IN THE NAME OF GOD

ASSESSMENT AND MANAGEMENT OF ADOLESCENT SUBSTANCE USE

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Adolescence is a phase of life that bridges childhood and adulthood, a period that involves neurobiological, physiological, psychological, and social maturation, including engagement in risky behaviors such as substance use.

- Most adolescents have not obtained mature levels of cognitive, emotional, social, or physical growth
- They are challenged by the developmental tasks of forming a separate identity and preparing for appropriate societal and individual roles, including job, marriage, and family
- Most adolescents experiment with substances such as alcohol, cigarettes, and marijuana
- A smaller portion proceeds to the use of other drugs.

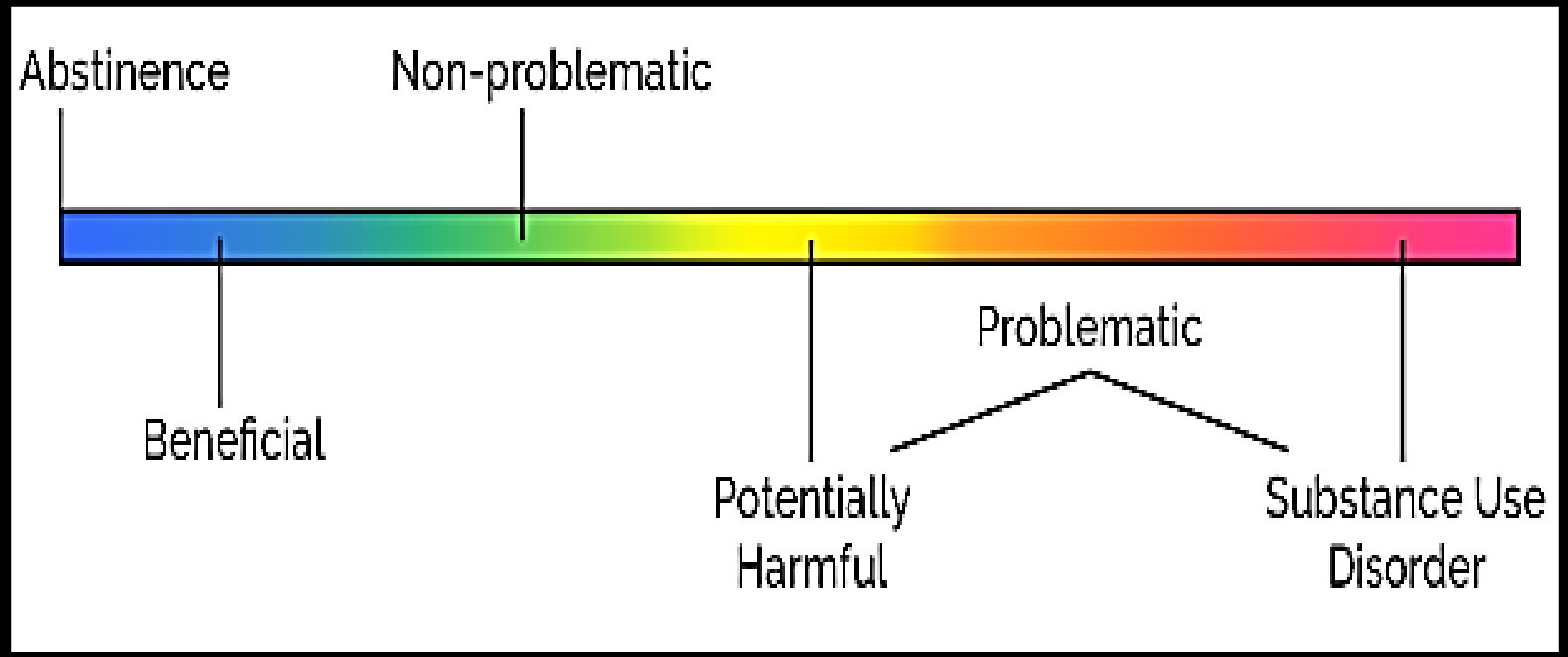
A 2022 SYSTEMATIC REVIEW AND META-ANALYSIS PUBLISHED IN *HEALTH SCIENCE REPORTS* ANALYZED 33 STUDIES INVOLVING 51,001 MALE ADOLESCENTS IN IRAN BETWEEN 2004 AND 2020

Substance	Overall Prevalence (%)	95% Confidence Interval
Any Substance Use	7%	4% - 11%
Alcohol Consumption	10%	8% - 11%
Tobacco Use	10%	3% - 19%
Any Addictive Substances	4%	2% - 7%
Methamphetamine	4%	3% - 6%
Cannabis	9%	7% - 11%
Opium	17%	1% - 44%
Amphetamine	11%	4% - 20%
Heroin	4%	0% - 10%
Ecstasy	5%	1% - 12%

- Early Onset of Use
- A strong predictor for SUDs over the lifetime
- It is unknown:
- Whether early use is a marker or other risk factors that predict SUD, or whether it has a causal effect.

While substance use is a necessary prelude to abuse or dependence, and early onset of regular use further increases the risk of SUDs, substance use persists, not sufficient for a diagnosis of abuse or dependence.

SUBSTANCE ABUSE PATTERN



DSM-5 CRITERIA

- The DSM-5 criteria, developed for adults, have not been established as applicable to adolescents.
- It is important to recognize frequent differences between the most common manifestations of the diagnoses of substance abuse and dependence in adolescents versus adults.
- Diagnosis of substance abuse requires evidence of a maladaptive pattern of substance use with clinically significant levels of impairment or distress.
- Impairment: inability to meet major role obligations leading to reduced functioning in one or more major areas of life, risk-taking behavior, an increased likelihood of legal consequences, and exposure to hazardous situations.
- Substance dependence: substantial degree of involvement with a substance as evidenced by an adolescent meeting at least 3 criteria from 7 criteria(withdrawal, tolerance, loss of control, overuse…).

- A hallmark of SUDs in adolescents is impairment in psychosocial and academic functioning.
- Impairment can include family conflict or dysfunction, interpersonal conflict, and academic failure
- Associated characteristics include deviant and risk-taking behavior and comorbid psychiatric disorders.

- In adults, the presence of these symptoms is an indication of a substance use disorder; however, many signs and symptoms presented in the *DSM-5* are normative behaviors for teens. For this very reason, substance use in adolescents is often missed or overlooked as part of "normal" youth development. Because of this, it is suggested to look at some of the criteria more rigorously.

DSM 5

Several limitations exist when attempting to apply the DSM-5 SUDs criteria in a developmentally considerate manner to adolescents.

The DSM-5 criteria for SUDs have questionable validity when applied to adolescents.

An accurate and developmentally specific measurement of adolescent substance use is essential to providing a precise understanding of the nature and extent of an adolescent's use pattern and determining their treatment needs.

The core differences in SUD symptoms and presentation between adolescents and adults.

Aspect	Adolescents	Adults
Primary Drivers	Social/developmental pressures, peer influence, popularity, parent-teen conflict	Underlying deficits (e.g., poor social skills, negative self-concept), chronic use
Neurodevelopment	Immature prefrontal cortex increases reward-seeking and risk-taking; brain more vulnerable to lasting effects	Brain is fully mature; patterns of use and addiction are more established
Symptom Presentation	**Tolerance**: May develop more quickly **Risky Use**: Limited by access (e.g., no car) **Withdrawal**: Less common due to shorter use history	**Tolerance**: Develops over a longer period **Risky Use**: Includes activities like driving while intoxicated **Withdrawal**: More commonly observed
Co-occurring Disorders	Very high rate of co-occurring mental health conditions (e.g., anxiety, depression); often used to "self-medicate"	Also high co-occurrence, but relationship may be more complex after years of use
Diagnostic Challenges	SUD criteria have "questionable validity"; behaviors can be mistaken for normal teen development	Diagnostic criteria are more directly applicable

FOR EXAMPLE

Tolerance – Adolescents may more quickly develop a tolerance for substances for a variety of reasons, especially when moving from experimentation to more regular use.

Risky behaviors – Adults are more likely than teens to engage in hazardous activities while using drugs or alcohol partly because teens have limited access to these activities.

Withdrawal – These symptoms usually appear after years of drug abuse, making them less likely to occur in teens, even with frequent heavy use. But just because the signs are not there does not mean substance use disorder is not present.

Cravings – The existence of cravings and how they are defined in teens may be vague. Some teens who use heavily report cravings, however, the definition of cravings for younger people may affect whether or not they are reported accurately.

DIFFERENCES IN SUD CRAVINGS BETWEEN ADOLESCENTS AND ADULTS

1. Primary Driver & Trigger
2. Neurological Basis
3. Craving Experience & Urgency
4. Role of Withdrawal
5. Psychological & Social Context

Feature	Adolescents	Adults
1. Primary Driver & Trigger	**Reward-Seeking & Social Cues:** Cravings are strongly triggered by the prospect of pleasure, novelty, and social acceptance. Being with peers who use, or in environments where use is common (parties, concerts), is a powerful trigger. The goal is often to "get	**Negative Reinforcement & Stress Cues:** Cravings are more often triggered by the desire to escape or relieve a negative state. This includes stress, anxiety, depression, boredom, pain, or withdrawal symptoms. The goal is often to "feel normal" or avoid feeling bad.
2. Neurological Basis	**Hyperactive Limbic System vs. Immature PFC**: The brain's reward center (limbic system, including the nucleus accumbens) is highly sensitive, making rewards feel more intense. Meanwhile, the Prefrontal Cortex (PFC)—responsible for impulse control, judgment, and long-term planning—is still underdeveloped. This creates a "car with a powerful accelerator and weak brakes."	**Altered Reward Circuitry & Habit Formation:** Chronic use has "hijacked" the reward system, reducing its sensitivity to natural rewards. The behavior has become more habitual and automatic, routed through the dorsal striatum. The PFC, while mature, may be impaired by chronic substance use, reducing its ability to inhibit the strong habit of use.
3. Craving Experience & Urgency	**Impulsive and Situational:** Cravings can appear suddenly and intensely in response to an immediate opportunity or social pressure. They may be short-lived but are harder to resist in the moment due to poor impulse control. The focus is on the immediate payoff.	Compulsive and Persistent: Cravings can be more persistent, nagging, and intrusive. They are less about a fleeting opportunity and more about a deep, conditioned need to use to cope or function. The individual may ruminate on the craving for extended periods.
4. Role of Withdrawal	**Less Prominent (Initially):** In early stages of use, physical withdrawal symptoms may be mild or absent. Cravings are less about avoiding sickness and more about recapturing a pleasurable experience.	**More Prominent and Feared**: Withdrawal symptoms are often a major trigger for cravings. The fear of physical or emotional discomfort (dysphoria, anxiety, pain) becomes a powerful motivator to use, creating a vicious cycle.
5. Psychological & Social Context	**Identity and Peer Integration:** Substance use is often intertwined with identity formation and the desperate need for peer belonging. Cravings can be linked to a desire to feel cool, rebellious, or part of a group. The social consequence of not using (e.g., social rejection) can feel more immediate and threatening than long-term health risks.	**Coping and Life Stressors**: Substance use is often a primary, maladaptive coping mechanism for adult life stressors (work, finances, relationships, trauma). Cravings are directly tied to these stressors. The social network may be smaller, but it often consists of other users, reinforcing the behavior.

- **Adolescents:** Cravings are often more **impulsive, reactive, and tied to social context and immediate reward**. They are driven by a brain that is highly sensitive to "go" signals (pleasure, social reward) but has weak "stop" signals (impulse control, consequence evaluation).
- **Adults:** Cravings are often more **habitual, compulsive, and tied to negative emotional states and withdrawal management**. They are driven by a brain where the reward system has been chronically altered, and substance use has become a deeply ingrained coping mechanism for stress or negative affect.

- an adolescent's craving is often a shout from a **reward-hungry, socially-tuned brain** that hasn't yet learned to wait. An adult's craving is often a groan from a **stress-weary brain** that has learned to depend on a substance to cope and now can't easily break the habit. Recognizing this distinction between **impulsive, reward-driven craving** and **compulsive, relief-driven craving** is fundamental to providing effective, developmentally appropriate care.

CRAVING AS A CORE SYMPTOM

Craving is recognized as a core component of addiction in the DSM-5 and is a key target of treatment

KEY FACTORS BEHIND THE DIFFERENCE

- **The Developing Brain**: The adolescent brain has an imbalance between a well-developed **reward system** (leading to heightened pleasure from substances) and a still-maturing **prefrontal cortex** (responsible for judgment and impulse control). This makes teens more prone to risk-taking and means their brains are more vulnerable to the long-term negative effects of substances, including a higher risk of addiction.
- **Social vs. Internal Drivers**: For many adolescents, substance use is linked to **transient social factors** like the desire for peer approval, high levels of popularity, or conflict with parents. In contrast, adult substance abuse problems are more strongly predicted by adolescent-era markers of **underlying difficulties**, such as a lack of social skills and poor self-concept.
- **Self-Medication**: Teens with untreated anxiety, depression, or ADHD may use substances to manage their symptoms. For example, a socially anxious teen might use marijuana to feel calm at a party. This pattern of "self-medication" can accelerate the progression to a serious disorder

WHAT TO LOOK FOR IN YOUNG PEOPLE

- Because the standard criteria can be less clear in adolescents, look for these behavioral and situational signs:
- **Changes in School and Social Life**: Sudden drop in grades, skipping school, or losing interest in activities and hobbies they once enjoyed.
- **Shift in Friendships**: Abandoning long-term friends for a new, substance-using peer group.
- **Secretive or Risky Behaviors**: Hiding alcohol or drugs in their room, getting into fights, or driving under the influence.
- **Mental Health Symptoms**: Increased irritability, sadness, or anxiety, which could be either a cause or a consequence of substance use.

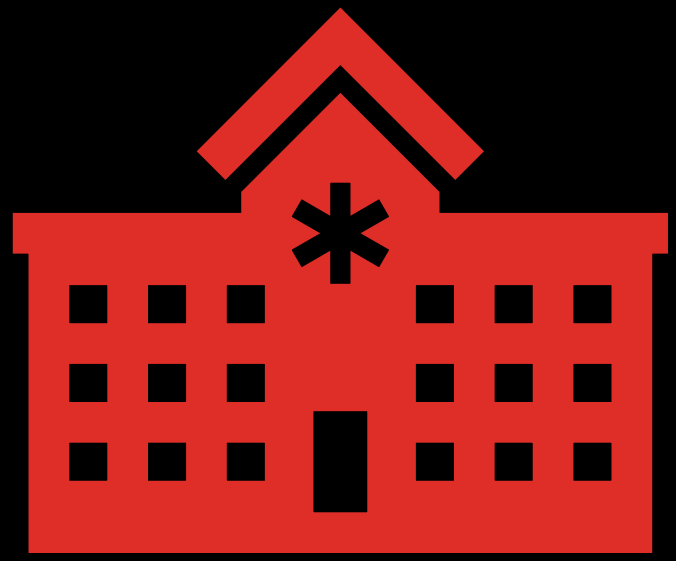
CASE PRESENTATION

- **The Chief Complaint:**
  "My stomach has been feeling awful, and I've been throwing up in the mornings."
- **Identifying Information:**
- **Name:** Sam M.
- **Age:** 17 years old
- **Sex:** Male
- **Source:** Self, appearing slightly disheveled and uncomfortable.

Sam is a 17-year-old male who presents for evaluation of intermittent nausea and early morning vomiting for the past 2 months. He reports episodes occur 3-4 times per week, often easing after a hot shower. He has experienced a decrease in appetite and an unintentional 5 Kg. weight loss. His mother, who accompanied him but is in the waiting room, is concerned he might have a "food allergy" or "acid reflux." She also notes he has been more withdrawn, his grades have slipped, and he has a "constant cough."

HISTORY OF PRESENT ILLNESS

- **Past Medical History:** Childhood asthma, resolved by age 12.
- **Medications:** None.
- **Social History:** Lives with mother and father. He has no part-time job. History of an honor roll student.
- **Family History:** Non-contributory



REVIEW OF SYSTEMS:

Constitutional: Fatigue, weight loss.

GI: Intermittent nausea, episodic vomiting (relieved by hot showers), decreased appetite.

Psychiatric: Anhedonia, mild anxiety, amotivation. Denies suicidal ideation.

Respiratory: Daily cough, sometimes productive.

Neurological: Reports "brain fog" and poor short-term memory.

PHYSICAL EXAMINATION

Vitals:

BP 148/90,

HR 108,

RR 16,

Temp 37.1°C.

General:

Alert and oriented. Appears slightly anxious. Poor eye contact.

HEENT:

Eyes:

Conjunctival injection (noted bilaterally).

Oropharynx:

Dry mucous membranes.

Cardiovascular: Sinus tachycardia. Regular rhythm.

Respiratory: Mild scattered wheezes on forced expiration.

Abdomen:

Soft, non-tender, non-distended. No organomegaly

Neurological: Cranial nerves intact. Mild difficulty with concentration during the exam.

FOCUSED INTERVIEW (CONFIDENTIAL)

The pediatrician uses a non-judgmental approach after the mother leaves the room.

- Pediatrician: “Sam, the symptoms you're describing—the nausea that gets better with hot showers, the red eyes, and the fast heart rate I just measured—are often linked to the use of marijuana or cannabis. This is a medical issue, and I need your honesty to help you feel better."
- Sam's Disclosure: Sam admits to using cannabis concentrates ("dabs" or "wax") via a "vape pen" almost daily for the past year. He started to "help with stress," but now uses it throughout the day. He confirms that hot showers provide significant relief from his nausea. He denies using alcohol or other drugs.

SUPPORTING EVIDENCE FOR CANNABIS USE

Acute/Intoxication Signs: Tachycardia, conjunctival injection, mild hypertension, anxiety.

Chronic Use Signs:

- **Respiratory:** Chronic cough, wheezing ("Cannabis Bronchitis").
- **GI: Cyclic Hyperemesis Syndrome (Cannabis Hyperemesis Syndrome) –** characteristic pattern of nausea/vomiting relieved by hot bathing.
- **Neuropsychiatric:** Amotivational syndrome, "brain fog," memory deficits, anhedonia.
- **Constitutional:** Weight loss due to decreased appetite (contrasts with "munchies" of acute use).

DIFFERENTIAL DIAGNOSIS

Primary: Cannabis Use Disorder with Cannabis Hyperemesis Syndrome.

GI: Inflammatory Bowel Disease, Gastroesophageal Reflux Disease (GERD), Cyclic Vomiting Syndrome.

Endocrine: Hyperthyroidism.

Psychiatric: Major Depressive Disorder, Anxiety Disorder.

Other: Pregnancy, other substance use.

DIAGNOSIS

Cannabis Use Disorder, Moderate.

Cannabis Hyperemesis Syndrome.

Cannabis-Induced Bronchitis.

Management Plan

1. PATIENT EDUCATION & BRIEF INTERVENTION:

Direct Linkage: "Sam, your vomiting is a known medical condition called Cannabis Hyperemesis Syndrome. The cannabis itself causes it, and the only definitive cure is to stop using it."

Explain the Pathophysiology: Briefly explain how chronic cannabis use can dysregulate the neurotransmitters in the gut and brain that control nausea.

Motivational Interviewing: Explore his readiness to quit. "What are the pros and cons of your cannabis use now that you see it's making you sick?"

2. SYMPTOMATIC & MEDICAL MANAGEMENT:

For Hyperemesis:

- **Definitive Treatment:**
- Cannabis cessation.
- **Symptomatic Relief:** Capsaicin cream applied to the abdomen (a recognized off-label treatment), hydration.
- **Caution:** Explain that anti-nausea medications like ondansetron are often ineffective for this specific syndrome.

For Withdrawal:

- Prepare him for potential withdrawal symptoms: irritability, sleep disturbance, decreased appetite, cravings (peak in 1st week, can last 2-3 weeks).

For Respiratory Symptoms:

- Advise that the cough should resolve with cessation of vaping/smoking.

3. FOLLOW-UP AND REFERRAL:

Close Follow-up: Schedule a follow-up in **1 week** to monitor for cessation, weight, and symptom resolution. A urine toxicology screen can be used as an objective measure of abstinence.

Mental Health Referral: Refer to a therapist to address the underlying stress and anxiety that prompted his use and to develop healthier coping mechanisms.

Parental Involvement: With Sam's permission, educate his parents about the diagnosis, emphasizing it is a medical condition, not a moral failing, and that a supportive (not punitive) home environment is crucial for recovery.

KEY TEACHING POINTS ON CANNABIS SIGNS & SYMPTOMS FOR THE PEDIATRICIAN

- **Look Beyond the Eyes:** While **conjunctival injection** and **tachycardia** are classic signs of recent use, they are not always present.
- **Know Cannabis Hyperemesis Syndrome (CHS):** This is a critical diagnostic clue. The triad is:
  - **Chronic cannabis use.**
  - **Cyclic episodes of nausea, vomiting, and abdominal pain.**
  - **Compulsive hot bathing** that provides symptomatic relief.
- **Recognize the Respiratory Impact:** Smoking or vaping cannabis causes **chronic bronchitis** (cough, wheeze, sputum production). It is a significant bronchial irritant.
- **Understand the "Amotivational Syndrome":** This is a controversial but clinically observed pattern in chronic users, featuring:
  - Apathy, lethargy.
  - Lack of motivation, especially for usual activities.
  - Decline in school performance.
  - Poor memory and concentration ("brain fog").

- **Contrast Acute vs. Chronic Effects:**
  - **Acute:** Euphoria, relaxation, **increased appetite ("munchies")**, impaired short-term memory, tachycardia, conjunctival injection.
  - **Chronic: Amotivational syndrome, CHS, respiratory issues, tolerance, withdrawal** upon cessation (irritability, insomnia, anxiety).

This case underscores that cannabis use can present with tangible medical symptoms beyond behavioral changes.

CASE PRESENTATION

- **The Chief Complaint**
  "My heart is racing, I can't sleep, and I feel like I'm going to fail everything."
- **Identifying Information:**
- **Name:** Arash K.
- **Age:** 17 years old
- **Sex:** Male
- **Source:** Self, accompanied by his concerned mother.

Arash is a 17-year-old male presenting to your clinic for evaluation of palpitations, insomnia, and severe anxiety that have been worsening over the past 2 months. His mother reports he has become "unrecognizable," irritable, withdrawn, and has lost a significant amount of weight. She is worried he has a thyroid problem or a "nervous breakdown." Arash is a high-achieving student. He admits to feeling constant pressure and states he "needs to perform." He has no history of cardiac or anxiety disorders.

HISTORY OF PRESENT ILLNESS

- **Past Medical History:** None.
- **Medications:** None prescribed.
- **Allergies:** No known drug allergies.
- **Social History:** Junior in high school, previously active in the volleyball team.
- **Family History:** Paternal history of hypertension. Maternal uncle with bipolar disorder.

REVIEW OF SYSTEMS

Constitutional: Significant weight loss (15 lbs in 2 months), decreased appetite, excessive energy.

Cardiovascular: Palpitations, subjective feeling of a "racing heart."

Psychiatric: Anxiety, irritability, paranoia (feels his friends are "talking about him"), **insomnia** (only sleeps 3-4 hours per night), racing thoughts. suicidal or homicidal ideation.

Neurological: Headaches, tremors, dizziness.

GI: Nausea, dry mouth.

ASSESSMENT & WORKUP

Physical Examination:

Vitals: BP 150/92, HR 128, RR 20, Temp 37.6°C (mild hyperthermia).

General: Alert, oriented. Appears thin, fidgety, and psychomotorically agitated. He is constantly tapping his foot and has difficulty sitting still.

HEENT: Mydriasis (bilaterally dilated pupils), dry oral mucosa.

Cardiovascular: Marked sinus tachycardia, regular rhythm. No murmurs.

Respiratory: Clear to auscultation.

Abdomen: Scaphoid, non-tender. Normal bowel sounds.

Neurological: Fine tremor of the outstretched hands. Hyperreflexia. Cognition is intact, but speech is rapid and pressured.

FOCUSED CONFIDENTIAL INTERVIEW (USING HEADSSS):

- The pediatrician speaks with Arash alone.
- **H**ome: "Fine, just a lot of pressure from my parents." (Contradicted by mother's report of minimal pressure).
- **E**ducation: "I have to get straight A's. I'm taking 3 classes. I can't afford to sleep."
- **A**ctivities: "Dropped valleyball. No time."
- **D**rugs: *(Pediatrician uses a direct, clinical approach)* "Arash, the exam findings, your dangerously high heart rate and blood pressure, dilated pupils, and weight loss are classic signs of stimulant use. People sometimes use ADHD medications like Ritalin to study. Is that something you've been taking to keep up?"
- **Arash's Disclosure:** After a pause, Arash admits to buying "Ritalin" pills from a classmate for the past 4 months. He started using them 2-3 times per week to study but is now using them daily to "get through the day." He crushes and snorts them for a "faster effect." He denies use of other illicit substances but drinks multiple energy drinks daily.

FORMULATION & DIFFERENTIAL DIAGNOSIS:

The constellation of findings is highly specific for stimulant intoxication.

Supporting Evidence for Stimulant Use:

- **Autonomic/Nervous System: Tachycardia, hypertension, mydriasis, hyperthermia, tremor, hyperreflexia.**
- **Metabolic: Significant weight loss**, decreased appetite.
- **Psychiatric: Anxiety, insomnia, irritability, paranoia, psychomotor agitation.**
- **Behavioral:** Social withdrawal, giving up previously enjoyed activities.

DIFFERENTIAL DIAGNOSIS

Primary: Stimulant Use Disorder.

Psychiatric: First-episode psychosis, Bipolar Disorder (manic episode), Panic Disorder, Generalized Anxiety Disorder.

Medical: Hyperthyroidism, Pheochromocytoma, Arrhythmia.

Other: Caffeine intoxication (from energy drinks), but this severe presentation is unlikely.

DIAGNOSIS

Stimulant Use Disorder, Severe.

Stimulant Intoxication, with associated tachycardia, hypertension, and anxiety.

Rule of Stimulant-Induced Psychotic or Anxiety Disorder

Management Plan

1. ACUTE MEDICAL MANAGEMENT & SAFETY:

Urgent Referral: Given the significant tachycardia (HR 128) and hypertension (BP 150/92), Arash is referred to the Emergency Department for immediate cardiac monitoring and management. Stimulants can cause arrhythmias, myocardial infarction, and stroke.

Laboratory Tests: Order in ED: ECG, CBC, CMP, thyroid panel, urine toxicology screen (to confirm amphetamines and rule out other substances like cocaine).

Environmental Safety: Create a calm, low-stimulation environment. Assess safety given his paranoia and agitation.

2. BRIEF INTERVENTION AND LONG-TERM PLAN:

Direct Feedback: "Arash, your body is in a state of overdose from these pills. The high heart rate and blood pressure are medical emergencies. The anxiety and paranoia are direct side effects of the drug. Stopping is the only way to reverse this."

Withdrawal Management: Prepare him for the "crash" after cessation: hypersomnia, increased appetite, lethargy, depression, and intense cravings. This typically lasts 1-2 weeks.

Comprehensive Referrals:

Parental Guidance: Educate parents on the diagnosis, emphasizing it is a medical condition. Counsel them on providing supportive supervision, recognizing signs of relapse, and securing all medications in the home.

Addiction Specialist/Therapist: using modalities like Cognitive Behavioral Therapy (CBT) and Contingency Management.

Psychiatrist: To manage the acute anxiety/paranoia and differentiate it from a primary psychiatric disorder once he is abstinent.

Academic Counselor: To help manage academic pressures and develop realistic study plans.

KEY TEACHING POINTS ON STIMULANT SIGNS & SYMPTOMS

- **Know the Autonomic Triad: Tachycardia, Hypertension, and Mydriasis** are the hallmark vital signs and physical exam findings of stimulant intoxication.
- **The "Great Imitator":** Stimulant misuse can perfectly mimic primary psychiatric disorders like **anxiety, panic, and psychosis.** A urine toxicology screen is essential in any adolescent presenting with new-onset psychiatric symptoms.
- **The Route Matters:** Snorting or injecting stimulants leads to a more intense high and a higher risk of addiction and medical complications compared to oral ingestion.

- **Contrast with Cannabis:**
  - **Stimulants: ↑HR, ↑BP, ↓Appetite, ↑Energy, Mydriasis, Insomnia.**
  - **Cannabis: ↑HR (usually mild), Variable BP, ↑Appetite, ↓Energy, Conjunctival Injection, Sedation.**
- **Withdrawal is the Opposite:** The crash from stimulants is characterized by **hypersomnia, hyperphagia, anergia (lack of energy), and anhedonia (inability to feel pleasure),** which can be profound and lead to continued use to avoid these feelings.
- **Cardiac Risk is Real:** Do not dismiss tachycardia and hypertension in a young person. Stimulants pose a real risk of acute coronary syndrome, even in adolescents with healthy hearts.

CASE PRESENTATION

- **The Chief Complaint**
  "My son is freaking out! He's seeing things that aren't there, and his heart is going crazy."
- **Identifying Information:**
- **Name:** Arad P.
- **Age:** 16 years old
- **Sex:** Male
- **Source:** Mother and paramedics.

HISTORY OF PRESENT ILLNESS:

Arad is a 16-year-old male brought to the Emergency Department by paramedics. According to his frantic mother, he was at a friend's house when he suddenly called her, saying he was "melting into the floor" and that "the walls were breathing." He became terrified and paranoid. On arrival, paramedics found him agitated, confused, and diaphoretic. His mother states he is a healthy boy with no prior psychiatric history. She found an empty baggie with what looked like "dried, small mushrooms" in his backpack.

- **Past Medical History:** None.
- **Medications:** None.
- **Allergies:** No known drug allergies.
- **Social History:** Good student, social, no known prior substance use.
- **Family History:** No significant psychiatric history.

REVIEW OF SYSTEMS

Constitutional: Diaphoresis.

Cardiovascular: Palpitations.

Psychiatric: Visual and auditory hallucinations, paranoia, depersonalization, time distortion, marked anxiety.

Neurological: Dizziness, pupil dilation per EMS.

GI: Nausea (reported by mother before arrival)

ASSESSMENT & WORKUP

1. PHYSICAL EXAMINATION

VITALS:

BP 145/88,

HR 118,

RR 22,

TEMP 37.8°C.

GENERAL: ANXIOUS, AGITATED, AND VISIBLY DISTRESSED. HE IS ROCKING BACK AND FORTH ON THE GURNEY. HE RESPONDS TO INTERNAL STIMULI, STARING AT THE WALL AND SAYING, "THE COLORS ARE TALKING TO ME."

HEENT:

MYDRIASIS

(MARKED BILATERAL PUPIL DILATION). MUCOUS MEMBRANES ARE MOIST.

CARDIOVASCULAR:

SINUS TACHYCARDIA.

REGULAR RHYTHM.

NEUROLOGICAL:

HYPERREFLEXIA. GAIT IS UNSTEADY DUE TO AGITATION AND PERCEPTUAL DISTORTION. CEREBELLAR EXAM (FINGER-TO-NOSE) IS UNRELIABLE DUE TO NON-COOPERATION. NO NYSTAGMUS.

KEY POSITIVE FINDINGS SUGGESTING CLASSIC HALLUCINOGEN:

- **Perceptual Alterations: Hallucinations (mostly visual**, e.g., geometric patterns, altered shapes), illusions.
- **Psychological Symptoms: Marked anxiety**, paranoia, depersonalization.
- **Autonomic Signs: Mydriasis, tachycardia, mild hypertension**, diaphoresis.
- **Cognitive:** Oriented to person, but disoriented to place and time.

DIFFERENTIAL DIAGNOSIS

Condition	Key Differentiating Features
Classic Hallucinogen (Psilocybin)	Visual hallucinations, mydriasis, normal/moist skin, intact reality testing (usually).
Stimulant (e.g., Amphetamine, Cocaine)	Paranoia predominates, tactile hallucinations (formication), more severe tachycardia/hypertension, anorexia, psychomotor agitation.
Anticholinergic (e.g., Diphenhydramine)	"Mad as a hatter, red as a beet, hot as a hare, dry as a bone, blind as a bat." Mydriasis WITH dry mucous membranes, flushed skin, urinary retention, absent sweating, and fever.
Primary Psychiatric Disorder (e.g., Psychosis)	Auditory hallucinations > visual, less likely to have autonomic signs (tachycardia, mydriasis), more systematized delusions, not time-limited.
PCP Intoxication	Can be violent, nystagmus (vertical/horizontal), analgesia, ataxia, severe dissociation.

DIAGNOSTIC WORKUP

- **ECG:** Shows sinus tachycardia, no ischemia.
- **Labs:** CBC, CMP, and urine toxicology are sent. The standard urine drug screen **will not detect psilocybin.** The tests are primarily to rule out other causes (e.g., metabolic, infection) and co-ingestants.
- **Point:** The diagnosis is primarily clinical, based on history and the classic toxidrome.

DIAGNOSIS

- Acute Psilocybin Intoxication (Adverse Reaction - "Bad Trip").
- Rule of Co-ingestion of Other Substances.

Management Plan

1. ACUTE MANAGEMENT (THE "TALK-DOWN"):

- **Environment is Everything:** Move the patient to a quiet, calm, low-stimulation room (dim lights, minimal staff). This is the single most important intervention.
- **Supportive Presence:** Have one nurse or provider stay with the patient. Use a calm, reassuring, and non-confrontational tone. **Reality reorientation** is helpful: "You are safe. You are in the hospital. You took a drug, and these feelings are from the drug. They will go away."
- **Safety:** Remove harmful objects. Consider a sitter to prevent the patient from injuring himself due to fear or misperception.
- **Physical Restraint is a LAST RESORT:** Can dramatically worsen paranoia and agitation. Chemical sedation is preferred if necessary (e.g., with a benzodiazepine).
- **Medical Support:** Provide IV fluids if needed for hydration. No specific antidote exists.

2. DISPOSITION AND FOLLOW-UP:

- **Observation:** The effects of psilocybin typically resolve within 6-12 hours. Patients can usually be discharged once the intoxication has resolved, they are medically stable, and their mental status has returned to baseline.
- **Interview:** Once Arad is calm and coherent, conduct a confidential adolescent interview. Explore the circumstances of use, his understanding of the risks, and any underlying stressors.
- **Motivational Interviewing & Harm Reduction:** "That was a really scary experience. What did you learn from it?" Discuss the risks of hallucinogen use, including the risk of accidental injury and the potential for triggering persistent psychosis in susceptible individuals.
- **Mental Health Referral:** Given the intensity of this reaction, a follow-up with a therapist or adolescent medicine specialist is prudent to assess for any lingering anxiety or PTSD from the event and to address any underlying issues.
- **Parental Guidance:** Educate the parents on what happened, emphasizing that it was a drug reaction, not necessarily a character flaw. Counsel them on how to provide supportive supervision and open communication.

KEY TEACHING POINTS ON PSILOCYBIN INTOXICATION

- **The Classic Triad of Psilocybin Intoxication is:**
  - **Perceptual Changes: Visual hallucinations/illusions** are hallmark.
  - **Psychological Effects:** Euphoria, anxiety, paranoia, depersonalization.
  - **Autonomic Arousal: Mydriasis, tachycardia,** mild hypertension, nausea.
- **"Bad Trips" are Medical Presentations:** The most common reason for ED presentation is a severe anxiety or panic reaction to the intense perceptual distortions.
- **Know What the Drug Screen Does (and Doesn't) Do:** Standard urine drug screens do not test for psilocybin.
- **Diagnosis is clinical.** A positive screen for other substances (e.g., cannabis) does not rule out a concurrent hallucinogen intoxication.

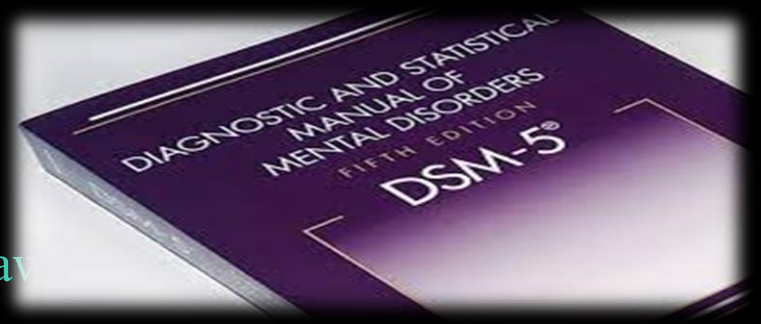
- **Differentiate from Psychiatric Emergencies:** The key is the **acute onset** **in a previously well individual with concomitant autonomic signs (mydriasis, tachycardia)**. A primary psychotic disorder is less likely to present with this specific combination.
- **Management is Non-Pharmacologic First:** The "talk-down" is the cornerstone of treatment. **Benzodiazepines** (e.g., lorazepam) are reserved for severe agitation that does not respond to verbal de-escalation.
- **Risk of Harm:** The greatest immediate risks are not from the drug's toxicity, but from **accidental injury** due to impaired judgment and perception (e.g., walking into traffic, falling from a height).

PEER SUBSTANCE USE ONE OF THE HALLMARKS OF THE DEVELOPMENT OF SUDS DRUG USERS SELECT DRUG-USING FRIENDS


SUD is a **behavioral deviance**
→Often associated with other forms of **deviance.**

SABSTANCE USE DISORDER(DSM 5)

- SUD is defined by cognitive, behavioral, and physiologic symptoms due
- to continued use of a substance despite significant substance use–related problems.
- Diagnostic criteria are divided into four central categories: (Two or more within a 12-mo period)
- impaired control over substance use
- Social impairment due to substance use
- Risky use of the substance
- Pharmacologic criteria of tolerance and withdra



IMPAIRED CONTROL

- 1. Taken in larger amounts or over a longer period than intended
- 2. Persistent desire or unsuccessful effort to cut down or control use
- 3. Great deal of time spent to obtain, use, or recover from substance
- 4. Craving, or strong desire or urge to use

SOCIAL IMPAIRMENT

- 5. Failure to fulfill major role obligations
- 6. Continued use despite social or interpersonal problems
- 7. Reduction in important social, occupational, or recreational activities

RISKY USE

- 8. Recurrent use in physically hazardous situations
- 9. Continued use despite knowledge of physical or psychological problem

PHARMACOLOGIC EFFECT

- 10. Tolerance (need for increased amount or diminished effect)A
- 11. AA (withdrawal syndrome or use to relieve/avoid withdrawal)

INTOXICATION

- A. Recent ingestion
- B. Problematic behavior or psychological changes
- C. One or more sign or symptom attributable to the substance
- D. Not attributable to another medical condition, mental disorder, or substance

WITHDRAWAL

- A. Cessation or reduction in heavy, prolonged use
- B. Two or more signs or symptoms attributable to cessation or reduction in use
- C. Clinically significant distress or impairment in important areas of functioning
- D. Not attributable to another medical condition, mental disorder, or substance

SUBSTANCES ARE DIVIDED INTO 10 CLASSES, INCLUDING:

ALCOHOL;

CAFFEINE;

CANNABIS;

HALLUCINOGENS;

INHALANTS;

OPIOIDS;

SEDATIVES,

HYPNOTICS, OR ANXIOLYTICS;

STIMULANTS;

TOBACCO;

AND OTHER OR UNKNOWN.

- The treatment of adolescent SUDs has begun to reflect the multifaceted nature of antecedents that lead to SUDs.
- • These multiple problems need to be targeted for effective treatment.

PROGNOSIS

- The course of SUDs in adolescents is variable.
- Adolescents with abuse often decrease or discontinue use in late adolescence or early adulthood, while those with dependence and more risk factors are more likely to continue to meet criteria for one or more SUDs.
- The age at which experimentation begins has been gradually declining.

SCREENING

- determines the likelihood that a client has co-occurring substance use and mental disorders or that his presenting signs, symptoms, or behaviors may be influenced by co-occurring issues.

ASSESSMENT

- Gathers information and engages in a process with the client that enables the provider to establish(or rule out) the presence or absence of a co-occurring disorder.
- Determines client's readiness for change, identifies client strengths or problem areas that may affect processes of treatment and recovery, and engages client in development of an appropriate treatment relationship.

- Gathers information and engages in a process with the client that enables the provider to establish(or rule out) the presence or absence of a co-occurring disorder.
- Determines client's readiness for change, Treatment Planning: Develops a comprehensive set of staged, integrated program placements and treatment interventions for each disorder that is adjusted as needed to take into account issues related to other disorders.
- The plan is mismatched to the individual needs, readiness, preferences, and personal goals of the client.
- Integrated Screening, assessment, and treatment planning: address both mental health and substance abuse, each in the context of other disorders.
- Identifies client strengths or problem areas that may affect processes of treatment and recovery, and engages the client in the development of an appropriate treatment relationship.

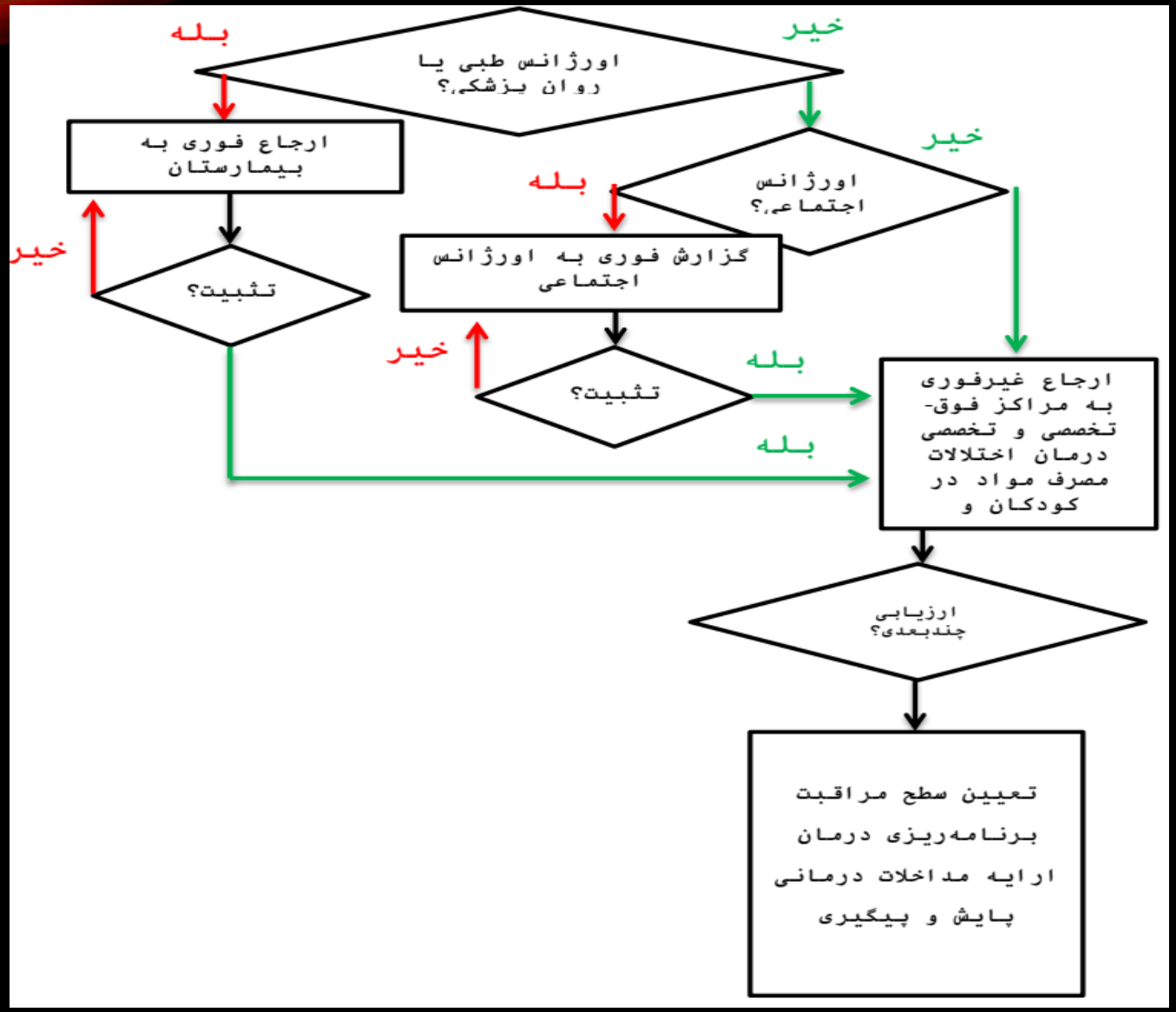
SCREENING

- The mental health assessment of older children and adolescents requires screening questions about the use of alcohol and other substances of abuse
- In the face of problems in one or more domains of adolescent functioning, clinicians and educational professionals who work with youths often need to screen for the need for more comprehensive evaluation,

- CRAFFT (6 items brief screen for primary care professionals
- At the very least, screening involves asking about substance use
- Asking about quantity and frequency,
- the presence of adverse consequences of use, and
- the adolescent's attitude toward use is are basic line of screening inquiry

CRAFFT ASSESSES

- A number of potential indicators of substance-related risks and impairments
- C: Have you ever ridden in a car driven by someone, including yourself, who was high or had been using alcohol or drugs?
- R :Do you ever use alcohol or drugs to relax, feel better about yourself, or fit in?
- A :Do you ever use alcohol or drugs while you are by yourself, alone
- F :Do you ever forget things you did while using alcohol or drugs?
- F :Do your family or friends ever tell you that you should cut down on your drinking or drug use?
- T: Have you ever gotten into trouble while you were using alcohol or drugs?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ارزیابی چندبعدی؟
تعیین سطح مراقبت
برنامه‌ریزی درمان
ارایه مداخلات درمانی
پایش و پیگیری

EVALUATION

- If the screening raises concerns about substance use, the clinician should conduct a more formal evaluation to determine the quantity and frequency of use and consequences of use for each substance used and whether the youth meets criteria for SUD•
- The goal of the evaluation is to determine whether the adolescent is using one or more substances, what effects substance use has on various domains of the adolescent's psychosocial functioning, and whether the problem fits diagnostic criteria for substance abuse or dependence (disorder, some level of dysfunction)
- Because of the covert nature of substance use, optimal assessment often requires information from a variety of sources, including the adolescent, parents (or other caregivers), other family members, school, any involved social agencies, and previous treatment records

TREATMENT SETTINGS

- In 2025, adolescent substance use treatment emphasizes evidence-based approaches tailored to developmental needs, integrating behavioral therapies, new technologies, and accessible settings like schools and justice systems. The field is advancing with new methods and a focus on co-occurring mental health.

PRIMARY TREATMENT MODALITIES

Treatment Approach	Key Applications & Insights
Behavioral Therapies	
♦ Cognitive-Behavioral Therapy (CBT)	Manages triggers, develops coping skills, and prevents relapse.
♦ Contingency Management	Provides incentives for treatment participation and drug-free tests, effective for stimulant use disorders.
♦ School-Based Interventions	Targeted CBT sessions for at-risk youth can delay substance use onset and reduce progression to substance use disorder.
Leveraging Technology	
♦ AI & Digital Tools	AI analyzes data for timely overdose trends; chatbots deliver behavioral therapy and relapse support.
♦ Digital Public Health Messaging	Uses social media and text messaging for prevention and treatment encouragement.
Treatment in Specific Settings	
♦ Justice Settings	Providing medications for opioid use disorder (MOUD) in jails/prisons reduces post-release overdose deaths and recidivism.
Emerging & Adjunct Therapies	
♦ Neuromodulation	Non-invasive brain stimulation techniques are being studied for various substance use disorders.
♦ GLP-1 Agonists	Medications for diabetes/obesity show promise in reducing substance use and are under clinical trial investigation.
Family & Experiential Therapy	
♦ Family Therapy	Addresses family dynamics; key for resolving substance use issues.
♦ Experiential Therapy	Uses art, music, or equine therapy to help process emotions non-verbally.

BEHAVIORAL THERAPIES,

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NEUROMODULATION

Non-invasive brain stimulation techniques are being studied for various substance use disorders.

FAMILY & EXPERIENTIAL THERAPY

Family Therapy	Addresses family dynamics; key to resolving substance use issues.
Experiential Therapy	Uses art, music, or equine therapy to help process emotions non-verbally

- When considering treatment for an adolescent, several critical factors emerge from the latest research:
- **Co-occurring Mental Health is the Rule, Not the Exception**: Many teens use substances to cope with underlying conditions like **anxiety**, **depression**, **or trauma**. An effective treatment plan must **integrate mental health and substance use care**.
- **The Critical Role of Prevention and Early Intervention**: The brain continues developing into young adulthood, making it a period of both vulnerability and opportunity. **Early intervention** in emerging mental health issues and evidence-based prevention programs can significantly reduce the initiation of drug use and the development of disorders.
- **The Overdose Prevention Imperative**: The proliferation of **fentanyl** in counterfeit pills makes any substance use potentially fatal. Expanding access to **naloxone**, the opioid overdose reversal medication, is a crucial public health priority.


THANK YOU