

PRESCRIPTIONS FOR PARENTS -

MAKING SCIENTIFIC RESEARCH PRACTICAL FOR FAMILIES



THE DANGERS of MARIJUANA

Since 1989, national support for legalization of marijuana has tripled - from 16% to 54% now. (Pew Research Center April 4, 2013)

Colorado legalized the medical use of marijuana in 2000 and then legalized possession of small amounts of marijuana in January, 2014, so more research is available regarding the potential dangers of marijuana - even casual use. Adolescents, who are the most likely to experiment, are also at the greatest risk to become addicted and to experience long-term damage to their developing brains.

Below we list some of the more recent research regarding the dangers of marijuana, as well as information on the potential medical benefits. We hope this will help you have an informed and factual conversation with your children.



WHAT IS MARIJUANA?

The main active chemical in marijuana is THC (delta-9-tetrahydrocannabinol), but other brain-affecting chemicals are also found, as well as many contaminants. When smoked, THC rapidly passes from the lungs into the bloodstream and then to the brain.

Important for parents to know is that the marijuana being smoked today is much more potent than that available when they were teens.

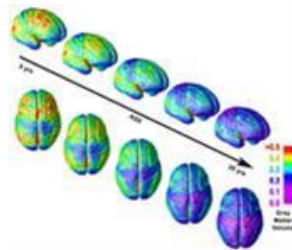
WHO IS USING MARIJUANA?



RISKS OF MARIJUANA

COGNITIVE CHANGES

The most significant dangers of marijuana use involve the decreased ability to pay attention, create memories and to learn. Failure to learn interferes with the ability to achieve educational goals, and heavy use of marijuana is associated with an increased risk of dropping out of high school.



THE ADOLESCENT BRAIN and MARIJUANA

THC, tetrahydrocannabinol, is the major active ingredient in marijuana. When it is inhaled or eaten, THC attaches to a protein found in the brains of all people - called the cannabinoid receptor type 1 (CB1).

These receptors are found throughout the brain, especially in the areas that influence pleasure, memory (hippocampus), thinking and concentration (frontal cortex), sensory



MEDICAL USE OF MARIJUANA

21 states and the District of Columbia have approved the use of "medical" marijuana for various diseases, including glaucoma, Crohn disease, post-traumatic stress disorder, epilepsy, Alzheimer disease and chemo-therapy induced nausea and vomiting.

Research on medical use

In the 2013 "Monitoring the Future" study, 6.5% of 12th graders reported near-daily use of marijuana. 6.5% of 8th graders, 17% of 10th graders, and 22.9% of 12 graders had used marijuana in the month prior to the survey.

WHO BECOMES ADDICTED?

Many people do not think of marijuana as addictive - but that is incorrect. According to the 2012 National Survey on Drug Use and Health, approximately 9% of those who experiment with marijuana will become addicted - 2.7 million people age 12 years and older met criteria for marijuana dependence. (8.6 million met criteria for alcohol dependence.)

Adolescents are more likely to become addicted to marijuana due to the immature development of the brain, especially the reward / pleasure center.

Adolescents who start using marijuana are 2 - 4 times more likely to develop dependence within 2 years of use, compared with those who first are exposed during adulthood.

20 - 25% of daily adolescent users will become addicted.

Volkow ND, et al. Adverse Health Effects of Marijuana Use. New England J of Medicine 2014; 370:2219-2227.

Users may experience a withdrawal syndrome when they stop THC - becoming irritable, having sleep difficulties, losing weight - effects

Regular marijuana use during teen years leads to lower IQs as adults - demonstrating the importance of teaching adolescents to avoid this risk behavior.

Patients in New Zealand who were heavy marijuana users had a decrease of 8 points in their IQ by the time they were 38 years old.

Because marijuana affects so many areas of brain function, the ability to do complex tasks can be compromised. The affect of THC on the time perception area of the brain often leads to a complacent approach to life, and impacts the desire and ability to pursue academic, athletic, or other life goals.

HEART

Marijuana may cause cardiovascular complications, according to the American Heart Association. A study in France found that heart attacks, strokes and even death could be attributable to marijuana use.

(Jouanjus E. Cannabis Use: Signal of Increasing Risk of Serious Cardiovascular Disorders. J of American Heart Association 2014; 3 (2) e000638

SCHIZOPHRENIA / PSYCHOSIS

For many years research has demonstrated a link between marijuana use and development of schizophrenia. Schizophrenia affects about 1% of the population, but people who use marijuana are twice as likely to develop the disorder. There may also be a genetic association in that those who are more likely to

and time perception, and coordinated movement (basal ganglia).

The cannabinoid receptors are part of a nervous system communication network that plays an important role in normal brain development and function. However, when exposed to marijuana, the system is overactivated, leading to impairment of judgment, coordination, balance, time perception and memory formation.

THC is one of the only drugs known that already has natural receptors in the brain. This means that it is more likely that THC will have adverse effects on the developing brain.

The adolescent brain is "under construction" and is much more vulnerable to the adverse effects of THC. Because TCH affects the pleasure centers of the immature brain, the adolescent brain is more likely to become addicted.

Also, since marijuana use impairs judgment, it can lead to other high-risk behaviors like driving while "high", sexual activity, and additional drug use.

WHAT CAN PARENTS DO?

The good news is that parents matter! The Columbia University Center for Alcohol and Substance Abuse regularly surveys teens and parents. CASA consistently documents the importance of parental disapproval of drug use.

Teens whose parents do not state their disapproval of marijuana use are 8 1/2 times more likely to say it is ok for teens to use marijuana. Teens who are left home alone unsupervised overnight are twice as likely to have used marijuana and alcohol.

<http://www.casacolumbia.org/addiction-research/reports/national-survey-american-attitudes-substance-abuse-teens-2012>

Family meals are also protective against high risk behaviors - see Family Meal newsletters.

of marijuana falls short of the standards used by the FDA to approve other medication. It is difficult to control for dosing, methods of use, contaminants (including pesticides, herbicides and fungi), as well as concentration of cannabidiol which may decrease the psychogenic effects of THC.

THC is available in pill form that is approved by the FDA, but this form seems less desirable by those seeking medical marijuana legalization.

There is scientific evidence supporting the use of marijuana to alleviate the nausea and vomiting associated with chemotherapy. Some newer research is also showing possible benefits in children who have persistent seizures that have not responded to conventional treatment - but most data is from patients who are using the cannabidiol with much less THC in the oil.

New information this month indicates THC may be helpful in suppressing the immune system in patients who suffer from auto-immune diseases. *X. Yang, et al. Histone modifications are associated with Delta(9)-tetrahydrocannabinol-mediated alterations in antigen-specific T cell responses. Journal of Biological Chemistry, 2014; DOI: [10.1074/jbc.M113.545210](https://doi.org/10.1074/jbc.M113.545210)*

For other diseases there are alternative medications that are known to be more effective, with drug dosages that have been studied and approved by the FDA. If marijuana is to be used medically, it should be tested and

which can last for several days to weeks.

A major concern is that as marijuana is increasingly accepted by the public and its use legalized by the states, adolescents will be less likely to perceive and understand the significant risks of marijuana use.

EMERGENCY ROOM VISITS AND HOSPITALIZATIONS DUE TO MARIJUANA USE

The CDC reported that more than 200 people in Colorado who smoked a synthetic marijuana over a 1 month period in 2013 required emergency medical care for mental changes, including aggressions, agitation, and confusion. 80% of the patients were male and their median age was 26 years. 13% of the patients were admitted; 10 to an intensive care unit. (*JAMA 2014; 311:457.*)

Data from the National Highway Traffic Safety Administration between 1994 and 2011 regarding fatal automobile accidents showed that at least one driver tested positive or marijuana in 4.5% of accidents in 1994, but increased to 10% in the last six months of 2011. (*Salomonsen-Sautel S, et al. Trends in fatal motor vehicle crashes before and after marijuana commercialization in Colorado. Drug and Alcohol Dependence 2014; 10.1016*

From the 2011 SAMHSA Drug Abuse Warning Network, there were 197 daily visits to US Emergency rooms for alcohol abuse in teens 12

develop schizophrenia may be more likely to use greater quantities of marijuana.

Heavier marijuana use and exposure at younger ages appears to make it more likely that schizophrenia will appear at an earlier age.

ANXIETY / DEPRESSION / Less Satisfaction

Marijuana has been associated with the development of anxiety and depression but more research is necessary to confirm and better understand that relationship. (NEJM) People who use marijuana long term report less life satisfaction, poorer education and job achievement, and more interpersonal problems compared with people who do not use the drug.

CAR ACCIDENTS

The overall risk of involvement in a motor vehicle accident doubles when a person drives soon after using marijuana. Those with higher drug levels were 3 – 7 times more likely to be responsible for an accident as those who had not used drugs or alcohol before driving.

regulated as any other medication.

– 17 years of age and 165
daily visits to US
Emergency rooms for
marijuana abuse.

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