



# *Marijuana Use Among Adolescents and Young Adults and Unintentional Poisoning Findings Summary*

## ***Retail Marijuana Public Health Advisory Committee***

The Colorado Department of Public Health and Environment (CDPHE) was assigned the responsibility to appoint a panel of health care professionals with expertise in cannabinoid physiology to monitor the emerging science and medical information relevant to the health effects associated with marijuana use (C.R.S. Sec. 25-1.5-111). This panel is the Retail Marijuana Public Health Advisory Committee and consists of 13 members who are physicians, scientists, or public health officials. Currently, the committee has members with expertise in drug epidemiology, surveillance epidemiology, medical toxicology, pediatric medicine, psychiatry, drug addiction, pharmacology, pulmonary medicine, neonatal and perinatal medicine, and public health prevention. The duties of this advisory committee are to:

- Review the scientific literature currently available on health effects of marijuana use.
- Judge and openly discuss the science using expert medical opinion.
- Come to consensus on population health effects of marijuana use based on current science.
- Come to consensus on translation of the science into public health messages.
- Recommend public health related policies based on the current science and expert medical discussion.
- Recommend public health surveillance activities to address any gaps in knowledge discovered.
- Identify and prioritize gaps in science important to public health.

More information on the topics and schedule of this advisory committee can be viewed at: <https://www.colorado.gov/pacific/cdphe/retail-marijuana-public-health-advisory-committee>

This document provides an overview of the major findings of the Retail Marijuana Public Health Advisory Committee. This overview represents information that has been officially approved by the committee. A full report on this and other topics will be available no later than January 31, 2015.



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## Definitions

- Adolescents: 9 through 17 years of age
- Young adults: 18 through 24 years of age

## Evidence Statements

Evidence statements are based on systematic scientific literature reviews performed by CDPHE staff with oversight and approval by the Retail Marijuana Public Health Advisory Committee.

1. We found moderate evidence that adolescents and young adults who regularly use marijuana are more likely than non-users to have ongoing impairment of cognitive and academic abilities for at least 28 days after last use.
2. We found limited evidence that adolescents who regularly use marijuana are more likely than non-users to score lower on IQ tests 12 hours or more after last use.
3. We found moderate evidence that adolescents who regularly use marijuana are less likely than non-users to graduate from high school.
4. We found limited evidence that adolescents who regularly use marijuana are less likely than adolescent non-users to attain a college degree.
5. We found moderate evidence that adolescent and young adult marijuana users are more likely than non-users to increase their use and to become addicted to marijuana in adulthood.
6. We found moderate evidence that adolescent and young adult marijuana users are more likely than non-users to use and be addicted to alcohol or tobacco in adulthood.
7. We found substantial evidence that adolescent and young adult marijuana users are more likely than non-users to use and be addicted to illicit drugs in adulthood.



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8. We found mixed evidence for whether or not adolescent and young adult marijuana users are more likely than non-users to have symptoms or a diagnosis of anxiety in adulthood.
9. We found mixed evidence for whether or not adolescent and young adult marijuana users are more likely than non-users to have symptoms or a diagnosis of depression in adulthood.
10. We found mixed evidence for whether or not adolescent and young adult marijuana users are more likely than non-users to have suicidal thoughts or attempt suicide.
11. We found substantial evidence that adolescents and young adults who regularly use marijuana are more likely than non-users to develop psychotic symptoms or psychotic disorders like schizophrenia in adulthood.
12. We found moderate evidence that adolescent and young adult marijuana users who quit have lower risks of cognitive and mental health outcomes than those who continue to use.
13. We found moderate evidence that more unintentional marijuana exposures of children occur in states with increased legal access to marijuana; and the exposures can lead to significant clinical effects requiring medical attention.

## Public Health Statements

Public health statements are plain language translations of the major findings (Evidence Statements) from the systematic literature reviews. These statements have been officially approved by the Retail Marijuana Public Health Advisory Committee.

1. Regular marijuana use by adolescents and young adults is strongly associated with impaired learning, memory, math and reading achievement, even 28 days after last use.
  - a. These impairments increase with more frequent marijuana use.



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2. Regular marijuana use by adolescents and young adults is strongly associated with developing psychotic symptoms and disorders such as schizophrenia in adulthood.
  - a. This risk is higher among those who start using marijuana at a younger age.
  - b. This risk is higher with more frequent marijuana use.
3. Marijuana use by adolescents and young adults - even occasional use - is associated with future high-risk use of alcohol, tobacco, and other drugs like cocaine, ecstasy, opioids and methamphetamine.
4. Starting marijuana use during adolescence or young adulthood is associated with future marijuana addiction.
5. Marijuana use by adolescents may be associated with low achievement, such as not graduating from high school or attaining a university degree, lower income, and more unemployment.
6. Marijuana use by adolescents and young adults may be associated with depression, anxiety or suicidal thoughts.
7. Legal marijuana access is associated with increased numbers of unintentional exposures in children which can lead to hospitalizations.

## Public Health Recommendations

Public health recommendations have been suggested and approved by the Retail Marijuana Public Health Advisory Committee with the goals of: 1) Improving knowledge regarding population-based health effects of retail marijuana use, 2) Developing and targeting public health education and prevention strategies for high-risk sub-populations.

### Data Quality Issues:

- Standardization of data collection on dose, amount, frequency and method of marijuana use in medical records and other surveillance data sources.
- Specify marijuana use as separate from other drug use in medical records and other surveillance data sources.



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## Surveillance:

- Monitor adolescent use and the factors associated with adolescents initiating use, through surveys such as the Healthy Kids Colorado Survey.
- Monitor young adult use and the factors associated with initiation of use, through surveys such as the Behavioral Risk Factor Surveillance Survey and data from college campuses.
- Monitor pediatric accidental marijuana exposure emergency department visits.
- Monitor adolescent and young adult marijuana related hospitalizations (both psychiatric and non-psychiatric) and emergency department visits.
- Monitor adolescent and young adult marijuana addiction treatment rates.

## Education:

- Public education.
- Educational materials at schools and colleges.
- Educational materials at dispensaries.
- Parental education.

## Research Gaps

Research gaps are suggested and approved by the Retail Marijuana Public Health Advisory Committee to identify important gaps in the scientific literature that may impact public health policies and prevention strategies.

1. Research studies on all outcomes should evaluate occasional users, separate from regular or heavy users.
2. Research studies on all outcomes should include former users and continuing users with comparable prior use frequency and age of onset to help separate long-term effects from the effects of current use.
3. Additional studies with more varied time periods of abstinence are needed to assess the duration of cognitive impact of marijuana use.
4. Studies evaluating the potential psychological outcomes of marijuana use should have separate evaluations of males and females.



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5. More studies are needed to assess the risk of increasing use or becoming addicted for occasional users, based on age of onset.
6. Studies are needed to compare the factors associated with adolescents initiating use, between states with different legal status. These studies should include specific factors such as parental influences, marijuana marketing and marijuana merchandising.
7. Better studies are needed to assess causality rather than only reported association, which may be confounded by other factors.