



UW PACC

Psychiatry and Addictions Case Conference

UW Medicine | Psychiatry and Behavioral Sciences

HOW DO I IDENTIFY AND TREAT SUBSTANCE INDUCED PSYCHOSIS?

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VA PUGET SOUND HEALTH CARE
SYSTEM



SPEAKER DISCLOSURES

✓ No conflicts of interest

OBJECTIVES

1. Understand the key DSM5 clinical criteria differentiating substance induced psychosis from primary psychotic illnesses
2. Name 2 common substances associated with substance induced psychosis
3. Name 2 treatment modalities associated with improvement in substance induced psychosis

DSM CRITERIA – SUBSTANCE INDUCED PSYCHOSIS

- During or soon after ingested substance
 - *Should not persist beyond one month
 - Not better accounted for by pre-existing mental disorder
 - Not a medical disorder (Delirium)
 - Orientation/consciousness intact
-
- *ongoing psychosis related to amphetamines may persist beyond one month

HISTORY, HISTORY, HISTORY

- No specific lab values or tests aside from urine toxicology
- Linear history of patient's development and mental health history
 - Family History
 - Developmental history – school, relationship, work
 - Substance use history

TYPICAL SYMPTOMS²

	Substance Induced Psychosis	Schizophrenia	Bipolar Mania	Depression w/Psychosis
Hallucinations	++++	++++	+++	++
Psychomotor Agitation	++++	++	+++	+/-
Disorganization of Thought	+++	++++	++++	++++
Grandiosity	+++	+/-	+++	+/-
Compulsive Thoughts	+	++++	+++	++++
Poverty of Speech	+/-	++++	+/-	+++
Psychomotor Retardation	+/-	++++	+/-	+++
Flat affect	+/-	++++	+/-	+/-

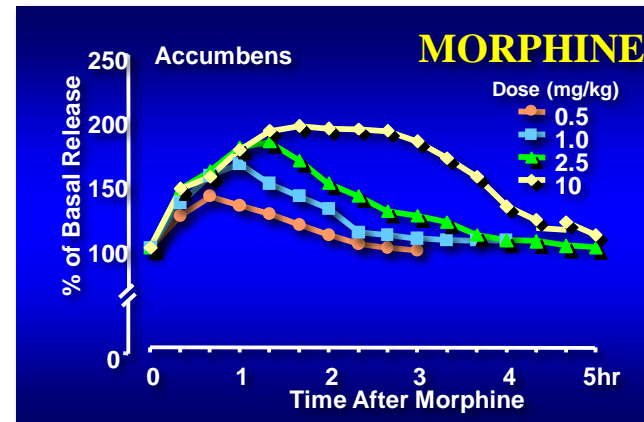
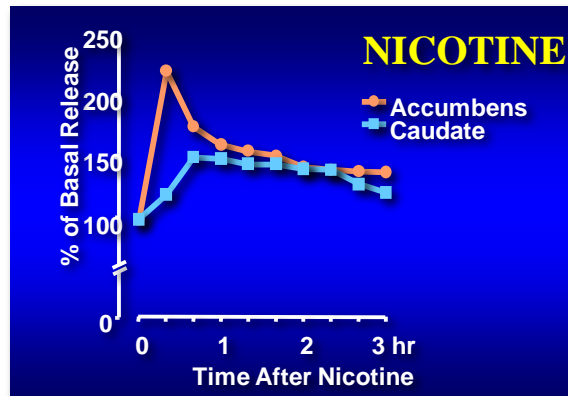
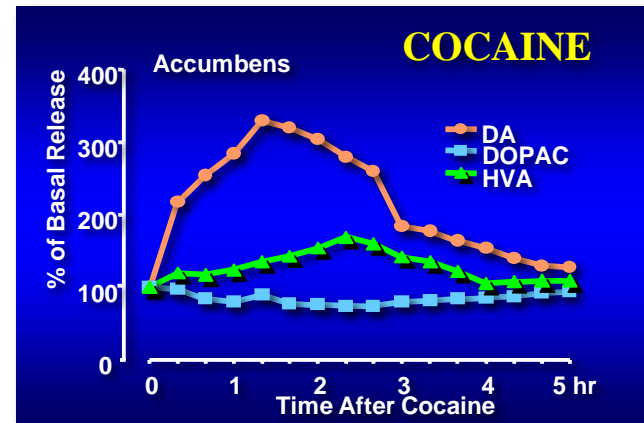
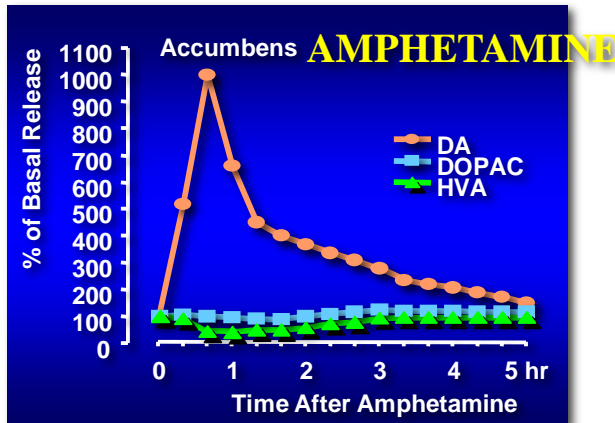
COMMON SUBSTANCES ASSOCIATED WITH PSYCHOSIS¹

- Cannabis – 0.8-10%
- Cocaine – Across the lifespan: 60.0–86.5%
- Methamphetamine - 17–37.1%

STIMULANTS - MECHANISMS OF ACTION

[Mouse Party \(utah.edu\)](http://utah.edu)

Effects of drugs on dopamine levels



Source: Di Chiara and Imperato

CASE

- 24 y.o. man who presents to the ED in severe distress stating that his roommates are poisoning him through the heating ducts.
- Patient has been using methamphetamine in binge fashion for 3 years. He usually uses stimulants partying with friends. Patient last used 2 days ago but was “passed out for the last day” prior to coming into the hospital because “they are pumping toxic gas into my room.”
- What information do you want to know/workup?

INITIAL SCREEN

- HR: 108, BP: 158/94, RR:14, Temp: 37.8, 99% RA
- Chem panel normal aside from Cr of 2.1
- CBC normal aside from white count of 12
- Utox is negative for everything aside from methamphetamine

- As you consider follow up labs, pt becomes increasingly agitated screaming that he's being poisoned. What is the next step in management?

NEXT STEP IN MANAGEMENT OF AGITATION

- A. Haldol 5mg
- B. Ativan 2mg
- C. Olanzapine 10mg
- D. Restraints

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MANAGEMENT OF ACUTE AGITATION

- Medication
 - Benzodiazepines
 - Antipsychotics: avoid in patients with evidence of Rhabdomyolysis and those with prolonged QTc
- Supportive Care
- Ongoing medical workup
 - Continue to monitor for delirium
- Reassurance/low stimulation

CASE CONTINUED

- Patient found to have CK of 2200 admitted for treatment of Rhabdomyolysis and secondary AKI. After 2 days of supportive care, aggressive fluid resuscitation and monitoring, CK is normalized, creatinine is down trending. Patient remains convinced that his roommates are poisoning him. What questions do you have next?

HISTORY CONTINUED

- Patient's longitudinal story obtained via his history and from his mom via collateral
 - Pt did 2 years of community college before dropping abruptly at the age of 21
 - Used various substances recreationally until amphetamines became routine at that time
 - Worked as a server for local pub until a year ago when he was fired for screaming at a customer
 - Increasingly paranoid over the last year intermittently going back to parent's house every so often to ask for money

HISTORY CONTINUED

- Mom says he has lost a significant amount of weight, has been increasingly aggressive toward his father at times and then totally somnolent at others. Only recently started making comments about his roommates trying to kill him and mostly during episodes when he's also agitated.
- No FH of severe mental illness

MENTAL STATUS

- Good eye contact, though slightly intense
- Fully oriented
- Mostly linear in answers, though perseverates on his roommates gassing him on occasion
- Says that he heard his roommates plotting against him in ER 2 days back but nothing since that time
- Acknowledges that using meth makes his worries about roommates worse but can't shake the feeling that it is really happening

DIAGNOSIS?

- Substance Induced Psychosis
- Primary psychotic disorder
- Maybe both?

TREATMENT OF STIMULANT INDUCED PSYCHOSIS ²

- Antipsychotics with evidence:
 - Aripiprazole, haloperidol, quetiapine, olanzapine, and risperidone
- No clear evidence favoring one agent
- No consistent dosing amongst studies
- No consistent time frame for treatment
- Side effect profile can help guide tx
- Unclear benefit from long acting injectables

CO-OCCURRING DISORDERS

Important to recognize and treat underlying mental health disorders

Higher rates of substance use amongst patients with severe mental illness

- Bipolar Disorder
- Schizophrenia
- Schizoaffective Disorder?

TREATMENT OF STIMULANT USE DISORDER

- Contingency Management
- Cognitive Behavioral Therapy
- Twelve Step Facilitation
- Community Reinforcement Approach

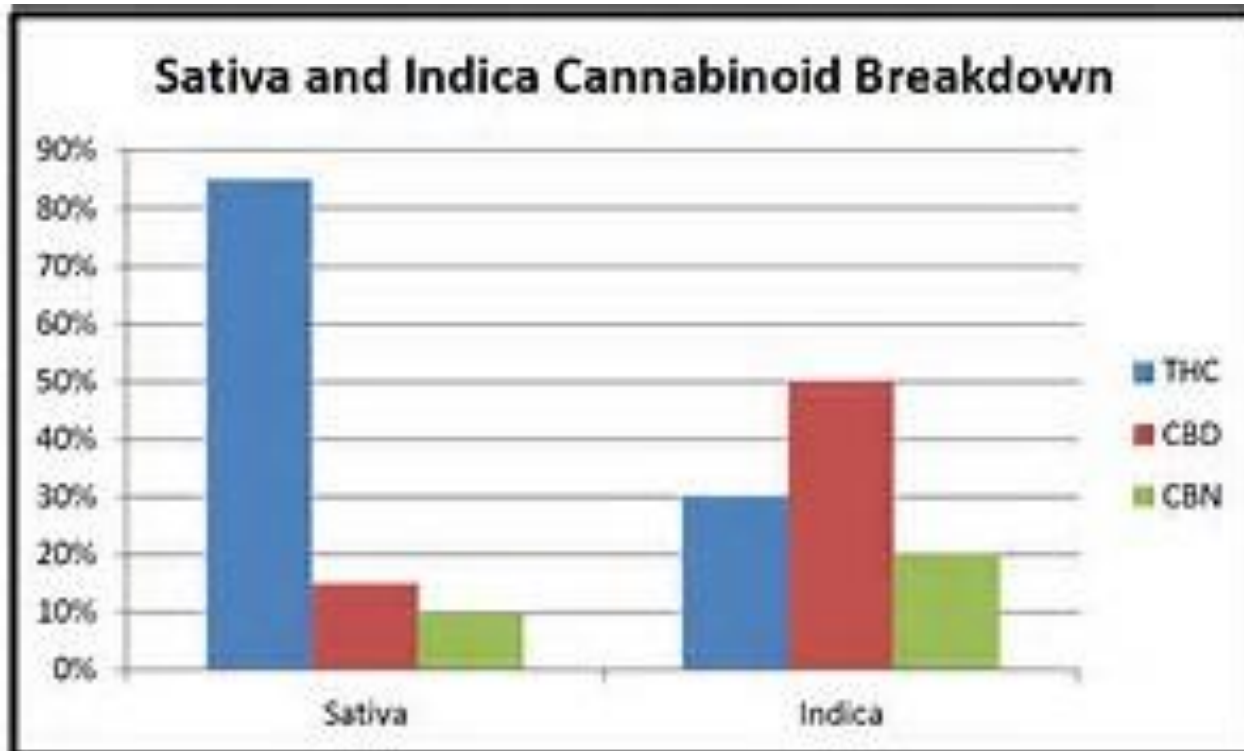
CANNABIS – THC MECHANISM

- [Mouse Party \(utah.edu\)](http://utah.edu)

CANNABIDIOL

- CBD reduces endocannabinoid degradation
- Non-specific antagonism of CB1 when activated by THC
- Partial agonist activity on D2 receptors
- Agonist activity at the serotonin 1A receptor

Weed is not Weed is not Weed



CANNABIS EFFECTS ON HEALTHY CONTROLS

- Δ -9-tetrahydrocannabinol (THC)

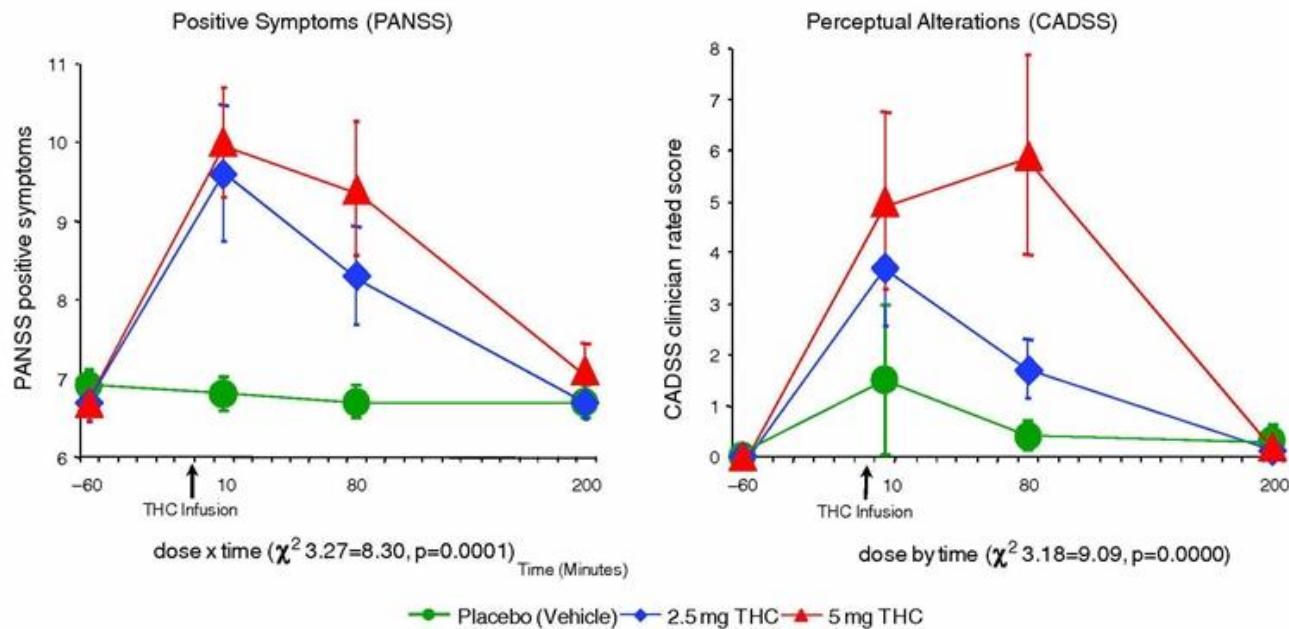


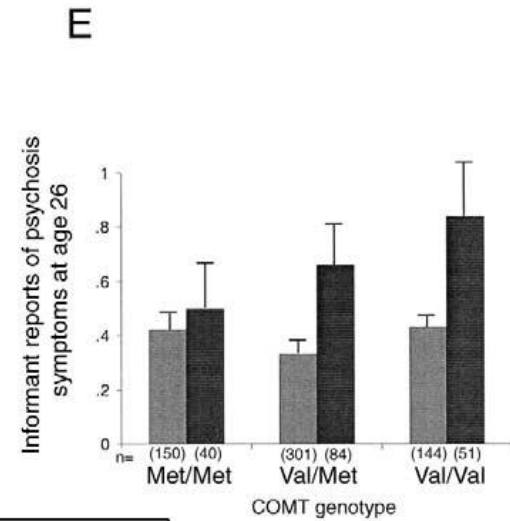
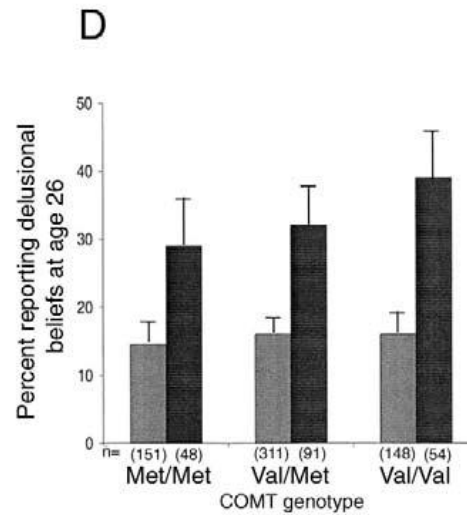
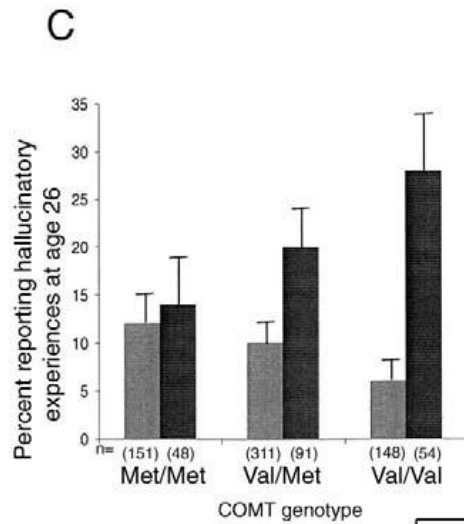
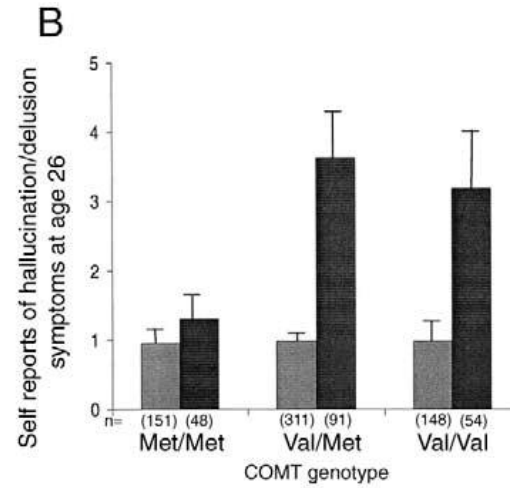
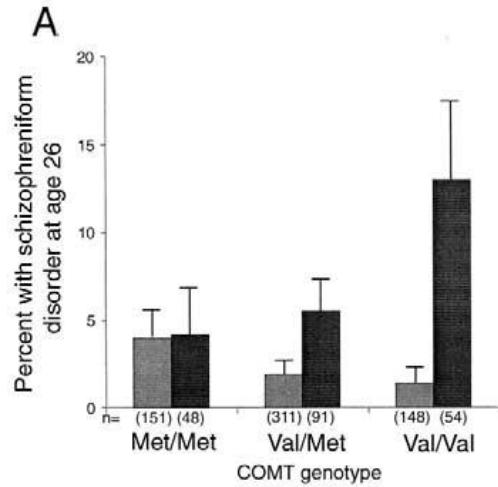
Figure 1. Δ ⁹-THC induces transient psychotomimetic effects in healthy individuals.

GENETIC LINKS

- Swedish Cohort >50,000 pts (1973-2007)
- Swedish males using marijuana 6x more likely to be diagnosed with schizophrenia
- Catechol-O-methyltransferase (COMT) -degrades dopamine, epinephrine and norepi

GENETIC LINKS

- Swedish males using marijuana 6x more likely to be diagnosed with schizophrenia
- Catechol-O-methyltransferase (COMT) -degrades dopamine, epinephrine and norepi
 - COMT Val¹⁰⁸ Met allele homozygotes more likely to develop schizophrenia with THC exposure
 - Carriers of the Val/Met allele more sensitive to psychotic effects of THC



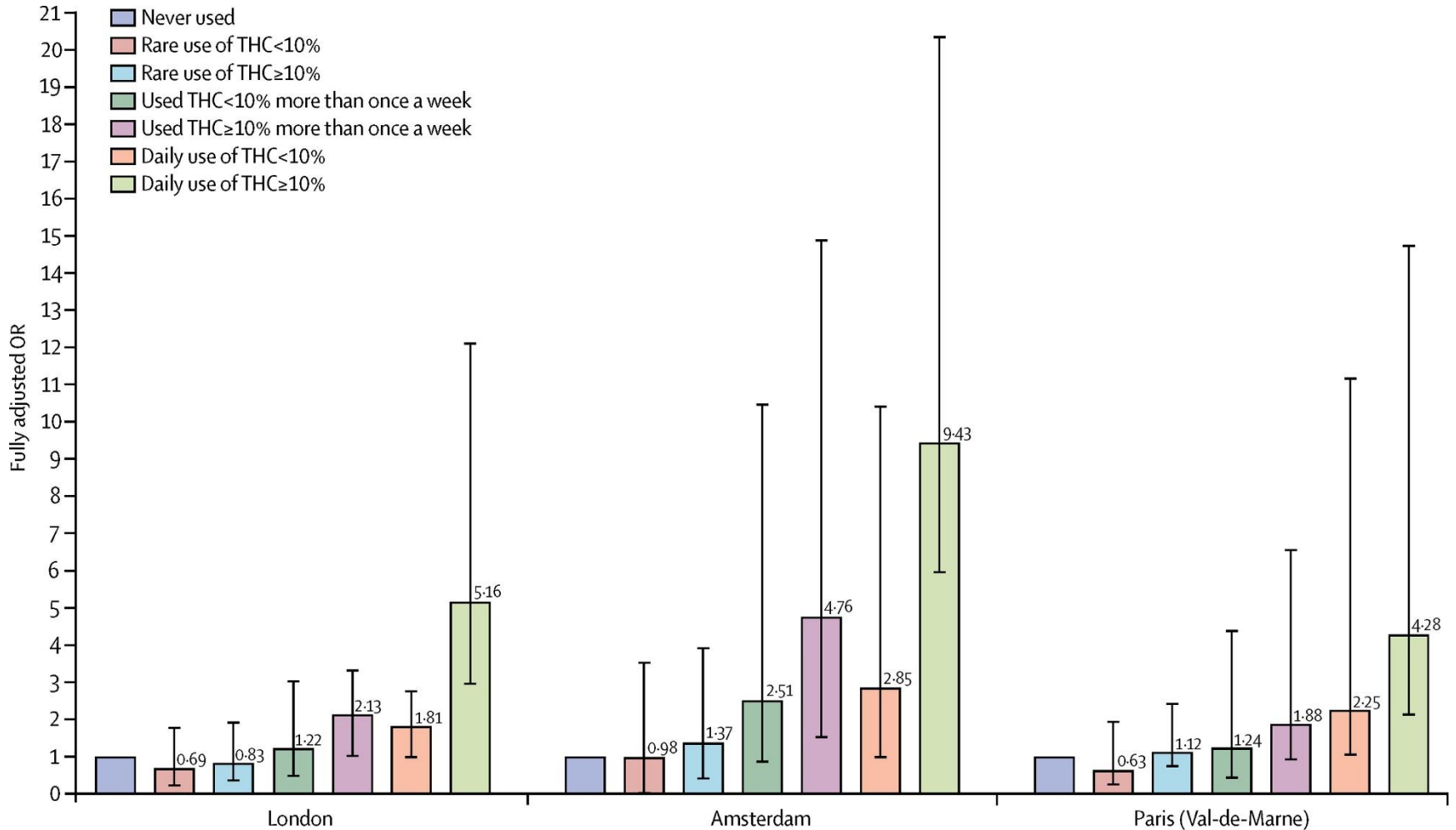
■ No adolescent cannabis use ■ Adolescent cannabis use

SCHIZOPHRENIA AND CONCURRENT MARIJUANA USE

- Manrique-Garcia 2014 Secondary analysis of Swedish Cohort >50,000 pts (1973-2007)
 - 357 cases reviewed with data from in-patient and follow up care

	Never Used Cannabis	Ever Used Cannabis
Median duration of 1 st hospital episode	30 days	59 days
Median number of readmissions	4	10
Median total number of hospital days	184 days	547 days

FREQUENCY/%THC AND PSYCHOSIS



Why Concentration Matters

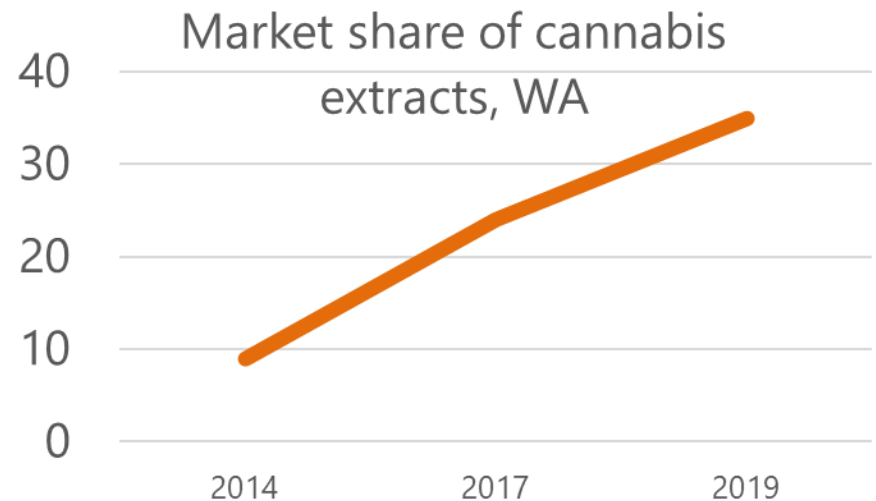
Sales of cannabis concentrates are increasing in WA

A nearly **ten-fold increase** in sales from extracts (from \$3.95 million in 2014 to \$311 million in 2017).

Why?

Extracts are Cheaper and Shelf-Stable

Legalization = Mass production



Kilmer, Beau, Steven Davenport, Rosanna Smart, Jonathan P. Caulkins, and Gregory Midgette, After the Grand Opening: Assessing Cannabis Supply and Demand in Washington State. Santa Monica, CA: RAND Corporation, 2019. https://www.rand.org/pubs/research_reports/RR3138.html.

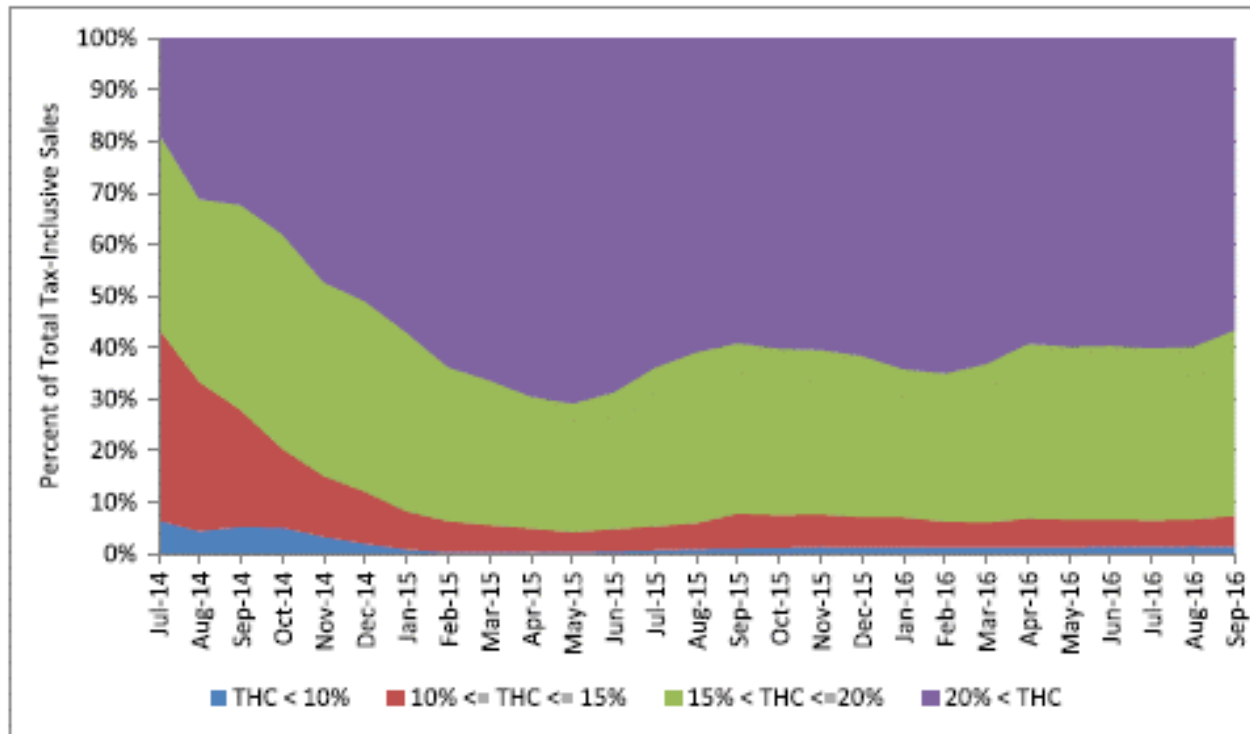
Firth CL, Davenport S, Smart R, Dilley JA. How high: Differences in the developments of cannabis markets in two legalized states. *Int J Drug Policy*. doi:10.1016/j.drugpo.2019.102611

WA State House Commerce and Gaming Commission work session. Sep 15, 2020. <https://www.tw.org/watch/?eventID=2020091004>

Adapted from ADAI update - 2020

Why Concentration Matters

Flower with less than 10% THC has vanished from the WA market



Smart R, Caulkins JP, Kilmer B, Davenport S, Midgette G. Variation in cannabis potency and prices in a newly legal market: evidence from 30 million cannabis sales in Washington state. *Addiction*. 2017;112(12):2167-2177.

CASE OF MR. C

- 41 y.o. man presenting to the ED with severe disorganization and agitation after moving from Florida to Washington in order to “practice my spirituality through cannabis.” Patient’s notable history
 - Several hospitalizations for psychosis in the past, mostly in his mid-late 20’s early 30’s
 - Able to maintain 5 years outside the hospital in housing and with no medications prior to the move
 - Studied biochemistry at FAU – completed 3 years

MR. C

- Smoked cannabis since teen years. Says it always helped with anxiety
- Found it helped with “spiritual connections and innovative ideas” in undergrad
- Regards hospitalizations in his 20s as a conspiracy by the “Baker Act Mandate”

INITIAL MENTAL STATUS

- “I am seeking the position of grand poobah, institute systems biology, neurocircuitry, plasma, chiral center justification, a gesture from an insane communist China leader.”
- Patient has monotone speech, his affect is flat and at times makes odd facial expressions, he stares at the floor or the wall, he postures in his seat moving almost constantly, sometimes with arms raised at sides like a scarecrow, when provider asks questions he repeats the last two/three words prior to attempting to answer, walks on tiptoes when leaving the room, repeats the phrase “institute of systems biology” many times out of context of conversation.

PSYCHOSIS WITH CATATONIA

- Busch-Francis – 23
- 2mg lorazepam TID
- Language more fluid, able to speak in full sentences by day 2, able to explain history
- What happened?
- What would you recommend in terms of treatment moving forward in relation to cannabis use?

RECOMMENDATIONS

- Supportive Care
- Antipsychotics may shorten amount of time psychosis persists and/or reduce intensity of symptoms.
- Protracted psychosis following cannabis abstinence is uncommon

CITATIONS

1. Fluyau D, Mitra P, Lorthe K. Antipsychotics for Amphetamine Psychosis. A Systematic Review. *Front Psychiatry*. 2019 Oct 15;10:740. doi: 10.3389/fpsy.2019.00740. PMID: 31681046; PMCID: PMC6804571.

2. Fiorentini A, Cantù F, Crisanti C, Cereda G, Oldani L, Brambilla P. Substance-Induced Psychoses: An Updated Literature Review. *Front Psychiatry*. 2021 Dec 23;12:694863. doi: 10.3389/fpsy.2021.694863. PMID: 35002789; PMCID: PMC8732862.