cannabis in the U.S., as determined by the percentage of THC (Mehmedic et al., 2010). The average THC potency of cannabis seized by the Drug Enforcement Agency has been increasing over the last 30 years; in 1995, confiscated street marijuana averaged 4 percent THC, versus 12 percent in 2012 (EISOHLY et al., 2016; see Exhibit 4-5). Researchers hypothesize that the increase in potency is due to many factors, including breeding, growing, curing, technical expertise, and domestic production leading to fresher and more diverse products (Cascini et al., 2012; Mehmedic et al., 2010; Seigny, 2013).

Evidence suggests that in the U.S. there has been a sharp rise in the availability of the most potent part of the cannabis plant: the buds, or unfertilized flower. This part is more potent than the leaves, branches, or fertil-

**EXHIBIT 4-5.** Average THC percentage of cannabis confiscated by the DEA 1995-2014



Source: [https://www.dea.gov/pr/microgram-journals/2015/mj12-1\\_1-17.pdf](https://www.dea.gov/pr/microgram-journals/2015/mj12-1_1-17.pdf)

ized flowers that were common in years past. In 2000, only 3.2 percent of seized cannabis was sinsemilla (i.e., the potent unfertilized cannabis flower); however, by 2010 it represented 60 percent of seized cannabis (Mehmedic et al., 2010). THC content of cannabis varies enormously from perhaps 4 percent to 8 percent for some commercial-grade imports to upwards of 20 percent (Cascini et al., 2012). In Colorado, the mean THC content is now 17 percent (Orens et al., 2015).

A RAND study of 30 million cannabis sales in Washington State documented an increase in the sales of extracts (Smart et al., 2017), which have even greater potencies than the unfertilized flowers. According to the study, traditional cannabis flowers still account for the majority of spending (66.6 percent), but the market share of extracts for inhalation and consumption increased by 145.8 percent between October 2014 and September 2016, now accounting for 21.2 percent of sales. The average THC level for cannabis extracts is more than triple that for cannabis flowers: 68.7 percent compared to 20.6 percent (Smart et al., 2017).

As previously noted, very little research is based on marijuana with a THC content higher than 8 percent. This means that our current understanding of the effects of cannabis does not reflect the changing nature of what is available. It is also not known how higher concentrations of THC affect prevalence of use and risk for CUD.

### Summary

- Cannabis is the most commonly used illicit substance in the U.S.
- The percentage of Americans who reported using marijuana in the past year more than doubled between 2001–2002 and 2012–2013.
- It is unclear how the relaxation of medical and recreational marijuana laws is affecting usage.
- Cannabis appears to be gaining in potency, but it is not known how higher concentrations of THC affect prevalence of use and risk for CUD.
- Most people (approximately 90 percent) consume cannabis by smoking; however, increasing numbers of people are also using alternative methods (vaping, consuming edibles, applying salves, or dabbing).
- Little is known about benefits and risks of consuming marijuana via alternative methods compared with smoking.

## CHAPTER 5: EFFECTS OF CANNABIS USE

### Desired Effects of Cannabis

A practitioner's understanding of a patient's particular motivation can help form a foundation for a more successful motivational intervention. Decades of research have shown consistent patterns of motivation for using cannabis. On self-report surveys, the most common motivations listed by cannabis users are relaxation, euphoria or access to an altered state, reflection/contemplation, and as a social activity (Green et al., 2003; Osborne & Fogel, 2008).

Common sought-after effects reported by recreational cannabis users include using cannabis to (from Green et al., 2003):

- Stimulate appetite
- Increase concentration
- Spur creativity
- Help in relaxation
- Serve as a socializing activity
- Obtain an enjoyable experience in and of itself
- Enhance sexual pleasure

Physiological and psychological effects more commonly sought by medical marijuana users include using cannabis to:

- Mitigate pain
- Improve sleep
- Reduce side effects of certain medications
- Decrease anxiety
- Decrease muscle spasms

Many of the cannabis effects are determined by the dose, methods of consumption, specific strains of marijuana or marijuana products, setting, cultural learning, and biological and psychological differences (Camí et al., 1991; Hill, 2015; Osborne & Fogel, 2008).

### WHY I USE: Quotes From Reddit

*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... the demons in my head. My childhood and teens were full of abuse and pain.*

*Weed works best for my medical issues.*

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

*I love weed! 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.*

### Medicinal Effects

Research on the medical utility of cannabis is in its infancy. Federal policies have made U.S. research in this area expensive, time consuming, and challenging, making it difficult to provide an analysis of the risks and benefits of medicinal cannabis use. Researchers seeking to conduct studies on cannabis or cannabinoids must navigate multiple review processes, including the

### COMMENTS FROM MEDICINAL CANNABIS USERS

*I'm in my 50s and work in the medical field and am not a recreational pot smoker (or anything else for that matter.) The chemotherapy combined with the prescription medications left me so miserable and incapacitated, I was desperate. For me, the medical marijuana was a miracle drug, a life-saver. I wished I had used it from the beginning because it was so helpful.*

Huffington Post, December 2014

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

Reddit

National Institute on Drug Abuse, the U.S. Food and Drug Administration (FDA), the U.S. Drug Enforcement Administration, as well as institutional review boards.

However, due in part to the increasing number of states in which medical cannabis is legal, pressure to provide data has increased. Despite this, only a small number of papers published in 2016 in the U.S. considered medicinal outcomes.

Nonetheless, there are indicators that cannabis may have medical benefits. Evidence exists for the utility of cannabis for pain, nausea, and appetite stimulation (National Academy of Sciences, Engineering, and Medicine, 2017). Cannabis use or adjunctive use for treatment of other medical conditions may have anecdotal evidence but requires more research.

Evidence for the efficacy of cannabis with some specific disorders is summarized below.

#### Multiple Sclerosis

The anti-inflammatory effects of cannabinoids have long been known, although whether they translate into clinical

efficacy remains an open question for multiple sclerosis (MS) (de Lago et al., 2012). For people with MS who have treatment-resistant spasticity, cannabis appears to modestly reduce pain and spasticity (Corey-Bloom et al., 2012; Ribeiro and Philip, 2016). Interestingly, smoked cannabis temporarily increases respiratory airflow, perhaps due to the anti-inflammatory effects. Some animal studies have found that cannabis can protect neurons from neuronal damage caused by use of MDMA (ecstasy) (Morley et al., 2004; Touriño et al., 2010).

#### Chronic Pain

Pain reduction has been a major source of interest among researchers, as many people with chronic pain report using cannabis to manage their symptoms and reduce their use of opioids and other psychoactive pain medications (Piper et al., 2017). Studies on the effects of THC only have not seen an effect on pain perception. However, in studies of THC combined with CBD, results include reduced pain and reduced use of opioid pain medications (Johnson et al., 2010; Abrams et al., 2011; Ware, 2015). The growing awareness that cannabis can reduce pain (along with its lack of toxicity and overdose potential) has led some physicians to begin calling for cannabis to be used as an adjuvant to opioid medications in the hopes that it may reduce reliance on these medications (Carter et al., 2015).

#### Epilepsy

A body of literature is emerging on the anti-epileptic (i.e., anticonvulsant) properties of cannabis, particularly CBD-rich cannabis. Clinical reports have provided conflicting data (Friedman and Devinsky, 2015). Results from an FDA-approved study on use of CBD for a severe form of childhood epilepsy suggest a dramatic reduction in seizures in this population (American Academy of Neurology, April 13, 2015). More recently, an open-label study of children and young adults with treatment-resistant epilepsy found that CBD reduced monthly seizures by 36.5 percent (Devinsky et al., 2016). More rigorous studies are needed to clarify the role of CBD in ameliorating seizures.

### Cancer

A number of in vitro and animal studies have shown that cannabinoids help prevent the spread of cancerous cells and lead to cancer cell death in both breast and prostate cancers (Caffarel et al., 2012; Orellana-Serradell et al., 2015). Despite the unfiltered and heavily carcinogenic smoke produced by burning cannabis, there has been no consistent link observed between cannabis smoking and lung cancer (Huang et al., 2015; Zhang et al., 2015). These data suggest an anti-cancer effect with cannabis, as comparable levels of tobacco smoking increase the risk of lung and other cancers. More research is necessary to determine whether cannabis (or more specifically the cannabinoids in cannabis) can be useful in cancer treatment, although it is known to reduce the side-effects of chemotherapy by reducing pain and increasing appetite (Abrams, 2016).

### Psychiatric Conditions

Despite the limited data, an increasing number of states have approved cannabis for use with a large number of medical and psychiatric conditions. Preliminary research on efficacy of cannabis (and especially CBD) in psychiatric disorders, such as psychotic illness and anxiety disorders, contradicts some literature on the negative psychiatric effects of cannabis and suggests a need for a more nuanced understanding of this complex plant (Zuardi et al., 2012).

### Addictive Effects

#### Dependence and Withdrawal

Another effect of extended and frequent cannabis use is the experience of dependence (a physiological state in which the brain acts normally only in the presence of the substance), followed by withdrawal symptoms that occur when the substance is removed. Cannabis withdrawal syndrome is now defined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (American Psychiatric Association [APA], 2013), and researchers demonstrate that it is similar to nicotine withdrawal.

### ANECDOTES FROM PERSONS IN RECOVERY FROM CANNABIS DEPENDENCE

*One of the things that scared me the most was my own addictive behavior. I knew that weed was impairing my ability to be the person I wanted to be and yet I ignored it, took solace in it, and allowed myself to get high.*

*For me, there was a critical incident in my life that finally resulted in me quitting. I arrived 45 minutes late for work because I was smoking weed. The incident caused me a lot of anxiety and negative self-evaluation, which was the motivating force I needed to quit.*

*When I first stopped, I was moody, irritable and anxious. And the cravings were !@#\$\$@ intense.*

*I reached out to friends who I knew would support my desire to stop using weed.*

*I needed to confront instant gratification and learn how to sleep without weed.*

*I had to cultivate mindfulness when craving.*

*I had to learn to cope with boredom, emotions, and mourn the loss of weed in my life.*

*Stopping marijuana use has done nothing but good for me. I'm feeling confident just talking to people. No more paranoia, no more thinking people hate me or are making fun of me. I can read paragraphs and books without losing focus. Turns out I DON'T have ADHD!*

Reddit

Most patients in cannabis withdrawal typically experience anxiety, irritability, and difficulty sleeping—generally feeling lousy. Additional psychological

symptoms can include irritability, depressed mood, and loss of appetite. Physical symptoms can include headaches, stomach pains, increased sweating, fever, chills, or shakiness (Budney et al., 2008). The exact withdrawal experience varies from individual to individual, but it often causes enough negative feelings that users will continue to use instead of remaining abstinent (Hill, 2015).

### Cannabis Use Disorder

Cannabis use disorder (CUD) is a condition characterized by cannabis-related harmful consequences that persist over time. Although the negative impacts of cannabis use and CUD are not as dramatic or potentially lethal as with some other substance use disorders (SUDs), these cannabis-related problems have real and substantial adverse impact on patients and their families. As described in the DSM-5, harmful cannabis use can negatively impact lives of adults and youth in multiple realms, including social, emotional, educational, occupational, familial, financial, and cognitive functioning (APA, 2013).

Many studies have looked at factors that indicate elevated risk for developing CUD and other SUDs. Researchers have identified a number of psychological factors that correlate with the onset or severity of cannabis involvement or other SUDs. These include high sensation seeking, anxiety, and difficulty managing emotions. Individuals from families with greater instability and less oversight have an increased risk for



marijuana and other substance use. Positive parent-child relationships can protect against SUDs, and poor parent-child relationships can predispose children to developing SUDs (Eassey et al., 2015).

Environmental factors also play an important role. Leventhal and colleagues (2015) found that living in high-crime neighborhoods predicted adolescent cannabis use, which may result from a lack of alternative reinforcers (e.g., sports and other positive youth activities); this could help explain why low socioeconomic status also predicts substance use risk. Children from high socioeconomic status families and those with highly educated parents were as likely as peers of lower socioeconomic status to start using cannabis in early adulthood (Patrick et al., 2016).

It should be noted that many of these same risk factors for CUD are also associated with the use of other substances, including alcohol. These observations lend support to the idea that developmental and nondevelopmental challenges (such as Adverse Childhood Experiences [ACEs]) may be underlying contributors to early and problematic substance use including cannabis use (McCrory and Mayes, 2015). A recent analysis of the National Longitudinal Study of Adolescent to Adult Health found that experiencing a single ACE increased the likelihood of CUD by 47 percent (LeTandre & Reed, 2017). Indeed, exposure to social stress in childhood appears to alter the endocannabinoid system and may contribute to cannabis use in adolescence and adulthood. (Mizrahi, 2016)

### Psychosocial Effects

Cannabis has a broad array of short-term neurocognitive effects that can include detriments of learning and memory, executive functioning, and motor control. A number of studies have found a correlation between adolescent use of cannabis and an increased likelihood of negative outcomes, such as lower academic attainment and employment instability (Silins et al., 2014; Meier et

al., 2012). However, whether the relationship is causal remains controversial, as social determinants and genetic factors may play a disproportionate role in life trajectory. More recent analyses that control for environmental stressors and family factors appear to account for these differences (Meier et al., 2017). Jackson et al. (2016) prospectively tested IQ in twin pairs discordant for cannabis use and found no difference between the cannabis-using and the non-using twin, although their IQ scores were significantly below the mean for dual-abstinent twin pairs.

### Psychotic Illness

A growing body of literature supports a correlation between cannabis use and early onset of psychotic illness (Davis et al., 2013). Psychotic illnesses are relatively rare: about 3 percent of people develop one of the psychotic illnesses (e.g., schizophrenia, bipolar, schizoaffective disorder) (Perela et al 2007). The use of cannabis may be a risk factor for early expression of a psychotic illness (Radhakrishnan et al., 2014), and risk may increase as the potency of cannabis increases (Di Forti et al., 2015; Large et al., 2011). Research has not determined, however, whether cannabis use is a direct contributor to increased risk for psychotic illness (as opposed to genetic and environmental factors) (Shakoor et al., 2015).

Recent as well as historic studies suggest that genetic predispositions (i.e., family history of psychotic illness) are responsible for the correlation between psychosis (Kety, et al., 1994) and cannabis use (Power et al., 2014; Proal et al., 2014). A recent critical analysis of the data came to this same conclusion (Ksir and Hart, 2016). The data also suggest that the linkage may be bidirectional, with people predisposed to psychotic illness more likely to seek out cannabis (Chase et al., 2016; Ranganathan et al., 2016). Studies of families with histories of psychotic illness show that recent and lifetime cannabis use are associated with more psychotic symptoms, suggesting a complex interaction between genes and cannabis (van Winkel, 2015).

Notably, a similar (if stronger) correlation exists between psychotic illness and tobacco use (Compton et al., 2009; Gurillo et al., 2015).

### Anxiety

Cannabis use can decrease anxiety but is also associated with the biphasic effect discussed earlier. Studies (Buckner et al, 2012) have shown a modest relationship between anxiety and cannabis use, although it remains unclear if the cannabis use is a form of self-medication or whether cannabis use triggers anxiety. To date only a single study has considered the possibility that anxiety traits precede cannabis use (Kedzior and Laeber, 2014), and these results were inconclusive.

### Traffic Safety

Intoxicants like cannabis alter motor control and reaction time, which makes the user more prone to accidents. Yet the relationship between cannabis use and motor vehicle safety has been hard to determine. There is a large variability in methodologies, findings, and interpretations of the data with respect to this relationship. Studies conflict on the strength of the effect that blood THC levels have on the likelihood of a motor vehicle accident; however, multiple systematic reviews have concluded that acutely elevated THC levels (as measured in the blood) produce a modest but consistent increase in the risk of motor vehicle crashes (Compton,





2017; Hartman et al., 2013; Rogeberg & Elvik, 2016). When researchers compared study methods, those with the strongest controls and most accurate methods tended to have smaller effect sizes (Rogeberg & Elvik, 2016). Laboratory studies show that acute cannabis consumption is associated with motor impairment (e.g., increased weaving in the driving lane) and has an additive effect when alcohol is also consumed (Hartman et al., 2015). Cannabis use by occasional marijuana smokers may present particular risks for traffic crashes (Hartman et al., 2013).

Brady and Li (2013) reported that the number of cannabis-related fatal motor vehicle accidents in the U.S. tripled from 1999 to 2010, although the overall rate of motor vehicle fatalities decreased over the same period. This suggests that the relationship is more complex than originally thought. Between 2010 and 2012 the National Highway Traffic Safety Administration conducted what has been characterized as “the largest and most comprehensive study to address alcohol and drug crash risk in the U.S. through a case-control study that employed a rigorous design involving a precise matching of cases and controls” (Compton et al., 2017). The results of this study found that when strenuous controls were put into place, there was no effect of cannabis (as measured by THC in blood and oral fluids) on crash risk (Compton et al., 2017). Nonetheless, the clear impairment in reaction time, cognitive ability, and motor control that is indicative of cannabis intoxication is likely to have negative effects on driving acuity.

### Summary

- 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.
- Cannabis use can lead to dependence, withdrawal, and addiction.
- Recommended treatment for CUD includes Motivational Enhancement Therapy and Cognitive Behavioral Therapy.
- Correlations between cannabis use and psychiatric disorders have been identified but are not yet understood.
- Emerging data indicate an increased vehicular accident risk when driving under the influence of marijuana.

## CHAPTER 6: CLINICAL SCREENING AND INTERVENTION

### Universal Screening for Substance Use Disorders

The prevalence of cannabis use in the U.S. provides a strong rationale for implementing universal screening in clinical settings and a targeted approach to intervention. This can be incorporated into the SBIRT (Screening, Brief Intervention, and Referral to Treatment) strategies already used by many practitioners to identify and prevent risky substance use.

The rationale for universal screening is simple. Alcohol and other drug use, including cannabis use, are common and can increase the risk for health problems, safety risks, and a host of psychosocial problems. Alcohol and drug use often go undetected, even though patients are often more open to conversations about their substance use than clinicians expect (Columbia, University 2000).



Lessons learned from several large-scale SBIRT projects suggest that framing the entire SBIRT process as a wellness initiative aimed at reducing the risks of preventable disease and injury can help normalize the screening process and ameliorate patient concerns. The project director of the SAMHSA-funded SBIRT Tennessee described an increase in screening adherence and fewer patient complaints when they posted a statement in the patient intake packet emphasizing that all patients were being screened for general wellness and preventable risks.

A critical lesson learned from SAMHSA-funded SBIRT projects in Tennessee and Vermont is the importance of beginning the screening with general public health questions that are nonintrusive and avoid the stigma associated with substance use (e.g., questions about seatbelt use, flu shots, distracted driving). This strategy increases opportunities for population-based risk reduction (e.g., reducing the risk of driving without seatbelts or distracted driving), while also serving as a substance use screening induction method. The approach lessens the potential for patient concerns about being singled out or judged regarding substance use. As with any SBIRT screening protocol, patients endorsing risk for any of the introductory wellness questions are provided a brief motivational interaction or written information (see Appendix A). Once these introductory questions are completed, patients can then be asked about tobacco, alcohol, or other substance use, as well as mood.

Common SBIRT alcohol and drug use screening tools used in clinical settings include the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST, a screening instrument for alcohol and drug use risk; World Health organization, 2010), the Alcohol Use Disorder Identification Test (AUDIT, a screening instrument for alcohol use risk; World Health Organization,

1982), and the Drug Abuse Screening Test, a screening instrument for alcohol and drug use risk (DAST; Skinner, 1982). These tools can be administered by clinicians or completed by patients on paper or tablet.

Regardless of administration method, the screening tools attempt to identify: (1) negative or concerning consequences of use that map onto DSM-5 criteria, and (2) screening scores that can indicate substance use risk levels that correspond to a recommended level of intervention (i.e., Brief Intervention, Brief Treatment, or Treatment Referral). The patient responses to screening questions provide the springboard for reflective feedback discussions as part of brief intervention. That is, the endorsed responses represent topics that are of personal consequence to the patient and that the practitioner skilled in Motivational Interviewing (MI) can explore to develop discrepancies and activate patient motivation to reduce risk.

### Rationale for a Cannabis Screener

In the Vermont SBIRT project, practitioners consistently voiced concerns and frustrations at the challenges of intervening meaningfully with cannabis-using patients. They reported that many patients did not verbalize reasons to change their use and, in fact, stated they felt cannabis was helpful for a variety of mental health and physical symptoms. These challenges were validated by a lack of patient-endorsed negative consequences on the DAST-10 screening tool. Cannabis-using patients endorsed an average of just 1.3 items (1= being use of cannabis), limiting the potential reasons for change that the practitioner could raise as a focus of a brief motivational intervention.

The relatively low number of consequence items endorsed presented an important question that needed to be addressed. Would the addition of a brief cannabis-specific screening tool increase the number of items of concern patients endorse, consequently increasing the potential for a brief intervention that was

more meaningful and more effective? More specifically, if patients are presented with items that address the potential negative personal impact of marijuana use versus general drug use consequences, will they endorse more of these items? In doing so, will their interest in discussing the item content increase, and will this lead to more robust opportunities to develop discrepancies and elicit change talk, increasing the potency of the ensuing MI?

For patients with concerning cannabis use, are we asking the right questions?

### Cannabis Intervention Screener

To build a more robust cannabis intervention strategy, our solution was to create the Cannabis Intervention Screener (CIS) as part of a targeted approach for triage, secondary screening, and motivational interventions based on endorsed concerns.

The CIS is a brief screening instrument used in medical and social service settings to identify individuals using cannabis at levels that may impact their health or social functioning. The CIS is a unique screener because it was specifically developed to help interventionists elicit and conduct motivational interventions with cannabis users—a patient population often presenting with lack of reason to examine the impact of their use (Budney et al., 2007). The CIS can be used in a variety of manners as part of a universal approach or an indicated screening effort.

The CIS comprises three sections:

1. A prescreen that measures cannabis use frequency (Triage)
2. Items eliciting reasons for use
3. Ten items assessing negative impacts of cannabis use in the past year

The complete CIS is provided in Appendix A.

## Development of the CIS

### Pilot Study

The Vermont SBIRT team reviewed cannabis literature and found six validated marijuana assessment tools from which items were selected to create the CIS; the new tool is not as lengthy as the predecessor assessment tools. In the pilot study conducted in Vermont, patients completed the two-part CIS triage item that addresses frequency of use as part of routine SBIRT initial screening. Patients endorsing a frequency of use of several times per week or more often were administered the full CIS and, for comparison, the DAST-10.

In the pilot study of the CIS conducted in Vermont, medical providers recommended setting an initial (triage) screening cutoff based on consumption, similar to the AUDIT-C scoring. This would identify potential cannabis risk based on frequency of consumption and signal need for further screening. The initial cutoff chosen was “several days per week” (interpreted as two or more) on the CIS triage item. The medical providers based this cutoff recommendation on three critical factors: (1) the lack of clear medical evidence that less frequent cannabis use leads to significant health risks; (2) the limited time providers in clinical settings (i.e., emergency departments, Federally Qualified Health Centers) have to address less frequent cannabis use;

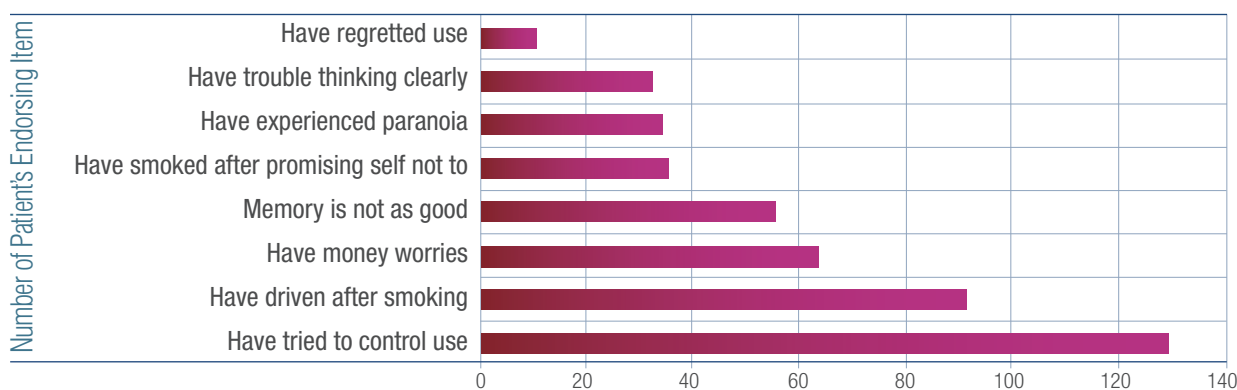
and (3) the lack of patient readiness/willingness to discuss their cannabis use when they are likely to perceive no concerns because that use is minimal.

If a patient scored as engaging in risky cannabis use based on responses to the 10 questions in Part 2 of the CIS, the SBIRT practitioners would engage in a brief intervention and related follow-up. The practitioners would utilize responses from the CIS to inform and guide the brief intervention. Brief intervention had two possible goals: to negotiate either a commitment to reduce or cease cannabis use, or a referral for further assessment and CUD treatment services.

As part of the pilot evaluation, the SBIRT practitioners completed a survey, the “Provider Questions for Cannabis Screener.” This elicited practitioner perspectives on the quality of the SBIRT interaction with the patient and the degree to which motivational indicators were present.

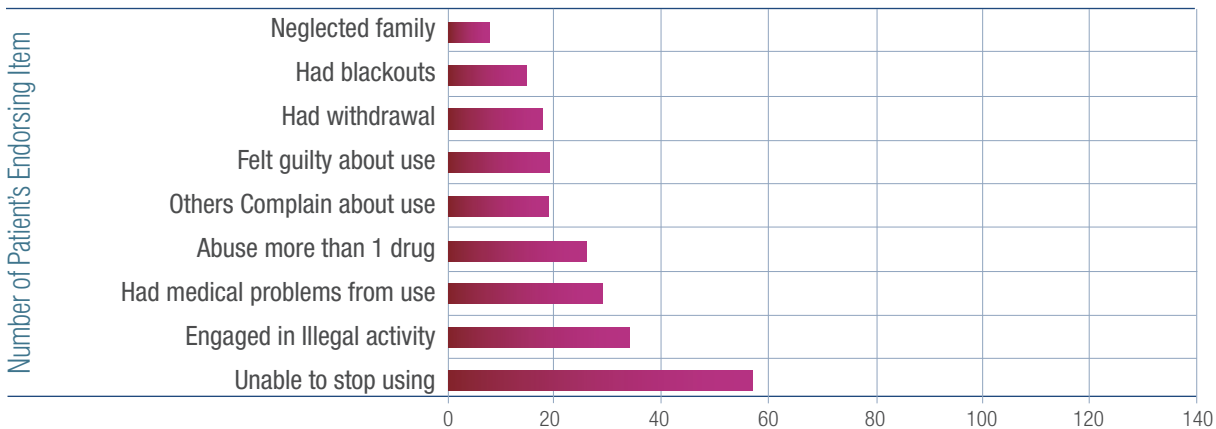
Pilot data were collected in Vermont on 215 patients endorsing cannabis use. Overall, initial pilot data indicated that patients significantly endorsed more items on the CIS versus the DAST (449 items vs. 225 respectively;  $t = 2.3, p < .05$  representing twice the number of endorsements). Fifteen percent of patients verbally shared that they used cannabis to cope with negative affect and to help with sleep, while 2 percent of patients verbally shared that they use marijuana to cope with physical pain. Figures 6-1, 6-2, and 6-3 illustrate CIS pilot results.

**EXHIBIT 6-1.** Patient Endorsement of CIS Items in Pilot Study

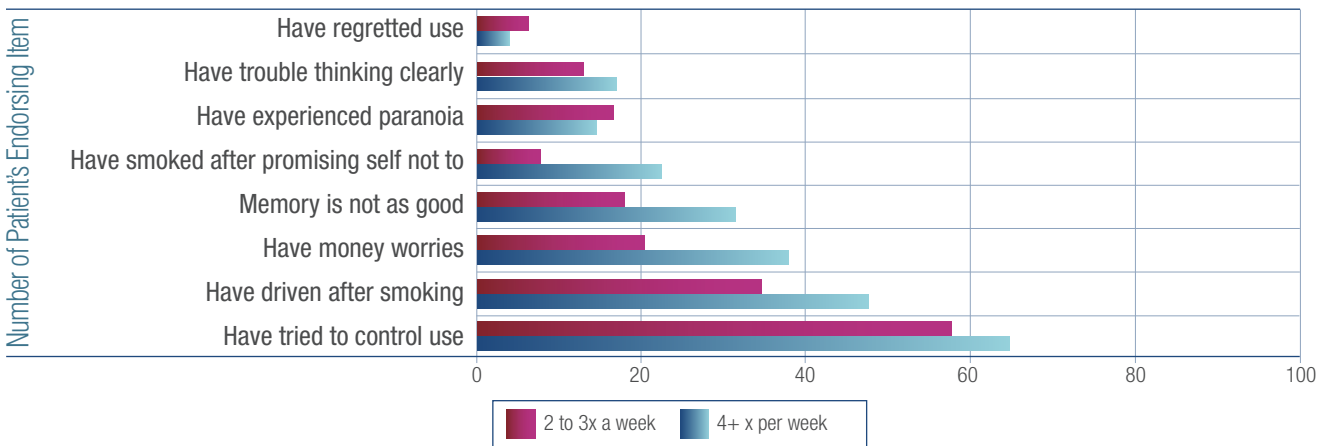


**Note:** Specific wording for these CIS items was revised as a result of the pilot study.

**EXHIBIT 6-2.** Patient Endorsement of DAST Items



**EXHIBIT 6-3.** CIS Item Endorsement for Patients Indicating Use Several Times Per Week



## Validation Study

After pilot testing, two other states, Washington and Iowa, collaborated with Vermont to conduct further validation evaluation. These three states reflect three different landscapes of marijuana public policy: (1) in Washington, recreational use is legal; (2) in Iowa, use is illegal; and (3) in Vermont, use is decriminalized. All three states have approved cannabis for medical purposes. Participating sites represented diverse practice settings, including community health centers, emergency departments, college health services, and routine primary care practices.

Methodology was similar to that used in the pilot evaluation, with a few exceptions. At all participating sites,

patients completed CIS triage item on frequency of use. In Vermont, patients completed the full CIS and DAST only if they endorsed using cannabis several days per week or daily; however, patients in Iowa and Washington completed the full CIS and DAST if they endorsed any cannabis use in the past year. All three states collected data regarding patients' risky alcohol use via the AUDIT and regarding mood via the PHQ-9 (Spitzer, 1999) when applicable (e.g., patient scored positive in prescreen) and available. The final sample size was 651 adult patients (18 and older) (Vermont: n = 128; Iowa: n = 228; Washington: n = 295).

Multiple analyses were conducted, including predictive and concurrent construct validity; decision tree analysis using Chi-square Automatic Interaction Detector

(CHAID); and significance tests analyzing frequency of use, method of use (e.g., smoke, vape, dab, edibles), and reasons for use in relation to the number of items endorsed correlating with increasing negative consequences of cannabis use.

## Summary of Evaluation Findings

Data from the initial CIS pilot and the larger CIS validation study confirmed the use of the cutoff proposed for the CIS triage as adults smoking less than weekly noted few if any negative consequences of cannabis use. Exhibit 6-4 illustrates that 34 percent of patients endorsed less than weekly use, while 66 percent endorsed weekly or more frequent use. Of those using weekly or more, 29 percent (of the 66 percent) endorsed use several days per week. Approximately 27 percent of persons who acknowledged using cannabis reported using daily or near daily. Patients endorsing greater than weekly use had significantly elevated CIS impact scores.

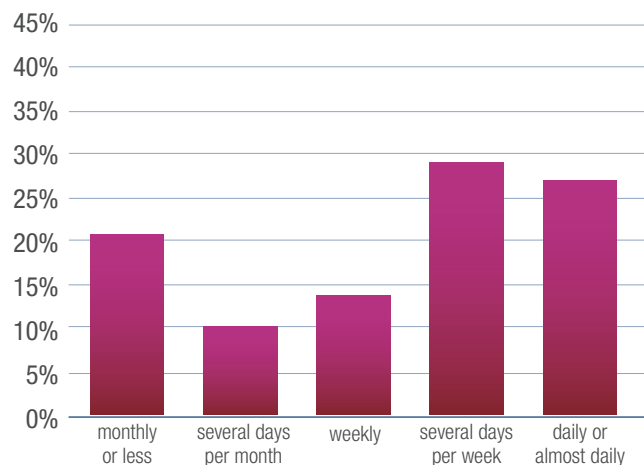
Methods of cannabis use were compared using the entire sample across all three states. It is important to note that patients were asked to identify all methods of cannabis use as opposed to their single preferred method, so patients may have selected more than one method. Exhibit 6-5 illustrates that the primary method

of use among this sample of cannabis users was smoking, followed by edibles, dabbing, and vaping. Seventy-three percent of patients reported only one method of use, with the vast majority of all patients (93 percent) endorsing smoking as their primary method.

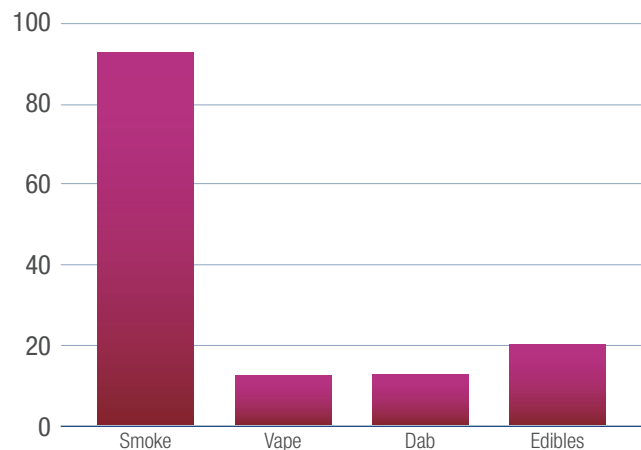
More frequent use was associated with engaging in multiple methods of use. Patients who endorsed using at least several days a week or more were more likely to vape or consume edibles in addition to smoking. Additionally, if patients endorsed using weekly or greater, they were more likely to also endorse dabbing.

As indicated earlier, the CIS collects data on impacts an individual may experience as a result of using cannabis. Construct validity analyses demonstrated that the most cohesive subset of items across all solutions is the 10 questions in Part 2 of the CIS that address negative and concerning impacts of use (see Exhibit 6-6). The first question in Part 2 of the CIS asks whether one has tried to control cannabis use by smoking only at certain times of the day or certain places. This was the most frequently endorsed item, with 52 percent of patients positively endorsing it. Thus, the CIS Part 2 is best defined by two constructs: (1) the first question in Part 2 (i.e., have you attempted to *control your use* in the past year); and (2) the CIS items 2–10, defining a set of

**EXHIBIT 6-4.** Frequency of Cannabis Use among Cannabis Users (n=523)



**EXHIBIT 6-5.** Primary Methods of Cannabis Use



## A Practitioner's Guide for Cannabis Intervention

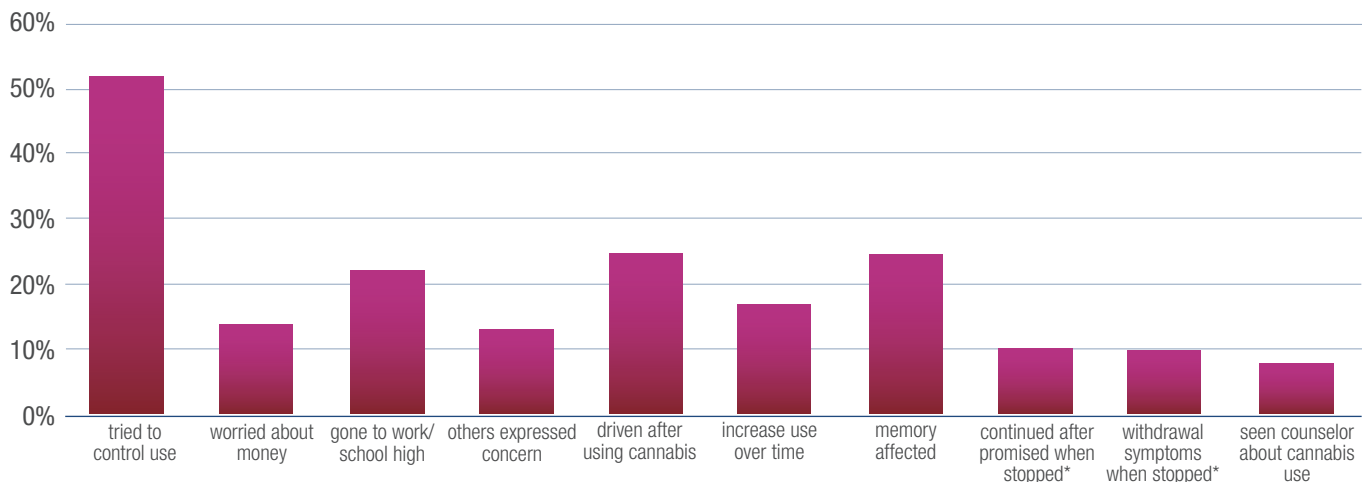
Common Cannabis User Concerns. The CIS item table below illustrates the frequency of specific concerns endorsed. This information is essential for making decisions on how best to engage and interact with cannabis users. The four most endorsed items were: trying to control use, driving, memory impairment, and getting high at school and work.

Stratification of cannabis risk within the screening and brief intervention process is critical for determining the

potential impact of an individual's use and guides the practitioner's response. Exhibit 6-7 indicates how CIS items that address negative impact of cannabis use map to DSM-5 criteria.

Prevalence for each risk level, as found in the validation evaluation, is also indicated in the figure. Exhibits 6-8 and 6-9 align practitioner response to levels of risk and to likely DSM-5 diagnoses.

**EXHIBIT 6-6.** Endorsement Frequency of CIS Impact Items

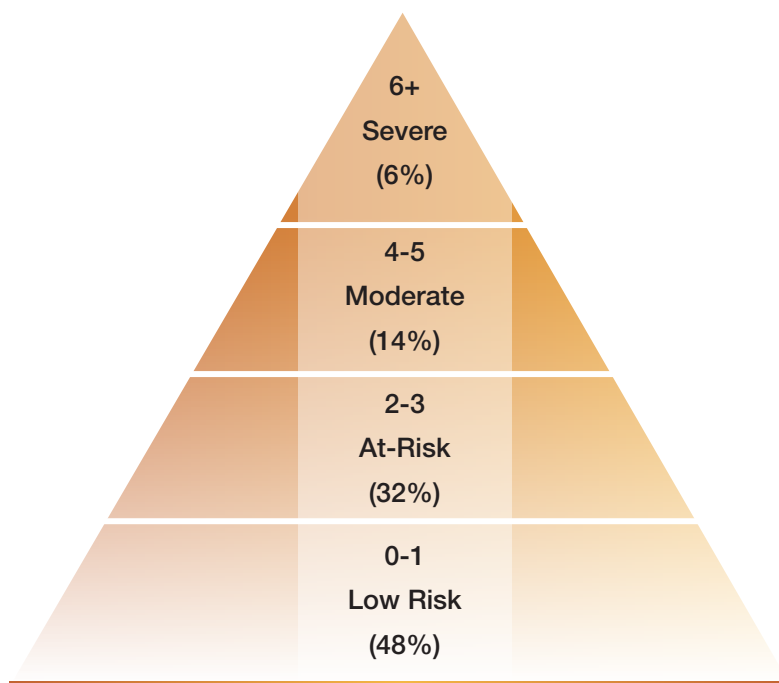


**NOTE:** Two items had substantial amounts of missing data as respondents could indicate if they felt the item was not applicable to them (\*38% missing data; \*\*17% missing data).

**EXHIBIT 6-7.** CIS Impact Questions Alignment With DSM-5 CUD Criteria

CIS PART 2, QUESTIONS 1–10	DSM-5 CRITERIA
Prior attempts to control use (Q1 and Q7)	Attempting to quit or control use
Worried about the amount of money (Q2)	Role obligations
Impact on work or school (Q3)	Role obligations
Impact on social functioning (Q4)	Social/interpersonal consequences
Driven a car or other vehicle under the influence (Q5)	Hazards associated with use
Memory/cognitive functioning (Q6)	Psychological/physical problems with use
Withdrawal Symptoms (Q8)	Withdrawal symptoms
Using greater quantities (Q9)	Using greater quantities
Prior treatment engagement (Q10)	Prior attempt to quit of control use

**EXHIBIT 6-8.** The Cannabis Risk Pyramid (for patients endorsing any cannabis use)



**EXHIBIT 6-9.** CIS Impact Scale Scores alignment with DSM 5 Diagnoses

IMPACT CUTOFF LEVELS	SUGGESTED INTERVENTION	ESTIMATED POPULATION PERCENT PER RISK LEVEL	ALIGNMENT WITH DSM-5 RISK CRITERIA
None (0–1)	Positive Feedback	48%	No risk
At-Risk (2–3)	Brief Intervention (BI)	32%	At risk for mild CUD
Moderate (4–5)	BI and Brief Treatment	14%	Moderate CUD
Severe (6+)	BI and Treatment Referral	6%	Severe CUD

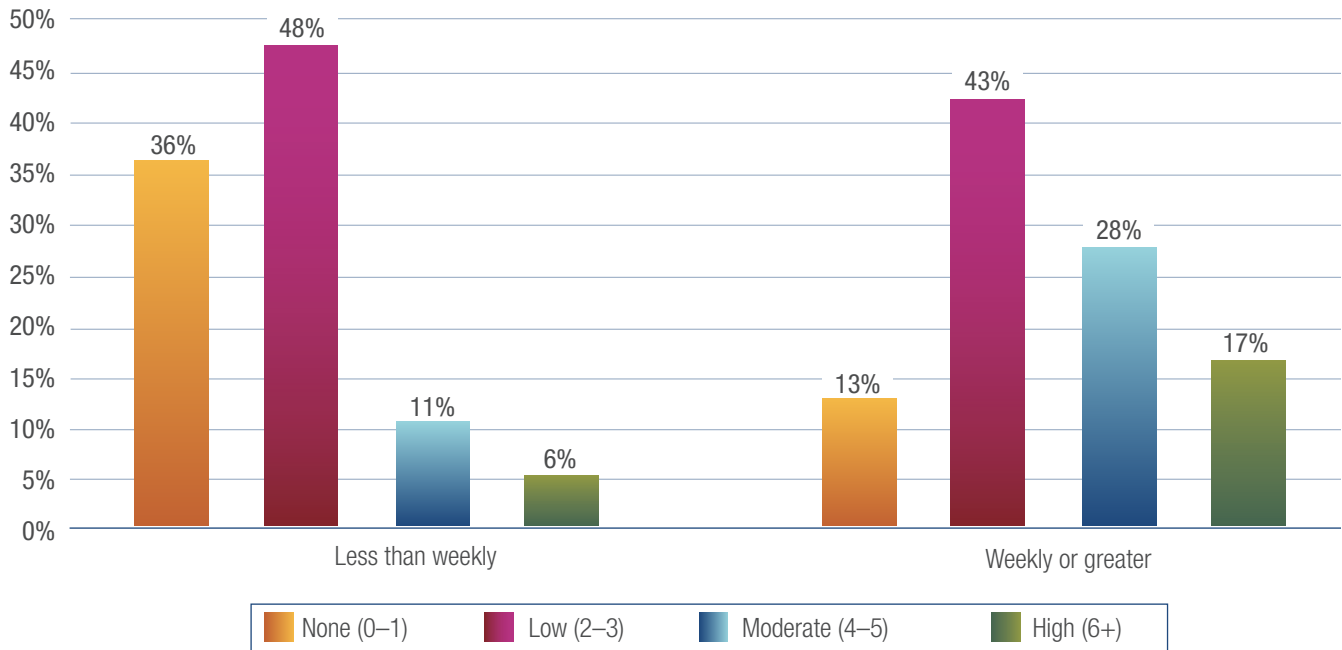
In our study, the correlation between the increased frequency of use and the number of negative impacts endorsed was strong (negative impacts increased as frequency of use increased), which is similar to findings in alcohol screening (Centers for Disease Control and Prevention, 2014). There was a significantly elevated chance that patients had tried to control their use when they used more than weekly or multiple times per day. Similarly, patients endorsing use multiple times per day endorsed all CIS impacts significantly more often when compared with those who endorsed using less frequently.

Because of the potential for negative impacts, writers of this guide encourage practitioners to pay special attention to cannabis users reporting daily or more than daily use. Cannabis users in these groups should be prioritized for clinical intervention.

The difference in the rates of endorsed risks based on frequency of use is illustrated in Exhibit 6-10. Among patients who used cannabis less than weekly, only 17 percent fell in the moderate- to high-risk levels, compared with 45 percent of patients who used more frequently (weekly or more frequently).

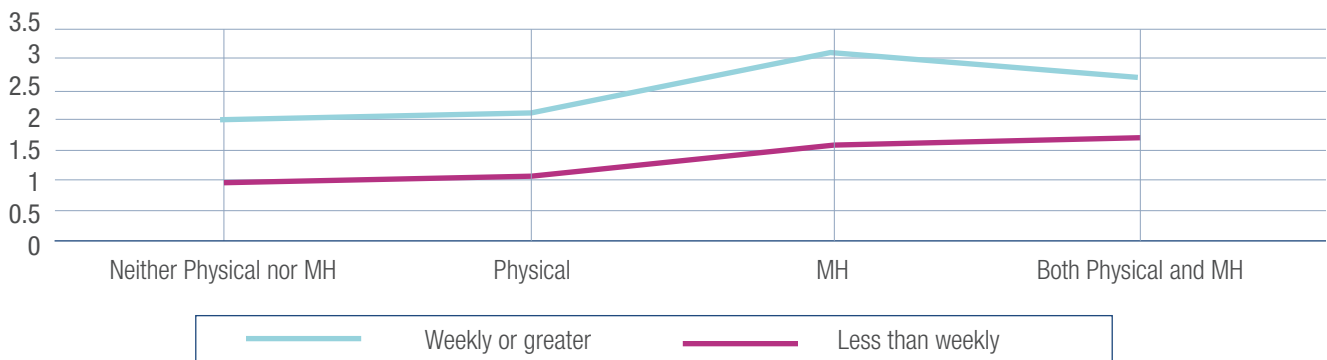


**EXHIBIT 6-10.** CIS Risk by Frequency of Use



**EXHIBIT 6-11.** CIS Scores

CIS scores higher among more frequent users and among those who use for MH reasons



As indicated in Exhibit 6-11, patients who endorsed using cannabis for mental health reasons (Part 2, Q5) or for both mental health and physical reasons (Q5 and Q6) were significantly more likely to have moderate to high levels of CIS risk. Thus, it appears that individuals who use cannabis to cope with mental health symptoms are also more likely to endorse negative impacts related to their cannabis use. Perhaps individuals with mental health problems or mental health and co-occurring physical problems who also

use cannabis, may have a different outlook on their cannabis use compared to those who use for physical or solely recreational reasons and thus, perceive the impact differently. Although patient endorsements of use for physical health, mental health, or recreational purposes are not scored as part of the CIS, this information provides an opening for practitioner engagement and exploration using MI strategies (e.g., advantages of using, advantages of not using).

### Summary

The CIS validation study demonstrated that:

- The CIS is a useful screening tool for cannabis screening and intervention.
- Using a single prescreen question about frequency of use to triage respondents and adopting weekly use as the cutoff were effective in distinguishing between those who had few if any negative impacts (who do not need further screening) and those with most impact from use (who should receive further screening).
- Patients who used daily or multiple times a day endorsed the most negative impacts; using multiple times daily was associated with the highest CIS impact scores.
- 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 identify the best focus for brief motivational interventions with patients (see below). For many patients who report more frequent use of cannabis, trying to control use is a salient discussion topic. Other commonly endorsed items that may be relevant points for discussion include driving under the influence, memory loss, concerns from friends and family, and being high during work/school.
- Patients with CIS scores of 4 and higher, indicating moderate to severe CUD, should be referred for further assessment and treatment.
- While the pilot and validation findings demonstrate the CIS has important clinical utility, future research is needed to further compare screener psychometrics and ensure the most comprehensive list of relevant negative impacts are included (e.g., disrupted sleep and problems in communication).



## CHAPTER 7. BRIEF NEGOTIATED INTERVIEW FOR CANNABIS RISK

Motivational Interviewing (MI) is well supported in clinical research as one of the most effective approaches for activating patient internal motivation for change across a wide range of behavioral risks and psychosocial disorders. In the third edition of their classic text, *Motivational Interviewing: Helping People Change*, Miller and Rollnick (2013) pointed out that more than 200 randomized clinical trials have been conducted on MI and more than 1,200 research publications have appeared, with the number of publications doubling every 3 years since 1990. Most important, they highlighted that MI outcomes are equal to or greater than other more intensive evidence-based approaches to treat addiction.

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) (An algorithm for the BNI is contained in Appendix E). The BNI aligns to the four main phases of MI described in the third edition of *Motivational Interviewing: Engage, Focus, Motivate, and Plan*. The cannabis-specific brief intervention described in this guide is best delivered when framed by these four phases, with special emphasis on topics specifically related to cannabis use as possible points of motivation for change.

Using the BNI to engage risky cannabis users demands a specialized skill set, given the dynamic status of marijuana legality and social acceptance, its potency, methods of use, marketing by a growing and powerful industry, lack of perceived harm by many, and potential positive effects of using cannabis for specific medical reasons. It also demands MI skills: attending to patients' readiness to change, exhibiting a demonstrated non-judgmental understanding, and validating the patient through reflection of the patient's reasons and desires for continued use and potential reasons to change.

Timing transitions from one phase of the BNI to another is critical. The practitioner must use mindful attention and careful listening for patient engagement, readiness, and change talk. Often, practitioners state they do not hear any change talk or desire to reduce use from their cannabis-using patients. In these situations, when patients are in a pre-contemplative phase of change, moving quickly to the Plan phase can be counterproductive. A more productive conversation is to explore nonjudgmentally the pros and cons of use, followed by double-sided reflections to begin developing discrepancies as described in the sample dialog included with the description of each phase below.

In every phase, practitioners should keep the door open for future conversation and can schedule a follow-up to check in and to demonstrate the desire to help patients reduce risk from their cannabis use.



## Illustration of BNI for Cannabis (Four Phases)

### BNI Phase 1: Engage

The Engage phase builds rapport and collaboration through using OARS strategies (i.e., open-ended questions, affirmations, reflections, and summaries).

#### Illustration of the Engage Phase

*"Good morning \_\_\_\_\_. I am \_\_\_\_\_. We are meeting today to discuss some 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?"*

#### Patient response.

*"Please tell me a bit about yourself."*

#### Patient response.

Note: Be curious, ask questions, reflect and summarize.

With a known patient, this conversation might begin,

*"What's been going on since I last saw you?"*

#### Tips for Engaging

- Conflict is counterproductive.
- Understand your client's reason for using!
- Your initial goal is to elicit the patient's personal experience (pros and cons) of use.

### BNI Phase 2: Focus

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). Common MI techniques used include OARS strategies, eliciting pros and cons (for and against using), reflecting and summarizing to highlight discrepancies, and promoting change talk.

#### Illustration of the Focus Phase

*"As I mentioned, I would like to spend a little time discussing the wellness survey you completed."*

#### Patient response.

*"You stated that you use marijuana a number of times each week. Would it be OK if we talked about that?"*

#### Patient response.

*"Could you help me understand, what is it that you like about marijuana?"*

#### Patient response.

Note: Explore, elicit, and summarize without judgement.

*"In your wellness survey responses, it looks like there may have been some not-so-good things related to your marijuana use. Would it be OK if we talked about that?"*

#### Patient response.

Note: Provide feedback/input based on screening responses. Explore these with the patient.

*"Can you tell me more about these?"*

#### Patient response.

Note: Finally, summarize with a double-sided reflection. Explore, elicit, and summarize without judgement.

*"To summarize, on the one hand you use marijuana because \_\_\_\_\_, and on the other hand some not-so-good things have happened like \_\_\_\_\_. How does that sound to you?"*

**Patient response.**

Reflect and further explore pros and cons and affirm change talk.

**Tips for Focusing**

- 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.
- When indicated, screen for co-occurring conditions such as anxiety and depression.
- Any concern endorsed by the patient is worth asking about and reflecting.
- Use double-sided reflections to emphasize the struggles of trying to use cannabis regularly for its perceived benefit, but at the same time wanting to minimize the negative impact of using. This can be helpful to develop discrepancies, especially for use that is more frequent (i.e., daily or multiple times per day).
- Provide feedback as an open-ended question:  
*"Some patients state they experience the most negative impacts from using when they regularly use multiple times daily. How does knowing that fact help you try to reduce your use?"*  
*"Some people I've talked with report being sluggish the day after they smoke. How do you avoid getting high the night before when you have a big day or something important to do?"*  
*"We know that it can be very hard to control cannabis use when you use it more than occasionally. I wonder how you're able to do that."*

**BNI Phase 3: Motivate**

The Motivate phase utilizes patient-identified negative consequences, norms, and other information about marijuana use, such as social and health impacts and provider concerns. The readiness ruler strategy (see Appendix B) is used to enhance internal and external motivation to change marijuana use behavior for risk reduction. Another option is to use the readiness ruler earlier in the BNI dialogue to carefully gauge whether the patient has any ambivalence or desire to change at this time. Then, if the answer to the readiness ruler question is "anything number more than 0," ask, "why not 0 or lower?" and alternatively "what would need to happen to increase your desires for change?" (using amplified reflection or looking to the future as a way of mining for ambivalence).

**Illustration of the Motivate Phase**

*"I would like to provide you with some information, if that is OK?"*

**Patient response.**

*"There are facts that we know about marijuana and its effects and other marijuana effects we are still learning about. One thing that we do know is that people who use more frequently and in greater amounts have more negative consequences related to their use."*

*"In line with that, you are using multiple times each week and you have experienced \_\_\_\_\_ [insert patient consequences]. And as your practitioner, I am concerned about the negative effect marijuana is having on you."*

**Patient response.**

*"So, talking about all this, where does this conversation bring you?"*

**Patient response.**

*"How ready are you to make a change in your use?"*

**Patient response.**

*"On a scale of 1 to 10 with 1 being "not at all" and 10 being "sign me up," how ready are you to make a change?"*

**Patient response.**

*Note: Complete readiness ruler strategy (see Appendix B).*

**Tips for Motivating**

Provide feedback as open-ended questions (e.g., "For some people who smoke as often as you do, memory can get a bit fuzzy or family members start saying they are concerned. Has that happened for you?")."



**BNI Phase 4: Plan**

While reinforcing the patient's self-efficacy, in the 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.

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 nonusing family/peers, among others. Providers can work to elicit plans matched to the patient readiness to increase initial success and self-efficacy.

**Illustration of the Plan Phase**

*"To bring this conversation all together, there are things that you like about using cannabis such as: \_\_\_\_\_. And you have experienced some negative consequences such as: \_\_\_\_\_. You described some reasons for changing your marijuana use and you say that you are XX% ready to make some changes. It is your choice what you do regarding your marijuana use. But what is something that you might choose to do this this week regarding your marijuana use?"*

Reflect the actions identified by your patient and clarify specifics—what, how, when, and where.

Note: Reinforce your patient's motivation and arrange a follow-up.

*"If I am hearing you right, your plan is to smoke no more than two times a week with friends and that if you have been smoking you won't drive. That sounds like a step in a good direction for you. Let's follow up in a month."*

If your patient shows reluctance, affirm the reluctance and his right to choose, then revisit pros and cons of use. When reluctance persists, the following strategy can be useful.

*"So, it sounds like even though there have been some not-so-good things occur related to marijuana, you're not quite ready to make any big changes. It's always your choice, and I can appreciate that. And I appreciate your being honest with me about where you are at. I am wondering if there is one thing you might do over the next few weeks that has nothing to do with reducing or stopping use but could help you be more aware. Would you consider just keeping track of how often you use, when, and the circumstance. For example: 'Thursday afternoon, with John at beach.' You can write it on paper or do a note on your phone. How does that sound to you?"*

### Patient response.

*"Great, thank you, and I would like to follow up with you in three weeks."*

### Tips for Planning

- Don't move too quickly into planning for cannabis use behavior change. Meet your clients where they are. Having patients agree to monitor substance use for a period of time is a prudent initial change strategy.
- Provide feedback framed as an open-ended question (e.g., "You're doing well, and you have a lot going for you. I wonder what you'd be willing to change about your cannabis use to keep that edge?")

Appendixes C and D present sample patient responses to initial and secondary cannabis screeners: one for a patient with low/moderate cannabis use risk (Appendix C) and one for a patient with high cannabis use risk (Appendix D). The sample screener responses are followed

by clinical vignettes that demonstrate SBIRT interventions based on the items endorsed by patients.



## Treatment Engagement

Patients with moderate to severe cannabis use disorder will likely benefit from treatment, and most patients can be served effectively in outpatient care. When the intervening practitioner is not the behavioral health provider, an effective warm handoff is essential for treatment engagement. The term "warm handoff" originated in customer service where it is used to describe referrals that ensure that the customer is directly connected to someone who can provide what he or she needs. In health care, this typically means that one member of the health care team introduces the patient to another team member. The referring practitioner explains why this provider can better address the specific cannabis issues with the patient and emphasizes the behavioral health provider's competence. The emphasis of the warm handoff is specifically on engaging the patient in the handoff with the receiving provider. We strongly recommend the warm handoff referral be conducted in person, involving the patient (and family, if present).

Successful handoffs between clinical providers require timely, open communication and collaboration. Primary care providers are encouraged to develop business associate agreements with treatment programs to facilitate ease of communication.

### Treatment for CUD

While the brief intervention focuses on preparing and motivating clients to change their use, CUD treatment helps patients with problematic use master effective skills to change their substance use. Outpatient treatment can range from just a few sessions to 15 sessions or more. Motivational Enhancement Treatment (MET) and Cognitive Behavior Therapy (CBT) alone and combined have been demonstrated to be effective and efficient treatment approaches to CUD (e.g., Budney et al, 2007; Kadden et al, 2007; Carroll et al 2004). Multiple meta-analyses (Magill and Ray, 2009) have repeatedly demonstrated CBT's efficacy in the treatment of SUDs and mental health disorders such as depression, traumatic stress, and anxiety. These findings have repeatedly led to MET/CBT's routine inclusion in lists of evidence-based practices that the field has been encouraged to adopt and use more widely (e.g., Institute of Medicine, National Quality Forum, 2017). The focus of MET/CBT, unlike other methods, is primarily on enhancing motivation for change, implementation of specific behavioral change and developing or strengthening coping skills. (Babor et al. 2011).

### Summary

- 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 conversations.
- Concerns most often endorsed by patients included money spent, using at work/school, memory issues, or driving risk. However, any concern is worth exploring and reflecting.
- The clinician can use double-sided reflections to emphasize the struggles of trying to use cannabis regularly for its perceived benefit, while also trying to minimize the impact of using.
- During a cannabis-focused BNI, use MI and MET tools and techniques to honor patient experience.
- Match action plans for reducing cannabis use to patient readiness for change.
- An integrated MET/CBT model has the best efficacy for ongoing treatment.



## APPENDIX A. CANNABIS INTERVENTION SCREENER

**Instructions:** Because we care about your health, we are interested in learning more about your marijuana use. Please answer the following questions as openly as possible. Your answers are strictly confidential within your health team.

### CIS Triage Questions

	Never	Monthly or Less	Several Days per Month	Weekly	Several Days per Week	Daily
1. How often have you used marijuana <b>in the past year?</b> (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?		

## A Practitioner's Guide for Cannabis Intervention

<b>CIS Part 2</b> <b>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.</b>		
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?		
<b>SCORING GUIDE INDICATED RESPONSES:</b> <ul style="list-style-type: none"> <li>• Lower Risk (at-risk) (2-3) – Brief Intervention</li> <li>• Moderate Risk (4-5) – Brief Intervention and Brief Treatment</li> <li>• Severe Risk (6+) – Brief Intervention and Treatment</li> </ul>	<b>Total:</b>	

### CIS Parts 1 and 2 Scoring Instructions:

1. CIS Part 1 provides useful information for brief intervention discussions and is not scored.
2. CIS Part 2 is scored based on affirmative responses to questions 1-10. Each affirmative response is counted as a 1.
3. Severity of risk levels is based on number of affirmative responses and generally corresponds to DSM 5 cannabis use disorder levels of mild, moderate and severe.
4. CIS Part 2 questions generally map to most but not all DSM 5 criteria.

## APPENDIX B. READINESS RULER

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
<b>Not at all ready</b>				<b>Somewhat ready</b>					<b>Extremely ready</b>

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.”

Asking the patient why the number is not lower invites him or her to articulate reasons and motives for considering change. If you ask why the number is not higher, it elicits barriers and reasons for staying the same. In effect, it showcases resistance talk rather than change talk.

## APPENDIX C. EXAMPLE 1 OF A CANNABIS SCREENING AND BRIEF INTERVENTION — LOW/MODERATE CANNABIS RISK

### SBIRT INITIAL SCREENING HANDOUT SCRIPT

(Typically handed to patient by front desk staff upon patient’s arrival)

Hi, Mr./Ms. \_\_\_\_\_.

**EXPLAIN:** *As part of our effort to provide comprehensive care we are working with all of our patients to identifying behaviors that can be related to various health conditions. The questions on this form help us to understand more about your risk level in relation to these health conditions. All of your answers are confidential and voluntary. If you can take a couple of minutes to answer these two pages fully, we would greatly appreciate it. Thank you.*

### Initial Screen

1. How often do you have a drink containing alcohol? (if you answer ‘never’ skip next two questions)

Never	Monthly or Less	2-4 Times a month	<b>2-3 times a week</b>	4 or more times a week
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2. How many standard drinks containing alcohol do you have on a typical day?

<b>1 or 2</b>	3 or 4	5 or 6	7 to 9	10 or more
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3. How often do you have 6 or more drinks on one occasion?

<b>Never</b>	Less than 1 time per month	Monthly	Weekly	Daily/almost daily
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4. Have you used marijuana/ cannabis in the last year?

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Never	Monthly or Less	2-4 times per month	<b>2-3 times per week</b>	4 or more times per week
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5. Have you used a prescription medication for non-medical reasons? (...for instance because of the feeling it caused or experience you have)

<b>Never</b>	Monthly or Less	2-4 times per month	2-3 times per week	4 or more times per week
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6. Have you used other illegal drugs in the past year?

<b>Never</b>	Monthly or Less	2-4 times per month	2-3 times per week	4 or more times per week
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7. Over the past 2 weeks, how often have you been bothered by any of the following:

a) Little interest or pleasure in doing things?

Not at all	<b>Several days</b>	More than half the days	Nearly every day
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b) Feeling down, depressed, or hopeless?

Not at all	Several days	More than half the days	Nearly every day
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**ACTION:** SBIRT Clinician scores the Initial Screen. If positive, give Secondary Screen.

### **SBIRT SECONDARY SCREENING HANDOUT SCRIPT** *(In primary care, this is typically handed out by person rooming the patient or nurse taking vitals)*

**EXPLAIN:** “Thank you for answering the wellness behaviors questionnaire given to you in the waiting area. Your answers help us to provide you with comprehensive care. We have a few more questions to ask you about your (alcohol use/drug use/mental health) to more fully understand your personal risk level. I just wanted to remind you that all of your answers are confidential and voluntary. If you could take a brief moment to answer these, we would really appreciate it.”

**DELIVER:** Secondary screen(s) is based on initial risk(s) identified. In this example the patient endorsed using cannabis 2-3 times per week and so needs the DAST and CIS. If your agency does this via interview; please ask all questions in DAST plus the Cannabis Integrated Screener. If the patient self-administers the secondary tools – please create a single form that allows the patient to answer all questions on the DAST and CSI.

### **Cannabis Integrated Screener**

1. In the past 30 days, how many days have you used marijuana? (including dabbing, vaping, or eating) = **8**

2. Typically, how many times per day do you use? **1x** 2x 3x 4 or more

3. How do you typically use marijuana?

a. Do you smoke it? **Y** or **N** If so, do you typically use a Vape? **Y** or **N**

if so, how often? \_\_\_ **2 X WEEK**

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b. Do you “Dab”? Y or **N**

c. Do you use joints, a bong, or pipe? Y or **N**

d. Do you use edibles? **Y** or N

if so, do you use manufactured products? **No** Do you make your own? **Rarely**

### CIS Part 2

1. Have you tried to control your marijuana use by smoking only at certain times of the day or certain places? **Yes**

2. Have you continued to smoke marijuana when you promised yourself you would not? **NO**

3. Have you had trouble thinking clearly in everyday activities **NO**

4. Have you worried about the amount of money you've been spending on marijuana? **NO**

5. Have you seen or heard things that are not really there, experienced false beliefs, or experienced paranoia in a way that was concerning to you? **NO**

6. Have you driven a car or other vehicle, including a bicycle, after using marijuana? **Yes**

7. Have you done something you regret as a result of your marijuana use? **NO**

8. Have you noticed that your memory is not as good as it used to be? **NO**

9. Have you found that marijuana helps with any of the following difficulties: trouble sleeping, trouble focusing, your worries, negative or painful emotions? **Yes**

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? **NO**

**ACTION:** For any positive secondary screens deliver the BI plus offer appropriate level of care BT or RT.

**TIP:** When using the CIS, it can be important and helpful to gather more specific information about a patient's frequency and method of marijuana use, especially given the new potency data around different methods of use. Below are some questions that might be helpful at obtaining further information.

1. In the past 30 days, how many days have you used marijuana? (including dabbing, vaping, or eating) \_\_\_\_\_ days

2. Typically, how many times per day do you use?

One

Two

Three

Four or more

3. How do you typically use marijuana?

a. Do you smoke it? Y or N

b. If so, do you typically use a Vape? Y or N

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c. if so, how often? \_\_\_\_\_

(Less than 1 a month, 2–4x/month, weekly, 2–3x/week, 4x or more/week)

d. Do you “Dab”? Y or N

e. if so, how often? \_\_\_\_\_

(Less than 1 a month, 2–4x/month, weekly, 2–3x/week, 4x or more/week)

f. Do you use joints, a bong, or pipe? Y or N

g. if so, how often? \_\_\_\_\_

(Less than 1 a month, 2–4x/month, weekly, 2–3x/week, 4x or more/week)

h. Do you use edibles? Y or N

i. if so, do you use manufactured products? Y or N

j. Do you make your own edibles? Y or N

4. Do you know THC and CBD levels in the type of marijuana you typically use? Y or N

a. If so, what is the average % of THC? \_\_\_\_\_ of CBD? \_\_\_\_\_

## CASE SCENARIO: SBIRT INITIAL/SECONDARY SCREENING SCORING/REVIEW/ DISCUSSION WITH PATIENT

*C = Clinician*

**P = Patient**

*C = Hey Tyler, it's so nice to meet you. Are you a native Vermonter?*

**P = No, I grew up in Massachusetts.**

*C = Which part?*

**P = Shrewsbury.**

*C = That's a nice town. Your T-shirt suggests you're a Pats fan? Did you catch the last game?*

**P = Yeah, that was a tough one.**

*C = I thought so too. They have so many injuries this season.*

**P = It's gonna be tough for them to make a run in the playoffs.**

*C = You're probably right, but I hope you're wrong. (shifting gears) Thanks for answering all of those questions we gave you – it's a lot but really helps us work with you to reduce your overall health risk. It's confidential, so anything we discuss is between you and me and your medical team here. I looked over your answers and I see that you use marijuana a couple of times a week. I wonder what your thoughts are around your use?*

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**P = I don't really think about it much, I mean, it's just pot. I use a little vape I got downtown so that it doesn't bother my lungs, and I only use it when I'm hanging out or if I need to chill.**

*C = So it sounds like you're thinking about your health and that you only smoke in particular situations.*

**P = Yeah. I guess so.**

*C = What do you enjoy about using it?*

**P = Well, if I've had a really stressful week in school or I've had too much caffeine it can help me relax and go to sleep.**

*C = You said you also use when you're hanging out?*

**P = Yeah. It's fun to smoke and watch a movie with friends. It's good for a low-key night.**

*C = So it helps you to relax when you have a stressful week and it can make watching a movie with friends more interesting. Does that sound right?*

**P = Uh-huh.**

*C = Do you ever notice any negative effects, or do you have any worries about the consequences of your use?*

**P = Not really. I feel like I'm on top of it, but I know that if my parents found out they would be really mad at me. They think all drugs are the same.**

*C = I get that. I wouldn't want my parents to hear about things that might disappoint them either. Can you tell me more about that feeling?*

**P = I definitely don't want to get busted, but I'm careful. I don't buy that much, and if it starts to slow me down then I'd use less or stop. I need to keep my grades up.**

*C = From what you're telling me, your grades and your health are important to you, and you would alter your use to reduce or prevent problems. I'm really happy to hear that...because those are areas that we know can suffer when people use frequently. I noticed that you marked off that you didn't know the potency of THC or CBD in your weed.*

**P = I know it's pretty strong, but I don't know what percent it is.**

*C = Sure, that makes sense. Well, just so you know, a lot of the weed that's around these days is high in THC and really low in CBD. You probably know this, but THC is the chemical that produces most of the 'high' and CBD has a lot of the medicinal properties. These high THC/low CBD strains can increase the risk of some of the negative effects like anxiety, and can make things like driving more dangerous, especially when mixed with alcohol. Does that make sense?*

**P = Yeah. I've heard a little about CBD, but that's interesting. I didn't know that.**

*C = I just want you to know that I have some concerns about that, so let's make sure we check in about that next time you're here. I also heard you say that if your marijuana use interfered with your health or with your grades then you'd use less or stop.*

**P = Right.**

*C = Given what we've talked about today, I wonder how ready you feel to change your marijuana use? If I were to give you a scale from 1 to 10, with 1 being 'not at all' and 10 being 'I want to stop using now', how ready would you say that you feel to reduce or stop using marijuana?*

**P = I don't know. Maybe like a 2.**

*C = I wonder why you didn't choose something lower, like a 0 or 1?*

**P = I don't want to get busted since the school would probably tell my parents. I'm also trying to get back in shape to do some running and I don't want smoking to get in the way.**

*C = Do you think that you'd be willing to consider reducing the likelihood of having your parents find out or of marijuana messing with your lungs by changing your cannabis use?*

**P = I guess.**

*C = So if you're smoking twice a week now, how could you reduce those risks?*

**P = By buying and using it less, like maybe once a week.**

*C = Ok, once a week sounds like an action you'd be willing to try. Can you think of supports that can help you make that change?*

**P = My buddy Sean is always working out. Maybe when I get stressed I can try to go to the gym with him.**

*C = That sounds like a really good plan. Do you have any other thoughts on ways to get support?*

**P = Maybe hanging out more with people that I know don't smoke, so that I'm not around it during the week.**

*C = That also sounds like a good idea. I think you're well on your way. I look forward to seeing you at your next appointment and hearing about how successful you've been and how your workout plan is coming along!*

## APPENDIX D. EXAMPLE 2 OF A CANNABIS SCREENING AND BRIEF INTERVENTION—HIGH CANNABIS RISK

**EXPLAIN:** *Hi, Mr. Logan "Before you go back with the nurse we have a few wellness behaviors questions we would like you to answer. As part of our effort to provide comprehensive care we are working with all of our patients to identify behaviors that can be related to various health conditions. The questions on this form help us to understand more about your risk level in relation to these health conditions. All of your answers are confidential and voluntary. If you can take a quick minute to answer these two pages fully, we would greatly appreciate it. Thank you."*

**DELIVER:** Initial Screen

1. How often do you have a drink containing alcohol? (if you answer 'never' skip next two questions)				
Never	Monthly or Less	2–4 Times a month	2–3 times a week	<b>4 or more times a week</b>
2. How many standard drinks containing alcohol do you have on a typical day?				
1 or 2	<b>3 or 4</b>	5 or 6	7 to 9	10 or more
3. How often do you have 6 or more drinks on one occasion?				
Never	<b>Less than 1 time per month</b>	Monthly	Weekly	Daily/almost daily



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4. Have you used marijuana/ cannabis in the last year?				
Never	Monthly or Less	2–4 Times a month	2-3 times a week	<b>4 or more times a week</b>
5. Have you used a prescription medication for non-medical reasons? (for instance, because of the feeling it caused or experience you have)				
Never	<b>Monthly or Less</b>	2–4 times per month	2-3 times per week	4 or more times per week
6. Have you used other illegal drugs in the past year?				
<b>NEVER</b>	Monthly or Less	2–4 times per month	2-3 times per week	4 or more times per week
7. Over the past 2 weeks, how often have you been bothered by any of the following:				
a) Little interest or pleasure in doing things?				
Not at all	Several days	<b>More than half the days</b>	Nearly every day	
b) Feeling down, depressed, or hopeless?				
Not at all	Several days	<b>More than half the days</b>	Nearly every day	

**DELIVER:** Upon completion, practitioner reviews the initial screen. If it is not complete, please ask the patient to complete missing items prior to going to exam room. This patient (Jeff Logan) endorsed daily use as well as alcohol and mood risk (depression). Patient scores equal AUDIT-C = 6; Drug screeners = Positive (>1); PHQ-2 = 4I. The practitioner administers the following appropriate secondary screens – AUDIT, DAST, PHQ-9 and CIS.

**EXPLAIN:** *“Thank you Mr. Logan for answering the questionnaire given to you in the waiting area regarding wellness behaviors. Your answers help us to provide you with comprehensive care. We have a few more questions to ask you about your (alcohol use/drug use/mental health) to more fully understand your personal risk level. I just wanted to remind you that all of your answers are confidential and voluntary. If you could take a brief moment to answer these, we would really appreciate it.”*

**ACTION:** Score secondary screens.

Add a score of 6 from AUDIT-C

4. How often during the last year have you found that you were not able to stop drinking once you had started?				
(0) Never	<b>(1) Less than monthly</b>	(2) Monthly	(3) Weekly	(4) Daily or almost daily
5. How often during the last year have you failed to do what was normally expected from you because of drinking?				
(0) Never	<b>(1) Less than monthly</b>	(2) Monthly	(3) Weekly	(4) Daily or almost daily
6. How often during the last year have you been unable to remember what happened the night before because you had been drinking?				
<b>(0) Never</b>	(1) Less than monthly	(2) Monthly	(3) Weekly	(4) Daily or almost daily
7. How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?				
<b>(0) Never</b>	(1) Less than monthly	(2) Monthly	(3) Weekly	(4) Daily or almost daily

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8. How often during the last year have you had a feeling of guilt or remorse after drinking?

(0) Never    **(1) Less than monthly**    (2) Monthly    (3) Weekly    (4) Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

**(0) No**    (2) Yes, but not in the last year    (4) Yes, during the last year

10. Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested you cut down?

(0) No    **(2) Yes, but not in the last year**    (4) Yes, during the last year

**AUDIT Total Score = 11 (Risk = Brief Intervention for alcohol)**

### PHQ 9 – items 3-9

3. Trouble falling or staying asleep, or sleeping too much    0    1    **2**    3

4. Feeling tired or having little energy    0    1    **2**    3

5. Poor appetite or overeating    **0**    1    2    3

6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down    0    1    **2**    3

7. Trouble concentrating on things, such as reading the newspaper or watching television    **0**    1    2    3

8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual    **0**    1    2    3

9. Thoughts that you would be better off dead or of hurting yourself in some way    0    **1**    2    3

**Total PHQ-9 Score = 11 (moderate depression)**

*Scores of 5, 10, 15, and 20 represent cut points for mild, moderate, moderately severe and severe depression, respectively.*

### DAST-10

Do you abuse more than one drug at a time? **Yes**

Are you always able to stop using drugs when you want? **Yes**

Have you had “blackouts” or “flashbacks” as a result of drug use? **NO**

Do you ever feel bad or guilty about your drug use? **Yes**

Does your spouse/partner/parents ever complain about your involvement with drugs? **Yes**

Have you neglected your family because of your drug use? **Yes**

Have you engaged in illegal activities in order to buy/obtain drugs? **NO**

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Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs? **NO**

Have you had medical problems as a result of your drug use (e.g. memory loss, seizures, bleeding, hepatitis, coughing, chest irritation, and bronchitis)? **NO**

**DAST Score = 5 (Risk = Referral to Treatment).**

### Cannabis Intervention Screener Results

1 How often have you used marijuana in the past year? (including smoking, vaping, dabbing, or edibles)? (including dabbing, vaping, or eating) **more than 20**

2. Typically, how many times per day do you use? 1x **2X** 3x 4 or more

3. How do you typically use marijuana?

a. Do you smoke it? **Yes** If so, do you typically use a Vape? No If so, how often? **DAILY**  
(how often daily, multiple times per day, weekly? etc.)

Do you "Dab"? **NO** If so, how often? \_\_\_\_\_ (how often daily, multiple times per day, weekly, monthly, etc.)

Do you use joints, a bong, or **pipe**? **YES** If so, how often? \_\_\_\_\_ (how often daily, **multiple times per day**, weekly? etc.)

b. Do you use edibles? **NO**, if so, do you use manufactured products? Do you make your own? **RARELY**

### CIS Part 2

1. Have you tried to control your marijuana use by smoking only at certain times of the day or certain places? **Yes**

2. Have you continued to smoke marijuana when you promised yourself you would not? **Yes**

3. Have you had trouble thinking clearly in everyday activities? No

4. Have you worried about the amount of money you've been spending on marijuana? **Yes**

5. Have you seen or heard things that are not really there, experienced false beliefs, or experienced paranoia in a way that was concerning to you? No

6. Have you driven a car or other vehicle, including a bicycle, after using marijuana? **Yes**

7. Have you done something you regret as a result of your marijuana use? No

8. Have you noticed that your memory is not as good as it used to be? **Yes**

9. Have you found that marijuana helps with any of the following difficulties: trouble sleeping, trouble focusing, your worries, negative or painful emotions? **Yes**

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? **No**

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**ACTION:** For any positive secondary screens deliver the **BI** plus offer appropriate level of care BT or RT.

**EXAMPLE PATIENT TWO:** Jeff scores: AUDIT = 11; DAST = 6; PHQ-9 = 11; CIS = 7. During his SBIRT encounter the interventionist will conduct a brief intervention (brief negotiated interview) and offer Referral for Specialty Treatment for his drug risk (frequent use of cannabis) and combined depressed mood along with his less severe alcohol risk.

*C = Clinician*

**P = Patient**

*C = Hi Jeff, it's nice to meet you. Are you doing ok? – I know your MD stated that you're here for a wicked sinus infection?*

**P = I'm alright a bit tired and ready to relax.**

*C = I hear that – whenever I've got a sinus infection I can't wait to get out of work and chill.*

**P = Yeah, Doc Pete – he's known me for years and always takes care of me, the guy is no nonsense and when he told me it was important for me to take a few minutes to see you I figured I better listen...so what's your deal?**

*C = Well as Doc Pete probably told you I'm the wellness coach here and I help patients like you identified with health risks that could be lowered with specialized care.*

**P = What do you mean?**

*C = Well you know all those questions you answered – they actually let your doctor and your wellness team know that you're struggling with risks in a few areas of your life which could benefit from treatment. If it's alright with you I'd like to show you the results of the screening tools (and discuss what they mean for you. How does that sound?*

**P= Oh, Ok but I already know that my wife, others and now Doc Pete are concerned with my smoking so much weed and how it affects my moods....so I'm not really sure this can help me because I've never seen weed as a real problem and can't really be convinced that it is one?**

*C = So you don't see the weed as something negative when it comes to your moods or health and would rather no one else tried convincing you of that fact...*

**P = Yeah. That's it – been smoking since I was 15 sometimes everyday several times a day like I put on those forms and I think if anything it helps me to chill, and relax and even sleep better.**

*C = You've found a lot of benefits from using since you were young, and it's helped you to stay calm and sleep. Are there other benefits you've noticed?*

**P = Well, if I've had a really stressful day at work, rather than coming home pissed off - I hit a bowl on the way home I can be ok and not just wanting to go into my room and escape everyone at home.**

*C = Your saying it helps you actually feel like being with your family when you get home, instead of being alone and angry - it seems to take the edge off your mood.*

**P = Yeah. It's been a longtime since I actually was just plain happy and the only time I really seem ok now is just after I smoke or maybe drink, and smoke some. I'll get up and even want to dance to music – you know get silly but that all changes if I'm not partying.**

*C = Well it makes sense now that you'd be worried if Doc Pete or others like myself were trying to tell you to stop those strategies you've found to actually help you feel "better" and not be as angry or just plain down.*

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**P = Uh-huh.**

*C = If it's ok now that I understand there are a lot of benefits to what you do to feel better – I'd still like us to go over some of your answers and what they also mean –*

**P = Ok**

*C = The answers you gave come from three different health tools and your scores match risk levels and they give us some recommendations of what could help.*

Interventionist Action: Show patient scores and risk pyramids – with health effects.

Discuss: the alcohol tool suggests lower risk levels while the drug/cannabis tool suggest high risk – no pun intended. The PHQ – has questions about mood and depression and your answers equate to a moderate depression

*Reflect: Does that all make sense to you or How does that sound to you?*

**P = yeah, I guess so, I didn't think things were that bad...**

*C= hearing the summary of these risks all together makes it seem bad.*

**P = I use less than most of my friends**

*C= We know that drinking more than 4 drinks per occasion or 14 drinks per week increases the risks of negative consequences; and for marijuana smoking weekly or greater creates risk.*

**P = My friend's must be really high risk (laughs)**

*C= You use less than your friends, but still at what is considered a risky level.*

**P= I definitely use less than some of my friends**

*C= Ok, but do you ever notice any negative effects, or do you have any worries about the consequences of your own use?*

**P = yeah, I guess so – when I'm not high it's hard for me to feel ok or have energy to do a lot – I mean I never let myself get too down and no way would I hurt myself – got a family and too much to lose.**

*C = you notice it's hard to really feel good without weed – so your baseline is to be down but not too too down. Can I ask when did your moods first get like this?*

**P = not really sure – but seems to be for a while maybe the last 10 years when I hit my 30's and life pretty much became a treadmill – wake up work, take care of kids, make sure we're financially ok to pay bills etc. I guess I'm feeling sort of stuck by it all.**

*C =You are feeling stuck, almost like you are on a treadmill.*

**P= Yeah, like every day is the same, I am just going through the motions.**

*C= Going through the motions.*

**P= Yeah**

*C= and some of those motions are planned smoking time.*

**P= Yeah, laughs**

*C= I heard you say that making sure you are financially ok to pay bills is important and on the questionnaire, you reported that you sometimes worry about the money you spend on marijuana?*

**P = It ain't cheap**

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C = So there are some not so great things about marijuana use; having to plan your use, the cost, and you also reported memory concerns and smoking sometimes even after you promised yourself you wouldn't.

**P = yeah**

C = Would it be ok for me to share some research about marijuana and depression?

**P=sure, why not**

C = Research suggests that marijuana use impacts depressive symptoms. One study found people that use cannabis are four times more likely than non-cannabis users to develop depressive symptoms over time, more likely to experience suicidal ideation and loss of pleasure

**P = I think marijuana helps me when I am feeling down.**

C = You are not sure if marijuana has contributed to your depression.

**P = I thought marijuana helped me when I am feeling down. What you're telling makes me wonder if I was mistaken.**

C = So, now you're wondering if perhaps marijuana may have contributed to your depression, your feeling stuck or your moods. You talk about your life feeling stuck, like you are just going through the motions, what do you think about creating a change in your pattern of marijuana use just to see if you notice any changes in your mood?

**P= What do you mean?**

C = Well you report smoking daily, and feeling stuck, some of the things in your daily life such as going to work, kids and family are difficult if not impossible to alter, but your marijuana use is something you have control over to try and change up in your routine

C = On a scale of 1-10, 1- being not at all and 10 being completely how ready are you to change up your marijuana use pattern?

**P = maybe a 5**

C = A 5, that is 50 percent ready. Fifty percent is higher than I would've figured. Why not 20 or 30 percent?

**P = Well like you said it is something I have the power to change, and it is expensive and takes a lot of time and planning.**

C = You are currently smoking daily, what kind of change do you think you could manage?

**P = I think I could just smoke on the weekends, I have been thinking about it lately cause I usually smoke after work before going in the house to be with my family. I could just go inside instead.**

C = So only smoking on the weekend and during the week going directly into the house when you get home?

**P = Yeah, I could try that.**

C = How long do you think it would take for you to know if there was a difference in how you feel?

**P = at least a month.**

C = That sounds reasonable. What might get in the way of you reaching this goal?

**P= Having a stressful day at work, meeting up with a friend after work, or habit.**

C = What are some thoughts about how you might manage these types of stressors as they arise?

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**P= I really don't know.**

*C= We have a health clinician that could meet with you weekly or we could refer you to an intensive outpatient treatment to help you experiment with different skills to use while you are making these changes in your marijuana use...*

**P= I don't need treatment to change my use.**

*C= It sounds like you feel confident that you can make these changes on your own.*

**P= If you would like I have a list of things you could do instead of smoke when a stressor arises, we could go over these together.**

*ACTION: Review and discuss 5 Ds with patient (Delay, Distract, Drink water, Deep breaths, Discuss feelings)*

*C= Ok, it sounds like some of these 5Ds may work for you. Today is Tuesday, when do you think you will switch to only smoking on the weekend?*

**P= today.**

*C= Ok, is there anyone you can share this goal with that will encourage you?*

**P= my wife, she would definitely be supportive.**

*C= that sounds great. One more thing, research suggests that when people reduce or stop smoking marijuana they may increase their alcohol intake. How will you make sure this doesn't happen to you?*

**P= Well I generally have a couple beers after work. I guess if I start having more than a couple beers after work.**

*C= Is that something that you will monitor?*

**P= yeah, I will give it my best.**

*C= earlier I said that low risk drinking limits include drinking no more than 4 drinks per occasion and no more than 14 per week. How many drinks do you generally have per week right now?*

**P= gosh... usually two on work nights and a couple more on the weekends.**

*C= So maybe more than the low risk 14 per week.*

**P= probably.**

*C= What do you think is a reasonable limit for you given that you want to keep an eye on your drinking while you reduce marijuana?*

**P= I think no more than 16 per week.**

*C= Ok, so still above the low risk limit and a boundary about the amount you will drink in a week.*

**P= yeah.**

*C= I wonder if it would be ok for me to check in with you over the next week, see how you are doing with your goals and if you want any assistance?*

**P= sure but it has to be either between 7-8 am or 5-6 pm.**

*C= Ok, I can make that happen. Today is Tuesday, is there a day that would be best?*

**P= How about next Tuesday?**

*C= Sounds good. Thank you for sharing your time with me. Talk with you Tuesday.*

# APPENDIX E. CANNABIS BRIEF NEGOTIATED INTERVENTION (BNI) ALGORITHM

## Cannabis Brief Negotiated Interview (BNI) Algorithm

<p><b>1. Raise the subject</b></p>	<p>Is it OK if we discuss the health and wellness questionnaire you completed?</p>
<p><b>2. Pros and Cons</b></p> <p>Elicit</p> <p>Summarize</p>	<p>Based on your screening responses seems like you smoke nearly everyday and you responded that it helps you cope with negative feelings. Can you tell me what else you like using? ..... Also can you share with me some of the negatives you noticed about using? So there are both some + and some not so + reasons for using, does that sound right?</p>
<p><b>3. Information and feedback</b></p> <p>Provide</p> <p>Elicit</p>	<p>Share information as a question – Based on the results of your screening I was wondering if you had ever experienced the following – increased anxiety or forgetfulness after using?</p> <p>Based on patients' response you could then do some psychoeducation: We know that ...</p> <ul style="list-style-type: none"> <li>Using marijuana can lead to altered perceptions and moods, impaired coordination, difficulty with thinking and problem solving, and disrupted learning and memory.</li> </ul> <p>What do you think about this information?</p>
<p><b>4. Readiness ruler</b></p> <p>Reinforce positives</p> <p>Ask about lower number</p>	<p>On a scale from 1-10, with 1 being not ready at all and 10 being completely ready, how ready are you to change your [x] use? You marked _____. that means you're _____% ready to make a change! Why did you choose that number and not a lower one like 1 or 2? Reinforce change talk.</p>
<p><b>5. Negotiate a plan</b></p> <p>Identify strengths and supports</p> <p>Have patient write down steps</p> <p>Offer appropriate resource</p>	<p>What are some steps you might take to reduce your risk? What will help you to reduce the things you don't like about using marijuana? What supports do you have for making this change? How can you use those supports/resources to help you now? Why don't we write down your Prescription for Change? This is what I heard you say... I have some additional resources that people sometimes find helpful. Would you like to hear about them?</p> <ul style="list-style-type: none"> <li>Primary care, outpatient counseling, mental health treatment.</li> </ul>



# APPENDIX F. MARIJUANA INFORMATION SHEET

## What's really in the week you're smoking?

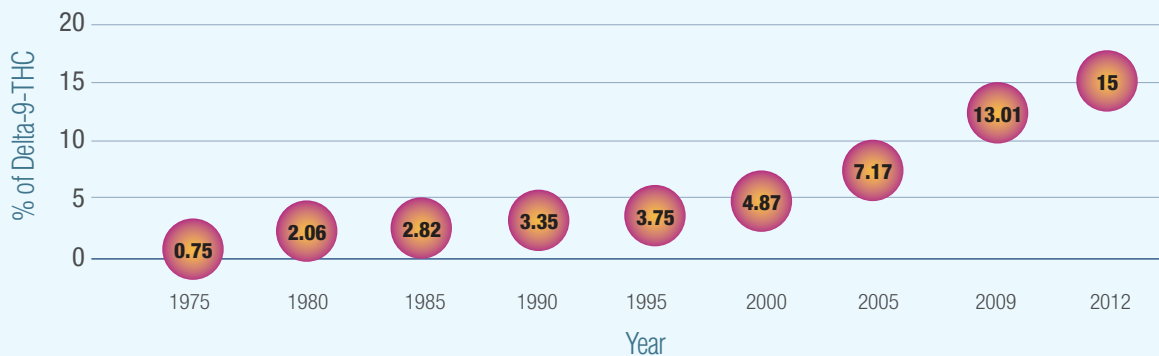
### Marijuana's Chemical Makeup

- Contains more than 460 active chemicals – and over 70 known cannabinoids! Eight produce the most effect (THC, THC-V, THC-A, CBD, CBD-A, CBD-V, CBN, CBG, CBC)
- Delta-9-Tetrahydrocannabinol (Delta-9-THC) is the primary and most familiar psychoactive compound. Research shows that THC interacts with the brain similar to the endogenous cannabinoid neurotransmitter anandamide, which is involved in the neurological processes of memory and pleasure seeking<sup>1</sup>

### Cannabinoid Potency

- Potency is a result of many variables – plant genetics and strain, cultivation method, harvesting, and processing
- The cannabinoid potency profile is the concentration of cannabinoids expressed in percentage of weight per weight (% wt/wt). This is the weight of the cannabinoid divided by the total plant weight. Edibles, tinctures, and topical are displayed in milligrams of cannabinoids per sample serving size (mg/serving)
- Marijuana users in the 1970s were most likely to smoke the leaves and initiate use around 20 years of age. Marijuana users today, however, start in their mid-teens and prefer to smoke the more potent flowering tops, (buds) of the plant
- **Marijuana Plant Flower** = 8% – 25% THC-A
- **Edibles** (brownies, candies, chocolate) = .05 mg to 105 mg cannabinoids per serving
- **Cannabis Concentrates** (hash oils, tinctures, waxes, etc.) = often exceed 70% THC
- **Vaporizers with Cartridges** (which like e-cigarettes) = 15 –30% THC
- **Synthetic Marijuana** (K2, fake weed, Yucatan Fire, Skunk, Moon Rocks) = contain dried, shredded plant material and chemical additives that are responsible for their psychoactive (mind-altering) effects and their potential toxicity

**Cannabinoid Averages of Illicit Cannabis Samples by Year Seized<sup>1,2</sup>**



### Effects of Marijuana Increase with Potency

- Marijuana is stronger today than in the past. For a new user, this may mean exposure to higher concentrations of THC, with a greater chance of adverse or unpredictable reaction
- Using marijuana can lead to altered perceptions and mood, impaired coordination, difficulty with thinking and problem solving, and disrupted learning and memory
- At higher level of THC (70% plus), negative effects include psychosis, irritability and paranoia
- Marijuana also raises heart rate by 20-100% shortly after smoking which lasts for hours
- Smoking is an irritant to the lungs and can cause respiratory problems and diminished pulmonary functioning, including bronchitis, coughing, phlegm, and lung infection

### Oral and Inhaled Medicine

- Areas of therapeutic potential include
- Analgesia in chronic neuropathic pain
- Appetite stimulation in debilitating diseases (e.g., cancer and AIDS)
- Spasticity on multiple sclerosis

### Does Smoking Marijuana as a Teen Really Matter?

- 1 in 6 teenagers who try marijuana, become addicted which results in withdrawal symptoms including irritability, sleeplessness, decreased appetite, anxiety and drug craving<sup>1</sup>
- Individuals who use cannabis before the age of 17 were 60% less likely to graduate high school and college, lost an average of 8 IQ point, used illicit drugs more frequently, and were more likely to attempt suicide than their non-using peers over the next two decades<sup>3</sup>

### What do Studies Show about Casual Use?<sup>4</sup>

- THC can disrupt focus, working memory, decision-making and motivation for 24 hours after use
- Even young adults who smoked 1-2 x weekly showed structural brain differences
- Many dangerous Pesticides, Fungicides, and Plant Growth Regulators (PGR's) are used on Cannabis, often indiscriminately throughout the flowering states of growth. These residual toxins create potential safety issues to individual when consumed

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## APPENDIX G. GLOSSARY

**ANXIOGENIC:** Increased anxiety.

**ANXIOLYTIC:** Reduced anxiety.

**BRIEF NEGOTIATED INTERVIEW (BNI):** A semi-structured interview process based on MI that is a proven evidence-based practice with a primary goal to identify and effectively intervene with those who are at moderate or high risk for psychosocial or health care problems related to their substance use.

**CANNABIDIOL (CBD):** One of the cannabinoids found in cannabis that is non-psychoactive, and has known medicinal benefits.

**CANNABINOIDS:** A variety of closely related compounds, many of which have not been detected in any other plant besides cannabis; at least 113 different cannabinoids have been isolated from cannabis, exhibiting varied effects.

**CANNABIS:** A psychoactive drug from the Cannabis plant known for medical and recreational applications. Also known as marijuana (among other names). *Cannabis* is a genus of flowering plant in the family Cannabaceae. The number of species within the genus is disputed. The two most known species are *Cannabis sativa* and *Cannabis indica*.

**COGNITIVE BEHAVIORAL THERAPY (CBT):** A social learning and skills transfer model for learning interpersonal and intrapersonal (self-management) skills, which focuses on the patient's internal motivation for sustaining engagement and treatment retention. The approach emphasizes collaboration between the clinician and the patient. CBT is often combined with Motivational interviewing/Motivational Enhancement Therapy (MI/MET).

**DABBING:** Inhaling the vapors of concentrated marijuana that has been placed on an extremely hot metal object called a nail.

**DELTA-9-TETRAHYDROCANNABINOL (THC):** The principal psychoactive substance in cannabis.

**DEPENDENCE:** A physiological state in which the brain acts normally only in the presence of the substance; withdrawal symptoms occur when the substance is discontinued.

**ENDOCANNABINOID SYSTEM:** A biological system composed of endocannabinoids, which are neurotransmitters that bind to cannabinoid receptors; cannabinoid receptor proteins are expressed throughout the mammalian central nervous system (including the brain). Two primary endocannabinoid receptors have been identified: CB1, found predominantly in the brain and nervous system, as well to a lesser extent in peripheral organs and tissues, and CB2 receptors, found throughout the organ systems and involved in the regulation of appetite, immune system functions, and pain management.

**ENTOURAGE EFFECT:** A mechanism by which compounds present in cannabis (many of which are largely non-psychoactive) modulate the overall medicinal and psychoactive effects of the plant.

**HASHISH (HASH):** A sticky, thick, dark-colored resin like sap that is made from the flower of the female cannabis plant.

**MARIJUANA:** The common name for cannabis. Slang names for marijuana include: herb, ganja, Mary Jane, weed, and bud.

**PRACTITIONER:** A health care or behavioral health clinician such as a physician, nurse, nurse practitioner, physician's assistant, professional counselor, social worker, or psychologist.

**JOINT:** A rolled marijuana cigarette. Unlike commercial tobacco cigarettes, joints are ordinarily hand-rolled by the user with rolling papers, though in some cases they are machine-rolled.

**MDMA (ECSTASY):** A synthetic drug that acts as a stimulant and hallucinogen. It produces an energizing effect, distortions in time and perception, and enhanced enjoyment from sensory experiences.

**MOTIVATIONAL INTERVIEWING (MI):** A patient-centered, directive method for promoting engagement and collaboration and enhancing intrinsic motivation to change by exploring and resolving ambivalence.

**PHYTOCANNABINOIDS:** Any plant-derived natural product capable of directly interacting with cannabinoid receptors or sharing chemical similarity with cannabinoids, or both. The most notable cannabinoids are THC and CBD.

**POTENCY:** In reference to cannabis, the amount of delta-9-tetrahydrocannabinol (THC) or cannabidiol (CBD) present in the dried plant.

**SCHEDULE 1:** A list issued by the Drug Enforcement Agency of substances with a high potential for abuse. By federal law, prescriptions for Schedule 1 substances may not be written and they may not be made available for clinical use. As of publication (Month 2018), THC (the psychoactive substance in cannabis) is listed as a Schedule 1 drug, even though some U.S. states have legalized marijuana use.

### **SCREENING, BRIEF INTERVENTION AND REFERRAL TO**

**TREATMENT (SBIRT):** A comprehensive, integrated, public health approach to the delivery of early intervention and treatment engagement for alcohol and substance use disorder.

**SINSEMILLA:** Highly potent marijuana from female plants that are specially tended and kept seedless by preventing pollination to induce a high resin content.

**SUBSTANCE USE DISORDER (SUD):** A diagnostic category in the *Diagnostic and Statistical Manual Of Mental Disorders* (5th ed.) for a condition in which the use of one or more substances leads to a clinically significant impairment or distress. This term replaces the terms “addiction” and “substance abuse disorder.”

**SYNTHETIC CANNABINOIDS:** Manufactured and chemically similar substances to marijuana cannabinoids that are not actually found in plant-based marijuana.

**TERPENES:** Fragrant oils in cannabis that provide its aromatic diversity and that play a role in the overall effect of the cannabis entourage effect.

**VAPING:** To inhale and exhale the vapor produced by an electronic vaping pen or similar device. As the cannabis does not burn during vaping, and vaping is viewed as less harmful to the lungs.

**VAPORIZER (VAPE PEN):** A battery-powered device used for vaping.

**WATER PIPE:** A popular device for smoking cannabis and tobacco. Also referred to as a bong. Cannabis or tobacco is filtered through the water pipe to cool the smoke, remove ash, and provide a smoother smoking experience.

**WITHDRAWAL:** A condition resulting from the discontinuance of an addictive drug. The withdrawal experience often includes uncomfortable or painful physical and psychological symptoms. Withdrawal symptoms associated with cannabis are described as uncomfortable but not life threatening.

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