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Psychiatry and Addictions Case Conference
UW Medicine | Psychiatry and Behavioral Sciences

METHAMPHETAMINE-ASSOCIATED PSYCHOSIS (MAP)

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project ECHO

SPEAKER DISCLOSURES

I have no conflicts of interest to disclose.

PLANNER DISCLOSURES

The following series planners have no relevant conflicts of interest to disclose; other disclosures have been mitigated.

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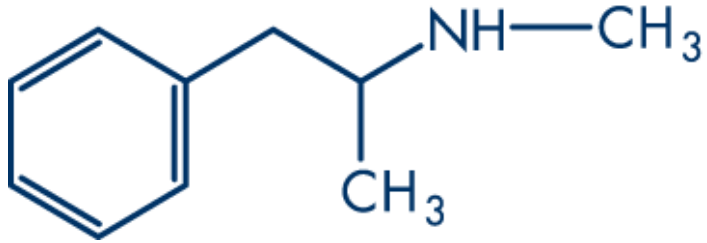
OBJECTIVES

1. Epidemiology & risk factors
2. Mechanism of action
3. Clinical presentation
4. Differential diagnoses
5. Treatment



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CASE

- **HPI**: A 42 yo man with a charted PMH of HFrEF (EF 40%) and schizophrenia comes to your office for shortness of breath. You see he has missed multiple appointments with you, cardiology and psychiatry. He reports he can no longer walk to his second-floor apartment without feeling dizzy. He demands to have his blood tested for “poison” because he thinks his neighbors are trying to kill him by pumping toxic gas through the vents. He knows this is happening because he can hear them plotting to kill him. When asked about medication compliance, he reports that he doesn’t take any pills because his neighbors are breaking in and tampering with them. He reports smoking meth 3-4x a week for the past year. He last used yesterday.
- **MSE**: disheveled, consistent eye contact, irritable, mildly pressured speech
- **PE**: excoriated limbs, + LE PE

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TERMINOLOGY

- Meth intoxication
- Acute MAP: lasting < 1 month, resolves with abstinence
- Persistent MAP: lasting > 1 month, even in the setting of abstinence

Substance/Medication-Induced Psychotic Disorder

Diagnostic Criteria

A. Presence of one or both of the following symptoms:

1. Delusions.
2. Hallucinations.

B. There is evidence from the history, physical examination, or laboratory findings of both (1) and (2):

1. The symptoms in Criterion A developed during or soon after substance intoxication or withdrawal or after exposure to or withdrawal from a medication.
2. The involved substance/medication is capable of producing the symptoms in Criterion A.

C. The disturbance is not better explained by a psychotic disorder that is not substance/medication-induced. Such evidence of an independent psychotic disorder could include the following:

The symptoms preceded the onset of the substance/medication use; the symptoms persist for a substantial period of time (e.g., about 1 month) after the cessation of acute withdrawal or severe intoxication; or there is other evidence of an independent non-substance/medication-induced psychotic disorder (e.g., a history of recurrent non-substance/medication-related episodes).

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EPIDEMIOLOGY & RISK FACTORS

EPIDEMIOLOGY: METH USE

- Source: National Survey on Drug and Health
- Use and mortality increasing since 2009
- Most recent data: 2016 – 2019
  - Past-year use: ↑ 43%
  - Methamphetamine use-disorder (MUD) diagnoses: ↑ 33%
  - Frequent use: ↑ 66%
  - Overdose deaths involving psychostimulants: ↑ 180%
- Also reflected in ED visits, psychiatric hospitalizations, & arrests
- Disproportionality affecting Black individuals

NSDUH
NATIONAL SURVEY ON DRUG USE AND HEALTH

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EPIDEMIOLOGY: OVERDOSE DEATHS

Drugs involved in overdose deaths in King County

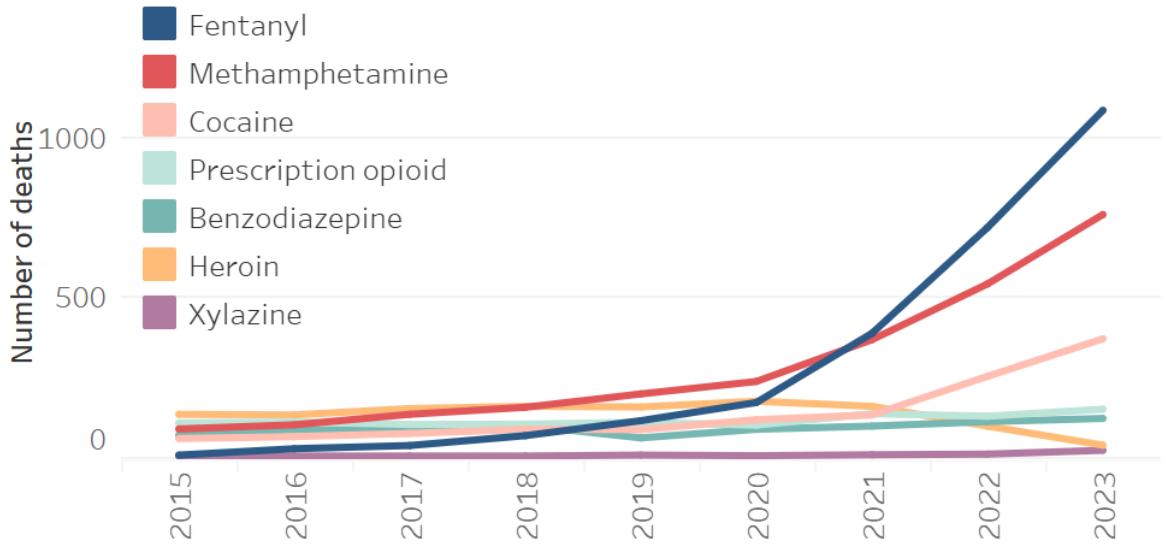
Data Source: King County Medical Examiner's Office

Drugs Involved in King County Overdose Deaths, 2015-2023

Drug overdose deaths typically involve multiple drug classes - most commonly opioids and stimulants.

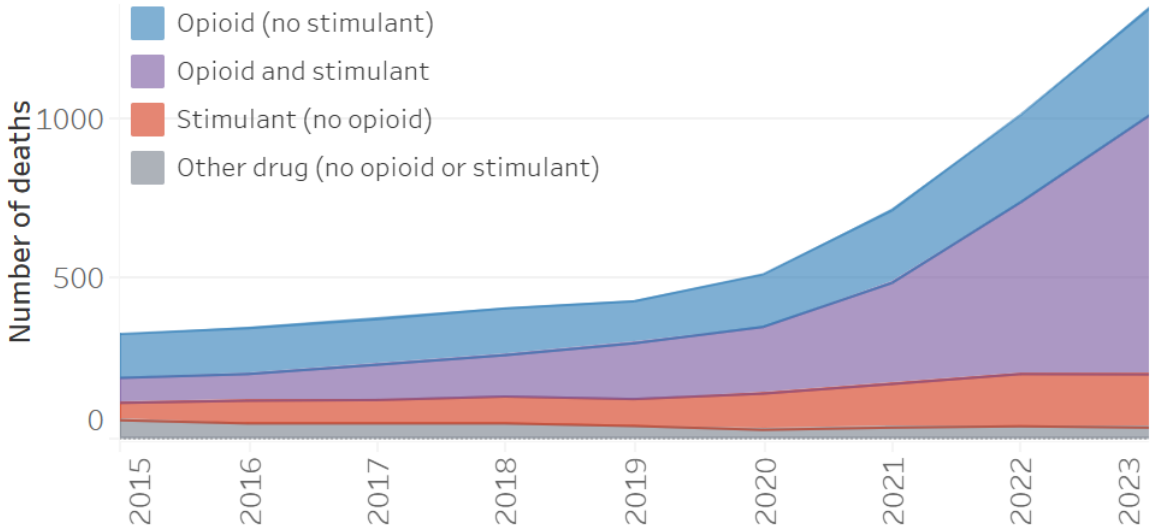
Specific drug classes involved in overdose deaths

Note: Individuals can be represented in more than one line



Number of Overdose Deaths Involving Opioids and/or Stimulants

Note: Individuals are represented only once; **Opioid** = Fentanyl, Heroin, an/or Prescription Opioids; **Stimulant** = Methamphetamine and/or cocaine



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EPIDEMIOLOGY: MAP

- **Limited data**
- Compared to the general population, individuals who use methamphetamines are 11x more likely to develop psychotic symptoms
- 27% - 40% of people who report heavy methamphetamine use have experienced at least one psychotic episode related to their use
- High recurrence, up to 50%
- 20% - 30% of acute MAP converts to persistent MAP > 6 months

MAP DEMOGRAPHIC ASSOCIATIONS

- Older age
- Younger age of substance use onset
- Heavier use
- Single relationship status
- Lower educational level
- Increased number of withdrawal symptoms
- Higher lack of anger control scores
- High lack of assertiveness scores
- High anxiety scores

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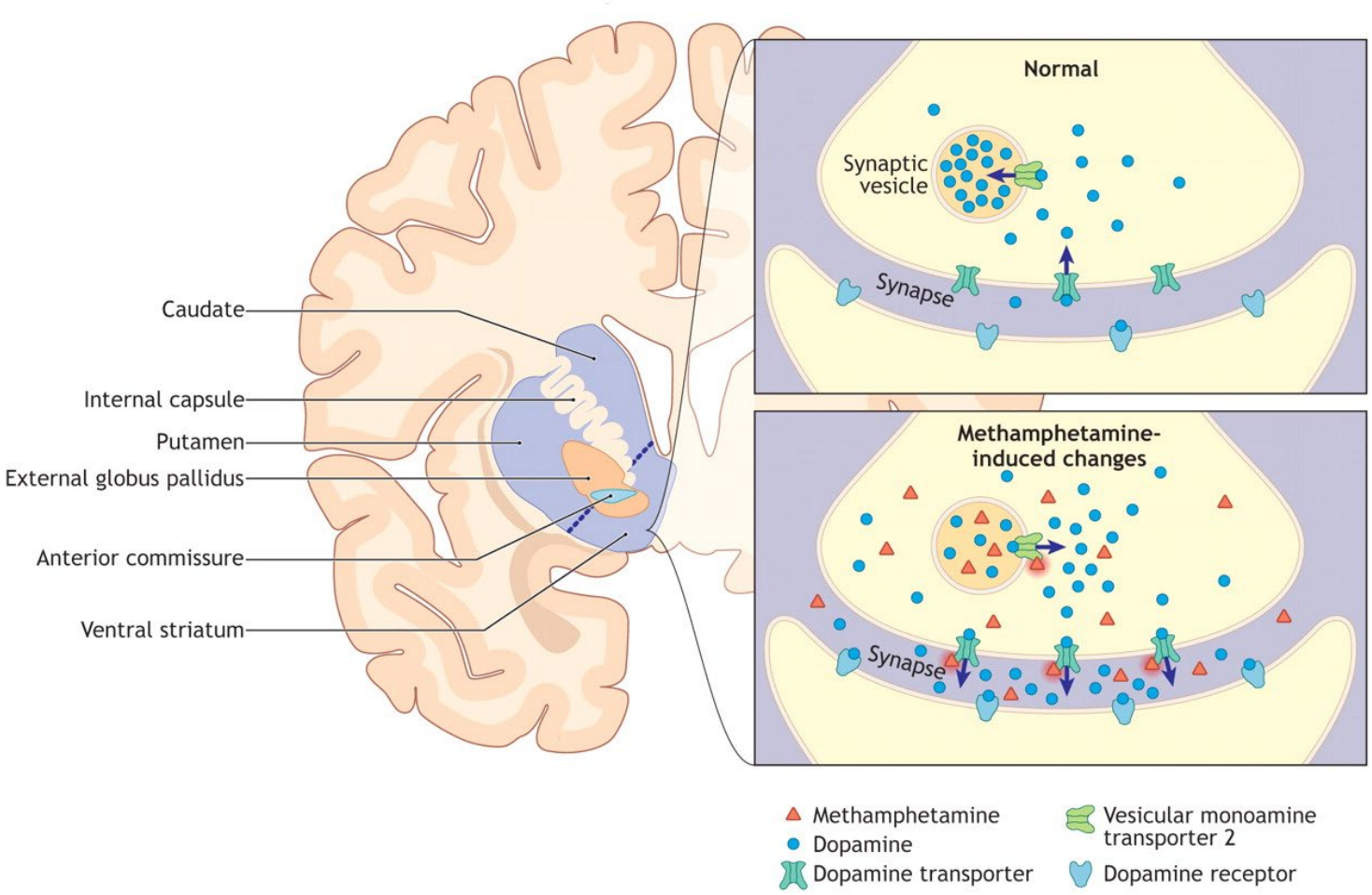
MECHANISM OF ACTION

MECHANISM OF ACTION: METH

- Increases dopamine release
- Inhibits dopamine reuptake
- Impairs dopamine storage



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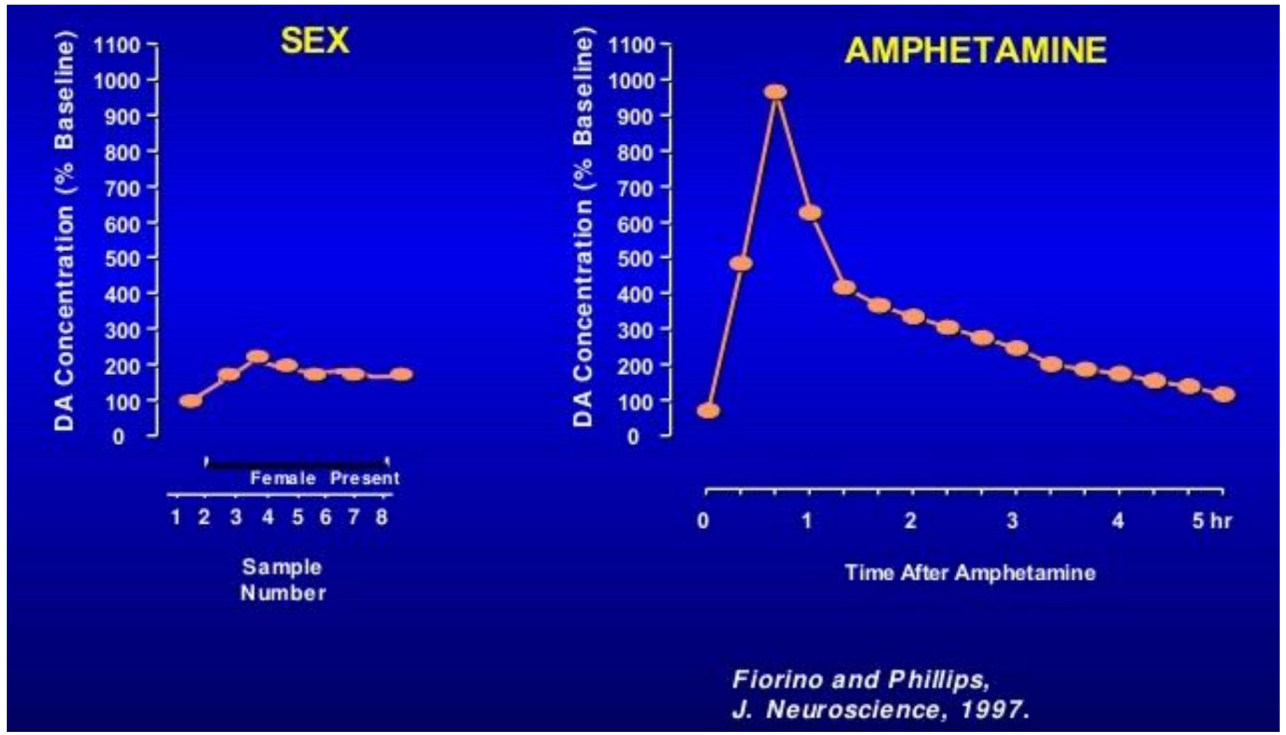
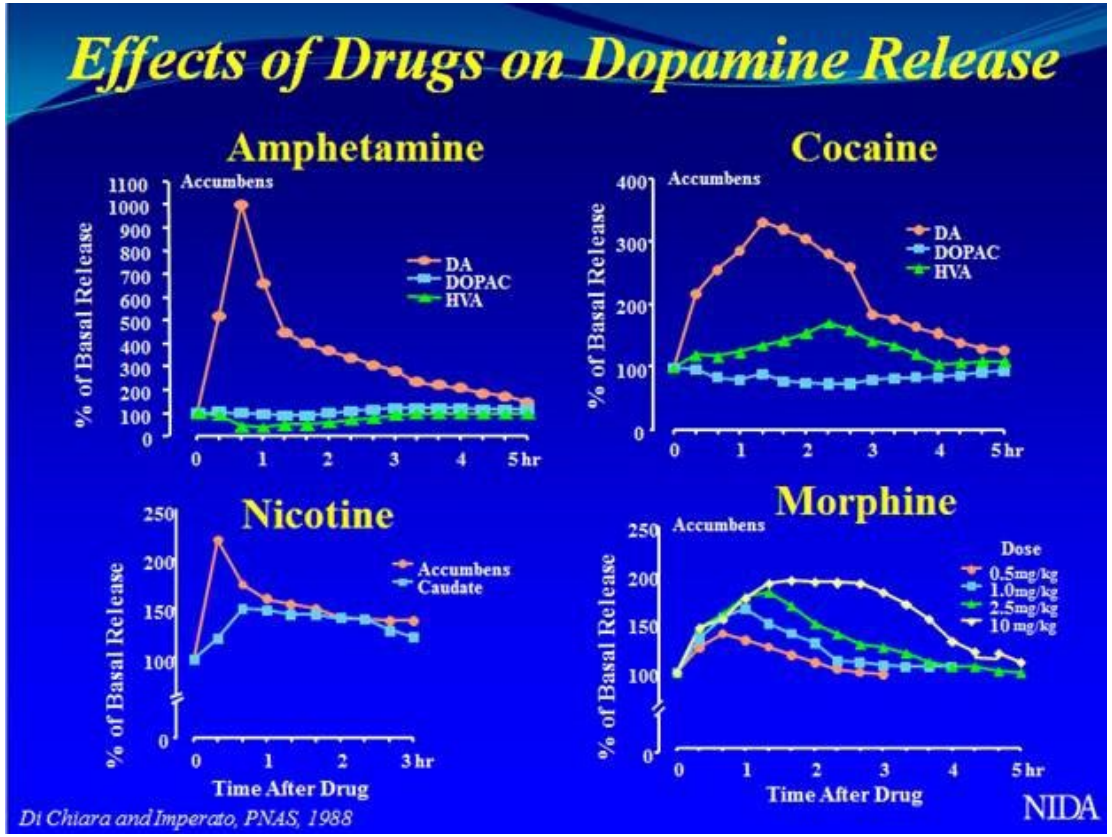
MECHANISM OF ACTION: METH





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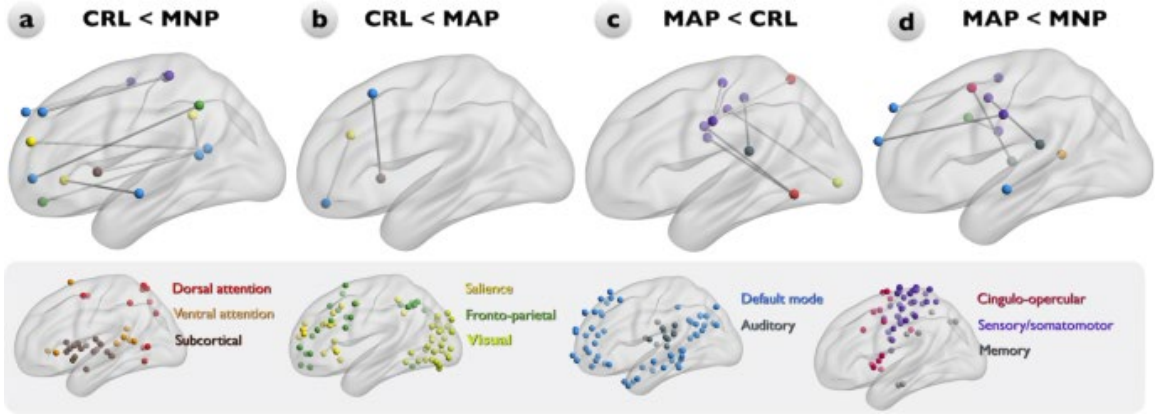
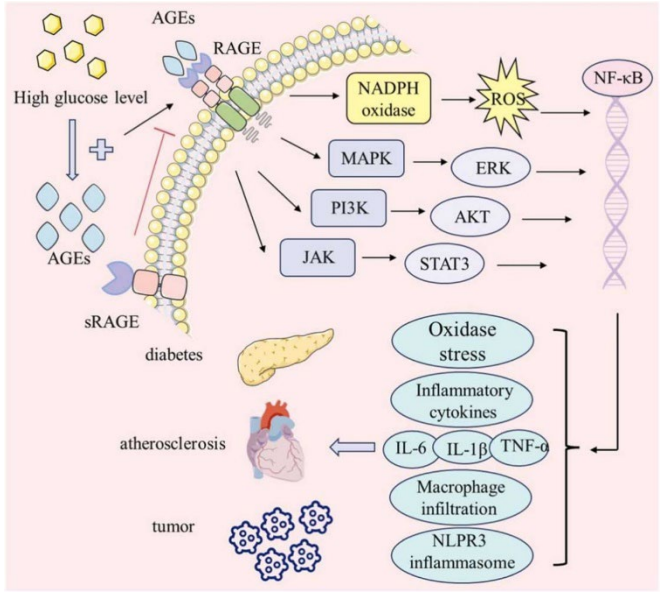
MECHANISM OF ACTION: METH

- Oxidative stress
- AGE-RAGE pathways
- Neural networks
  - Default mode network (DCN)
  - Frontoparietal network (FPN)
  - Sensory somatic network (SSN)





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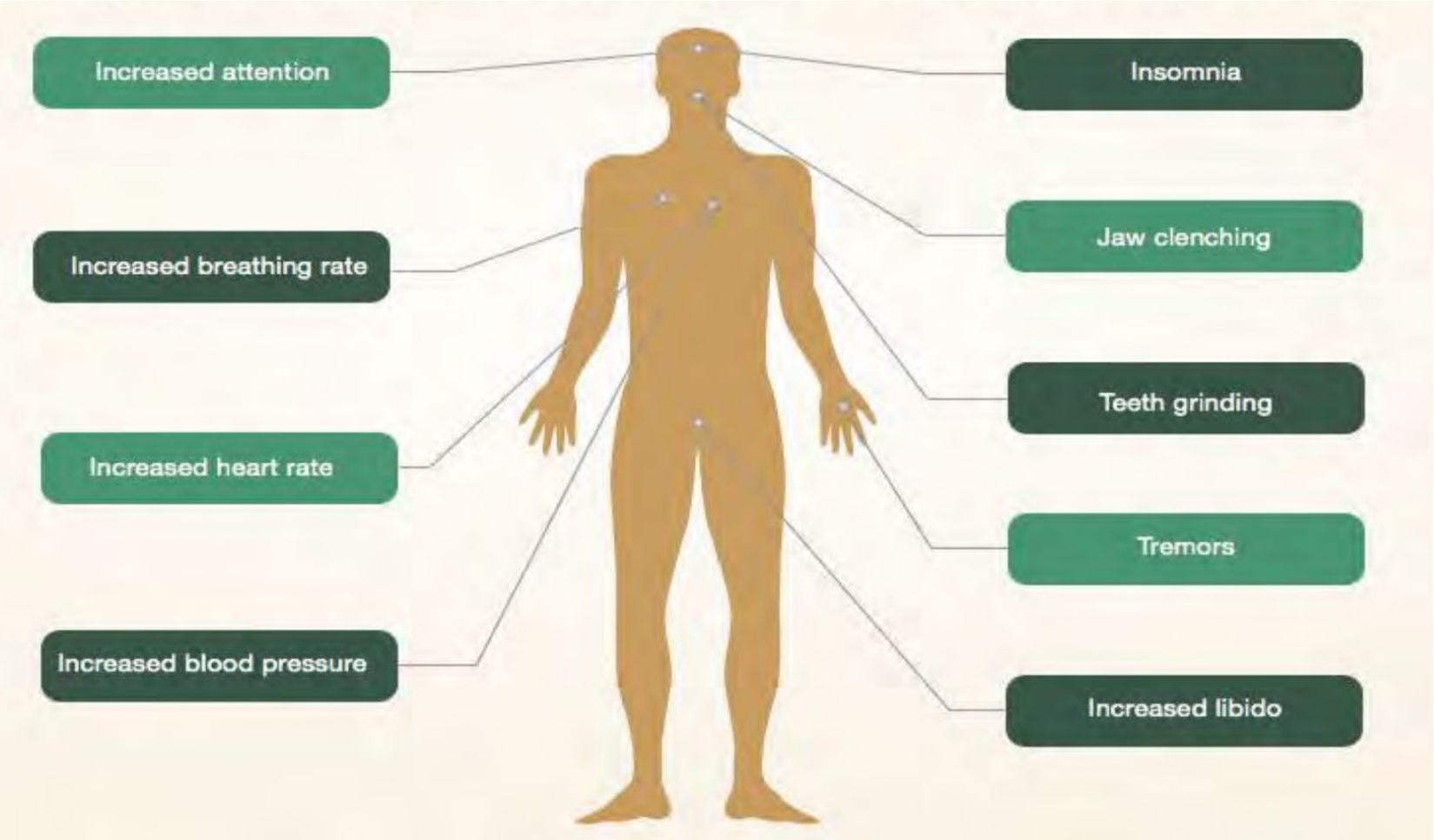
CLINICAL PRESENTATION

INTOXICATION

- Sympathetic activation
- Psychiatric symptoms



MAP

- **Paranoia**
- Hallucinations: auditory, tactile, visual
- Delusions: paranoid, persecutory, ideas of reference
- Disorganized behaviors
  - Can progress to violence

DIFFERENTIAL DIAGNOSIS

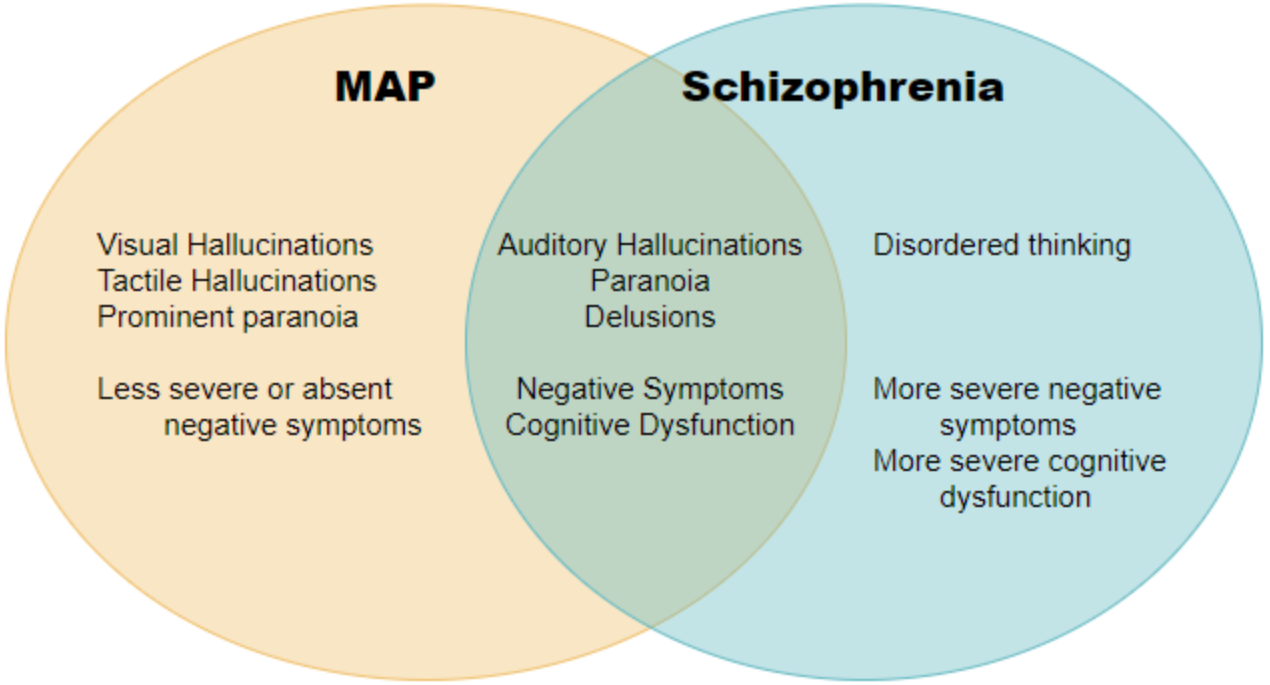
DIFFERENTIAL DIAGNOSIS

- Psychiatric
  - Brief psychotic episode
  - Schizophrenia-spectrum disorder
  - Mania with psychotic features (bipolar I disorder)
  - And/or other substance use:
    - Cannabis
    - PCP
    - Hallucinogens
- Medical
  - **EtOH withdrawal/DTs**
  - Delirium
  - Dementia (LBD, FTP)

DIFFERENTIAL DIAGNOSIS

"How do I differentiate methamphetamine-induced psychosis from a primary psychotic disorder?"

- Mental status exam
- History: temporal relationship, age of onset
- Tincture of time



TREATMENT

Pharmacologic

Non-pharmacologic

BUILDING RAPPORT WITH PATIENTS WITH PSYCHOSIS

- Prioritize safety
- Stay calm
- Validate emotions, not delusions
- Identify shared goals
- As you build rapport, gently reality test with open-ended questions and scales

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PHARMACOLOGY: MUD

- No FDA approved medications for MUD or MAP
- MUD
  - Mirtazapine 30mg daily
  - Wellbutrin 450 mg daily + naltrexone IM q 3 weeks
  - Stimulants?
- Treat co-occurring psychiatric disorders
- Harm reduction
  - Narcan
  - Fentanyl test strips
  - Infectious disease testing (IVDU, STIs)

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PHARMACOLOGY: INTOXICATION/ACUTE MAP

- Most data for acute MAP is for psychosis during intoxication
  - Benzodiazepines
  - Second-generation antipsychotics (usually olanzapine 5 – 10mg)*

PHARMACOLOGY: ACUTE AND PERSISTENT MAP

"When should I prescribe an antipsychotic for persistent MAP?"

- Safety concerns
- Functional impairment
- Previous response
- Low likelihood of decreasing/stopping meth
- Limited insight
- Good history of an underlying primary psychotic disorder

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PHARMACOLOGY: ACUTE AND PERSISTENT MAP

Drug	Dose Range	Comments
Aripiprazole	5 – 10 mg daily	- Lowest metabolic effects - Least potent
Risperidone	2 – 4 mg daily	- Available as LAI
Olanzapine	5 – 20 mg daily	- Best for acute intoxication - Sedating - Highest metabolic effects

- Yearly screening: weight, A1C, lipids, AIMS

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NON-PHARMACOLOGIC : CBT-P

EXERCISE: A picture's worth a thousand words

What comes to mind when you think about your voices or worries?
On the next page, draw what they "look like" to you. If you can't think of pictures, write words that describe them or how they make you feel.
Use your imagination!

My Recovery Plan		
Long-Term Goal: *Think about an exciting big picture goal you have.*		
Now break that goal down into up to 1-2 **SMART short-term goals and small steps** that you can take every day or every week toward those short-term goals.		
Short-Term Goal 1:		**Target dates**
Step a:		
Step b:		
Step c:		
Short-Term Goal 2:		**Target dates**
Step a:		

What is happening here?

- ❑ The women are having a conversation and the man is on a phone call.
- ❑ The man is talking about the women.
- ❑ All 3 of the people are friends.
- ❑ The women are talking about the man.
- ❑ Other explanations?

Notice how many different explanations there can be for the same picture.
We can't know for sure which one is correct because we need more information, but we can take some educated guesses.

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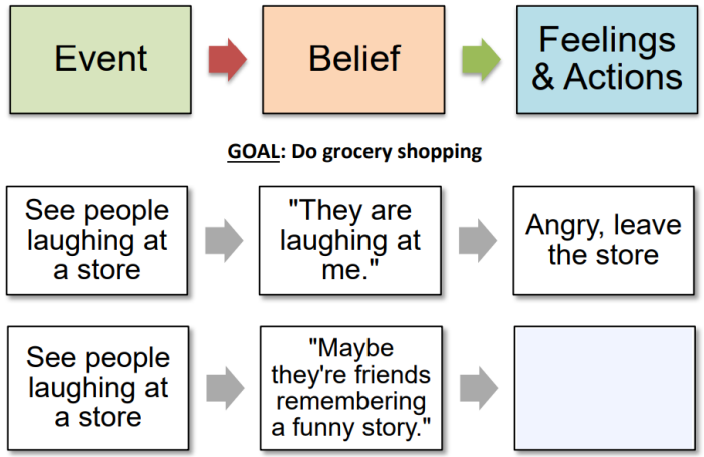
NON-PHARMACOLOGIC : CBT-P

CHANGE IT
Questions to Ask Yourself to Change Inaccurate/Unhelpful Thoughts

1. Are there any **alternative explanations** for what happened?
2. If **someone else** had this thought, how would I tell him or her to change it?
3. How can I think about this situation differently so that I **feel better**?
4. How can I think about this situation differently so that I keep working toward my **goals** and have the **life that I want**?



Exercise: Practice the 3 Cs!
Choose a recent situation where you experienced voices or worries.

Situation: *What happened? Where? When?*

Feelings: *How were you feeling?*

Actions: *What did you do?*

Catch it: *What went through your mind? What was your thought/belief? What story did you tell yourself?*

Check it

Evidence **For** the Thought

Evidence **Against** the Thought

*Is the thought **totally accurate**?* ☐ Yes ☐ No

Thinking habits?
☐ Jumping to Conclusions ☐ Mind Reading ☐ Fortunetelling
☐ Intentionalizing ☐ Emotional Reasoning ☐ Externalizing
☐ Selective Abstraction ☐ Missing Positives ☐ Personalizing

*Is the thought **helpful** for your feelings & goals?* ☐ Yes ☐ No

Change it *Make the thought more accurate and helpful.*

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CONTINGENCY MANAGEMENT (CM)

- Evidence-based intervention that reinforces target behaviors
- Effective across many patient populations
- Operant conditioning
  - Immediate, reliable, reinforceable
  - Make early recovery rewarding

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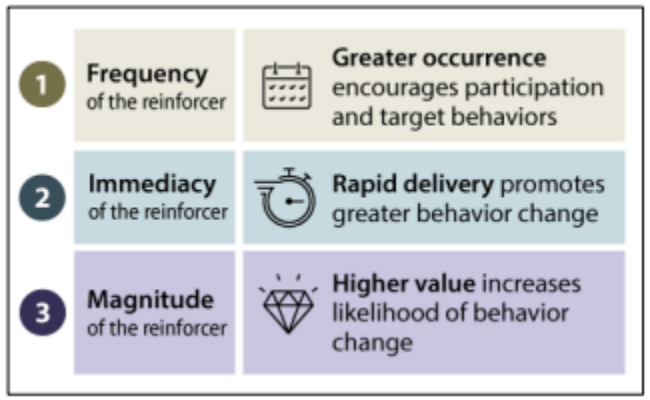
Journal of Substance Use and Addiction Treatment

journal homepage: www.journals.elsevier.com/journal-of-substance-use-and-addiction-treatment

Contingency management for substance use disorders in the U.S. Veterans Health Administration: 2018–2022

Lara N. Coughlin [a,*], Lan Zhang [a], Madeline C. Frost [b,c], Gabriela Khazanov [d,e], James R. McKay [d,e], Dominick DePhilippis [e,f], Lewei (Allison) Lin [a,g]



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- **MSE**: disheveled, consistent eye contact, irritable, mildly pressured speech
- **PE**: excoriated limbs, + LE PE

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DISCUSSION QUESTIONS

- What else do you want to know?
- How would you build rapport?
- What interventions might you consider?
- How would your care change if this patient was also smoking cannabis daily?
- What harm reduction can you provide?

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KEY TAKEAWAYS

- Meth-induced psychotic symptoms are common among methamphetamine uses and carries a high risk of progressing to persistent a psychotic disorder
- MAP is characterized by auditory, tactile or visual hallucinations; paranoia; persecutory delusions; and cognitive impairments
- MAP can be differentiated from a primary psychotic disorder by the MSE and history
- Pharmacologic treatments include second-generation antipsychotics and medications to treat methamphetamine use disorder
- Non-pharmacologic treatments include CBT-P and CM

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KEY KEY TAKEAWAYS

- Prescribe Narcan

- Get the patient to come back

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