

Recreational Marijuana and Health

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Short-Term Effects of Marijuana Use on Health

- Impaired short-term memory
- Temporary loss of coordination
 - Increase in motor vehicle accident risk when driving soon after using
 - THC levels of 2 to 5 ng/mL associated with impaired driving skills
- Altered judgment
- At high doses
 - Stimulation: agitation, paranoia, psychosis
 - Followed by sedation: can lead to respiratory insufficiency in children
 - No specific antidote for marijuana toxicity

Volkow ND, et al. *N Engl J Med* 2014; 370:2219-27

Hurley W, Mazor S. *JAMA Pediatr* 2013; 167:602-3

Long-Term Effects of Marijuana Use on Health

- Risk of addiction:
 - ~1 in 10 who use marijuana will become addicted
 - Risk increases with
 - Earlier age of initiation
 - Daily use (25% to 50%)
 - Cannabis withdrawal syndrome: craving, irritability, sleep difficulties, anxiety, and depression
- Regular use during adolescence associated with
 - Altered brain development
 - Poorer educational outcome
 - Cognitive impairment, lower IQ scores
 - Diminished life satisfaction

Long-Term Effects of Marijuana Use on Health

- Association with use of other substances
- Psychiatric symptoms
 - Associated with anxiety and depression
 - Unmasking of schizophrenia (genetic predisposition)
- Increased symptoms of chronic bronchitis in persons who regularly smoke marijuana

Effect on the Health System: Experience in Colorado

- Increased admissions to burn center
 - Butane used as solvent to extract THC
- Cyclic vomiting syndrome/marijuana hyperemesis syndrome
 - Associated with frequent use of high THC products
 - Abdominal pain, sweating, severe vomiting
- THC intoxication from edible products
 - 10-30 mg THC for intoxication
 - THC blood levels begin to rise ~30 minutes after consumption, peak at ~3 hours, and are cleared ~12 after ingestion

Effect on the Health Care System: ED Visits for Ingestions, Children <12 Years Old, Denver, 2005-2011

Characteristic	January 1, 2005, Through September 30, 2009	October 1, 2009, Through December 31, 2011 *
No. of patients	790	588
Age, median (IQR), y	2.6 (1.6-3.0)	2.3 (1.5-3.6)
Male sex	449 (56.8)	334 (56.8)
Types of ingestions		
Acetaminophen	90 (11.3)	48 (8.2)
Antihistamine	43 (5.4)	32 (5.4)
Antidepressant	23 (2.9)	14 (2.3)
Antitussive	18 (2.2)	14 (2.3)
Marijuana exposures	0	14 (2.3)

* Medical marijuana laws changed Oct 2009; recreational use legalization Nov. 2012

Many Caveats and Poorly Understood Issues

- Association does not prove causation
- Health effects may take years to manifest
- Effects of prenatal exposure on brain development
- Cancer risk: confounded by high rates of concurrent tobacco use
- Risk of heart attack and stroke
- Opportunities for effective public health education to reduce the health risks
- Second hand marijuana smoke exposure
- E-cigarettes (vaping)
- “Re-normalization” of smoking

Health Effects of Legalization

- Very little is known
- Depends on legalization's effects on:
 - Prevalence of use and age-specific prevalence of use
 - Frequency and duration of use
 - Modalities of use
 - Regulation, taxation, market forces