

Marijuana

What Physicians Need to Know

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CRIT 2010

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Modified from Robin Barnes, CRIT, 2006; Stephen Kertesz, CRIT 2009
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Fact or Fiction?

(True or False Pre-seminar Questions)

- Marijuana use is increasing
- Withdrawal symptoms occur with marijuana cessation
- No adverse health effects occur with marijuana use
- Marijuana is a “gateway” drug
- Marijuana causes psychosis
- You can’t overdose on marijuana
- Marijuana abuse and dependence is treatable

US love-
hate
relationship
with MJ

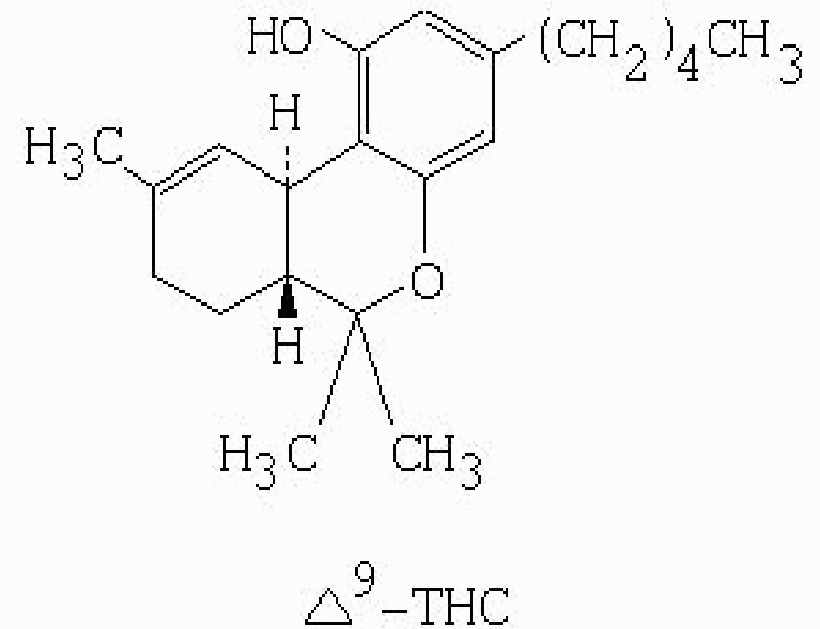
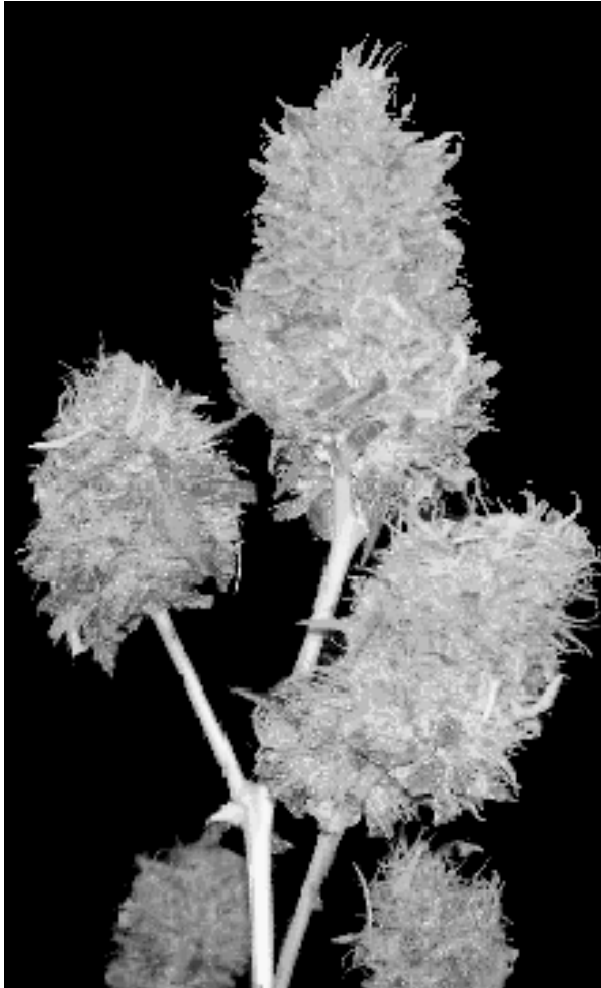


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US love-hate relationship with MJ

- Introduced to US by Mexican immigrant workers end 19th-early 20th C.
- 1937: Marijuana Tax Act - taxes use/possession
- Growing use 1950's by Beat & jazz artists
- 1970's widespread use; 10 states decriminalize
- 1980's "Say no to drugs." Severe penalties for trafficking
- Early 1990's: Use nadirs, then increases in late 1990s
- Mid-1990's to present: medical marijuana use legalized in 14 states

Agent - Marijuana



Delta-9-tetra-hydrocannabinol

Marijuana

- Available as marijuana, hashish, hash oil
- Potency: 1 joint was 10 mg THC in 1970s→150+ mg in 1990s)
- Bioavailable in seconds after smoking
- 30 days to fully eliminate
- Binds CB1 receptor

Acute Effects of Smoked Marijuana

- Euphoria, relaxation
- Intensity of perception
- Distortion of time and space
- Memory impairment
- Appetite stimulation, “munchies”
- No death by overdose

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Cohen, BMJ. 2008; 336; pp 167-168; Ashton B J Psych 2001.

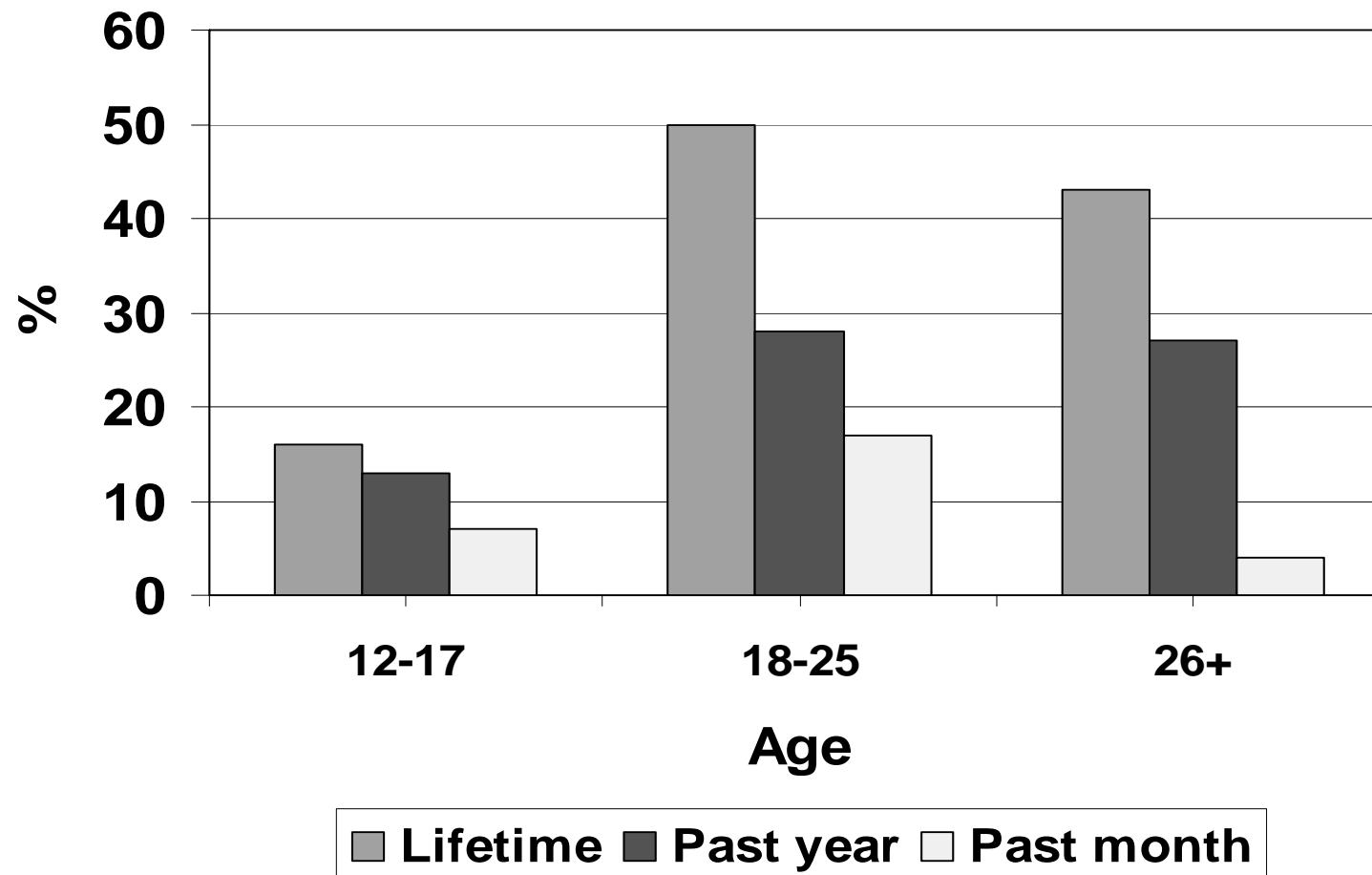
Endogenous Cannabinoid System

- Receptors in CNS (CB1) and immune cells (CB2)
 - CB1 receptors found in areas related to pleasure, memory, concentration, time perception, coordination,
 - Appetite, pain
- ECS noted in diseases - ALS, multiple sclerosis, obesity, embryonic implantation, prostate cancer
(?) *Pertwee, 2005*

Epidemiology

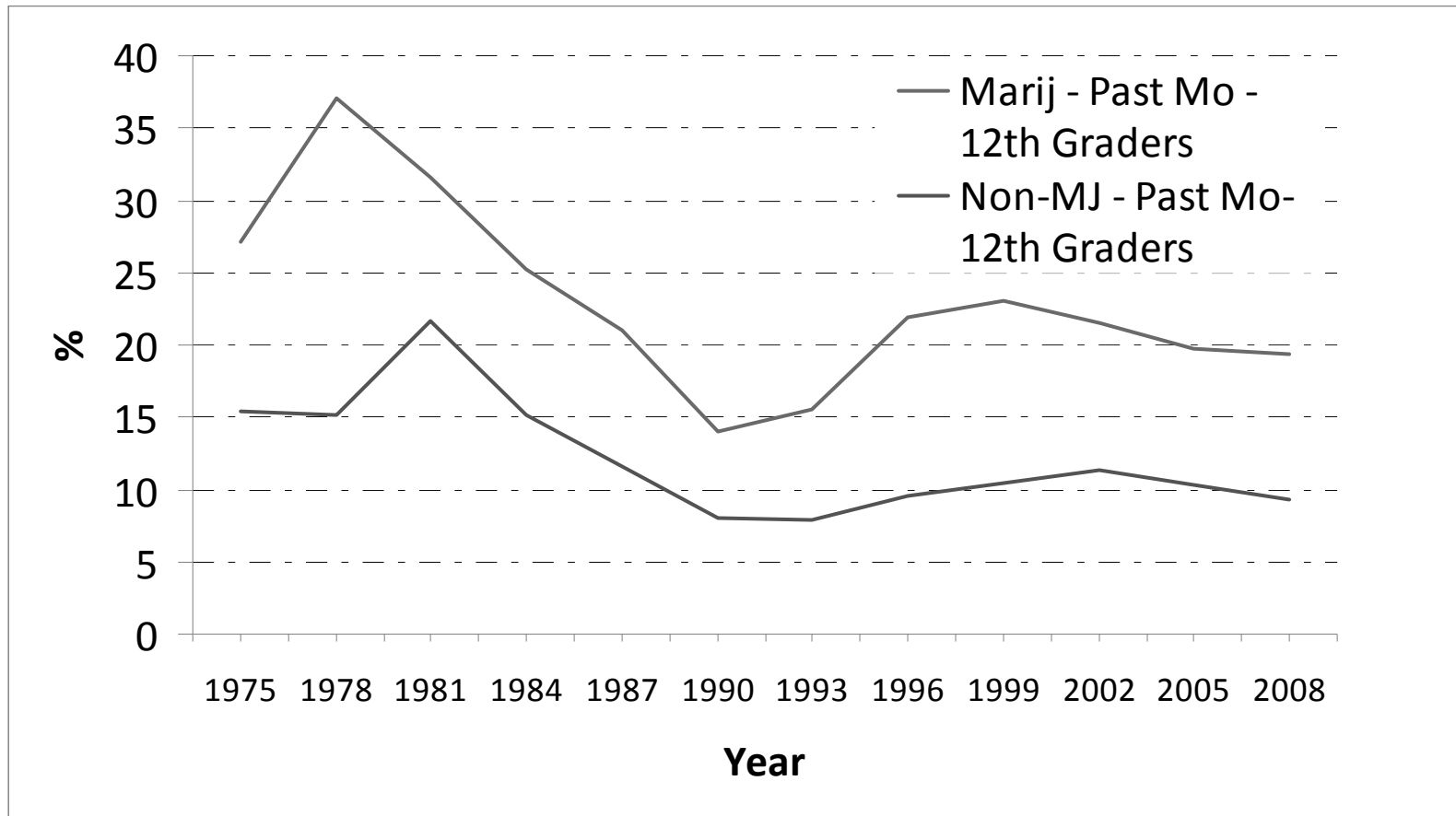
- Lifetime use
- Changes over 10-15 years
- Changes in Abuse/Dependence

Marijuana Use in Lifetime, Past year, Past month by age



Source: Nat'l
Survey on Drug
Use, 2008

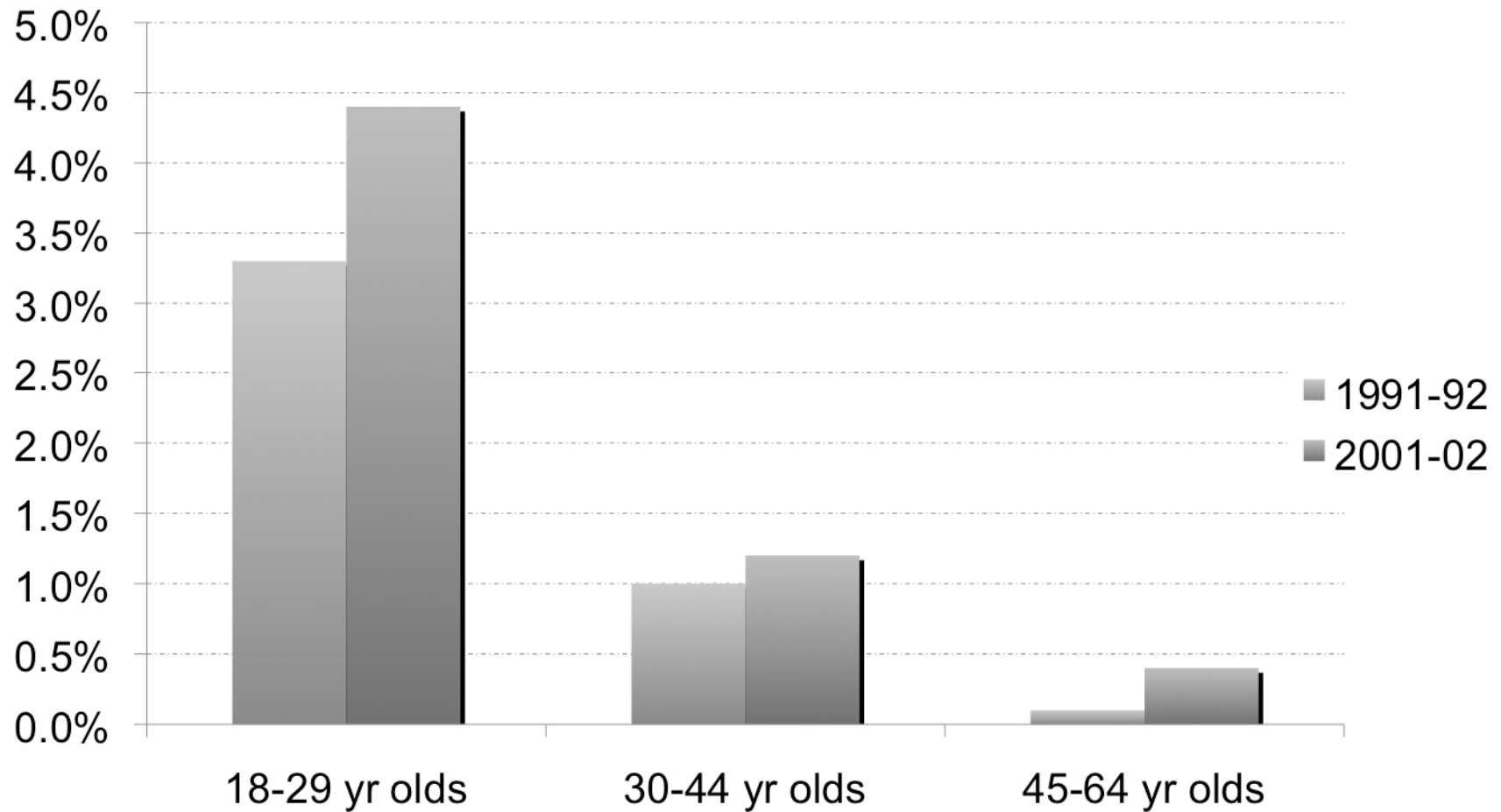
Past-Month MJ Use, 12th Graders



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Source: <http://www.monitoringthefuture.org/data/08data/pr08t17.pdf>

Prevalence of DSM-IV Marijuana Abuse/ Dependence, 1991-92 versus 2001-02



Compton WM. JAMA; 2004; 291: 2114-2121
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Impact on Health

Cognition, brain function

- Transient acute effects on episodic memory & learning *Curran, Psychopharm 2002*
- Motor & Visual tracking (driving) x 2-5 hrs
O'Kane 2002
 - 2-3 increase risk MVA *Ramaekers 2004*
- Persistent effects of longer-term use on cognition
 - Adolescents: slower psychomotor speed, diminished planning/sequencing after abstinence x 3 weeks *Medina 2007*

Cannabis and psychosis

- Biologically plausible (DA release)
- Multiple epidemiologic cohort studies:
 - risk for symptoms & schizophrenia

But:

- Risk nonuniform: prior psychotic sx, genetic risk, early adolescent use *Semple, J Psychopharm 2005*
- If prevalence rose 5x since 1970, why didn't schizophrenia rise 5x? *MacLeod Lancet 2005*

Cannabis and Pulmonary Problems

- Makes biologic sense for smoked form: carcinogens/tar
 - Cough, increased sputum, increased respiratory infections (less consistent)
 - But: no decline in lung function or increased risk COPD (Tetrault 2007)
 - *Lung Cancer:*
 - Associated with cellular changes consistent with precancerous state
 - Associated with increased risk in combination with tobacco use

Cannabis and Other Problems

- Head and neck cancer?
- Depressive symptoms: modest data
- Reproductive effects: Adverse in males (hormonal alterations, sperm function effects)

Early life use, later problems?

- The DEBATED **Gateway** to other drugs *Kandel 2003*
 - Sequence (Yes),
 - Association (Yes),
 - Causation (Maybe)
 - Even if NO causation, policy/clinical focus on young marijuana users as being at risk remains relevant
- Educational Attainment, Other Drug Use *MacLeod 2005*
 - High quality cohort studies (n=16)
 - Alcohol and tobacco had similar associations

Dependence and Withdrawal

- Conditional dependence:
 - 9% for marijuana, vs 17% for cocaine
- Withdrawal is real
 - Insomnia, craving, anorexia, irritability, anxiety
 - Onset 8-10 hours after d/cing drug; 4-14 days' duration *Budney, 2003*
- Chronic use → tolerance *Wright, 2002*

Presenting Problems in Primary Care

- Respiratory: exacerbation of asthma, cough/sputum
- Mental Health: depression, paranoia
- Problems with concentration, learning, employment/school
- Difficulty stopping or controlling use

Winstock, BMJ, 2010

Can It Be *Medically Useful*?

- Possible: Research sparse, growing
 - Anti-emetic,
 - Appetite stimulant,
 - Pain control (central) – multiple sclerosis,
 - Anxiolytic,
 - Glaucoma —mild decrease intraocular pressure
- Dronabinol (Marinol): relative effects vs marijuana is contested

Medical Marijuana

..a moving target



- Medical Marijuana laws – in 14 states
- The federal government *may* prosecute, whether there is a medical marijuana state law (*U.S. Supreme Court, 2005*)
- No federal resources may be used to prosecute patients/physicians (*Department of Justice Memo to US Attorneys, 2009*)

Can we treat marijuana abuse/dependence?

Diagnosing a Problem

- Same criteria for abuse and dependence as other illicit and licit substances
 - Abuse
 - Dependence

(risky use vs safe use - primary care challenge – NOT STUDIED)

Treatment Options

- Pharmacotherapy
 - No approved medication (yet)
 - ?cannabinoid antagonist
 - ?oral THC to manage withdrawal
- Behavioral
 - In substance abuse treatment:
 - cognitive-behavioral therapy, contingency management, motivational enhancement
 - In ambulatory and emergency care
 - ?Brief interventions – similar to alcohol use – some data

Strategies to Help Patients Cut Back or Abstain in Primary Care (the patient in action stage of change)

- Not studied!
- Discuss potential for withdrawal symptoms
 - How to manage?
 - Delay smoking during day
 - Extend interval between drug ingestion
 - Taper off slowly
- Refer for treatment

Fact or Fiction?

(True or False)

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- Withdrawal symptoms occur with marijuana cessation True
- No adverse health effects occur with marijuana use False
- Marijuana is a “gateway” drug Hmm..True & False
- Marijuana causes psychosis False
- You can’t overdose on marijuana True
- Marijuana abuse and dependence is treatable True

What can you tell your patients? (fact vs fiction)

- Use is not entirely safe
- The gateway “association” is present (?causal)
 - Addiction is real; but conditional dependence low
- Medical and social complications occur
 - Cognitive, Respiratory, Reproductive effects
 - There is a psychosis risk, esp in adolescence
 - Death by OD is not reported
 - Withdrawal symptoms exist
- Behavioral treatment may help