

Marijuana

What Physicians Need to Know

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CRIT 2011

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Modified from Robin Barnes, CRIT, 2006; Stephen Kertesz, CRIT 2009

Fact or Fiction?

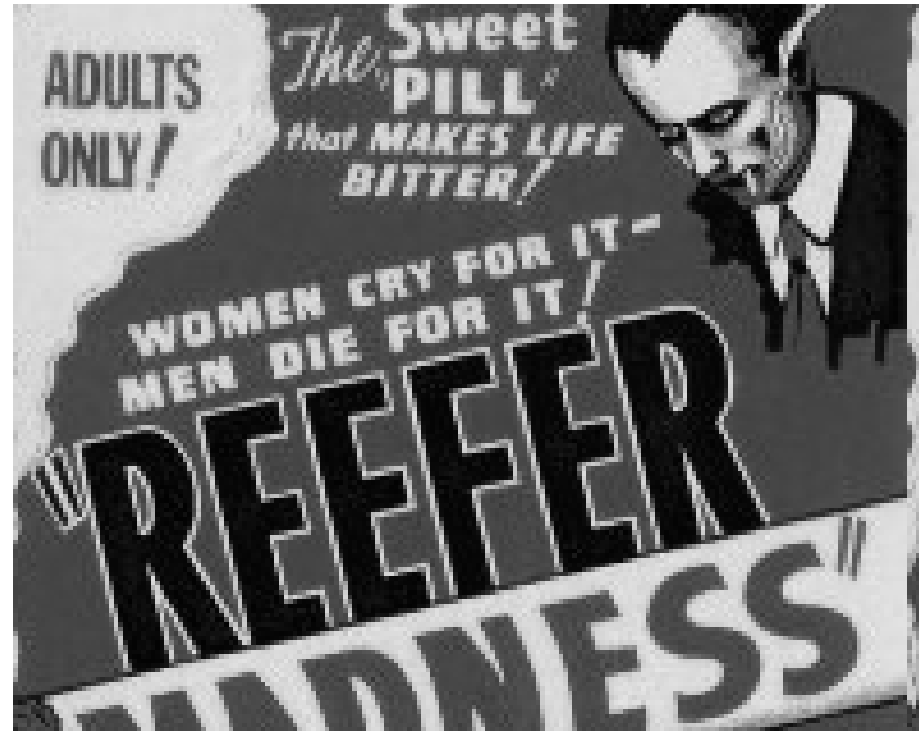
(True or False Pre-seminar Questions)

1. Marijuana use is increasing.
2. Withdrawal symptoms occur with marijuana cessation.
3. No adverse health effects occur with marijuana use.
4. You can't overdose on marijuana.
5. Marijuana abuse and dependence is treatable.
6. There are defined safe limits for marijuana use.
7. Physicians can prescribe marijuana for medical purposes in your state.

US love-hate relationship with MJ

- 1937: Marijuana Tax Act - taxes use/possession
- Growing use 1950's by Beat & jazz artists
- 1970's widespread use; 10 states decriminalize; "Reefer Madness"

US: love-hate relationship with MJ



Reefer Madness, 1936

“A cautionary tale about the ill effects of marijuana ... a trio of drug dealers try to corrupt innocent teenagers with wild parties and jazz music.”



FAST TIMES AT RIDGEMONT HIGH, 1982...
“POTHEAD” SEAN PENN

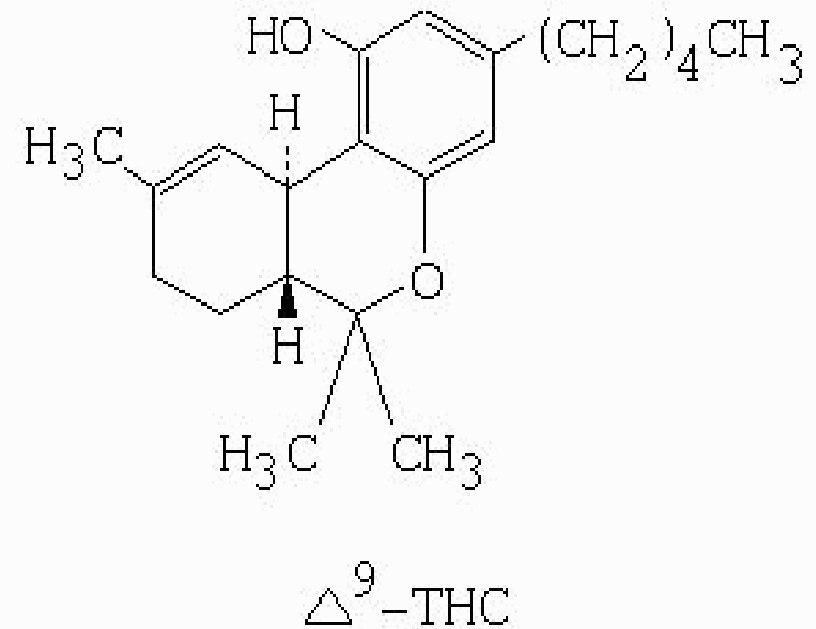
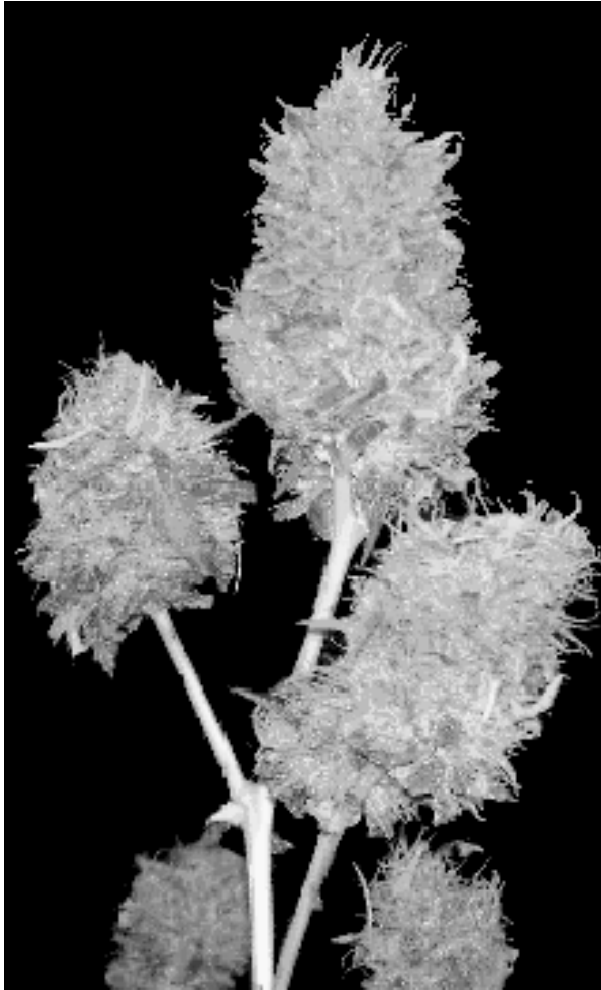
US love-hate relationship with MJ

- 1980's "Say no to drugs." Severe penalties for trafficking
- Mid-1990's to present: medical marijuana use legalized in 15 states

Outline

1. Biochemical structure and effect
2. Epidemiology
3. Impact on health
4. Presenting problems in primary care
5. Medical use (just a mention)
6. Treatment

Biochemical Structure of 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

Endogenous Cannabinoid System

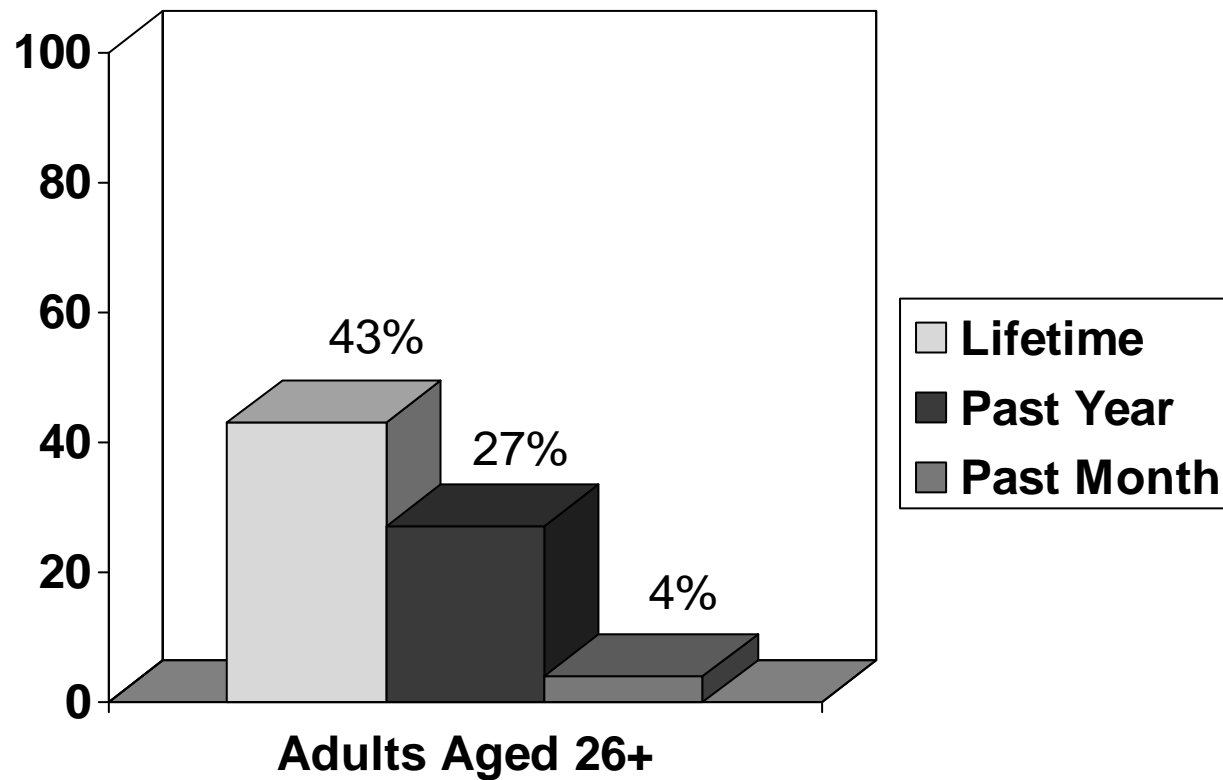
- Receptors in CNS (CB1) and immune cells (CB2)
 - CB1 receptors found in areas related to pleasure, memory, concentration, time perception, coordination,
 - Appetite, pain
- Endogenous Cannabinoid System involved in:
 - ALS, multiple sclerosis, obesity, embryonic implantation, (?) prostate cancer
 -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

Epidemiology

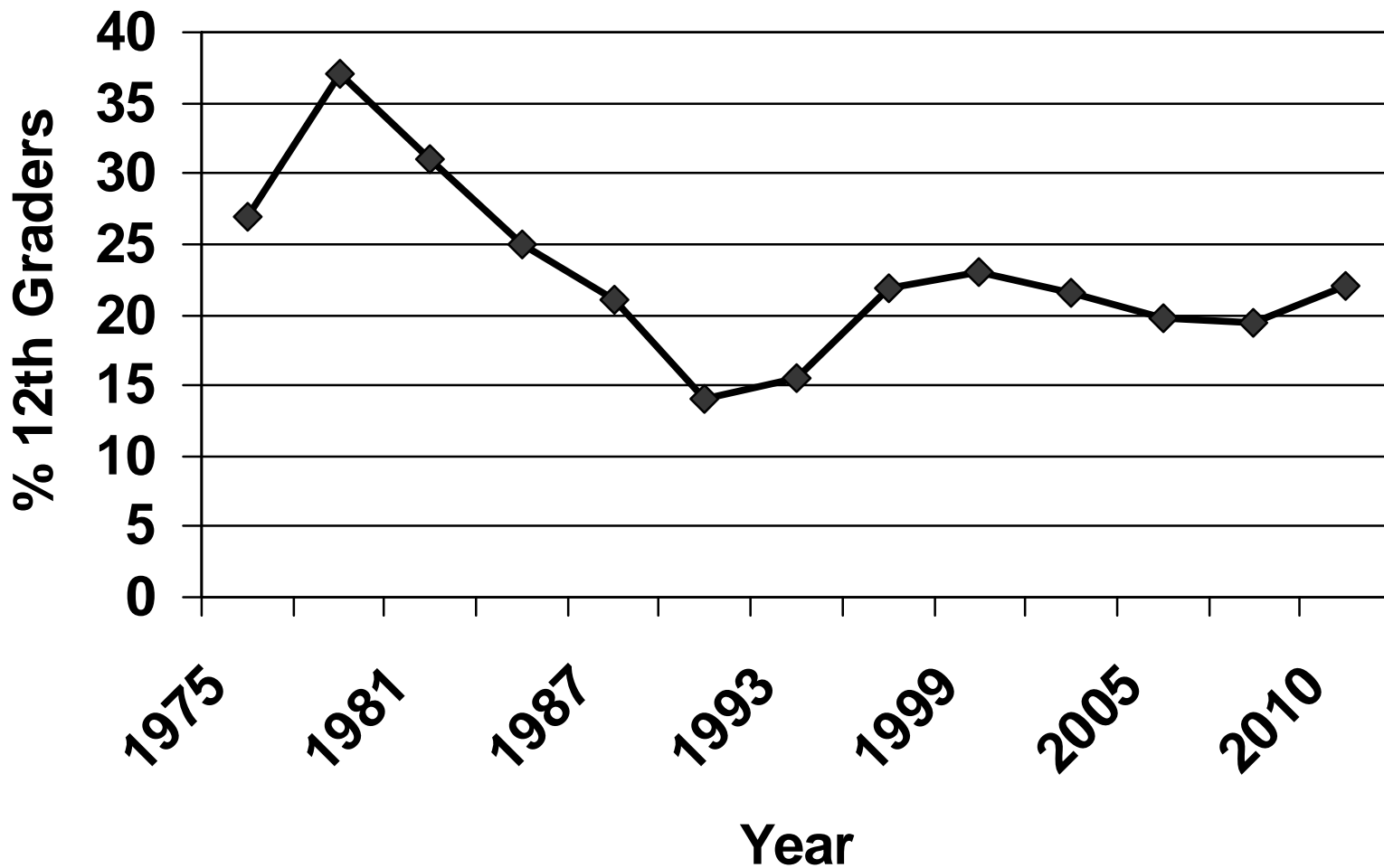
- Lifetime use
- # Dependent

% Marijuana Use

National Survey on Drug Use - 2008



Past-Month Marijuana Use, 12 Graders



Source: *Monitoring the Future*

Past Year Dependence or Abuse (2009)

- Marijuana – 4.3 million
- Pain relievers – 1.9 million
- Cocaine – 1.1 million

National Household Survey
On Drug Use and Health, 2009

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 at risk remains relevant
- Adverse association with educational attainment and other drug use *MacLeod 2005*
 - Early use of alcohol and tobacco similar effects



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*

What might be 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

Some complexity and uncertainty...

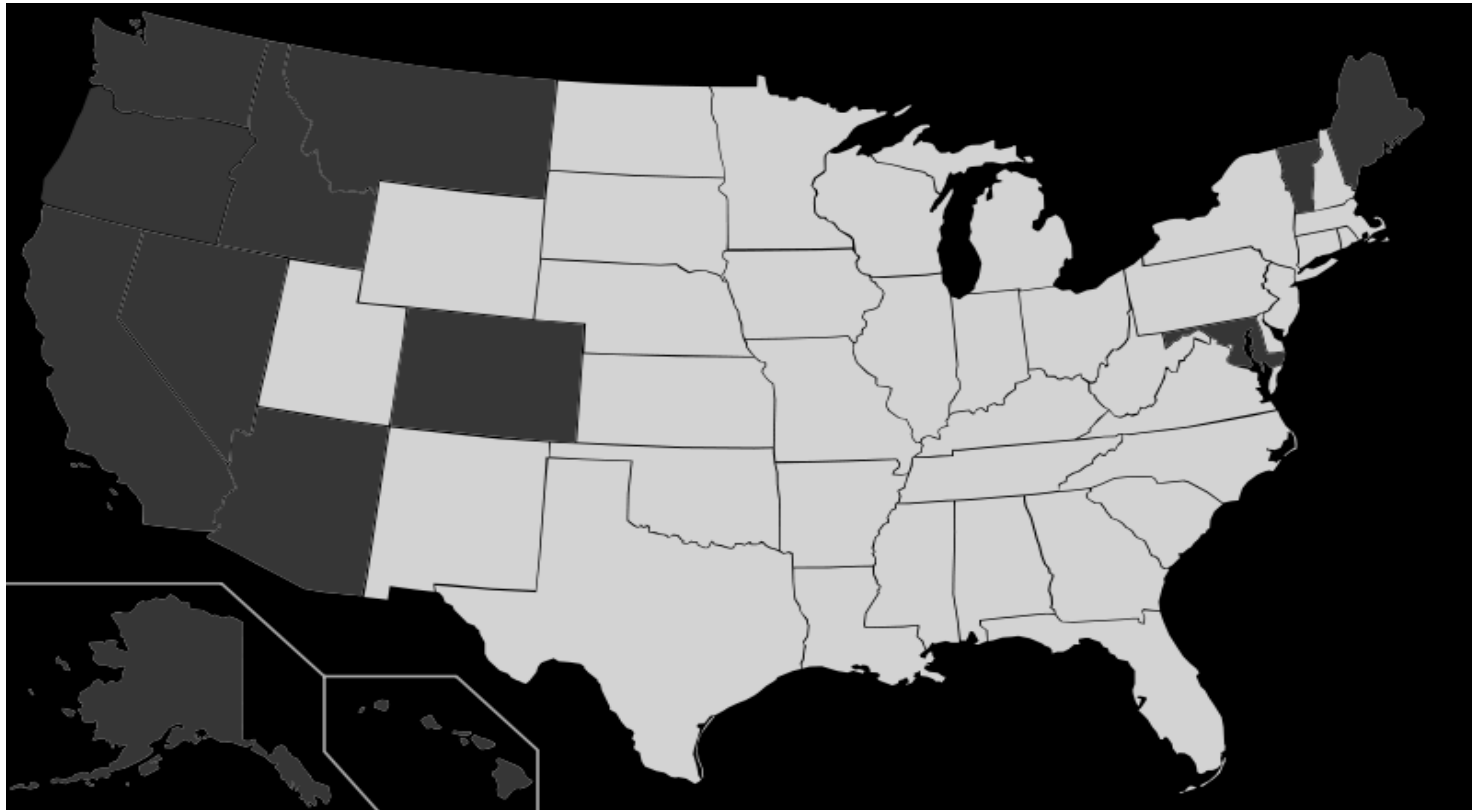
- Salutory effects
 - Medical Marijuana in 15 states
- Impact of medical marijuana on addressing marijuana abuse and dependence in primary care?
- Is there safe use, and for whom?

Can It Be *Medically Useful*?

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

Cohen S, BMJ, 2008
Tramer MR, BMJ, 2001

Medical Marijuana -15 States



Alaska, Arizona, California, Colorado, DC, Hawaii, Maine, Maryland, Michigan, Montana, Nevada, New Jersey, New Mexico, Oregon, Rhode Island, Vermont, Washington



SODA POT
12 MIND-BLOWING OUNCES

Diagnosing a Problem

- Same criteria for abuse and dependence as other illicit and licit substances
 - Abuse
 - Dependence
- BUT: risky versus safe use – NOT studied
 - How to counsel and or treat in primary care?

Can we treat marijuana abuse/dependence?

Treatment Options

- Pharmacotherapy
 - No approved medication (yet)
 - ?cannabinoid antagonist
 - ?oral THC to manage withdrawal
 - ?oral THC for maintenance or short-term treatment?
- 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

- Not well-studied!
- Brief intervention
- 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?

1. Marijuana use is increasing. True
2. Withdrawal symptoms occur with marijuana cessation. True
3. No adverse health effects occur with marijuana use. False
4. You can't overdose on marijuana. True
5. Marijuana abuse and dependence is treatable. True
6. There are defined safe limits for marijuana use. False
7. Physicians can prescribe marijuana for medical purposes in your state. 15 states

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

- No safe limits have been defined
- The gateway “association” is present (?causal)
 - Addiction is real; but conditional dependence low
- Medical and social complications do occur
 - Cognitive, Respiratory, Reproductive effects
 - There is a risk for psychotic symptoms, esp in adolescence
 - Death by OD is not reported
 - Withdrawal symptoms exist
- Behavioral treatment can help

THANKS!

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