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Dr. Meldon Kahan is an Associate Professor in the Department of Family Medicine at University of Toronto, and Medical Director of the Substance Use Service at Women's College Hospital. He is the Principal Investigator for the META:PHI project, which is establishing primary care based addiction treatment pathways in Toronto and other sites across Ontario. He is a member of several provincial and national committees on addiction, including the Addiction Medicine Section of the College of Family Physicians of Canada, the Education Committee of the Canadian Society of Addiction Medicine, and the Executive Committee of the First Do No Harm Initiative of the Canadian Centre for Substance Abuse. Over the years he has written a number of peer-reviewed articles, guidelines, and educational publications on addictionrelated topics. His main interests are primary care and addiction, methadone and buprenorphine treatment, and medical education in addiction.

Marijuana and ABI: Evidence and practice based considerations

Back to School Conference Acquired Brain Injury Association Meldon Kahan MD Sept. 28, 2017

Conflict of interest

• No COI to declare

Questions addressed

- Does cannabis have neuroprotective properties in ABI?
- Does medical marijuana help with post-ABI anxiety?
- Does medical marijuana help with post-ABI pain?
- What are the indications, precautions and contraindications, and dosing for medical marijuana?

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- What are the psychiatric and social harms of marijuana?
- What are the clinical features and management of cannabis use disorder?

Does cannabis have neuroprotective properties after ABI?

- Nguyen 2014: 3 year retrospective study of 440 patients admitted to trauma unit with head injury
- 18% had positive toxicology screen for THC
- Risk of death was 2.4% for +ve screen versus 9.9% for -ve screen
- Limitations
- Mean age THC +ve vs -ve: 32 years vs 53 years
- Wide confidence interval: 0.051 0.991
- Alcohol +ve screen was also higher in THC group and other studies have shown association with alcohol and survival

Neuroprotective effects are probably not from THC

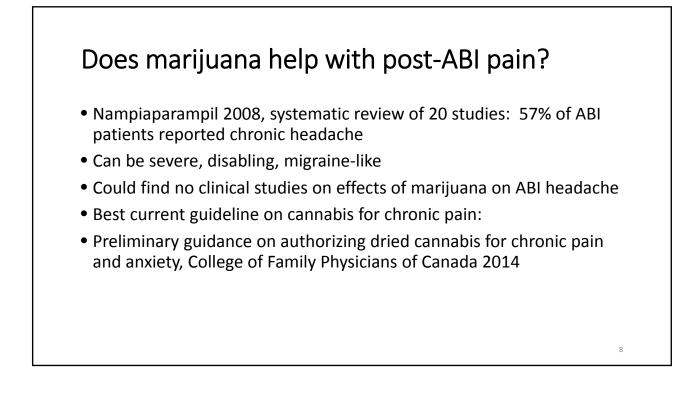
- Kwiatkoski 2011: Rats receiving cannabidiol had stronger recovery from spinal injury
- Dexanabinol and other cannabinoid analogues may reduce excitotoxic response, inflammation, vasospasm
- Conclusion:
- Further research needed on use of pharmaceutical cannabinoids in neuroprotection after ABI

Does medical marijuana help with post-ABI anxiety?

- Dr Carolyn Lemsky presentation to ABI 2013:
- ABI patients have high prevalence of anxiety and mood disorders:
 Anger, frustration, impulsivity, anxiety, depression, schizophrenia
- May be direct result of damage to specific brain structures

Marijuana and PTSD

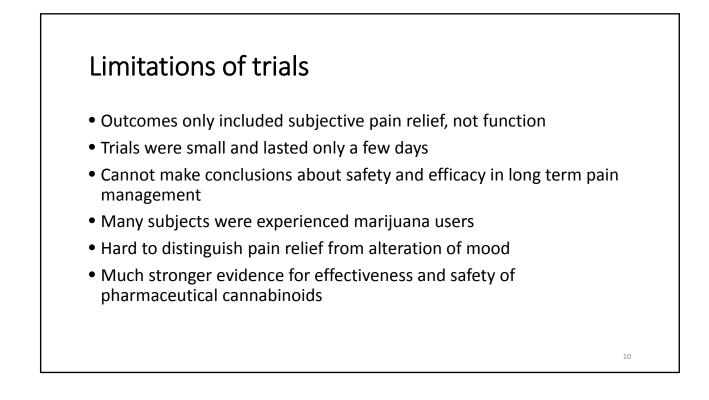
- O'Neil 2017, systematic review: 3 studies met inclusion criteria
- Two showed no relationship; one (with least risk of bias) was cohort study of veterans admitted in inpatient program for PTSD
- Use of marijuana was associated with worse symptoms and worse behaviour (including violence); stopping marijuana was associated with improvement
- Several clinical trials pending
- Preclinical studies: THC causes anxiety de novo; cannabidiol may have anxiolytic properties



Evidence for smoked cannabis and chronic pain

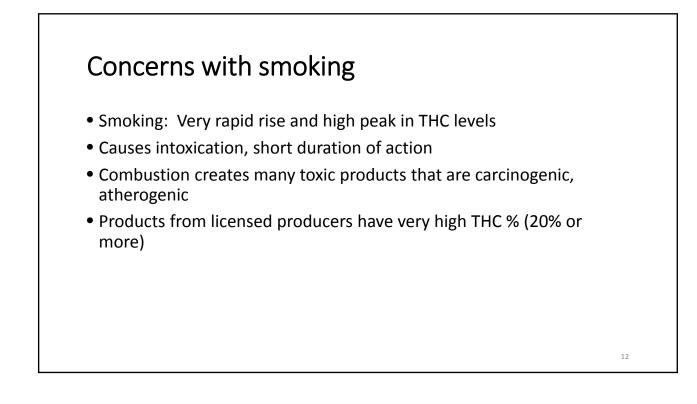
- 5 RCTs on smoked cannabis
- Total subjects = 180
- Duration range 3-15 days
- Subjects had severe neuropathic pain from MS or HIV or other causes

- The trials compared smoked cannabis to placebo, not to other treatments or to oral cannabis
- One trial that compared smoked cannabis to dronabinol
 - dronabinol had a longer duration of analgesia
 - Systematic review CFP Mailis 2016



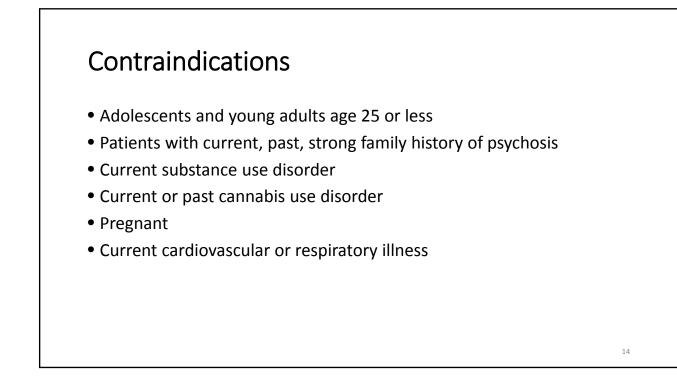
Adverse effects, safety

- Meta-analysis from 2009 (Sanchez et al), looked at 18 double-blind RCTS using pharmaceutical cannabinoids compared to placebo for chronic pain
- Alterations to perception OR 4.51
- Affect of motor function OR 3.93
- Altered cognitive function OR 4.46



Indications for cannabis

- Severe neuropathic pain, not responding to all other treatments including oral cannabinoids
- Not indicated for common pain syndromes seen in primary care, eg FM, MSK pain
 - No evidence of benefit
 - effective and safe alternatives



Precautions

- Past substance use disorder
- On higher doses of opioids or benzodiazepines
- Current anxiety or mood disorder
- Tobacco smoker
- High risk for cardiovascular disease

Precautions and contraindications in ABI

- Marijuana is contraindicated in many ABI patients:
- High prevalence of problematic substance use
- Current anxiety and mood disorders, psychosis

Dosing recommendations

- Titrate slowly
- Aim to improve function and relieve pain without causing cognitive impairment or intoxication

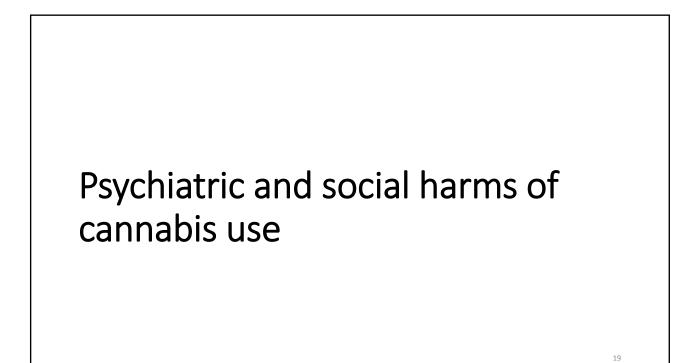
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• Maximum dose 400-700 mg dried cannabis with THC concentration no more than 9% (with equal amounts of cannabidiol)

Management of requests for medical marijuana

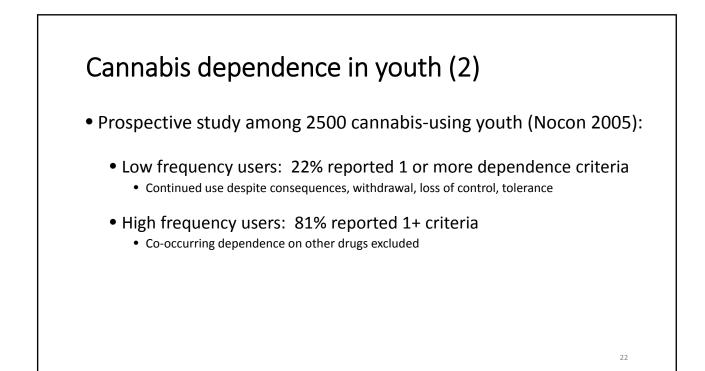
- Do not prescribe if not indicated and/or contraindicated
- Explain to patients that evidence is lacking and adverse effects are serious
- Rule out cannabis use disorder (see later)
- Note: Reports of pain relief must be accompanied by evidence of improved function
- This is true for all analgesic medications
- Do not refer to medical marijuana clinics unless you are convinced they assess and prescribe based on evidence and best practices



Self-reported problems among past 3 month users (15-24) (CAS 2004)			
	Problem (ASSIST)		
	Strong desire to use	45.9%	
	Health, social, legal problems	8.9%	
	Failed expectations	12.2%	
	Friends concerned	27.3%	
	Failed control	54.0%	
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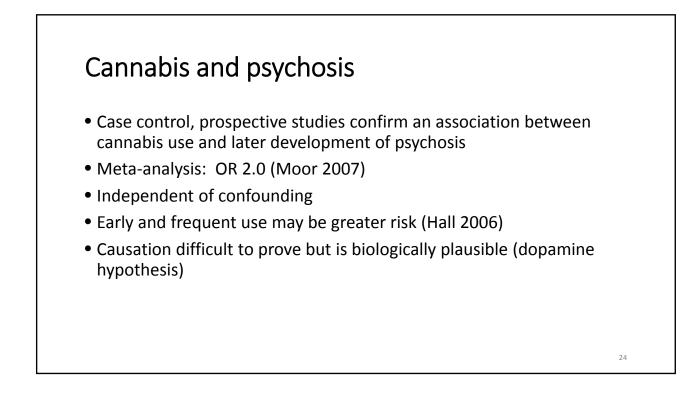
Prevalence of cannabis use disorder among youth

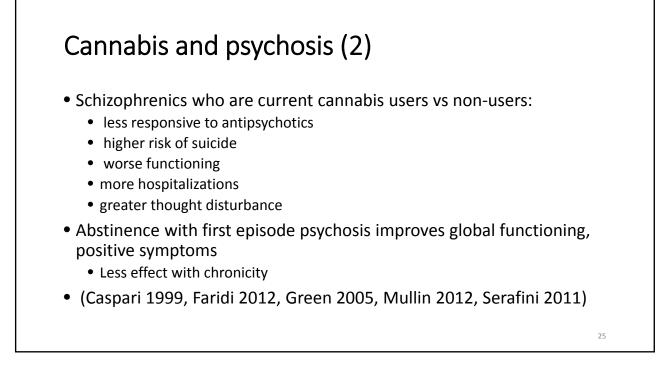
- Overall, an estimated 8% of recreational cannabis users meet DSM-IV criteria for dependence
- Prevalence might be higher in youth cannabis smokers
- In Ontario, the majority of patients seeking treatment for cannabis addiction are youth < 20, in high school (Urbanoski 2005)

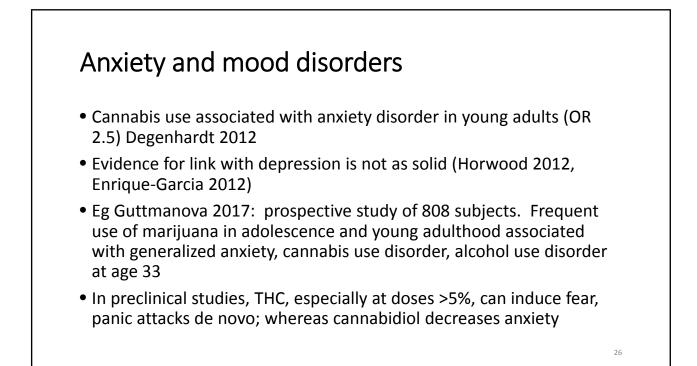


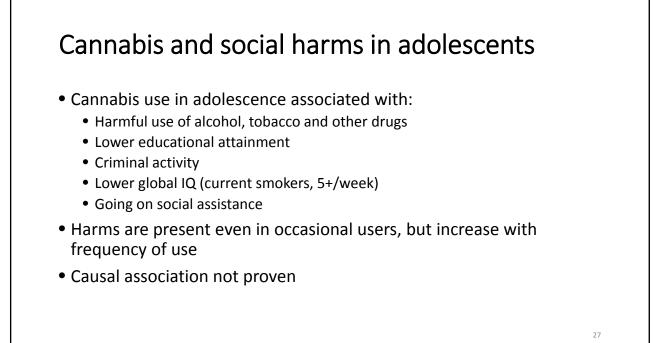
Withdrawal

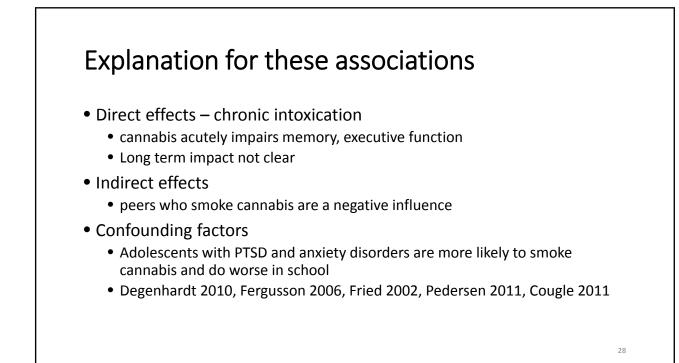
- 44% of frequent users report clinically significant withdrawal symptoms
 - causing distress and relief smoking
- Two groups of symptoms:
 - 'weakness' (hypersomnia, weakness, psychomotor retardation)
 - anxiety, depression, insomnia, restlessness
- Onset days 1-3, peak 2-6, duration 4-14
 - Hasin 2008, Budney 2003

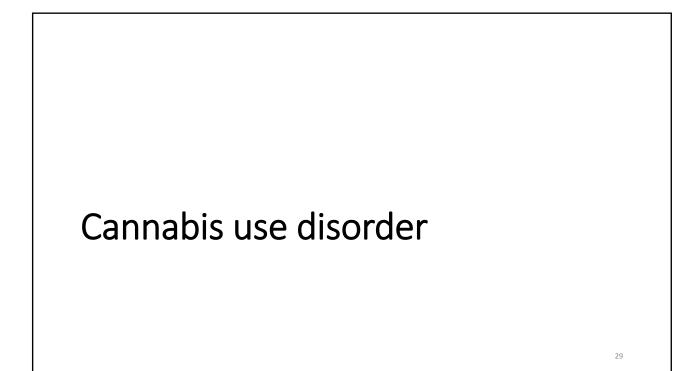












Clinical features

- Smokes daily, often large amounts (2+ grams)
- Spends a large amount of time smoking, neglecting other activities (school, work, family etc)
- Poor mood, poor psychosocial functioning
- Inability to reduce or abstain
- Presence of risk factors
 - ABI
 - Anxiety, mood, psychotic disorders
 - Current, past or strong family history of problematic substance use

Management

- Explain link between cannabis use and poor mood and function
- Explain that abstinence or reduced use will improve mood, function and pain
- Encourage attendance at addiction treatment
- HSC, CAMH
- Substance Use Services at SJHC, SMH, WCH
- Nabilone may be helpful relieves withdrawal symptoms and cravings, is safe
- Other agents eg gabapentin may be helpful; more research needed