

# **Growing Like a Weed:** The Effects of Cannabis on the Adolescent Brain

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# A Few Ground Rules:

- Questions are welcome
- This is not a debate about legalization
- This is not a “demonization” presentation



# Agenda

- Overview of Adolescent Substance Abuse Trends
- More In Depth Review of the body/minds response to marijuana
- Understand the Impact of Substance Abuse on the social/emotional development
- Where to Look and What to Do

# Adolescent Substance Use

# Learning Points:

- Current Drug Trends
- Signs & Symptoms
- Treatment Options

A young woman with long, dark, wavy hair is looking down with a sad expression. In the background, two other young women are visible, one of whom is smiling. The scene appears to be outdoors, possibly at a school event.

Even the very best school is a  
difficult place for a child.

Michael Thompson, Ph.D., *The Pressured Child*



Adolescents struggling with anxiety and depression will often self-medicate with drugs and alcohol.

# Watch for Emerging Mental Health Issues

- ‘I can’t handle the pressure of school/sports/family life (anxiety)’
- ‘I don’t like myself/feel comfortable in my own skin (depression)’
- ‘I can’t take the memory of what happened/is happening (abuse/trauma)’
- ‘I can’t focus in school (ADHD)’



# What are the risk factors?

- Early initiation
- Behavior problems
- Poor emotional regulation
- Poor grades
- Too much work
- Attitudes
- ADHD

Common Liability Model



# Alcohol



In 2014, 45% percent of Illinois seniors reported having attended or hosted a party at which alcohol was served with parent's knowledge or consent.

**Illinois Youth Survey, 2014**

# Sobering Facts

- People who drink before age 14 are up to 8 times more likely to develop alcoholism than those who start drinking after age 21.

Substance Abuse and Mental Health Services Administration, Results from the 2014 National Survey on Drug Use and Health: Summary of National Findings.



# Prescription drugs:

More teens abuse prescription drugs than any other illicit drug except marijuana.

# Bars (Ladders)

**Another name for the rectangular shaped Xanax (anti-anxiety medication) with three lines in them (typically 2mg per 'bar').**

- The term “barred out” means being highly sedated due to Xanax consumption.
- School bus (yellow 'bar')
- Hulks, green monsters (green)





**.25 mg**



**.5 mg**



**1 mg**



**2 mg**

# Addies

**Slang term for ADHD medication Adderall. It is a mixture of amphetamine salts.**

- Commonly prescribed for ADHD
- Occasionally abused by students seeking a competitive advantage in their studies
- Replaced Ritalin as ADHD med
- Vyvanse



# Prescription Opiates

## Common types

- Vicodin
- Norco
- Oxycontin
- Fentanyl
- Percocet
- Tylenol with codeine

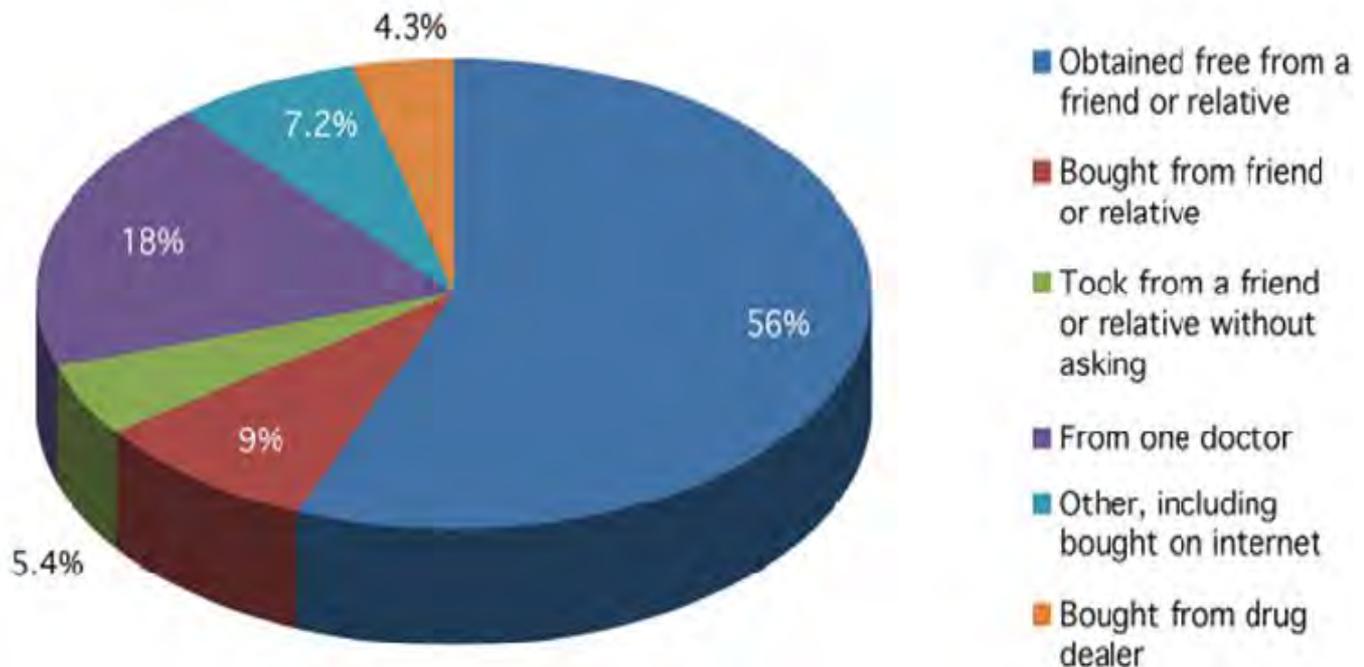
## Routes of admission

- Injected
- Taken orally
- Snorted
- Smoked



# Where do you get these drugs?

Sources of Pain Relievers for Most Recent Nonmedical Use,  $\geq 12$  years



# Lean (sizzurp/purple drank)

- Prescription strength cough syrup mixed with sprite (promethazine and codeine are active ingredients)
- Danger arises in high doses because both are depressants increasing overdose risk
- Several popular members of hip hop community have died from respiratory depression due to ingestion



# **Marijuana and the Brain**

# Chemical Composition of *Cannabis Sativa*

- More than 400 different compounds
- Approximately 60 of them are unique and are not found in any other plant - *cannabinoids*



# Chemical Composition of *Cannabis Sativa*

- The compound that is most responsible for the physical and psychological effects of hemp is *tetra hydro cannabinol* (THC)



# Chemical Composition of *Cannabis Sativa*

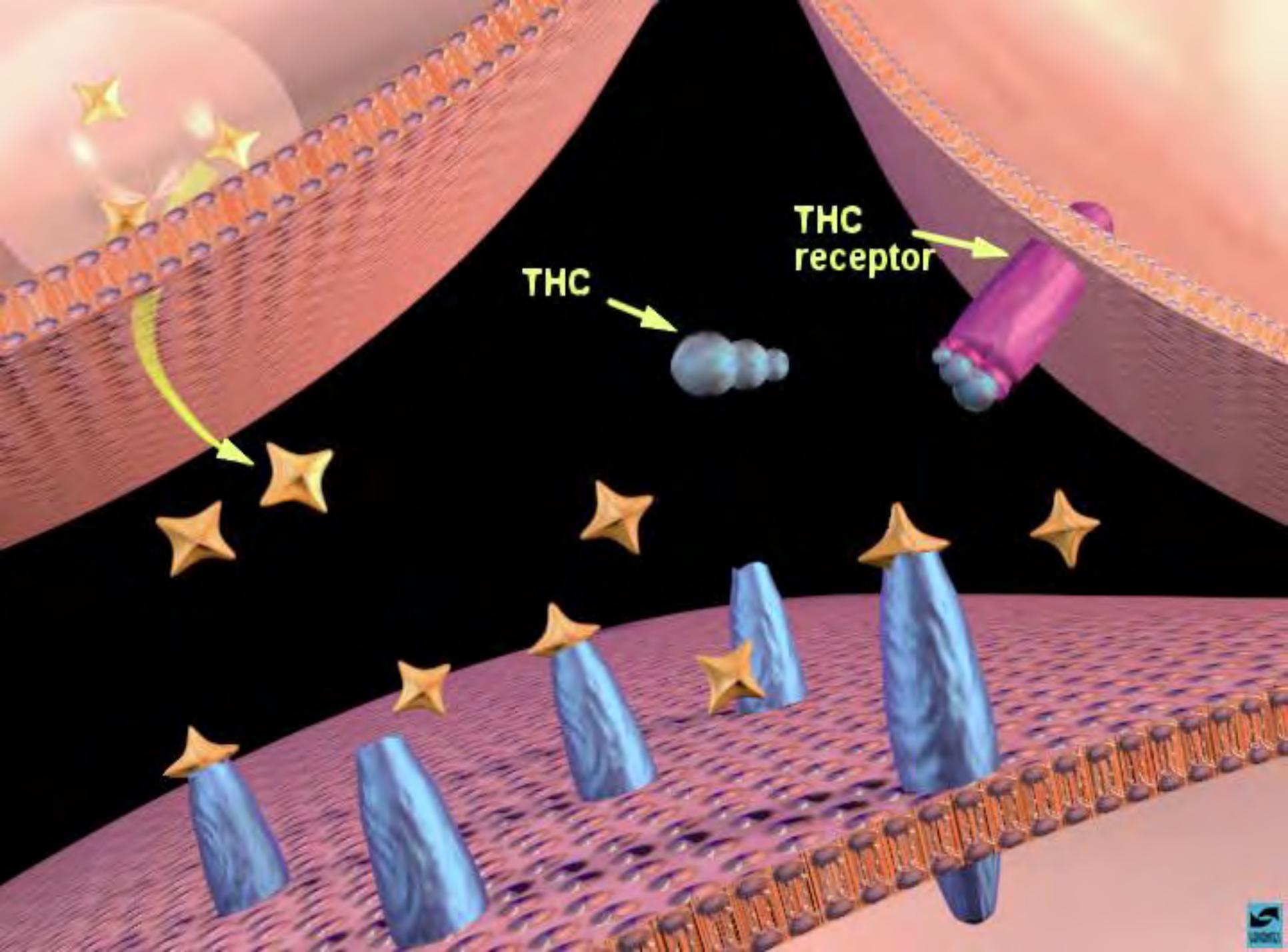
- Other compounds in hemp are cannabinalol (CBN) and cannabidiol (CBD), these compounds influence the effect of THC
- THC, just as other cannabinoids, dissolves well in fat, but not well in water



# Physiological Response

## *When marijuana is smoked or vaporized*

- THC quickly passes from the lungs into the bloodstream, which carries it to organs throughout the body, including the brain.
- Its effects begin almost immediately and can last from 1 to 3 hours.
- Decision making, concentration, and memory can be affected for days after use, especially in regular users.
- If marijuana is consumed in foods or beverages, the effects of THC appear later—usually in 30 minutes to 1 hour—and may last for many hours.



THC

THC receptor

# Neurological Response

- Most of the cannabinoid receptors are found in parts of the brain that influence pleasure, memory, thinking, concentration, sensory and time perception, and coordinated movement.
- Marijuana activates the endocannabinoid system, which causes the pleasurable feelings or "high" and stimulates the release of dopamine in the brain's reward centers, reinforcing the behavior.

# Systemic Impact

- Cannabinoid receptors are primarily found in the following areas:
- The hippocampus
- The cerebellum
- The basal ganglia
- The cerebral cortex

# Systemic Impact: Learning and Memory

- The hippocampus plays a critical role in certain types of learning.
- Disrupting its normal functioning can lead to:
  - Problems studying
  - Problems learning new things
  - Recalling recent events
- Chronic marijuana use disorder, that begins in adolescence, is associated with a loss of IQ points, as compared with people who don't use marijuana during their teen years.<sup>3</sup> However, two recent twin studies suggest that this decline is related to other risk factors (e.g., genetics, family, and environment), not by marijuana use itself.

# Systemic Impact: Coordination

- THC affects the cerebellum, the area of our brain that controls balance and coordination, and the basal ganglia, another part of the brain that helps control movement.
- These effects can influence performance in such activities as sports, driving, and video games.

# Systemic Impact: Judgment

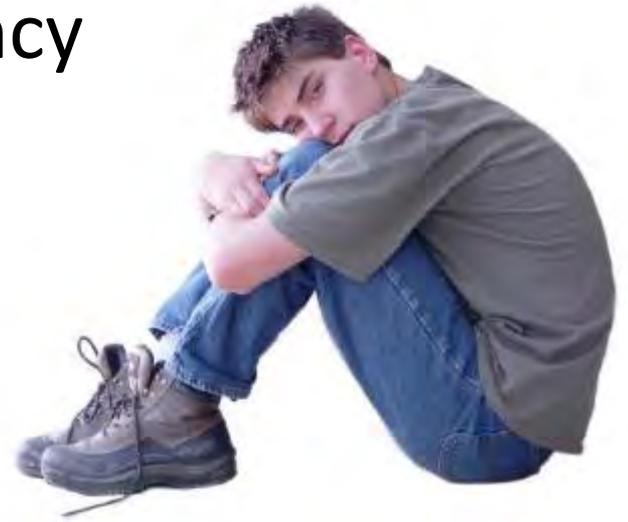
- THC affects areas of the frontal cortex involved in decision making
- Using it can make you more likely to engage in risky behavior, such as unprotected sex or getting in a car with someone who's been drinking or is high on marijuana.

# Cannabis:

## Physical Effects

### Cannabis Withdrawal:

- Greatest in first two weeks of abstinence
- Most symptoms were endorsed with a high degree of frequency



# Cannabis:

## Physical Effects

### Symptoms:

- Restlessness
- Appetite change
- Thoughts of and cravings for cannabis



# **Why Be Concerned About Adolescent Use?**

# Adolescent brain development

- Brain development continues from embryonic through puberty
  - Synaptogenesis
  - Myelination
  - Apoptosis (pruning)



# Adolescent brain development

- Even adulthood has continued remodeling
  - Efficacy of transmission
  - Strength of transmission



# **Behaviors associated with developing adolescent brain**

- Increased peer-directed social interactions
- Increased novelty-seeking behaviors
- Increased risk-taking behaviors
- Increased consummatory behaviors

# Adolescent behaviors and substance abuse

- Increased internal “reward” for substance use (including Cannabis)
- Increased motivation to use these drugs
- Less sensitivity to aversive or negative consequences of these drugs



# Drugs effects on brain development

- Potential direct damage to frontal cortex
- Altered EEG's
- Alteration of puberty related endocrine function
- Altered hippocampal volumes

# Substance abuse effects on brain function

- Changes in mood – despair and anhedonia
- Changes in cognition (thinking)
  - Memory
  - Attention
- Increased emergence of psychosis
- Increased vulnerability for more harmful use



# Marijuana & Addiction

- Approximately 10 percent of users may develop what is called a marijuana use disorder—problems with their health, school, friendships, family or other conflicts in their life.
- A serious substance use disorder is commonly called an addiction – the person can't stop using marijuana even though it gets in the way of daily life.
- People who begin using marijuana before the age of 18 are 4–7 times more likely than adults to develop a marijuana use disorder.

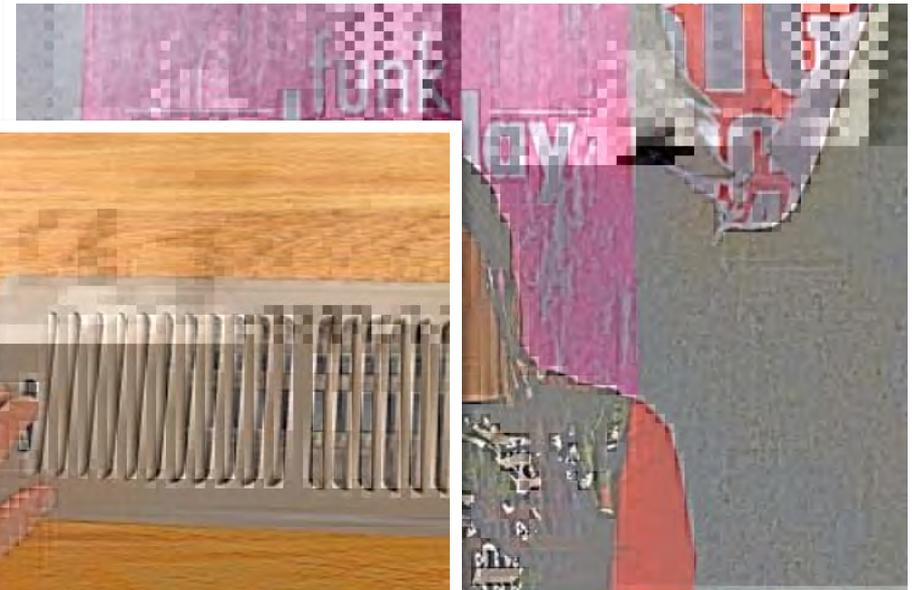
# **Where to Look & What to Do**

# Hiding Places



## Car Interior

If your teen has his or her own car, there are a plethora of places they can hide drugs. Common hiding spots include the glove compartment, taped underneath the seats, the steering wheel, and the trunk.

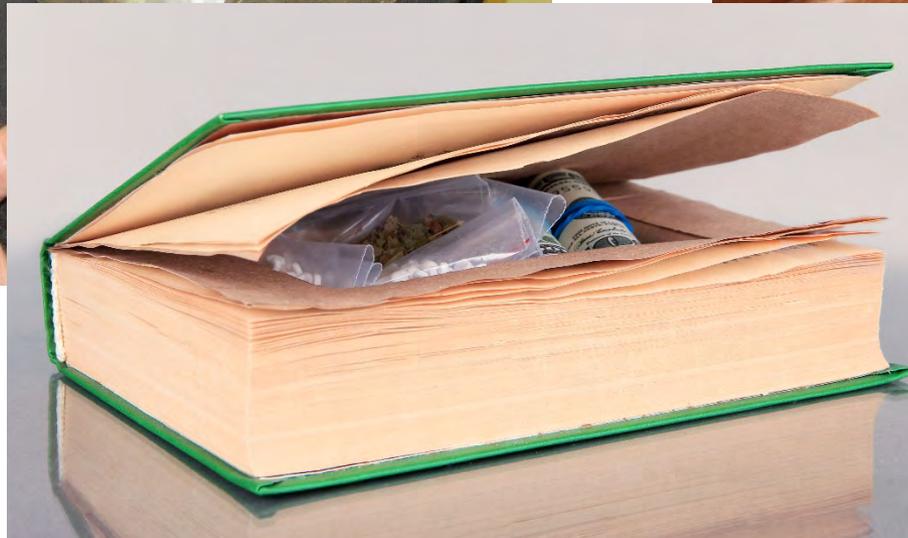
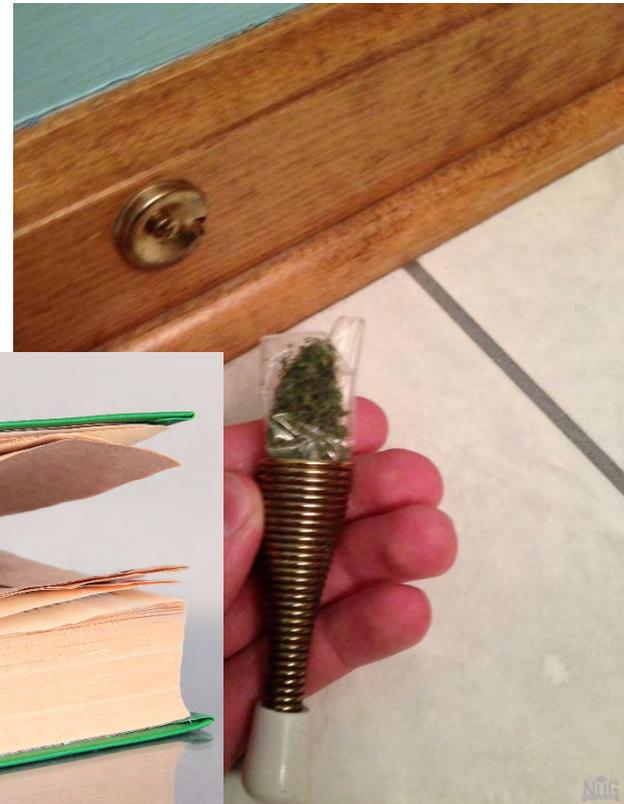


## Heating Vent

Teens can tape their drug-filled baggies inside of the heating vent in his or her room.

When your teen is in their room, you might want to run your eyes over their room or her bedroom. Teens trying to hide drugs often use their small drug-filled baggies and tape them to posters hanging on their walls.

# Hiding Places



# Hiding Places

- Soda Cans
- Hair Brush
- “Axe” Bottle
- Candles
- Wall Safe
- Chap Stick



# Hiding Places

- Writing Utensils
- Water Bottles
- Flip Flops
- Personal Hygiene Items
- Surge Protector
- Altoid Tin



# Signs & Symptoms

## Physical/Emotional

- Unexplained extreme mood swings, nodding off
- Increased aggression or anxiety
- Change in dress or appearance/hygiene
- Changes in sleeping habits
- Inability to focus
- Dilated or constricted pupils and bloodshot eyes
- Threats and attempts of suicide
- Nosebleeds/unexplained burns
- Loss of appetite, yet periods of binge eating



# Signs & Symptoms

## Social

- Changes in friends
- Drug use by friends
- Engaging in risky behavior
- Avoids contact with concerned persons
- Loses interests in hobbies/activities
- Secretive and defensive regarding actions and possessions
- Possession of paraphernalia



# How do we identify someone using substances in school?

- Misses excessive time from school
- Fails to turn in assignments
- Sleeps in class
- Exhibits persistent behavioral problems
- Reduced grades
- Increased tardiness
- Reduced interest in extracurricular activities

# How to Help

Positive change occurs in the context of authentic relationships—people need to know someone cares and will be there unconditionally for them. It is a transactional and facilitating process of supporting change and capacity building—not fixing.



# How can I help?

- Gather information from the adolescent
- Communicate concerns with parents, teachers, counselors
- Make a referral for a free assessment



# What can you do?

- **Educate yourself about addiction.**

What does addiction look like for teens?  
What's normal behavior and what's not?

- **Don't go it alone.**

Involve key people and build support and opportunity for intervention with others.

- **An intervention is not a one time event.**

“Getting past no!” is a process. Continue to monitor with concern.

# Strategies to get past “No”

- **Act quickly when the time is right!**  
Use a crisis to expedite treatment or action.
- **“Think outside the box.”**  
Remove barriers as they are presented.
- **Don’t underestimate the power of consequences and boundaries**  
Fewer boundaries for teens today. Make the connection between behavior and consequences.

# Tips for working with youth

- Start with normal conversation – Express that you care.
- Say ‘this is what I have observed’ rather than accusing.
- Use concrete examples: Grades, smelling of alcohol, coming home late, etc.
- Don’t ask, ‘have you ever?’, instead ask, ‘when did you’ or ‘how much’ or ‘how often’
- Point out that this is a serious health issue – You’re concerned about their health.

# Questions?



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Schedule a **free** consultation  
for teen and adult substance use

# **Rosecrance Healing Garden**

**at the Griffin Williamson Campus**





**Rosecrance Griffin  
Williamson Campus**  
1601 N. University Dr.  
Rockford, IL 61107

## **Services offered:**

- Free confidential drug and alcohol and mental health evaluations
- Partial hospitalization
- Residential substance abuse treatment & Specialized Mental Health Services treatment
  - Gender specific counseling
  - Experiential therapies including art, music, recreation, and horticulture
  - Family education and support
  - Transition planning
  - Alumni program
- Recovery homes for teens also offered in Rockford.



Lakeview

**Adult Services:**

- Free Assessments
- Individual/Family Counseling
- Intensive Outpatient Program
- Day Treatment
- Recovery Home



Naperville

**Services:**

- Free Assessments
- Early Intervention Services
- Urine drug screens offered at an additional cost
- Resources and trainings for parents, professionals and community members



Frankfort



La Grange

**Teen & Adult Services:**

- Free Assessments
- Early Intervention Services
- Intensive Outpatient Program
- Urine drug screens offered at an additional cost
- Resources and trainings for parents, professionals and community members



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Oak Park



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