Welcome to UVM/AHEC ECHO: Children’s Mental Health

March 18, 2021

Facilitators:
Michael Hoffnung, DO
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Kathy Mariani, MD, MPH
Liz Cote

Presenter:
Brady Heward, MD
• RECORDING OF SESSION TO BEGIN
Adolescent Cannabis Use
Brady Heward, MD
Agenda

• Introductions
• Objectives
• Didactic Presentation (15-20 min)
• Case presentation
  • Clarifying questions
  • Participants – then faculty panel
• Discussion
• Recommendations
• Summary
• Closing Announcements
  • Submission of new cases
  • Completion of evaluations
CME Disclosures

University of Vermont (UVM) Office of Continuing Medical and Interprofessional Education (CMIE) is approved as a provider of Continuing Medical Education (CME) by the ACCME. UVM designates this internet live activity for a maximum of 1.0 AMA PRA Category 1 Credits. Participants should claim only the credit commensurate with the extent of their participation in the activity.

Interest Disclosures:

• As an organization accredited by the ACCME to sponsor continuing medical education activities, UVMCMIE is required to disclose any real or apparent conflicts of interest (COI) that any speakers may have related to the content of their presentations.
Series Objectives

• By the end of this series, the learners should be able to:

  • Feel more comfort and confidence in identifying, treating, and referring a variety of complex children's mental health presentations.
Session Objectives

• By the end of this activity, the learners should be able to:
  • Discuss current trends in adolescent marijuana use
  • Describe consequences of early marijuana use
  • Describe psychotherapeutic and potential psychopharmacologic treatments for cannabis use
Conflict of Interests

• No conflicts of interest to disclose

• Off-label medication use will be discussed – there are no FDA approved treatments for Cannabis Use Disorder
Adolescent Cannabis Use
Clearing the Smoke: Cannabis and Mental Health
A two-part webinar series presented by APA and AAAP

Dates: Thursday, April 8, 2021 and Thursday April 15, 2021
Time: 1:00 pm - 2:00 pm

Register for Webinar 1
Register for Webinar 2

Webinar description:
4.8 million Americans ages 12 and older were diagnosed with cannabis use disorder in 2019. As of 2020, there are 35 states in which medical marijuana is legal, and 1 in 5 total states where cannabis is recreationally legal. Yet, on a national level, cannabis remains a schedule I substance under the Controlled Substances Act - limiting research on the drug. With cannabis becoming more readily available in multiple states, psychiatrists and other mental health professionals need to have the most updated information available on cannabis and to help patients make informed decisions.
Cannabis

- Cannabis
  - Cannabis *sativa*
  - Cannabis *indica*
- Leaves, flowers, stems or seeds
- Oil can be concentrated
- Psychoactive chemicals
  - Cannabinoids
Cannabinoids

- Class of compounds that bind to the cannabinoid receptors.
- Endocannabinoids – endogenous
  - Anandamide
- Phytocannabinoids – Plant based cannabinoids
  - 113 different cannabinoids have been isolated from Cannabis plants
- Synthetic Cannabinoids
Preparations

• Flower/buds
• Kief
• Hashish
• Hash Oil
• Tincture
• Infusions
Modes of Administration

• Joints
• Pipes
• Edibles
• Vaping
• Dabbing
• Oils
CBD vs THC

**CBD – Cannabidiol**
- Possible therapeutic effects
  - Anxiolytic
  - Anti-epileptic
  - Antipsychotic
  - Anti-inflammatory
- Epidiolex (cannabidiol)
  - Lennox-Gastaut syndrome
  - Seizures – Tuberous sclerosis
  - Myoclonic epilepsy
  - Orphan drug designation

**THC – tetrahydrocannabinol**
- Euphoria
- Possible therapeutic effects
  - Appetite Stimulant
  - Anti-emetic
  - Anti-inflammatory
- Negative effects
  - Psychotomimetic
  - Deficits in memory, recall
  - Stress
- Marinol (dronabinol – tetrahydrocannabinol)
  - Nausea – Chemotherapy, Post Op
  - Loss of Appetite – HIV

CBD is going down

THC is going up

Ration of THC/CBD
Past Year Marijuana Use among People Aged 12 or Older: 2002-2019

+ Difference between this estimate and the 2019 estimate is statistically significant at the .05 level.
Perceived Risk of Harm Vs Past-Year Use
Vaping

**TEENS USING VAPEING DEVICES IN RECORD NUMBERS**

**PAST-YEAR VAPEGING**

<table>
<thead>
<tr>
<th></th>
<th>8th graders</th>
<th>10th graders</th>
<th>12th graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine</td>
<td>17.6%</td>
<td>32.3%</td>
<td>37.3%</td>
</tr>
<tr>
<td>Marijuana or Hash Oil</td>
<td>4.6%</td>
<td>5.3%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Just Flavoring</td>
<td>5.4%</td>
<td>13.0%</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

**WHAT DO TEENS SAY THEY ARE VAPEGING?**

**TOBACCO AND NICOTINE: VAPEGING THREATENS PROGRESS**

**NICOTINE – DAILY USE**

<table>
<thead>
<tr>
<th></th>
<th>8th graders</th>
<th>10th graders</th>
<th>12th graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Smoking</td>
<td>1.9%</td>
<td>1.3%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Daily Nicotine Vaping measured for the first time in 2019</td>
<td>0.8%</td>
<td>1.3%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

**CIGARETTE SMOKING (PAST MONTH) DECLINES OVER PAST TEN YEARS**

<table>
<thead>
<tr>
<th></th>
<th>8th graders</th>
<th>10th graders</th>
<th>12th graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>22.6%</td>
<td>20.0%</td>
<td>17.3%</td>
</tr>
<tr>
<td>2010</td>
<td>21.3%</td>
<td>18.8%</td>
<td>17.1%</td>
</tr>
<tr>
<td>2011</td>
<td>20.6%</td>
<td>18.0%</td>
<td>16.9%</td>
</tr>
<tr>
<td>2012</td>
<td>19.9%</td>
<td>17.0%</td>
<td>16.6%</td>
</tr>
<tr>
<td>2013</td>
<td>19.2%</td>
<td>16.0%</td>
<td>16.2%</td>
</tr>
<tr>
<td>2014</td>
<td>18.5%</td>
<td>15.0%</td>
<td>15.2%</td>
</tr>
<tr>
<td>2015</td>
<td>17.8%</td>
<td>14.0%</td>
<td>14.3%</td>
</tr>
<tr>
<td>2016</td>
<td>17.1%</td>
<td>13.0%</td>
<td>13.1%</td>
</tr>
<tr>
<td>2017</td>
<td>16.4%</td>
<td>12.0%</td>
<td>12.2%</td>
</tr>
<tr>
<td>2018</td>
<td>15.7%</td>
<td>11.0%</td>
<td>11.1%</td>
</tr>
<tr>
<td>2019</td>
<td>15.0%</td>
<td>10.0%</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

**NEARLY 2 IN 5 STUDENTS IN 12TH GRADE REPORT PAST-YEAR VAPEGING, RAISING CONCERNS ABOUT THE IMPACT ON BRAIN HEALTH AND POTENTIAL FOR ADDICATION.**

Vaping

TEEN E-CIG USERS ARE MORE LIKELY TO START SMOKING:²

Start Smoking Within 6 Months

30.7% E-CIG USER
8.1% NON USER

*Includes combustible tobacco products (cigarettes, cigars, and hookahs)

WHAT DO TEENS SAY IS IN THEIR E-CIG³?

13.7% Don’t Know
13.2% Nicotine
5.8% Marijuana
1.3% Other
66.0% Just Flavoring

Manufacturers don’t have to report e-cig ingredients, so users don’t know what’s actually in them.

Percent of Students Reporting Vaping in Past Month, by Type and Grade

<table>
<thead>
<tr>
<th></th>
<th>8th Grade</th>
<th>10th Grade</th>
<th>12th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Vaping</td>
<td>12.2%</td>
<td>9.6%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Nicotine</td>
<td>25.6%</td>
<td>19.9%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Marijuana / Hash Oil</td>
<td>39.9%</td>
<td>25.5%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Just Flavoring</td>
<td>3.9%</td>
<td>11.9%</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

*Significant increase or ^significant decline compared to the 2018 MTF Survey.

Drugabuse.gov
30-day Prevalence - Vaping

All Vaping

Marijuana
Following a significant decrease in EVP use between 2015 and 2017, current EVP use more than doubled between 2017 and 2019.

Electronic Vapor Products (EVP) Include e-cigarettes, Vapes, vape pens, e-cgars, E-hookahs, hookah pens, and mods
VT-YRBS

Days Used EVP, Among Current Users

2017
- Every day: 15%
- 1 to 2 days: 37%
- 6 to 19 days: 23%
- 10 to 19 days: 12%
- 3 to 5 days: 11%
- 6 to 9 days: 11%

2019
- Every day: 31%
- 1 to 2 days: 19%
- 3 to 5 days: 13%
- 6 to 9 days: 11%
- 20 to 29 days: 12%
- 6 to 19 days: 15%
- 10 to 19 days: 25%

Healthvermont.gov 2019 VT-YRBS
Frequency of Marijuana Use
(Among Current Users)

- 40+ times, 20%
- 1 to 2 times, 33%
- 20 to 39 times, 10%
- 10 to 19 times, 13%
- 3 to 9 times, 24%
VT-YRBS

Primary Methods Used to Consume Marijuana
(Among Current Users)

2017

- Smoked: 91%
- Ate/drunk: 5%
- Vaped: 2%
- Other: 2%

2019

- Smoked: 67%
- Ate/drunk: 6%
- Vaped: 17%
- Dabbed: 8%
- Other: 2%

NOTE: In 2019 dabbing was added as a response option.
Risks of Cannabis
What are the risks of Cannabis use?

• Short-term effects
  • Intoxication
  • Impaired Driving

• Long-term effects
  • Dependence and a use disorder
  • Withdrawal
  • Cognition
  • Psychosis
  • Hyperemesis
Cannabis Intoxication

A. Recent use of cannabis.
B. Clinically significant problematic behavioral or psychological changes (e.g., impaired motor coordination, euphoria, anxiety, sensation of slowed time, impaired judgment, social withdrawal) that developed during, or shortly after, cannabis use.
C. Two (or more) of the following signs or symptoms developing within 2 hours of cannabis use:
   1. Conjunctival injection.
   2. Increased appetite.
   3. Dry mouth.
   4. Tachycardia.
D. The signs or symptoms are not attributable to another medical condition and are not better explained by another mental disorder, including intoxication with another substance.

Specify if:

With perceptual disturbances: Hallucinations with intact reality testing or auditory, visual, or tactile illusions occur in the absence of a delirium.
Cannabis and Driving

- Drivers feel their ability is impaired and that they are less safe leading to increased vigilance
  - Drivers may compensate by driving more slowly
- Multiple impairments have been observed through experimental testing
  - Increased reaction time, lane position variability
- Higher rates of MVA with increased cannabis use
- Risk of collision nearly doubled by acute consumption

(Bondallaz 2016; Hartman 2013)
Dependence and Cannabis Use Disorder

• Approximately 9% of people who use become dependent (Lopez-Quintero 2011)

• The rate increases to 1 in 6 (17%) of those who start before the age of 18 (Hall 2009)

• The risk increases to between 25-50% in daily users (Volkow 2021)

• 30% of those who use may meet criteria for a use disorder (Hasin 2015)

• 2.8% of 12-17 year-olds have Cannabis Use Disorder (699,000 adolescents) (NSDUH 2019)
Cannabis Use Disorder

A. A problematic pattern of cannabis use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:

1. Cannabis is often taken in larger amounts or over a longer period than was intended.
2. There is a persistent desire or unsuccessful efforts to cut down or control cannabis use.
3. A great deal of time is spent in activities necessary to obtain cannabis, use cannabis, or recover from its effects.
4. Craving, or a strong desire or urge to use cannabis.
5. Recurrent cannabis use resulting in a failure to fulfill major role obligations at work, school, or home.
6. Continued cannabis use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of cannabis.
7. Important social, occupational, or recreational activities are given up or reduced because of cannabis use.

8. Recurrent cannabis use in situations in which it is physically hazardous.
9. Cannabis use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by cannabis.
10. Tolerance, as defined by either of the following:
   a. A need for markedly increased amounts of cannabis to achieve intoxication or desired effect.
   b. Markedly diminished effect with continued use of the same amount of cannabis.
11. Withdrawal, as manifested by either of the following:
   a. The characteristic withdrawal syndrome for cannabis (refer to Criteria A and B of the criteria set for cannabis withdrawal, pp. 242–243).
   b. Cannabis (or a closely related substance) is taken to relieve or avoid withdrawal symptoms.
Cannabis Withdrawal

292.0 (F12.288)

A. Cessation of cannabis use that has been heavy and prolonged (i.e., usually daily or almost daily use over a period of at least a few months).

B. Three (or more) of the following signs and symptoms develop within approximately 1 week after Criterion A:
   1. Irritability, anger, or aggression.
   2. Nervousness or anxiety.
   3. Sleep difficulty (e.g., insomnia, disturbing dreams).
   4. Decreased appetite or weight loss.
   5. Restlessness.
   6. Depressed mood.
   7. At least one of the following physical symptoms causing significant discomfort: abdominal pain, shakiness/tremors, sweating, fever, chills, or headache.

C. The signs or symptoms in Criterion B cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The signs or symptoms are not attributable to another medical condition and are not better explained by another mental disorder, including intoxication or withdrawal from another substance.
Neuropsychological Changes

• Decrease in as much as 6-8 points in full scale IQ when started at a young age (Meier 2012; Volkow 2021)
• Deficits in verbal learning and memory (Broyd 2016)
• Deficits in attention (Broyd 2016)
• Deficits in psychomotor function (Broyd 2016)
• Deficits in processing speed (Meier 2012)
Achievement and Cannabis Use

• Associations include (Volkow 2014, Suerken 2016)
  • Poorer Grades
  • Increased risk of drop out
  • Decreased college degrees (Maggs 2015)
• Adult outcomes of chronic marijuana use (Brook 2013)
  • Decreased employment (OR 0.37)
  • Increased incapacitation at work (OR 27.94)
  • Decreased financial independence (OR 0.35)
  • Increased financial problems (OR 1.88)
  • Increased co-workers/Peer Use (OR 2.25/6.94)
Cannabis and Psychosis (Volkow 2016)

• THC “can cause acute, transient, dose-dependent psychosis”
• Cannabis may trigger Schizophrenia in at risk populations
  • Ever use of cannabis may increase risk by 2-fold
  • Frequent use or high THC may increase the risk by 6-fold
Cannabis Hyperemesis Syndrome

• Cannabis has a biphasic mechanism
  • Anti-emetic with less frequent and lower potency
  • Pro-emetic and higher potency and more frequent
• ED presentations increased 5.5-fold between 2006-2013 from cannabis associated vomiting

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Rome IV criteria for cannabinoid hyperemesis syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stereotypical episodic vomiting resembling (CVS) in terms of onset, duration, and frequency</td>
</tr>
<tr>
<td></td>
<td>Presentation after prolonged, excessive cannabis use</td>
</tr>
<tr>
<td></td>
<td>Relief of vomiting episodes by sustained cessation of cannabis use</td>
</tr>
<tr>
<td></td>
<td>Supportive remarks: May be associated with pathologic bathing behavior (prolonged hot baths or showers).</td>
</tr>
</tbody>
</table>

Note: Criteria fulfilled for the last 3 months, symptom onset at least 6 months before diagnosis.

(Venkatesan 2019)
Screening and Treatment Options for Cannabis Use
Note:
Within the five broad levels of care (0.5, 1, 2, 3, 4), decimal numbers are used to further express gradations of intensity of services. The decimals listed here represent benchmarks along a continuum, meaning patients can move up or down in terms of intensity without necessarily being placed in a new benchmark level of care.

https://www.asamcontinuum.org/knowledgebase/what-are-the-asam-levels-of-care/
Treatment Resources

- SAMHSA
- TIP 31, 32, 35, 39
- Advisory
- NIDA – screening resources
- S2BI
- BSTAD
- CRAFFT
Screening to Brief Intervention (S2BI)

Developed at Boston Children’s Hospital with support from the National Institute on Drug Abuse.

The following questions will ask about your use, if any, of alcohol, tobacco, and other drugs. Please answer every question by checking the box next to your choice.

**IN THE PAST YEAR, HOW MANY TIMES HAVE YOU USED:**

**Tobacco?**
- Never
- Once or twice
- Monthly
- Weekly or more

**Alcohol?**
- Never
- Once or twice
- Monthly
- Weekly or more

**Marijuana?**
- Never
- Once or twice
- Monthly
- Weekly or more

STOP if answers to all previous questions are “never.” Otherwise, continue with questions on the right.

**Prescription drugs that were not prescribed for you (such as pain medication or Adderall)?**
- Never
- Once or twice
- Monthly
- Weekly or more

**Illegal drugs (such as cocaine or Ecstasy)?**
- Never
- Once or twice
- Monthly
- Weekly or more

**Inhalants (such as nitrous oxide)?**
- Never
- Once or twice
- Monthly
- Weekly or more

**Herbs or synthetic drugs (such as salvia, “K2”, or bath salts)?**
- Never
- Once or twice
- Monthly
- Weekly or more
BSTAD

Brief Screener for Tobacco, Alcohol, and other Drugs

In the PAST YEAR, on how many days did you smoke cigarettes or use other tobacco products?

0 days

Click and drag on the bar above to select the number of days or type the number of days in the field above.

7% complete

https://www.drugabuse.gov/ast/bstad/##
CRAFFT

<table>
<thead>
<tr>
<th>Part A: During the PAST 12 MONTHS, did you:</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drink any alcohol (more than a few sips)? (Do not count sips of alcohol taken during family or religious events.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Smoke any marijuana or hashish?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Use anything else to get high? (“anything else” includes illegal drugs, over the counter and prescription drugs, and things that you sniff or “huff”)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part B: CRAFFT</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you ever ridden in a CAR driven by someone (including yourself) who was “high” or had been using alcohol or drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Do you ever use alcohol or drugs to RELAX, feel better about yourself, or fit in?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Do you ever use alcohol or drugs while you are by yourself, or ALONE?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Do you ever FORGET things you did while using alcohol or drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Do your FAMILY or FRIENDS ever tell you that you should cut down on your drinking or drug use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Have you ever gotten into TROUBLE while you were using alcohol or drugs?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SBIRT and Motivational Interviewing/Enhancement

• SBIRT
  • SBIRT Tool Kit  - Link to PDF
  • SBIRT Overview
  • Additional SBIRT Tools

• Motivational Interviewing
  • SAMHSA Store TIP 35
  • Project ECHO Motivational Interviewing
  • Podcast – Talking to Change
# Other Psychotherapies

## Behavioral Approaches to Therapy

<table>
<thead>
<tr>
<th>Therapy Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Behavioral Therapy</td>
<td>Teaches participants to anticipate problems and develop effective coping strategies; explore the positive and negative consequences of substance use; learn to monitor thoughts and feelings to recognize distorted thinking that triggers substance use.</td>
</tr>
<tr>
<td>Adolescent Community Reinforcement Approach</td>
<td>Replaces influences that led to substance use with influences that reinforce abstinence and healthier family, social, educational, and vocational relationships; assesses needs and addresses problem-solving, coping, and communication skills.</td>
</tr>
<tr>
<td>Contingency Management (CM)</td>
<td>Participants receive low-cost incentives (e.g., prizes, cash vouchers) in exchange for participating in treatment, achieving treatment goals, and avoiding substance use. By using positive reinforcement to avoid alcohol and drugs, CM helps retain adolescents in treatment, improve medication compliance, and promote achievement of other treatment goals, such as educational attainment.</td>
</tr>
<tr>
<td>Motivational Enhancement Therapy</td>
<td>Reduces ambivalence about engaging in treatment or stopping substance use. Using motivational interviewing, the therapist works with the adolescent to motivate their desire to stop using alcohol and drugs and build a plan for change.</td>
</tr>
</tbody>
</table>
## Other Psychotherapies

<table>
<thead>
<tr>
<th>Types of Family Therapy and Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Therapy Name</strong></td>
</tr>
<tr>
<td><strong>Brief Strategic Family Therapy</strong></td>
</tr>
<tr>
<td><strong>Family Behavior Therapy</strong></td>
</tr>
<tr>
<td><strong>Functional Family Therapy</strong></td>
</tr>
<tr>
<td><strong>Multidimensional Family Therapy</strong></td>
</tr>
<tr>
<td><strong>Multisystemic Therapy®</strong></td>
</tr>
</tbody>
</table>
Contingency Management

- Contingency Management
  - Consider working with families to develop contingencies (low-cost incentives) for treatment adherence, participation, and reduction in substance use
- Participation
- Negative Urine Tests
- Decreasing Quantitative THC in Urine
- Incorporate Harm Reduction
Pharmacotherapy

• N-acetylcysteine – double blind randomized placebo control trial (Gray 2012)
  • N=116, Ages 15-21
  • Contingency Management and Brief Counseling
  • Placebo or NAC 1200mg BID

Figure 1.
Proportion of negative urine cannabinoid tests (intent-to-treat analysis including all randomized participants, with urine cannabinoid tests assumed to be positive for all missed visits; n=116); adjusted for years of cannabis use, baseline urine cannabinoid test results, and major depressive disorder. OR=2.4 (95% CI: 1.1-5.2), \( \chi^2=4.72, p=0.029 \)
NAC=N-Acetylcysteine, BL=Baseline Visit, FU=Post-Treatment Follow-Up Visit
Pharmacotherapy

• Other Promising Medications (Volkow 2019)
  • CB1R agonists, gabapentin, N-acetylcysteine, FAAH inhibitors
## Treatment of Cannabis Hyperemesis Syndrome

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Mechanism and advantages</th>
<th>Adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzodiazepines [67,68]</td>
<td>Useful for their anti-anxiety, anti-emetic and inhibition of vestibular system</td>
<td>Sedation, altered consciousness</td>
</tr>
<tr>
<td>TCA [69]</td>
<td>Used prophylactically. Mixed results noted.</td>
<td>Arrhythmias</td>
</tr>
<tr>
<td>Anti-dopaminergic: Haloperidol [53,70] Droperidol [59]</td>
<td>Haloperidol is a broad spectrum antiemetic. May interfere with CB1 signaling [54]. Blockage of dopamine at the chemoreceptor trigger zone.</td>
<td>Arrhythmias, central nervous system side effects</td>
</tr>
<tr>
<td>Dopaminergic agents: Promethazine and prochlorperazine [71]</td>
<td>Effect CTZ area in the brain stem. Variable success noted</td>
<td>Dysrhythmias (QT prolongation), oversedation</td>
</tr>
<tr>
<td>Serotonergic antagonists: Ondansetron [54]</td>
<td>First-line agents used for emesis. Variable response noted [54,72]</td>
<td>Arrhythmias, extrapyramidal effects, hypotension, and sedation related effects</td>
</tr>
<tr>
<td>Corticosteroids [73]</td>
<td>Rarely used with limited response [55,74]</td>
<td>Hyperglycemia and psychosis</td>
</tr>
<tr>
<td>Capsaicin [74,75]</td>
<td>Bind to TRPV1 receptors in proximity to CB1 [62]</td>
<td>Minimal. Skin irritation</td>
</tr>
<tr>
<td>Volume repletion</td>
<td>Prevents dehydration related symptoms</td>
<td>Minimal</td>
</tr>
<tr>
<td>Cannabis cessation [64]</td>
<td>Required for long-term management</td>
<td>Patient compliance</td>
</tr>
</tbody>
</table>

*TRPV1, transient receptor potential cation channel subfamily V member 1; TCA, tricyclic antidepressant; CB, cannabinoid; CTZ, chemoreceptor trigger zone*
Questions
• RECORDING TO BE STOPPED FOR CASE PRESENTATION
Cases/HIPAA

- Names
- Address
- DOB
- Phone/Fax #
- Email address
- Social Security #
- Medical Record #

The discussion and materials included in this conference are confidential and privileged pursuant to 26VSA Section 1441-1443. This material is intended for use in improving patient care. It is privileged and strictly confidential and is to be used only for the evaluation and improvement of patient care.
Case
Questions and Concerns/Discussion
Conclusion

• Volunteers to present cases (this is key to the Project ECHO model)
  • Please submit cases to Michael.Hoffnung@uvmhealth.org

• Please complete evaluation survey after each session

• Claim your CME at www.highmarksce.com/uvmmmed

• Please contact us with any questions, concerns, or suggestions
  • Michael.Hoffnung@uvmhealth.org
  • Elizabeth.Cote@uvm.edu
  • ahec@uvm.edu
Important Epidemiologic Studies in Addiction

• Epidemiologic Catchment Area Study (ECA)

• National Comorbidity Survey (NCS)

• NCS-Replication

• National Epidemiologic Survey of Alcohol and Related Conditions (NESARC) I, II, and III

• National Survey of Drug Use and Health (NSDUH)

• Monitoring the Future (MTF)

• National Health and Nutrition Examination Survey (NHANES)
## Comparing the Surveys

<table>
<thead>
<tr>
<th>Survey</th>
<th>When</th>
<th>Where</th>
<th>Who</th>
<th>Funding</th>
<th>Study Type</th>
<th>Frequency</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSDUH</td>
<td>1971 - Present</td>
<td>All 50 states</td>
<td>12+</td>
<td>SAMHSA</td>
<td>Cross-Sectional</td>
<td>Yearly</td>
<td>60-70,000 annually</td>
</tr>
<tr>
<td>MTF</td>
<td>1975 - Present</td>
<td>400+ Different Schools</td>
<td>8th, 10th and 12th graders</td>
<td>NIDA</td>
<td>Cross-Sectional</td>
<td>Yearly</td>
<td>40-50,000 annually</td>
</tr>
<tr>
<td>VT-YRBS</td>
<td>1990 - Present</td>
<td>Vermont* 47 states</td>
<td>6th-8th 9th-12th</td>
<td>CDC</td>
<td>Cross-Sectional</td>
<td>Odd number years</td>
<td>35,000</td>
</tr>
</tbody>
</table>
Past Month Cigarette Use among People Aged 12 or Older: 2002-2019

+ Difference between this estimate and the 2019 estimate is statistically significant at the .05 level.
30-Day Prevalence of Cigarette Use
Daily Cigarette Use
30-Day Vaping Nicotine
Primary Reason for Using Electronic Vapor Products (Among Current Users)

- Some other reason: 51%
- Family/friends use them: 17%
- Available in many flavors: 10%
- Less harmful: 10%
- Trying to quit using other tobacco products: 8%
- Easier to get: 2%
- Cost less: 1%
Used Cigarettes, Cigars, Smokeless Tobacco, or Electronic Vapor Products, Past 30 Days

Used an EVP, Past 30 Days

- HV2020 Goal (12%)
Cannabis in the brain

What are the risks of Cannabis use?

- [https://www.samhsa.gov/marijuana-quiz](https://www.samhsa.gov/marijuana-quiz)
MARIJUANA
THE RISKS ARE REAL

Using marijuana carries real risks for your health and quality of life. Some might be surprising to you. So know the risks — learn before you burn, eat, or use.

Today’s marijuana is stronger.
Today’s marijuana has more than 3 times the concentration of THC than marijuana from 25 years ago. More THC — the mind-altering chemical in marijuana — may lead to an increase in dependency and addiction.

Impairs your memory.
Using marijuana can affect your memory, learning, concentration, and attention. Other effects include difficulty with thinking and problem solving.

Risk of addiction.
About 1 in 10 people who use marijuana may become addicted to marijuana and 1 in 6 when use begins before age 18.

Affects your performance.
Using marijuana can lead to worse educational outcomes. Compared with teens who don’t use, students who use marijuana are more likely not to finish high school or get a college degree.

Can harm your baby.
Using marijuana when you’re pregnant can affect your baby’s development. It’s linked to lower birth weight, preterm birth and stillbirth, increased risk of brain and behavioral problems.

Lowers brain power.
Marijuana affects your brain development. Use by adolescents has been linked to a decline in IQ scores — up to 8 points! Those are points you don’t get back, even if you stop using.

Driving danger.
People who drive under the influence of marijuana can experience dangerous effects: slower reactions, lane weaving, decreased coordination, and difficulty reacting to signals and sounds on the road.