

OREGON PUBLIC HEALTH DIVISION • OREGON HEALTH AUTHORITY

MARIJUANA USE IN OREGON: WHAT WE KNOW AND WHAT WE DON'T

**T**he oldest known written record on *Cannabis* use comes from the Chinese Emperor Shen Nung in 2727 BC. Ancient Greeks and Romans were also familiar with cannabis.<sup>1</sup> In the 1840's, Dr. W.B. O'Shaughnessy a surgeon working in India introduced *Cannabis* into Western Medicine, promoting its use as an anesthetic, sedative, anti-inflammatory, and anticonvulsant.<sup>2</sup>

In 2012, voters in Colorado and Washington approved ballot measures that legalized the recreational use of marijuana. Oregon is one of 21 states and the District of Columbia that allow marijuana use for medical purposes,\* and in March 2014 Oregon began licensing establishments for the retail sale of medical marijuana.

While marijuana has been used for medicinal and recreational purposes throughout the world for thousands of years, questions still exist about the risks and benefits of its use. The Controlled Substances Act lists marijuana as a Schedule 1 drug; therefore, it has not been approved for evaluation in double-blinded, placebo-controlled trials (the gold standard for determining the efficacy of medications). Nonetheless, there is a growing body of scientific literature on the acute and chronic health effects of marijuana use.

This *CD Summary* provides an overview of marijuana use in the US and Oregon, and summarizes what is known about the health effects from three sources: a 1999 Institute of Medicine (IOM) authoritative report, "Marijuana and medicine: Assessing the science base"<sup>3</sup>; National Institutes of Health web-based "comprehensive, peer-reviewed, evidence-based" information about *Cannabis* use in treating people with cancer<sup>2</sup>, and a June 2014 National Institute on Drug Abuse review article, "Adverse health effects of marijuana use."<sup>4</sup>

\* [http://medicalmarijuana.procon.org/view\\_resource.php?resourceID=000881](http://medicalmarijuana.procon.org/view_resource.php?resourceID=000881)

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**WHAT IS MARIJUANA?**

The scientific name for marijuana is *Cannabis* (genus) *sativa* (species); sub-species: *sativa* and *indica*. The primary psychoactive ingredient in marijuana is delta-9-tetrahydrocannabinol (THC); marijuana also contains cannabidiol (CBD), although this chemical has been less studied. *Cannabis* strains can be cultivated to contain different amounts of THC and CBD. The potency of marijuana (e.g. the THC content) increased 4-fold between the 1980's and 2012. When the flowers and leaves of the marijuana plant are dried, they can be smoked, usually in marijuana cigarettes, pipes, and water pipes. Marijuana can also be ingested (f.ex. in brownies, tea), or heated and vaporized so that the oils are volatilized and inhaled.

**USE IN U.S./ OREGON**

According to the National Survey on Drug Use on Health (footnote: Substance Abuse and Mental Health Services Agency [SAMHSA] administered face-to-face, household survey), 43% of persons ages ≥12 years in the US report having tried marijuana at least once during their lifetime; 12% report current use. In Oregon, current use (used marijuana during the past 30 days) is highest in 18-25 year olds, followed by 12-17 year olds (figure 1). Current use appears to be relatively stable over the past decade, with a slight increase in 2011-12.

The 2013 Oregon Healthy Teens (OHT) survey (footnote: a school-based survey administered among 8<sup>th</sup> and 11<sup>th</sup> graders) found past 30 day use among 8<sup>th</sup> graders to be 10% and among 11<sup>th</sup> graders 20%; these numbers have decreased slightly during the past decade (figure 2).

Figure 1. Marijuana use by age group, Oregon, 2002-2011

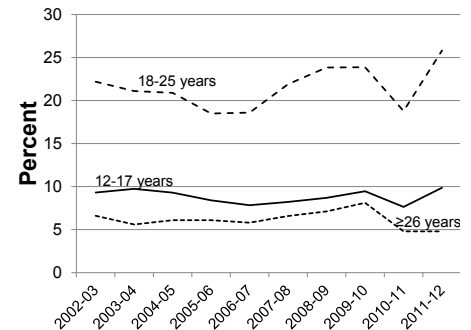
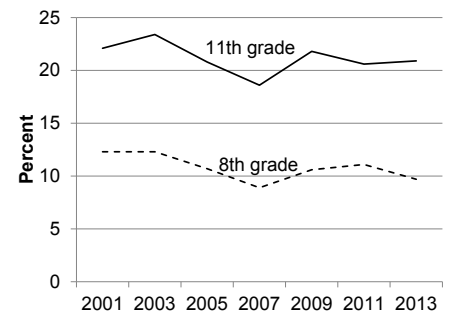


Figure 2. Marijuana use by 8<sup>th</sup> and 11<sup>th</sup> graders, Oregon, 2002-2011



**OREGON MEDICAL MARIJUANA**

Oregon's Medical Marijuana Program is administered by the Public Health Division; currently, more than 60,500 patients hold an Oregon medical marijuana card. Qualifying medical conditions for receiving a card are set in state statute. Primary conditions for current card holders: severe pain (59,670); persistent muscle spasms (15,888); nausea (9,101); cancer (2,827); and seizures (1,490) (these conditions are not mutually exclusive). Other conditions include: agitation, cachexia, glaucoma, HIV/AIDS; and post-traumatic stress disorder.<sup>†</sup>

**HEALTH EFFECTS**

THC is lipid soluble, accumulates in fatty tissues; the tissue elimination half-life is approximately 7 days. THC stimulates the release of dopamine resulting in: increased heart rate and blood pressure; increased appetite; control of nausea and vomiting. Dronabinol

<sup>†</sup> <http://public.health.oregon.gov/DiseasesConditions/ChronicDisease/MedicalMarijuanaProgram/Pages/data.aspx>



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is a synthetic THC and is the main active ingredient in Marinol®,<sup>5</sup> marketed to reduce nausea and vomiting associated with cancer chemotherapy; and to stimulate appetite in patients with HIV-AIDS. THC plays a role in pain modulation, and has been shown to reduce neuropathic pain in cancer patients. Other potential conditions with symptoms that may be alleviated by THC include: glaucoma; inflammation (f.ex. rheumatoid arthritis, Crohn's disease); multiple sclerosis, and epilepsy.<sup>6</sup>

THC can reduce anxiety, and produce relaxation, sedation, and feelings of euphoria. These effects can influence the potential therapeutic value and may be beneficial for some patients and undesirable for others. In addition, THC can cause altered sensory perception, decreased coordination and reaction time.

In some people, THC can cause acute dysphoria, hallucinations, and paranoia. Other adverse effects include: decreased motor control, coordination, reaction time; and inhibited behaviors, and altered judgement, which, for example, can increase the risk of injuries associated with motor vehicle crashes, or sexually transmitted infections. Data from SAMHSA indicate that in 2011, marijuana ranked second to cocaine as a cause of Emergency Department visits for illicit drug use.<sup>6</sup> Marijuana use is also associated with impaired short-term memory and ability to learn.

#### DEVELOPMENTAL IMPACTS

Marijuana can have adverse effects on development. Use during pregnancy has been linked to low birth weight, preterm labor, higher NICU

admissions, and developmental delays. Marijuana use can have a deleterious effect on the developing brains of infants and children. THC concentrates in breast milk, and may produce sedation, reduced muscular tone and poor sucking in infants. Use of marijuana in teenagers has been associated with impaired attention, memory, learning, and increased risk of addiction (see below).

#### LONG-TERM ADVERSE EFFECTS

Chronic use of marijuana can lead to addiction (an estimated 9% of those who experiment with marijuana become dependent). While withdrawal symptoms are not as serious as those for opiates or alcohol, they include irritability, anxiety, dysphoria, insomnia. SAMHSA data show that 18% of state-funded treatment episodes in 2009 were related to marijuana usage, compared to 7% in 1993.<sup>6</sup>

Marijuana smoke is associated with abnormalities of cells lining the human respiratory tract, and like tobacco smoke, is associated with increased risk of cancer (including: lung, head/neck, bladder, brain, and testis), and lung damage. In addition, marijuana smoke has similar cardiac effects as tobacco smoke.

#### PRUDENT RECOMMENDATIONS

- Smoke of any kind can cause health problems, including lung cancer and cardiovascular disease. Avoiding breathing smoke (including marijuana smoke) is important for health.
- Infants, children and adolescents with developing brains should not be exposed to THC. Further, mothers who are pregnant or breastfeeding should not expose their babies to THC.
- Cognitive impairment, whether from alcohol, the use of medications, or

marijuana can lead to increased risk of injury (e.g. from a car crash). Persons should not drive or operate heavy machinery while under the influence of mind-altering substances.

- Patients should be cautioned about potential adverse effects of use. Acutely, some marijuana users may experience dysphoria, anxiety, or paranoia; and long-term use increases the risk of addiction.

#### CONCLUSION

As the societal discussions around the role of medical and recreational marijuana evolve, the public health, medical, and drug treatment communities play an important role in grounding these discussions in facts: we need to be clear about what is known, and what gaps exist in current knowledge of the potential health benefits and risks associated with marijuana use. To quote our NIDA colleagues we "need to improve our understanding of how to harness the potential medical benefits of the marijuana plant without exposing people...to its intrinsic risks."<sup>4</sup>

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