

Marijuana Myths

Myth No. 1: Marijuana is medicine

Although 23 states allow the legal sale of marijuana for “medicinal purposes,” it is important to note that there are currently no Food and Drug Administration–approved indications for medical marijuana. There is modest evidence that the active compounds in marijuana (delta-9-tetra-hydrocannabinol [THC] and other cannabinoids) can be effective in the management of the muscle spasticity associated with multiple sclerosis, the treatment of nausea associated with chemotherapy, and increasing the appetite of patients with wasting due to AIDS, and there are FDA-approved synthetic cannabinoids that can be prescribed for these symptoms. It is also important to note that there is no evidence that THC or other cannabinoids are useful in the treatment of mood or anxiety symptoms, even though these are often used as reasons for seeking medicinal marijuana. Indeed, marijuana may cause or worsen several psychiatric problems.

Myth No. 2: Marijuana is safe

Although there is consensus that moderate marijuana use in adulthood poses only limited health risks (including the known risks of smoking), there is robust evidence that marijuana use during youth (through the early 20s) causes several serious and permanent effects on the developing brain. One 2012 study showed that for youth who are dependent on marijuana before they are 18 years, there is an 8-point drop in IQ in adulthood ([Proc Natl Acad Sci USA. 2012 Oct 2;109\[40\]:E2657-64](#)). This IQ drop persists even if they quit smoking, and does not occur for those who first become dependent on marijuana in adulthood. A 2015 study demonstrated that even for adolescents who are light smokers (one to two times weekly) with no evidence of marijuana dependence, there are significant abnormalities in the size and shape of their amygdala and nucleus accumbens, with associated changes in their motivation, decision making, attention, functional memory, and processing of emotions ([J Neurosci. 2014 Apr 16;34\[16\]:5529-38](#)). These abnormalities increase with increased frequency of use, and are not seen in those who begin smoking in adulthood (mid-20s and later).

Beyond these findings of cognitive deficits, evidence is growing that adolescent marijuana use is associated with several psychiatric illnesses, including depression and anxiety. There is especially strong evidence for a causal link between marijuana use and psychotic illnesses in (genetically) vulnerable young people. Any marijuana user can experience a brief psychotic reaction if the amount ingested or smoked is great enough, but for those young people who carry a specific variant of the gene for catechol-o-methyltransferase (COMT, an enzyme that degrades neurotransmitters), smoking marijuana in adolescence nearly triples their risk of developing schizophrenia in adulthood. For youth with a variant of the AKT gene (another enzyme affecting dopamine signaling in the brain), daily use of marijuana raises their risk of developing schizophrenia sevenfold. Clearly, marijuana can be the critical environmental trigger for schizophrenia in genetically vulnerable youth. Until we have a comprehensive knowledge

of the relevant genes, and routinely check every patient's complete genetic profile, it is reasonable to assume that any young person using marijuana is significantly increasing the risk of developing schizophrenia, a chronic and disabling condition.

Myth No. 3: Marijuana has no effect on driving

A teenager who smokes on Saturday night may have lingering impairment of motivation, the ability to shift attention, the ability to learn complex tasks, and working memory. These are all critical cognitive abilities for learning, and can make studying on Sunday and performing well on a test on Monday much more difficult.

Marijuana intoxication significantly affects motor coordination, reaction time, and judgment, and multiple studies have demonstrated a direct relationship between blood THC concentration and impaired driving ability. A recent meta-analysis demonstrated that the risk of being in a car accident doubled after marijuana use ([Drug Alcohol Depend. 2004 Feb 7;73\[2\]:109-19](#)). These studies usually involved adults, and it is reasonable to assume that the risks may be more pronounced in adolescents, particularly ones who are new to driving or have other problems that could affect their attention or reaction time (such as attention-deficit/hyperactivity disorder). Beyond letting patients know about the increased risks of accidents, it may be worth reminding them that driving while intoxicated – even with legal use marijuana – is a criminal offense.

Myth No. 4: Marijuana has no effect on schoolwork

Aside from the risks of causing long-term cognitive changes and psychiatric problems that can affect school performance, the direct effects of marijuana intoxication can linger and affect school performance well after its use. The “high” from marijuana typically lasts from 1 to 3 hours, but the drug's effects on higher-level cognitive processes (mediated by the neocortex and hippocampus) can last for days. So a teenager who smokes on Saturday night may have lingering impairment of motivation, the ability to shift attention, the ability to learn complex tasks, and working memory. These are all critical cognitive abilities for learning, and can make studying on Sunday and performing well on a test on Monday much more difficult.

Myth No. 5: Marijuana is not addictive

Marijuana is addictive, with studies suggesting that nearly 9% of marijuana users will become addicted. Again, the risks are far greater for young people. Among people who begin using marijuana during adolescence, the rate of addiction climbs to 17%, and can be as high as 50% in daily users. Remember that addiction describes a pattern of continued use despite that use causing significant legal, social, or school and work

problems. Users also may develop physical dependence, with a withdrawal syndrome that includes irritability, restlessness, insomnia, and appetite changes; these can last as long as 2 weeks.

Currently available forms of marijuana are much more potent than those that were studied and used in prior decades. On average, the potency of smoked marijuana has tripled, and there are concentrates (in oil form, for example) and hybrids with much higher potency still. More potent marijuana increases the high from even a small dose, and increases the likelihood of addiction and of other immediate and lingering complications of its use. So, parents who think they know what marijuana does to adolescents based on their own youthful experiences are significantly underestimating the risks.

When asking your patients explicitly about marijuana use, be curious and nonjudgmental, but also be frank and forthright about what is known about the risks associated with its use. Although the current legal and political changes around marijuana use may have given them the impression that marijuana use is safe, you want them to have the facts they need to make informed decisions. Even if you only discuss one of these myths with your patients, you will have equipped them with powerful information that they may use and share with their friends.