

# Using Science to Talk About Drugs

---

Diana Martinez, MD  
CUIMC/NYSPI

# Working with communities to address the opioid crisis.

- SAMHSA's State Targeted Response Technical Assistance (STR-TA) and State Opioid Response Technical Assistance (SOR-TA) grants created the *Opioid Response Network* to assist states, individuals and other organizations by providing the resources and technical assistance they need locally to address the opioid crisis .
- Technical assistance is available to support the evidence-based prevention, treatment, and recovery of opioid use disorders.

Funding for this initiative was made possible (in part) by grant no.1H79TI085588 from SAMHSA. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

# Working with communities to address the opioid crisis.

- The Opioid Response Network (ORN) provides local, experienced consultants in prevention, treatment and recovery to communities and organizations to help address this opioid crisis.
- The ORN accepts requests for education and training.
- Each state/territory has a designated team, led by a regional Technology Transfer Specialist (TTS), who is an expert in implementing evidence-based practices.

# Contact the Opioid Response Network

- To ask questions or submit a request for technical assistance:
  - Visit [www.OpioidResponseNetwork.org](http://www.OpioidResponseNetwork.org)
  - Email [orn@aaap.org](mailto:orn@aaap.org)
  - Call 401-270-5900

# Drug use and Data

---

- Accidents are a top cause of death in teenagers<sup>1</sup>,  
About half include drugs: mostly alcohol, some cannabis (aka marijuana)
- Overdose is the major cause of death in young adults (mostly opioids, some alcohol)<sup>1</sup>
- Assault on campuses: half involve intoxication<sup>2</sup>
- Addiction: 46.3 million people have substance use disorder in the US<sup>3</sup>  
As common as heart disease  
Begins during the teenage years

1. Center for Disease Control; 10 leading causes of Death; 2020 2.National Institute on Drug Abuse; <https://nida.nih.gov/sites/default/files/sexualassault.pdf> 3.Substance Abuse and Mental Health Services Administration. (2022). Key substance use and mental health indicators in the United States: Results from the 2021 National Survey on Drug Use and Health (HHS Publication No. PEP22-07-01-005, NSDUH Series H-57). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/data/report/2021-nsduh-annual-national-report>

# What can we do about it?

---

We know what doesn't work:

- Punishment or avoiding the issue altogether

We know what works for sex:

- Science based education: biology, decision-making, and safety
- Studies show this reduces STIs, unplanned pregnancy, sexual assault, and delays initiation of sex

Discussing drugs with teens: biology, decision-making, and safety

- Knowing how recognize a dangerous situation (accident, overdose, assault)
- Knowing how to help someone in trouble
- Recognizing the risks of addiction

PART I:  
The risks of intoxication

---

# Risks of intoxication: Alcohol

## Risk depends on the dose:

1 drink (1-2 hours): feeling social/relaxed, impaired coordination

2-3 drinks: impulsivity increases, loss of fear, coordination worsens

3-4 drinks: blackouts (no memory, bad decisions, but walking/talking)

More drinks: the brain begins to shut down; risk of death

One drink = 12 oz. 5%  
beer or hard seltzer

One drink = 1.5 oz of  
liquor (rum, vodka,  
tequila are 40% alcohol)



Larger containers = many, many drinks



Alcohol metabolism varies by size, sex, age, bodyweight:  
Drinking quickly or on an empty stomach increases intoxication

## Risks of alcohol intoxication

Accidents: Not only driving, includes biking, skateboarding, skiing, climbing, walking (cold, busy street), swimming

Assault: About half of assaults involve alcohol, with an increased risk victimization

Overdose: In the US, 6 deaths/day to to alcohol overdose – increase early fall and spring break. Often called “poisoning.” and Sometimes involves vomiting, not always



# Risks of intoxication: Cannabis

Is cannabis safer than alcohol?

Yes: no reported lethal overdose on cannabis alone.

**And NO: (accident, assault, over-intoxication)**

Accident risk is increased: driving, swimming, hiking, rooftops, biking, skiing, climbing

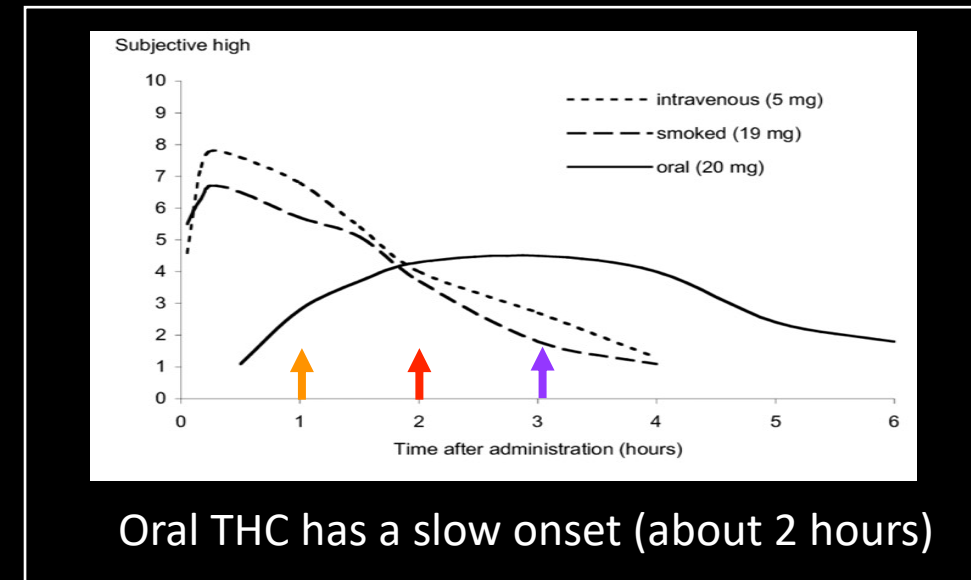
Assault: increasing reports on cannabis in assault (impaired consciousness increases risk of victimization: like alcohol)

Floyd et al, 2017 ADAI, U of Wash

Over-intoxication: quite miserable, comes with anxiety, confusion, low blood pressure (fainting, or having to lie flat), chest pain. Patients can be quite delusional, paranoid, and scared. Only treatment is time.

Risk of heart attack: About 1.5% of cannabis smokers (including young, healthy): any chest pain/pressure or trouble catching breath.

DeFilippis et al, J Am Coll Cardiol, 2020



Grotenherman et al, 2005

# Heroin and opioids (fentanyl and carfentanil)

## Fentanyl/Carfentanil:

100-1000x more potent than heroin

Cause more overdose deaths than heroin

**Fentanyl overdose: US teens are the fastest growing group to die**

Experimenting with drugs that contain opioids can be fatal

(Friedman et al, JAMA 2022)



Lethal dose heroin, fentanyl, carfentanil



Heroin with fentanyl



Fake percocet



Fake Vicodin

Cocaine, MDMA, other pills or tablets:  
**can contain fentanyl/carfentanil**

## NALOXONE SAVES LIVES



Naloxone: will reverse an opioid overdose (not other overdoses)  
Must call 911 (sometimes multiple doses needed)

# Improving safety: accidents, assault, overdose

---

Accidents: Friends don't let friends drive drunk – or under the influence of any drug

It's not just driving: also biking, skateboarding, walking out in cold, swimming

Assault: Decreased level of consciousness (to any drug) increases risk

This is **unsafe**: friends watch out for friends

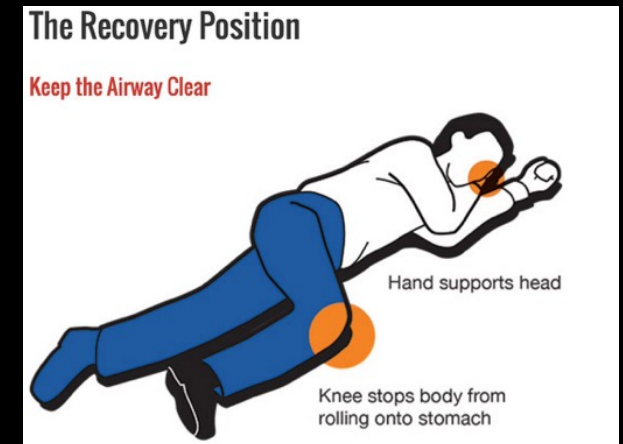
Over-intoxication: it's common to take too much - people are often scared and embarrassed, will try to get home alone

This is **unsafe**: risks of accidents, assault, overdose, friends watch out for friends

Overdose: most common with opioids and alcohol

- Most overdoses are not instantaneous, and they can be stopped
- If a person is sick: do not worry about which drug was taken: focus on the person
- Symptoms of fear, confusion, dizziness, drowsiness, chest pain, nausea: get help
- Can't walk, talk, or stay awake: get help
- If not conscious (won't wake up or stay awake), put in recovery position
- Call 911, make sure that first responders can find you
- Naloxone saves lives

Friends watch out for friends: getting help makes a difference



# What can parents do?

---

Have a family emergency plan:

Encourage kids to call home for help: discuss issues later, but safety is the priority

Call home rather than trying to solve a problem alone

Consider having them call home for a friend who needs help, if needed

There's an impression that teens exposed to alcohol at home learn to drink more responsibly.

However, research shows that this doesn't improve safety and can backfire, where teens drink more and are more likely to drink heavily.

Kaynack et al, J Stud Alcohol Drugs 2014

Additionally, allowing alcohol at high school parties by parents doesn't provide any protection – and it increases the risks of harm to others. It's also illegal in most states.

The same idea applies to other drugs.

PART II:  
Mental Health and Drug Use

---

# Why do people use drugs?

---

Drugs have various short-term effects that underly some of the reasons people use:

**Nicotine**: improves cognition, increases attention, reduces stress

**Alcohol**: reduces anxiety (especially social anxiety)

**Cannabis**: anti-anxiety, improves sleep, lightens mood

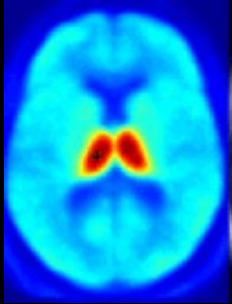
**Cocaine/Amphetamine**: increases attention/cognition, productivity

**Opioids**: Heroin, Oxycontin, Percocet, Diluadid, Vicodin, Morphine

potent pain killers (physical and emotional)

Thus, drugs are sometimes used as self-medication to alleviate psychiatric symptoms

# Tobacco/E-cigarettes and Self-Medication

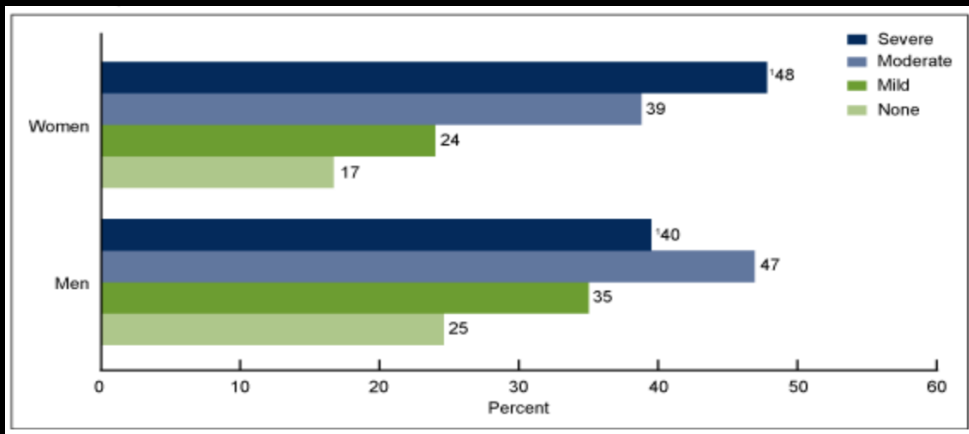


thalamus

The thalamus prioritizes information: Switches attention to what's most important  
Nicotine improves efficiency of thalamus, increases concentration/reduces stress

Research studies show that nicotine:  
Improves symptoms of ADHD  
Improves symptoms of Depression

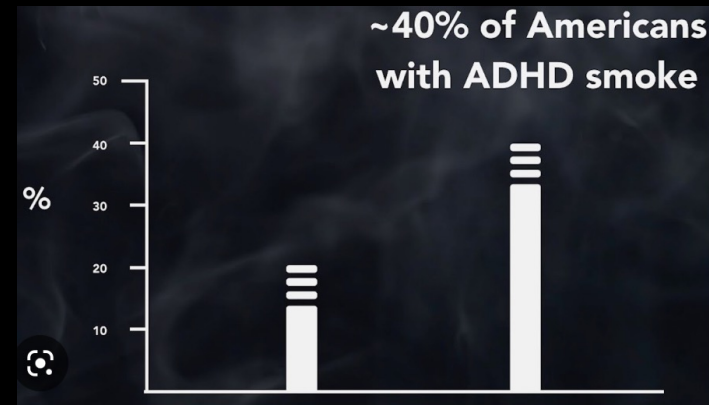
## Severity of depression and smoking



The percentage current smokers increases as depression severity increases

CDC/NCHS, National Health and Nutrition Examination Surveys, 2005-2008.

## Smoking and ADHD



Mitchell et al, 2018 Nicotine & Tobacco Research

# Psychiatric disorders

---

## Depression occurs in about 20% of teens

- Feeling sad, hopeless, or worthless – with a loss of interest in school, activities, or friends.
- Difficulty concentrating, low energy, and sleep problems, which can include insomnia or sleeping too much.
- Sometimes teens with depression hurt themselves with cutting or scratching of the arms and legs.

## Anxiety disorders also occur in about 20% of teens

- Persistent worry and fear, indecisiveness, and trouble concentrating.
- Social anxiety disorder: intense fear of situations where feel judged (speaking up in class, meeting new people, using a public restroom, or eating in front of others).
- Generalized anxiety disorder: persistent, ongoing worry and fear that exceeds the issues or problems. Patients feel indecisive or may overthink decisions. Can include fatigue, insomnia, headache, nausea

## Borderline Personality Disorder (1-2%)

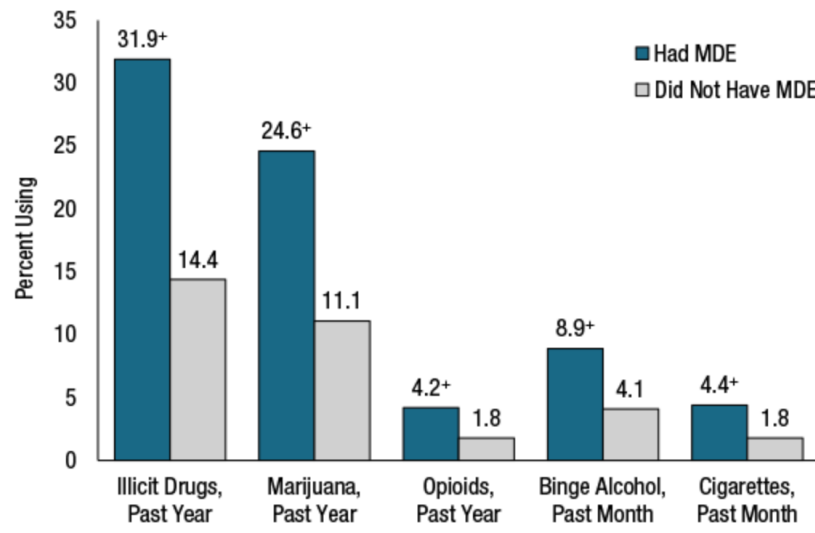
- Self-injury (cutting/burning of arms or legs); impulsive/destructive actions; unstable relationships
- Unstable mood: swings between depression, anger, excitation, demoralization



# Depression and Drugs

## Depression is a significant risk for self-medication

Figure 55. Substance Use among Youths Aged 12 to 17, by Past Year Major Depressive Episode (MDE) Status: 2019



\* Difference between this estimate and the estimate for youths without MDE is statistically significant at the .05 level.  
Note: Youth respondents with unknown MDE data were excluded.

Similar pattern seen with anxiety disorders:

Adolescents with anxiety disorders more likely to use cannabis, alcohol, and nicotine products

**Treatment reduces the risk**

Depression increase likelihood of drug use and developing a drug problem

SAMHSA.gov: Key Substance Use and Mental Health Indicators in the United States:  
Results from the 2019 National Survey on Drug Use and Health

# Psychiatric disorders

---

## ADHD occurs in about 8% of children

- Symptoms include inattention, disorganization, hyperactivity, and impulsivity.
- ADHD impairs academic performance and can cause social problems.
- Kids with ADHD can have trouble making friends/ fitting in.

## Oppositional Defiant Disorder occurs in 5-7% of children

- Lying, blaming others for mistakes, vindictive.
- Impulsive (and bad) decision making.
- Defiance towards parents, teachers or coaches - to a point where their ability to function suffers.

## Conduct disorder occurs in 5-7% of children

- Aggression/violence towards people or animals, theft or destruction of property, setting fires,
- Skipping school, getting into fights, and bullying.

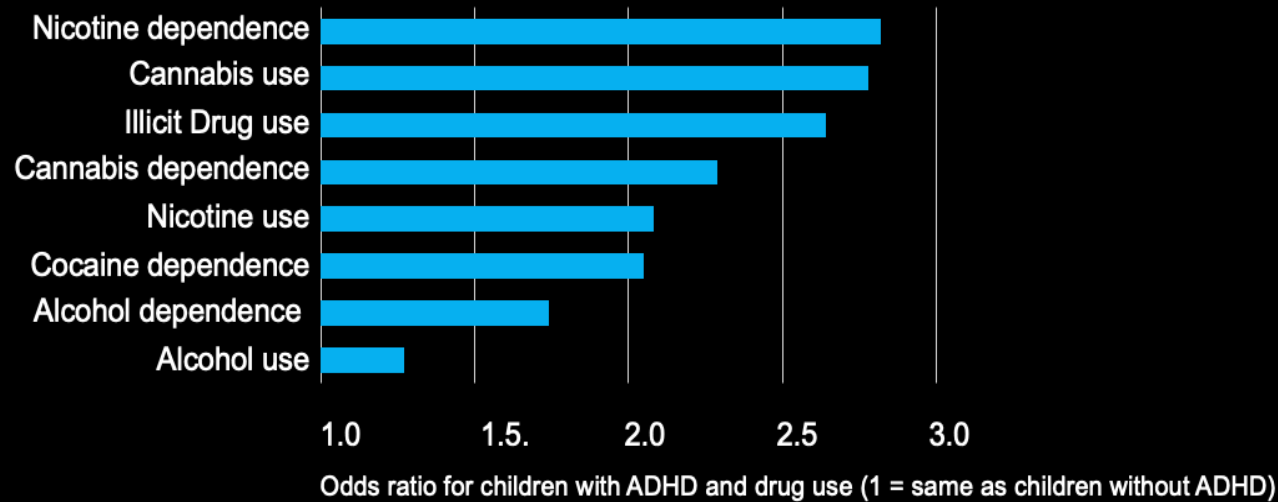
## Learning disorder

- Difficulty with reading, writing, math

# ADHD and drug use

## ADHD is a significant risk for drug use, risky use, and addiction

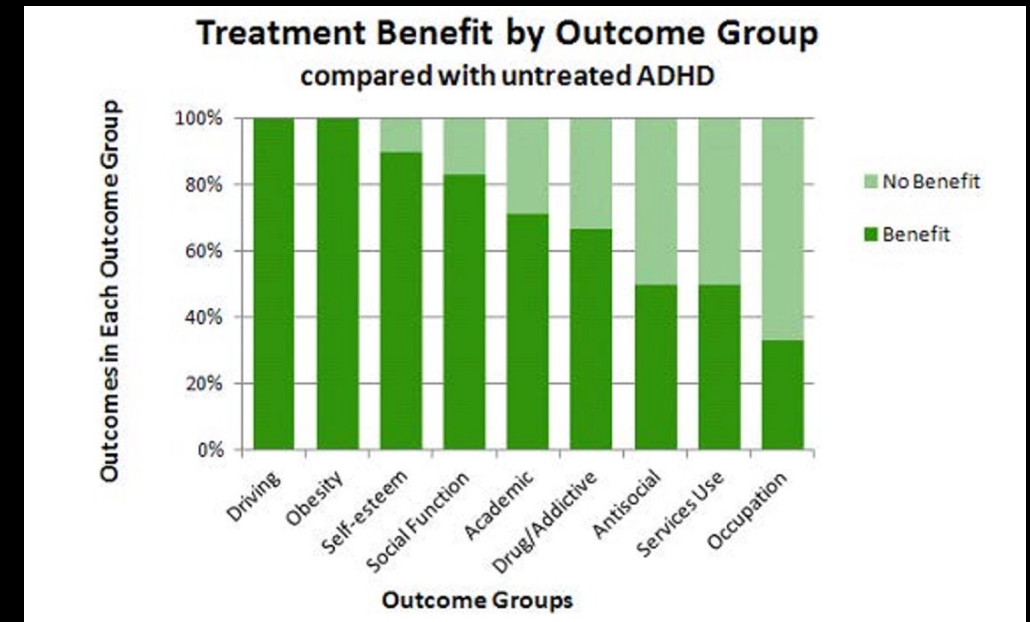
Lee et al, 2011 Clin Psychol Rev



## Treating ADHD with medication can prevent:

- accidents and injuries
- STI, teen pregnancy
- major depression, rates of suicide attempt
- And improves in social functioning: with friends, educators, and parents

## Treatment for ADHD reduces risk



Treatment with medication is most effective for ADHD

Source: Faraone et al, 2021 The World Federation of ADHD International Consensus Statement: Evidence-based Conclusions about the Disorder

# What does self-medication look like?

---

Signs of self-medication, drug use that occurs:

- Alone
- At school
- Triggered by stress
- Increases over time



The person might not recognize self-medication:

They might not recognize that they have a psychiatric disorders (for example, ADHD)

They might know that drugs relieve stress – but may not see their use as self-medicating

# What's the problem with self-medication?

The symptoms return once the effect of the drug (alcohol, cannabis, e-cigarettes) wears off

- Cannabis/alcohol can lower anxiety/depression/ADHD symptoms: but these return when the drug effect wears off – the effect is short lived
- The effect only there when feeling intoxicated (alcohol, cannabis)

Self-medication might make some disorders worse (depression, anxiety, ADHD) over time

- This might be caused by the drug: or could be caused by the mental illness worsening

Risk of developing a drug problem over time

- Psychiatric symptoms can't be controlled: tend to occur at all times of the day (school)
- Self-medication can lead to increased drug use: at school, after-school, work

# Diagnosing a Drug Problem: Substance Use Disorder (SUD)

---

Substance = drug, and an SUD disorder can happen with alcohol, cannabis, tobacco, e-cigarettes, cocaine, methamphetamine, benzodiazepines, psychedelics, opioids.

1. Consuming more than intended
2. Consistently failed efforts to control use
3. Spending a large amount of time using or obtaining the substance
4. Failure to fulfill major obligations at home, work, or school.
5. Craving the drug
6. Continuing use of a substance despite health problems (mental/physical)
7. Continuing use despite negative effects on relationships
8. Repeated use of the substance in a dangerous situation (e.g. driving a car)
9. Giving up or reducing activities because of the substance
10. Tolerance: needing larger to get the desired effect
11. Withdrawal symptoms (typically anxiety, irritability, fatigue, nausea/).

Mild SUD: 'yes' to 2 or 3 of the 11

Moderate SUD: 'yes' to 4-5

Severe SUD: 'yes' to 6 or more

# What does a Substance Use Disorder (SUD) look like?

---

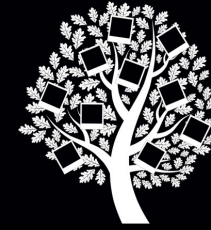
- Use that Interferes with schoolwork (homework/not studying) or problems with grades.
- Use at school (or after school activities): intoxication during school day is a symptom of problematic use.
- Missing/skipping school that's associated with drug use.
- Giving up/quitting: a passion (music, art, acting, dancing), sports (formal team or pick-up, intramural), school newspaper/yearbook club, debate team, school band or orchestra, or job – due to drug use.
- Losing an opportunity: after-school job, removal from a team or club at school, or not meeting rules at home (curfew, babysitting younger siblings, chores) due to drug use.
- Use triggered by craving: feeling stressed or by being around other people using it.
- Use that increases the risk of an accident: driving, swimming, biking, hiking, skateboarding. Also consider fight or assault that involved drugs (including having been the victim of an assault due to drug use).
- Use that interferes with relationships: loss of friends, issues with family members, or romantic relationship.

# Risk factors for Substance Use Disorders (SUD)

---

## Family History:

Greater risk with parents or siblings  
Not drug specific: alcohol problem in parent  
increases risk of cannabis problem in child



## Age of drug use:

Earlier use = greater risk of addiction  
Later exposure is protective



## Having a psychiatric disorder:

Depression, anxiety, borderline personality disorder  
ADHD, conduct disorder, oppositional defiant disorder



## Environment:

Lack of resources, lack of opportunity, lack of support





# What can parents do about mental health?

---

- Teens are often characterized as moody, impulsive, difficult: but maybe it's mental health?
- Recognition that psychiatric disorders can happen without an obvious cause: some teens feel guilty for feeling sad, anxious, or stressed – when they feel they have no reason for feeling unhappy
- Ask about future plans: hope for the future is protective

## **Treatment for psychiatric disorders reduces drug use and risk of problematic drug use**

Contact the social work team at school

For depression and anxiety – counseling/therapy and/or medication can work

For ADHD: studies show that medication for ADHD is protective:

Reduces the risk of accidents, obesity, drug use, depression, and suicide attempts

Improves social function: with friends, teachers, and parents

The strongest data us with methylphenidate ('Ritalin') or amphetamines ('Adderall')

Can also use atomoxetine ('Strattera') or guanfacine ("Intuniv")

ADHD: check out "ADDitude Magazine" – online and free

# What can parents do about drug use?

---

## Recognize and talk about problematic drug use

- Discuss the symptoms of problematic drug use
- Watch for self-medication: many psychiatric disorders begin during childhood/teenage years
- Drugs can make the symptoms better quickly: but they don't treat the underlying problem
- Remember that problematic drug use is a psychiatric disorder like depression or ADHD
- Early intervention: getting help for a teen with a drug problem can be life-changing
- Treating a drug problem early can prevent it from becoming more severe
- Contact the social work team at school
- Additional resources: SAMHSA: <https://www.samhsa.gov>

# Your Feedback is Important

---



**Need to find me? “Diana Martinez Columbia”**

Crisis or emergency:

988: call or text crisis and suicide line

School resources:

Counselors; Psychologist, Therapist, Social Worker  
Excellent resource for many students



OASAS: <https://oasas.ny.gov>:

The New York State Office of Addiction Services and Supports (OASAS): adults and children call 1-877-8-HOPENY

SAMHSA: <https://www.samhsa.gov>:

The Substance Abuse and Mental Health Services Administration: mental health (adults and children). 1-800-66-HELP

Tobacco/E-cig: 866-NY-QUITS

Trevor Project: for LGBTQ+ youth

# The smoke shop?

---

Smoke shops are opening with cannabis/THC products (practically all illegal)

Topics of discussion

- It's still illegal (despite the prevalence and "looking the other way" ) with risks
- Assume the product is mislabeled (if there is packaging)

Review the risks of cannabis

Risks of intoxication:

Accidents: driving, biking, swimming

Over-intoxication: anxiety, paranoia, nausea, dizziness, light-headed (can be severe)

Overdose: not seen with cannabis alone, but is cannabis mixed with other drugs can be fatal

Assault: impaired level of consciousness increases chances of victimization

Distributing cannabis incurs serious penalty

Risk of addiction:

About the same risk as alcohol addiction

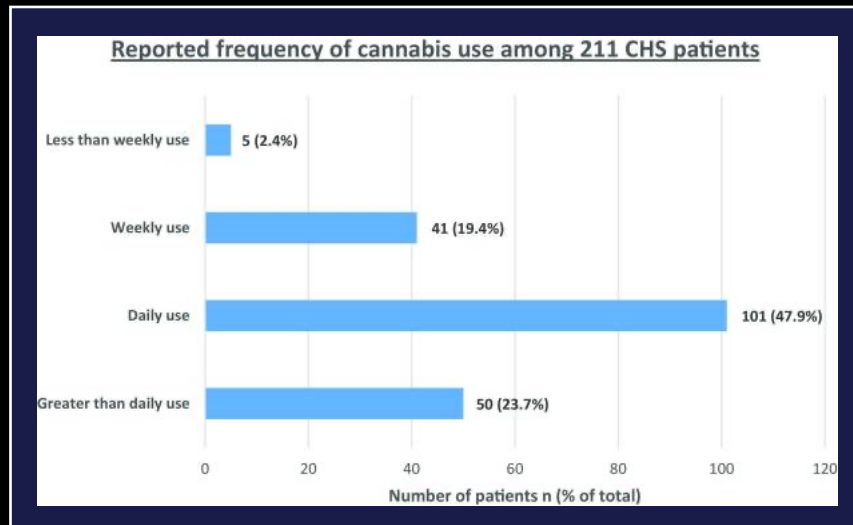
Risk is higher with self-medication



# Issues with Cannabis Use

## Cannabis Hyperemesis Syndrome:

- Abdominal pain, nausea and (sometimes) vomiting
- Returns in a cyclic pattern over months
- Hot baths/showers with symptom relief
- Resolution of symptoms after stopping cannabis



## Cannabis and worsening of mental health

Studies show that regular use of cannabis:

- Worsen depression and suicidal thoughts (alcohol also has this effect)
- Can worsen psychotic disorders (where people have hallucinations and delusions); especially with heavy use
- Can interfere with future plans:
  - Problems with grades; missing school
  - Lost opportunities
  - (alcohol also has this effect)

# Hallucinogens (psychedelics and dissociative drugs)

---

Psychedelics: LSD, psilocybin, mescaline, DMT (ayahuasca)

Dissociatives: PCP, ketamine

Associated drugs: K2 (THC congener), salvia divinorum, MDMA



Main risks:

Accidents (due to the profound change in perception) can be extreme

Distress (“bad trip”): more common in settings like parties, concerts (over-intoxication)

Drugs from the illegal market could contain a range of psychoactive substances, and likely contain contaminants with unpredictable effects

Legal consequences: penalties are still high, unpredictable

Lethal overdose: not common with most hallucinogens (K2 an exception)

Much more common with counterfeit pharmaceuticals or drugs obtained on the illicit market

