

# Cannabis & Mental Illness in the Post- Legalization Era

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# Learning Objectives

- By the end of this session the participant should be able to:
  - Describe the current landscape of available cannabis products
  - List criteria for cannabis use disorder and cannabis withdrawal
  - Summarize the association of cannabis use with psychiatric illnesses using psychosis as a model

# Outline

- What is Cannabis?
  - Components and mechanisms
  - What's available today
- Cannabis and Mental Illness
  - Cannabis Use Disorder and Withdrawal
  - Psychosis as a model
- A Few Words on Treatment

# Outline

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# What is Cannabis

## Components & Mechanisms

- Cannabis is a hemp plant selectively bred to psychoactive compounds
- 500+ compounds



# What is Cannabis

## Components & Mechanisms

- Main psychoactive ingredient is THC (delta-9-tetrahydrocannabinol)



# What is Cannabis

## Components & Mechanisms

- THC is a partial agonist in the endocannabinoid system

### CB1 Receptors



### CB2 Receptors



Cardiovascular, reproductive tissues, spinal cord, GI tract, spleen, liver, pancreas, marrow, musculoskeletal system, etc.

## What is Cannabis

# Components & Mechanisms

- Endocannabinoid system is neuromodulatory
- Receptors and projections are widely distributed throughout the brain:

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# What is Cannabis

## Components & Mechanisms

- Endocannabinoid system is neuromodulatory
- Receptors and projections are widely distributed throughout the brain:
  - Memory
  - Motor
  - Appetite
  - Pain Sensation
  - Energy Metabolism
  - Stress Response
  - Sleep
  - “Higher” cortical fxn

## What is Cannabis

# Components & Mechanisms

- 2<sup>nd</sup> most prevalent in SUD patients
- 3<sup>rd</sup> most prevalent in general population

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Kacha-Ochana A, *MMWR*. 2022;71(23):749-756.

Compton WM, et al. *JAMA Netw Open*. 2023'6(1):e2254566.

## What is Cannabis

# Components & Mechanisms

- Lifetime prevalence: 47%
- Past year prevalence: 22%
- Past month prevalence: 15.4%

First recreational  
legalization in 2012

Doubled from 2013-2023

# What is Cannabis

## What's Available Today?



The screenshot shows the top portion of a news article on the Connecticut Mirror website. At the top center is the logo for 'ct mirror', with 'ct' in a red square and 'mirror' in a serif font. To the right is a link for 'NEWSLETTERS'. Below this is a red navigation bar with white text for various categories: '2026 Legislative Session', 'Investigations', 'Immigration', 'Justice', 'Money', 'Health', 'Explainers', and 'Opinion'. The article is categorized under 'POLITICS', indicated by a red square icon. The main headline reads 'Lamont signs Connecticut's marijuana legalization law'. Below the headline, it says 'by Mark Pazniokas' next to a small circular profile picture of the author, and 'June 22, 2021 @ 5:10 pm'. To the right of the author information is a row of social media sharing icons: Facebook, Twitter, X, LinkedIn, Reddit, Email, and Print.

NEWSLETTERS

2026 Legislative Session Investigations Immigration Justice Money Health Explainers Opinion

POLITICS

### Lamont signs Connecticut's marijuana legalization law

by Mark Pazniokas  
June 22, 2021 @ 5:10 pm

Facebook Twitter X LinkedIn Reddit Email Print

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# What is Cannabis

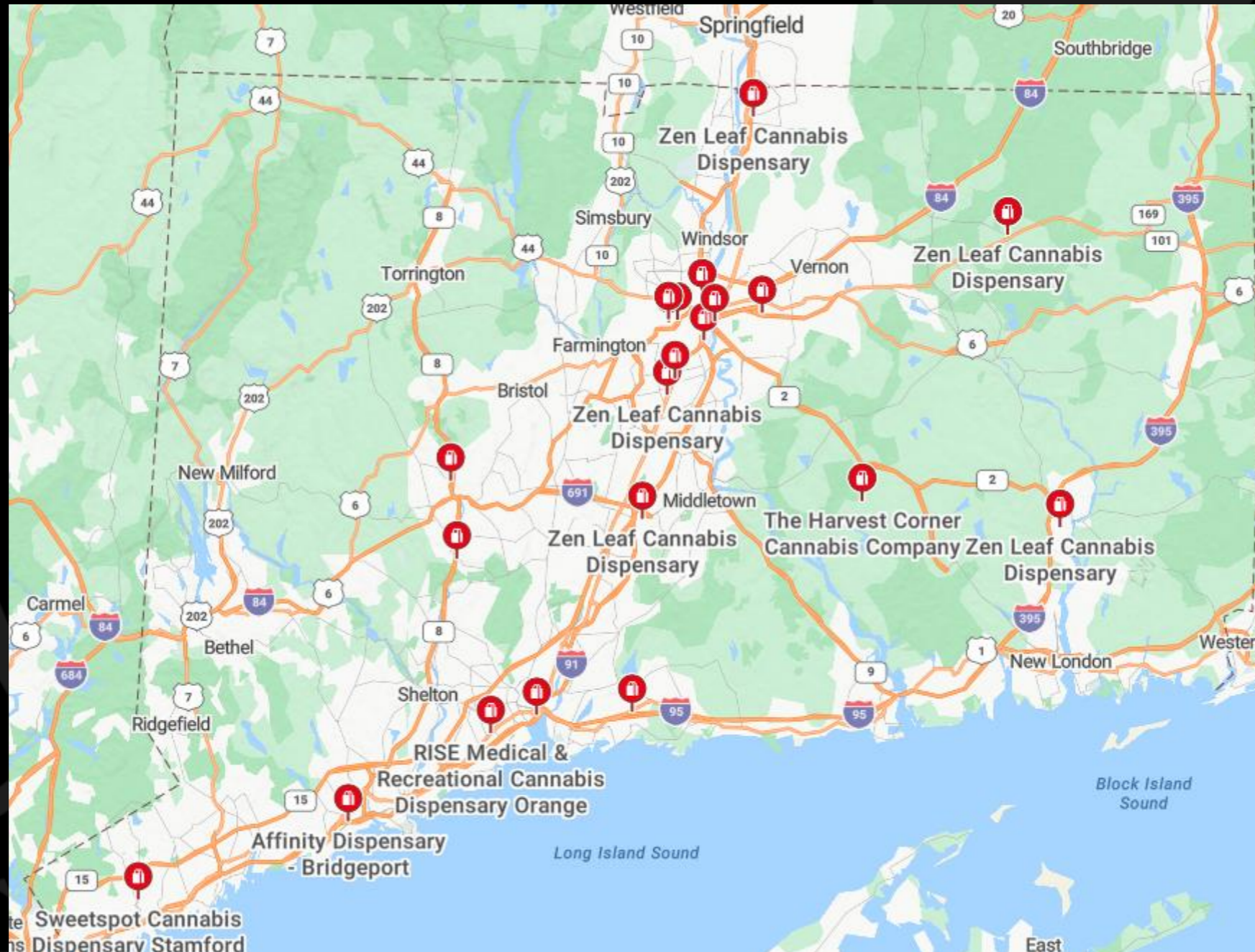
## What's Available Today?

- June 2021: Recreational Legalization
- One-quarter ounce (7g) per transaction
- “Medical” use have additional allowances

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# What is Cannabis

## What's Available Today?



# What is Cannabis

## What's Available Today?



### Zen Leaf Cannabis Dispensary

 3/5 (12 reviews)

Retail

2903 Berlin Tpke, Newington

Open · Closes 9 PM · (959) 952-1119

# “I Use Cannabis”

Flower (aka “Bud”)

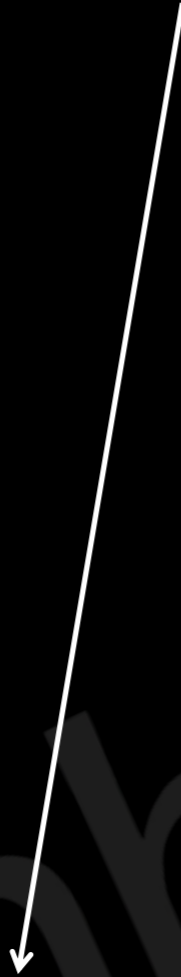


- Dried plant
- Still most widely used
- Smoke or vaporized
- 10-25% THC\*



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# “I Use Cannabis”



## Concentrates



- THC using butane or alcohol
- Wax, shatter, budder, dab
- 80-95% THC

# “I Use Cannabis”

↓  
Edibles



- THC-infused foods and beverages
- Delayed onset
- Longer duration

# “I Use Cannabis”

- Sublingual administration
- Bypass first-pass metabolism
- Fast onset
- Favored for “medicinal” use

## Tinctures/Oils



# “I Use Cannabis”

Vapes

- Similar to vaping nicotine
- THC distillate added to “e-juice”
- Can be very high potency



# What is Cannabis

## What's Available Today?

Route	Onset	Peak	Duration
Smoking/Vaping	1-5 mins	10-30 mins	2-4 hrs
Sublingual	15-45 mins	1-2 hrs	4-6 hrs
Edibles	30-120 mins	2-4 hrs	6-8+ hrs

# What is Cannabis

## What's Available Today?

### How much are people using?




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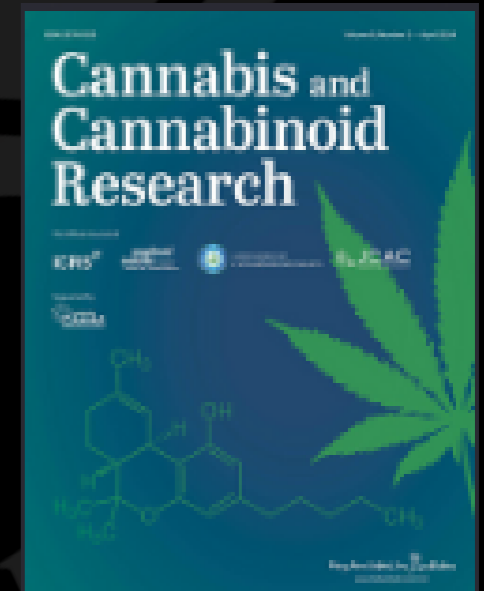
# What is Cannabis

## What's Available Today?

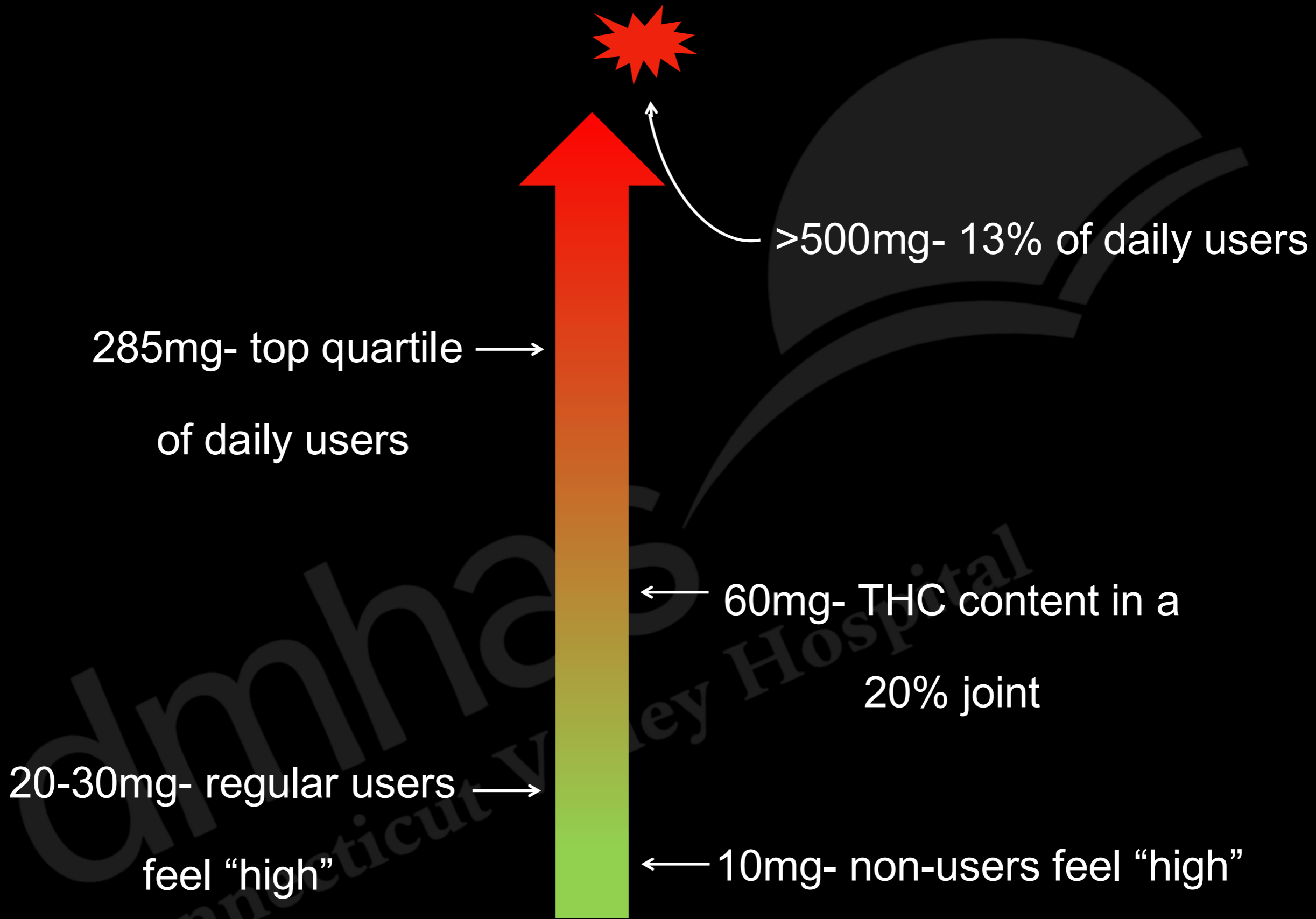
Original Research

### Estimating THC Consumption from Smoked and Vaped Cannabis Products in an Online Survey of Adults Who Use Cannabis

Alan J. Budney <sup>1,2,\*</sup>, Jacob T. Borodovsky<sup>1,2</sup>, Cara A. Struble <sup>1,2</sup>, Mohammad I. Habib<sup>1</sup>, Dvora Shmulewitz<sup>3,4</sup>, Ofir Livne<sup>3,4</sup>, Efrat Aharonovich<sup>3,4</sup>, Claire Walsh<sup>4</sup>, Carrie Cuttler <sup>5</sup>, and Deborah S. Hasin<sup>3,4,6</sup>



- Survey of 3200 daily cannabis users



# “I Use Cannabis”

- What kind of cannabis do you use?
- How do you use it?
- How often?

Frequency & Potency

# Outline

- What is Cannabis?
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- Cannabis and Mental Illness
  - Cannabis Use Disorder and Withdrawal
  - Psychosis as a model
- A Few Words on Treatment

# Cannabis and Mental Illness

## Cannabis Use Disorder (CUD) & Cannabis Withdrawal

## Cannabis and Mental Illness

# Cannabis Use Disorder & Withdrawal

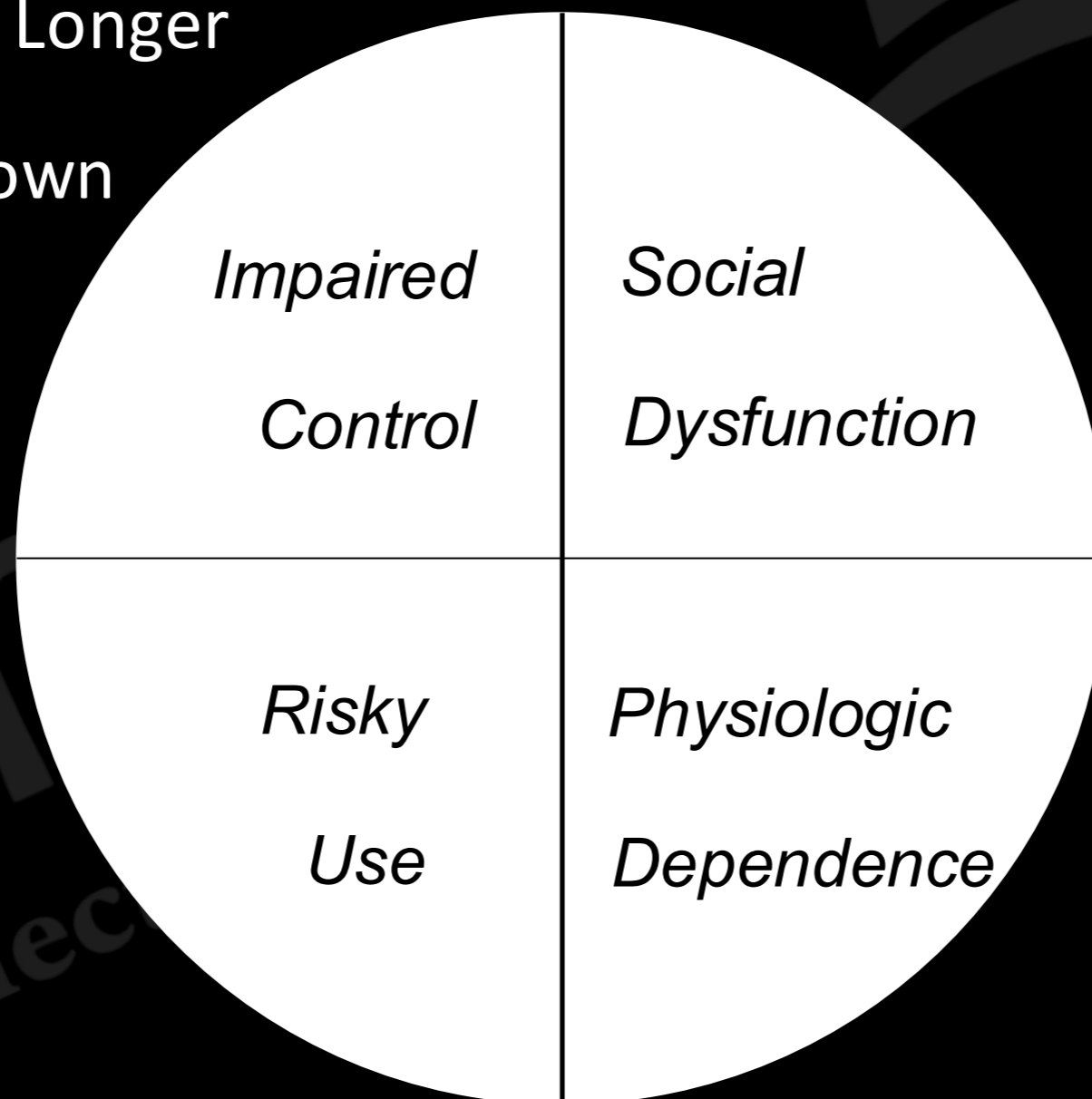
- Eleven SUD Criteria
- Four domains
  - Impaired Control
  - Social Dysfunction
  - Risky Use
  - Physiologic Dependence



# Cannabis and Mental Illness

## Cannabis Use Disorder & Withdrawal

1. Larger & Longer
2. Can't cut down
3. Time Spent
4. Cravings

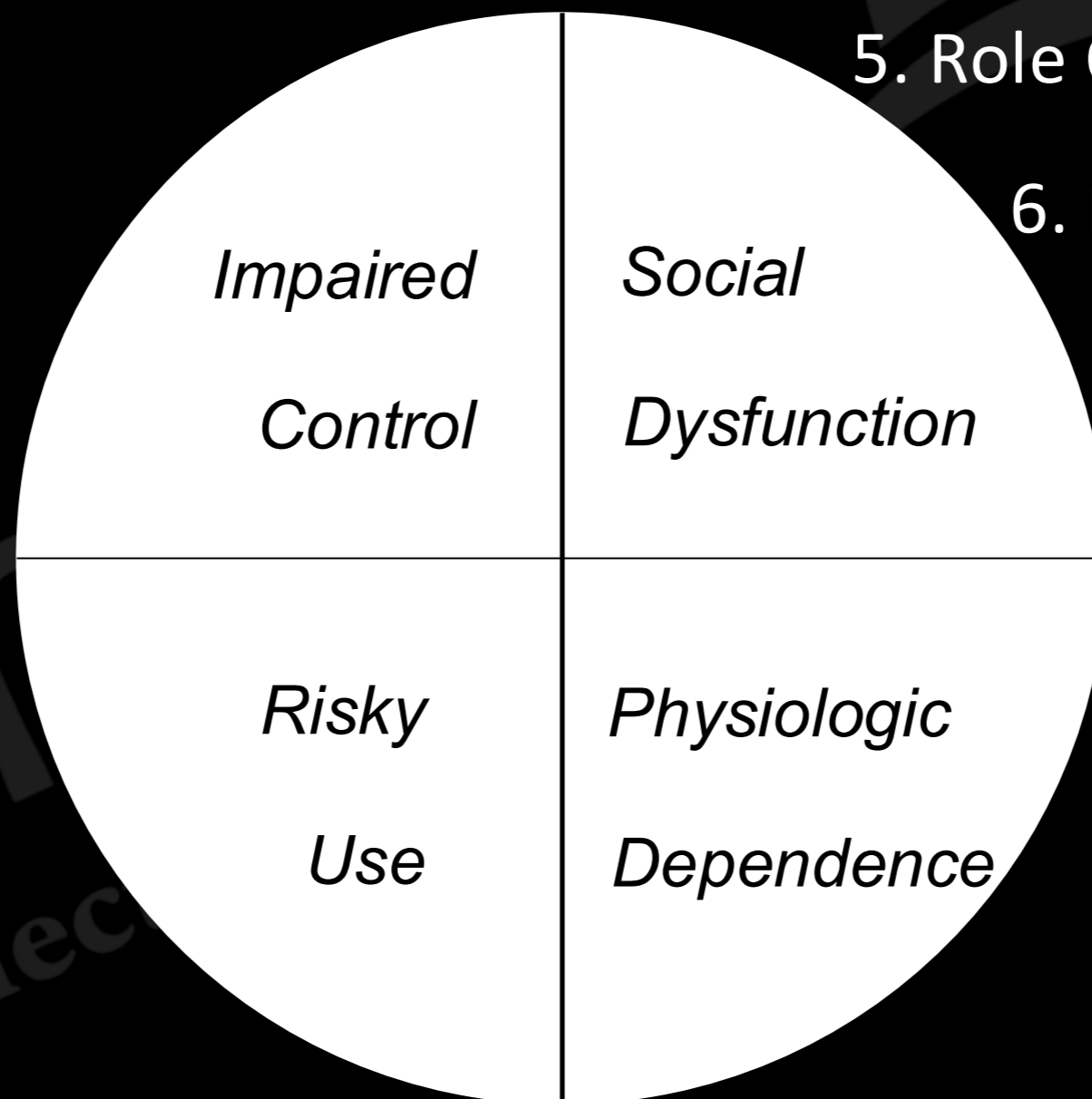


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# Cannabis and Mental Illness

## Cannabis Use Disorder & Withdrawal



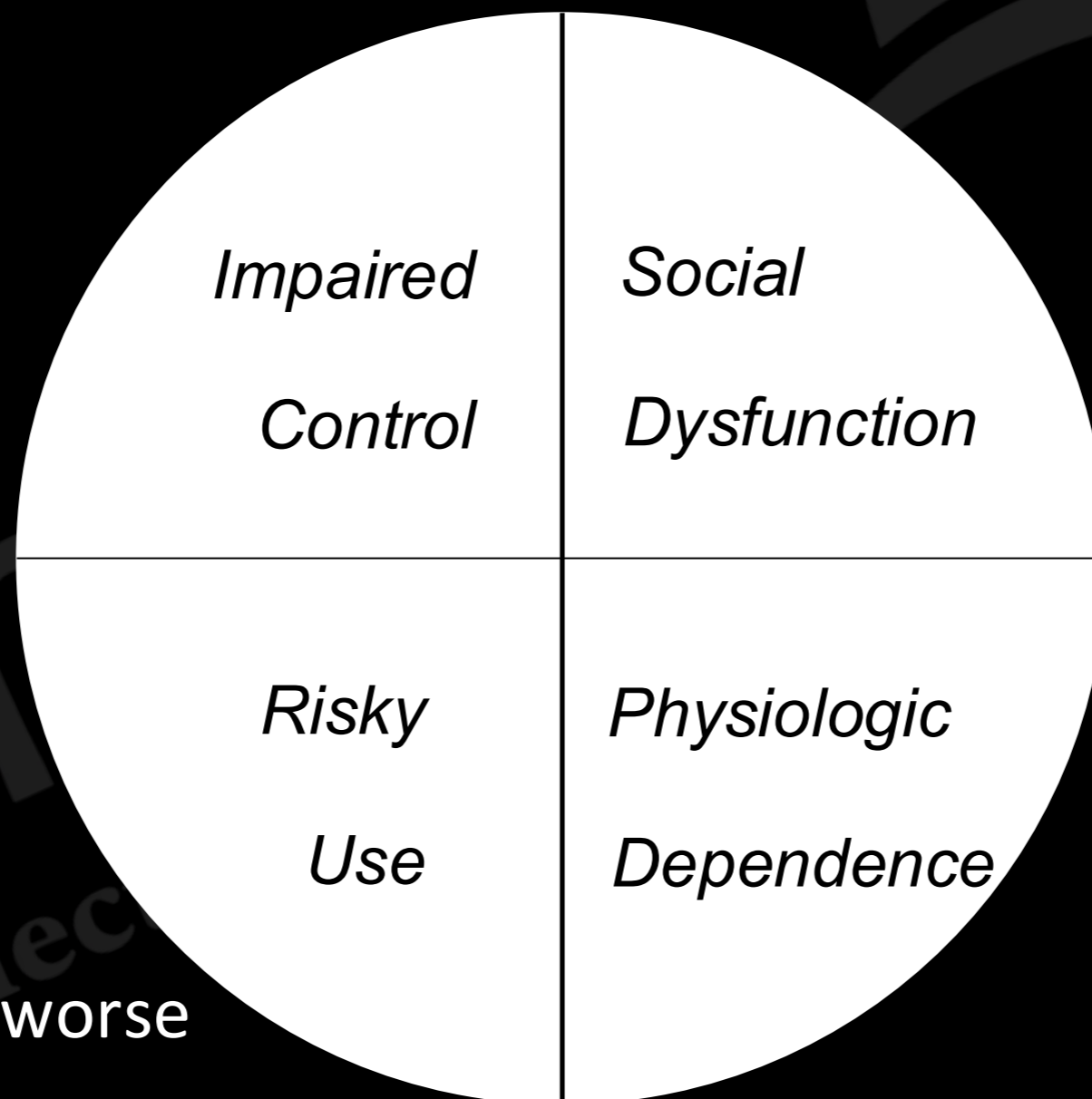
5. Role Obligations

6. Relationship Problems

7. Social activities

# Cannabis and Mental Illness

## Cannabis Use Disorder & Withdrawal

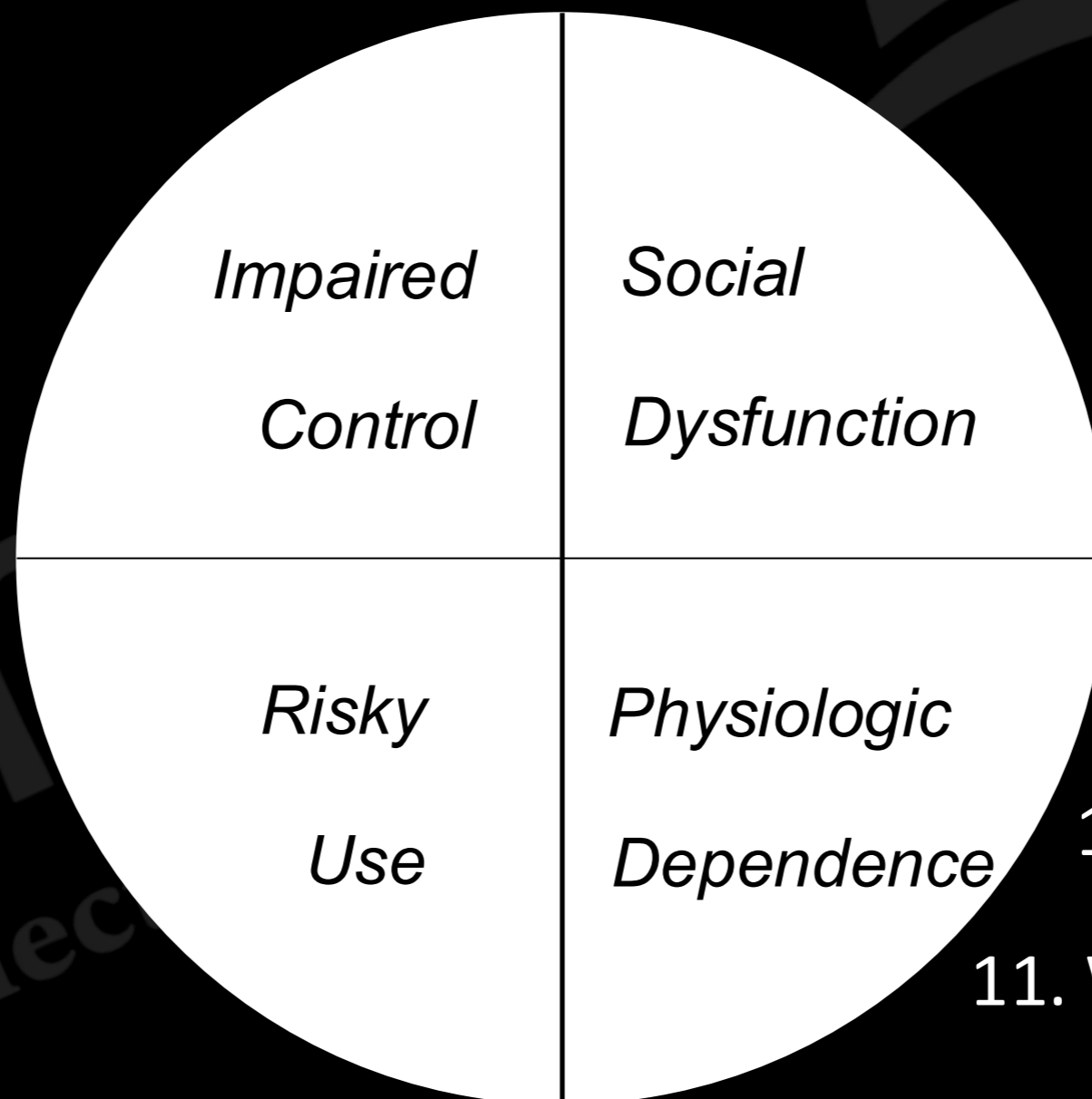


8. Physical Danger

9. Problems made worse

# Cannabis and Mental Illness

## Cannabis Use Disorder & Withdrawal



10. Tolerance

11. Withdrawal

## Cannabis and Mental Illness

# Cannabis Use Disorder & Withdrawal

- Risk increases with frequency of use

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## Cannabis and Mental Illness

# Cannabis Use Disorder & Withdrawal

- Risk increases with frequency of use
- Meta-analysis encompassing 41,000 people who use cannabis

Frequency of use	Absolute Risk of CUD
None	0%
Annual	3.5%
Monthly	8.0%
Weekly	16.8%
Daily	36.0%

# Cannabis and Mental Illness

## Cannabis Use Disorder & Withdrawal

### Cannabis Withdrawal

#### Physiologic

Appetite Loss

Nausea/vomiting

Headache

Hot Flashes

#### Psychologic

Irritability

Insomnia

Anxiety

Depression

Cravings

## Cannabis and Mental Illness

# Cannabis Use Disorder & Withdrawal

- About half of cannabis users experience withdrawal
- Increased rate with more frequent use
- Association with potency is less clear

Bahji A et al, *JAMA Netw Open* 2020;3(4):e202370.

Budney AJ et al, *J Abnorm Psychol* 2003;112:393–402.

## Cannabis and Mental Illness

# Cannabis Use Disorder & Withdrawal

- Withdrawal onset 24-48 hours
- Lasts approx. 2 wks
- Sleep disturbance can persist >1 month

Bahji A et al, *JAMA Netw Open* 2020;3(4):e202370.

Budney AJ et al, *J Abnorm Psychol* 2003;112:393–402.

## Cannabis and Mental Illness

# Cannabis Use Disorder & Withdrawal

- No dangerous physiologic symptoms
- Risks returning to use
- Treatment approaches to be discussed at the end...

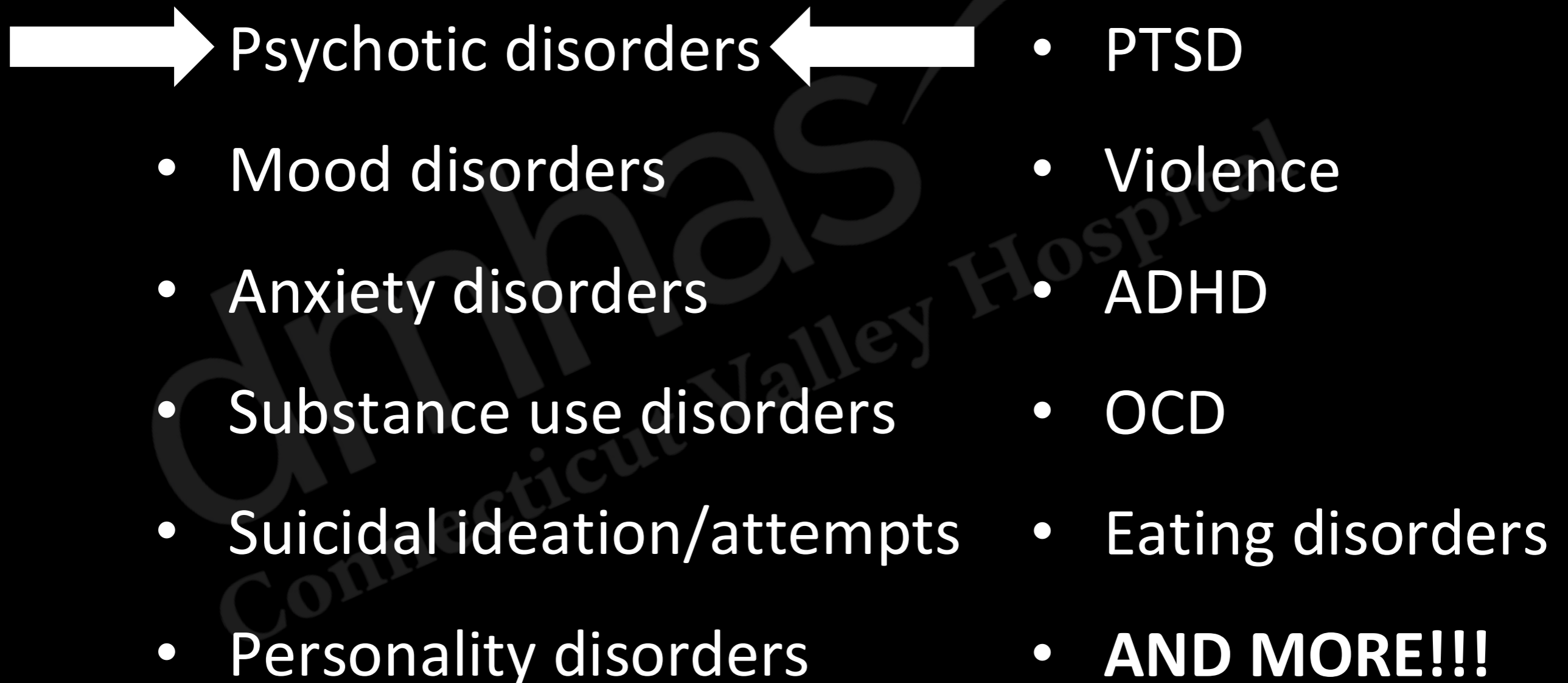
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# Cannabis and Mental Illness

## Psychosis as a Model

Cannabis use is associated with most psychiatric illnesses



# Cannabis and Mental Illness

## Psychosis as a Model

- Transient psychosis during intoxication
  - Wide range of prevalence estimates (5-50%)
- Progression to long-term psychotic disorders
  - Indistinguishable from schizophrenia
  - Risk is *exposure dependent*

# Cannabis and Mental Illness

## Psychosis as a Model

High frequency of use leads to  
higher risk of psychosis

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# Cannabis and Mental Illness

## Psychosis as a Model



\*Others estimate 6.0 fold increase

Volkow ND, et al. *JAMA Psychiatry*. 2016;73(3):292-297.  
Jauhar S, et al. *Lancet*. 2022;399(10323):473-486.

# Cannabis and Mental Illness

## Psychosis as a Model

High potency products leads to  
higher risk of psychosis

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# Cannabis and Mental Illness

## Psychosis as a Model

- Relative to low potency products, high potency use is associated with:
  - 4 years earlier psychosis onset
  - More severe positive symptoms
  - 3-fold more likely to have subsequent psychotic episode

# Cannabis and Mental Illness

## Psychosis as a Model

Cannabis has the highest risk of  
transitioning schizophrenia  
of any substance

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# Cannabis and Mental Illness

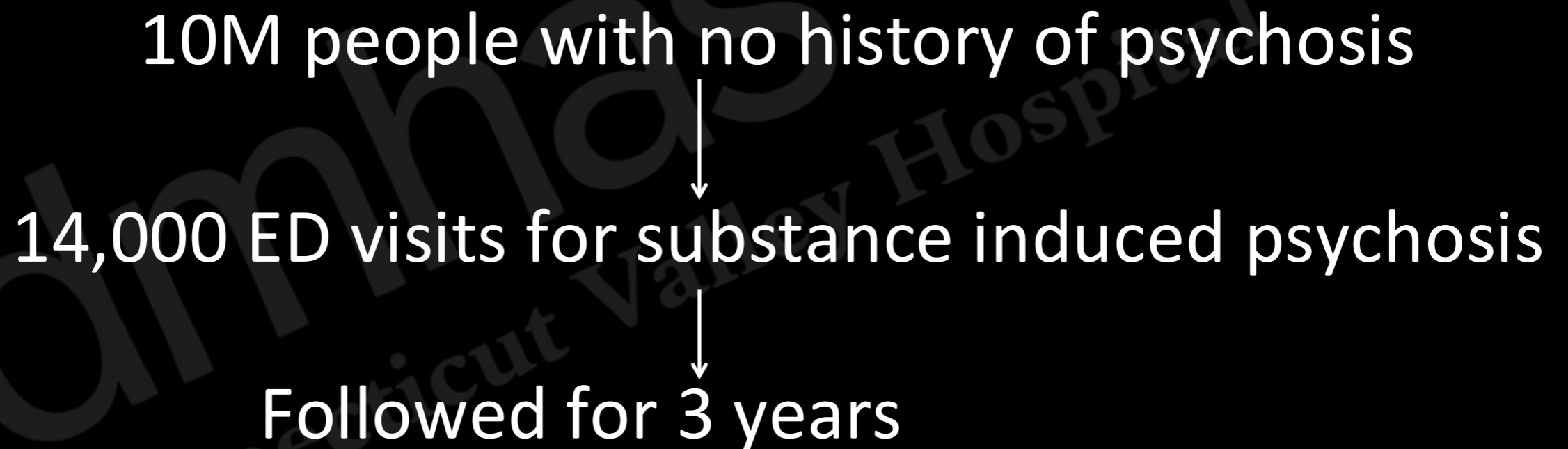
## Psychosis as a Model

JAMA Psychiatry | [Brief Report](#)

### Transition to Schizophrenia Spectrum Disorder Following Emergency Department Visits Due to Substance Use With and Without Psychosis

Daniel T. Myran, MD, MPH; Lyndsay D. Harrison, MSc; Michael Pugliese, MSc; Marco Solmi, MD, PhD;  
Kelly K. Anderson, PhD; Jess G. Fiedorowicz, MD, PhD; Christopher M. Perlman, PhD; Colleen Webber, PhD;  
Yaron Finkelstein, MD; Peter Tanuseputro, MD, MHSc

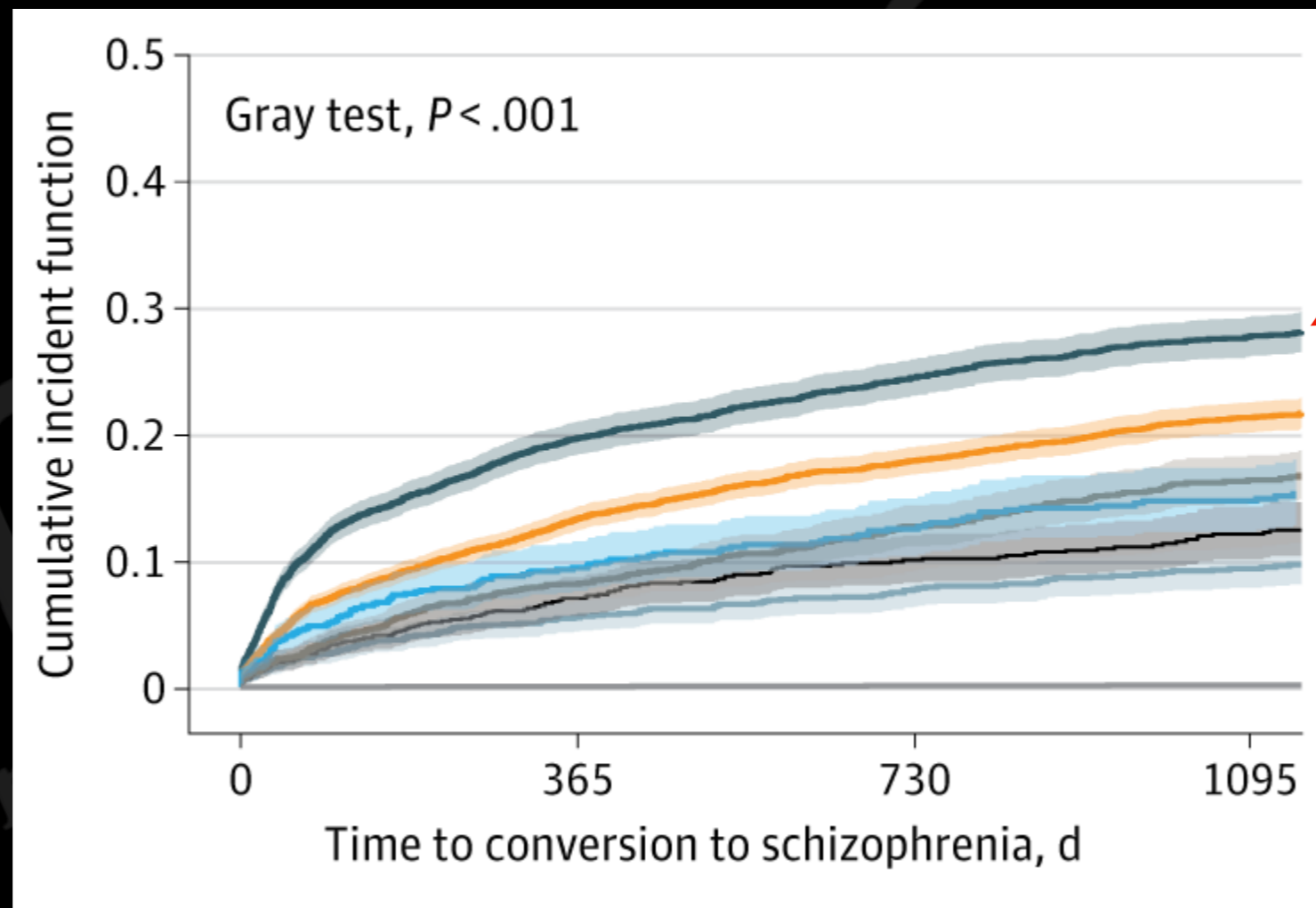
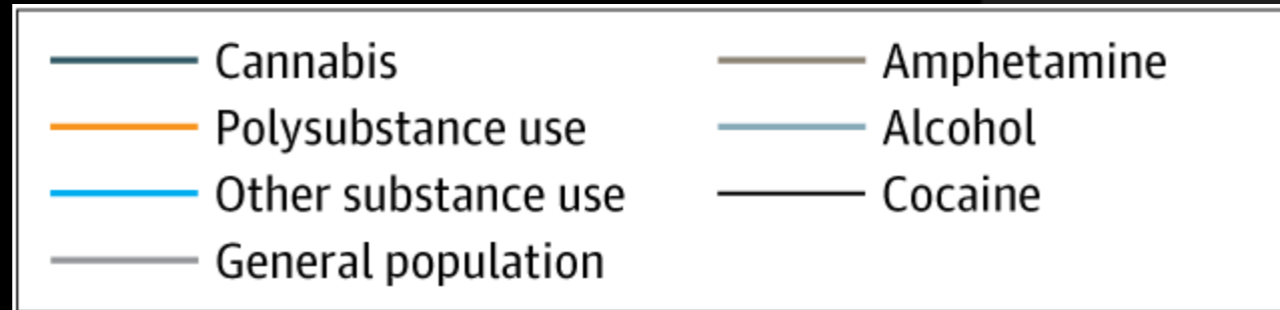
Myran DT, et al. *JAMA Psychiatry*. 2023;80(11):1169-1174.



- How many developed schizophrenia
- What substance were they using?

# Cannabis and Mental Illness

## Psychosis as a Model



26% after 3 yrs!

# Cannabis and Mental Illness

## Psychosis as a Model

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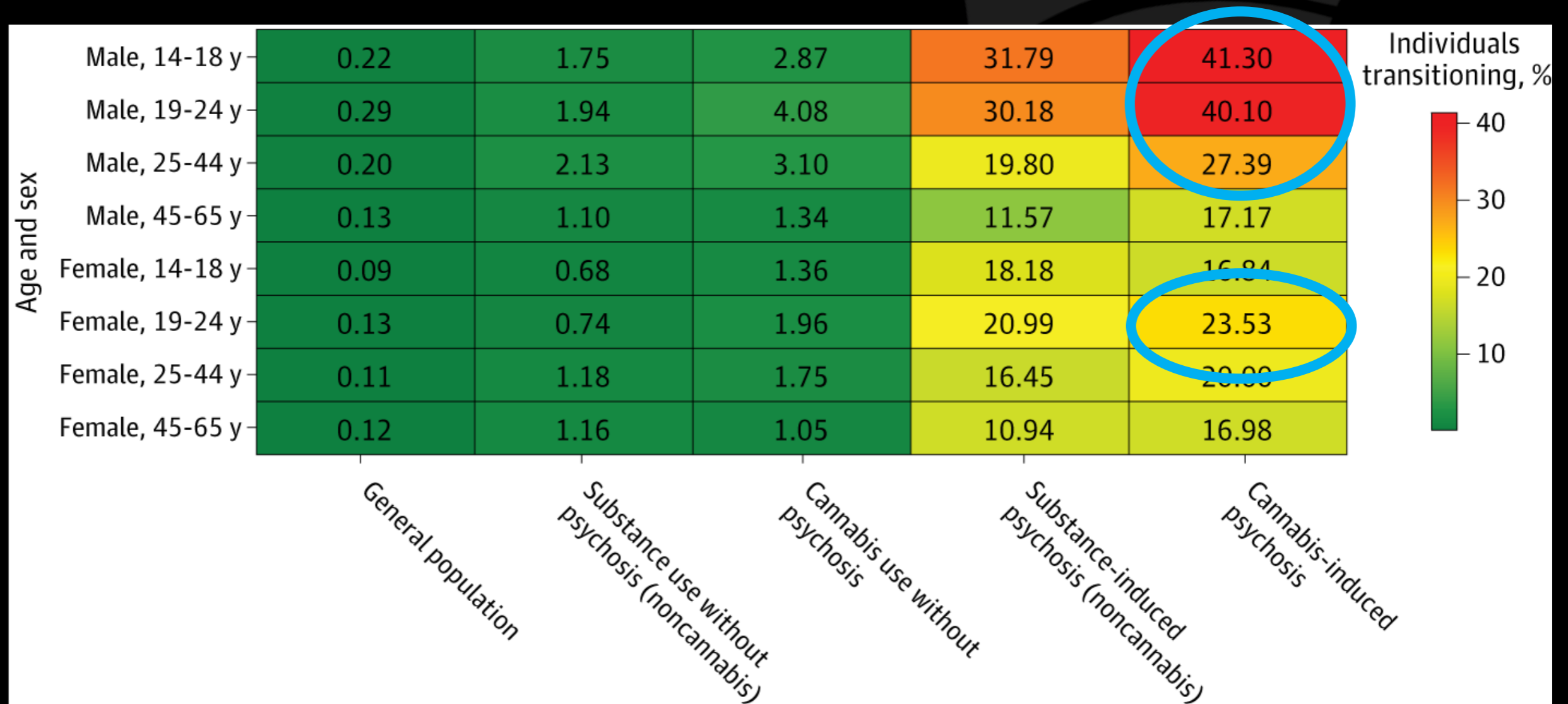
Myran DT, et al. *JAMA Psychiatry*. 2023;80(11):1169-1174.

10M people with no history of psychosis  
↓  
400,000 ED visits for substance use in general  
↓  
Followed for 3 years

- How many developed schizophrenia
- What substance were they using?

# Cannabis and Mental Illness

## Psychosis as a Model



Percentage of people transitioning to schizophrenia after 3 years

# Cannabis and Mental Illness

## Psychosis as a Model

How has this trend changed  
over time?

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# Cannabis and Mental Illness

## Psychosis as a Model

JAMA  
Network | **Open**<sup>™</sup>



Original Investigation | Substance Use and Addiction

### Changes in Incident Schizophrenia Diagnoses Associated With Cannabis Use Disorder After Cannabis Legalization

Daniel T. Myran, MD, MPH; Michael Pugliese, MSc; Lyndsay D. Harrison, MSc; Marco Solmi, MD; Kelly K. Anderson, PhD; Jess G. Fiedorowicz, MD; Yaron Finkelstein, MD; Doug Manuel, MD; Monica Taljaard, PhD; Colleen Webber, PhD; Peter Tanuseputro, MD

- 13.5 million people in Canada
- Incidence of Schizophrenia associated with CUD tripled post-legalization
- Overall diagnosis of Psychosis NOS doubled

# Cannabis and Mental Illness

## Psychosis as a Model

- Cannabis is an independent risk factor for long-term psychosis
- Stronger association with high potency
- Stronger association with frequent use
- Young people are more at risk

These relationships hold for other  
psychiatric illnesses \*

\* mostly...

# Outline

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# A Few Words on Treatment

## Cannabis Withdrawal

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# A Few Words on Treatment

- Reassurance, reassurance, reassurance
- Symptom driven medications  
(insomnia, anxiety, nausea, etc.)
- Some emerging medication options

# A Few Words on Treatment

- High dose gabapentin
- Cannabinoid agonist (dronabinol, nabilone, nabiximols)
- CBD
- N-acetylcysteine

# A Few Words on Treatment

## Cannabis Use Disorder

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# A Few Words on Treatment

- Mainstay is psychotherapy
  - Cognitive Behavioral Therapy
  - Motivational Enhancement
  - Acceptance & Commitment Therapy
- No strong evidence for medications

# A Few Words on Treatment



**Cochrane  
Library**

Cochrane Database of Systematic Reviews

## Pharmacotherapies for cannabis use disorder (Review)

Spiga F, Parkhouse T, Tang VM, Savović J, Le Foll B, Nielsen S

**Authors' conclusions:** There is incomplete evidence for all the clinically-important pharmacotherapies investigated and, for half of their outcomes, the quality of the evidence was low (44%) or very low (11%). **Given the limited evidence of efficacy, those pharmacotherapies should still be considered experimental for treating cannabis use disorder.** The greater withdrawal from treatment due to adverse effects seen with anticonvulsants and mood stabilisers may limit their therapeutic value.

# A Few Words on Treatment

- Small amount or mixed evidence:
  - Topiramate
  - Gabapentin
  - N-acetylcysteine (adolescents)
  - CBD
  - Cannabinoid agonists

# A Few Words on Treatment

- Treat co-morbid psychiatric conditions

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# A Few Words on Treatment

## Psychosis and Other Psychiatric Illness

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# A Few Words on Treatment

- General principles:
  - Treat psychiatric illness as you would otherwise
  - Treatment may be more difficult
  - Support cannabis abstinence

# A Few Words on Treatment

- In psychosis, cannabis use can lead to:
  - Recurrence of psychosis
  - More severe psychotic symptoms
  - Worse social functioning
- Even if medication adherent

# A Few Words on Treatment

- Emerging nuance for antipsychotics
  - LAIs do well
  - Oral aripiprazole does well
  - Clozapine also does well (though less than aripiprazole!)
  - Quetiapine least effective

Taipale H, et al. *Schizophrenia Bulletin*. 2024;50(6):1287-1294.

Mustonen A, et al. *British J Psychiatry*. 2025;358:116966.



Thank you!!

Questions?