Virtual Forum
Youth Substance Use and Addiction
Timely Updates on a Critical Issue
May 3, 2023 | 1pm - 2pm ET

Welcome and Introduction

Jose Vito, MD
NYU Grossman School of Medicine
New York State Office of Mental Health

This forum is brought to you by a collaboration between the American Academy of Child and Adolescent Psychiatry and the American Academy of Addiction Psychiatry.
Disclosures

Reports no financial relationships with ineligible companies.
Virtual Forum Logistics

Zoom Webinar:
- All participants will be in listen-only mode for the duration of this forum
- Questions can be asked using the Q&A function
- Please use the chat function for technical help questions
- Due to time limitations, not all questions may be answered but we will try to answer as many as is feasible
- Slides will be posted, along with webinar recording, to www.aacap.org/virtual_forum by Friday, May 5
Program and Speakers

- Dr. Jose Vito: Introduction (5 min)
- Dr. Kevin M. Gray: Understanding and Addressing Adolescent Cannabis Use (15 min)
- Dr. David Atkinson: Teen Substance Use and Suicide: An Exploration of the Relationship (15 min)
- Dr. Kevin M. Simon: Adolescent Substance Use and (in)Justice System Involvement (15 min)
- Dr. Amy Yule: Q&A (10 min)
Understanding and Addressing Adolescent Cannabis Use

Kevin M. Gray, MD
Professor of Psychiatry and Behavioral Sciences
Medical University of South Carolina

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MUSC
Medical University of South Carolina

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Adolescence: Old and New

- What’s old? → a well-characterized developmental transition from childhood to adulthood with complex biological, psychological, and social dynamics

- What’s new? → youth are navigating adolescent development amid novel surroundings

- “They are always different; they are always the same.” –John Peel, BBC Radio 1
Adolescence: Brain Development Considerations

- Striatal development is curvilinear and prefrontal development is linear
- Amid a developmental window in which motivational reactivity outpaces cognitive control, adolescents may be particularly prone to making high-risk choices, valuing immediate reward over long-term considerations; this sets the stage for substance initiation and escalation

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Image: Development of brain regions during adolescence, with emphasis on striatum and prefrontal cortex (PFC). Copyright: Casey & Jones, 2010
Cannabis: Old and New

- What’s old? → cannabis has been used by humans for centuries
- What’s new? → rapid changes in cannabis and cannabinoid products; aggressive commercialization and marketing in much of the U.S.
Cannabis contains over 100 distinct cannabinoids and over 500 distinct chemical constituents.

Most well known are delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD).

Novel formulations of cannabis and cannabinoid products contain varying concentrations of THC, CBD, and/or other natural and synthetic cannabinoids (e.g., delta-8-THC, THC-O acetate).

Most common routes of administration include inhalation (smoking or vaping) and oral ingestion (edibles).

- Each carries its own set of risks, attributes, and other considerations.
Cannabis: Increased THC Potency Over the Past 15 Years

Percentage of THC and CBD in Cannabis Samples Seized by the DEA, 1995-2021

Source: U Miss, Potency Monitoring Project
Cannabis: Potency ↔ Treatment Admissions

Sources: NSDUH, TEDS, National Seizure System
Past Month Substance Use, Monitoring the Future Survey

- Alcohol
- Been Drunk
- Cannabis
- Any Vaping
- Vaping Cannabis
- Vaping Nicotine
- Cigarettes
- ADHD Medications
- OxyContin
- Hallucinogens
- Cocaine
- Ecstasy
- Inhalants
- Heroin
Should We Be Worried About Adolescent Cannabis Use?

- Many people have occasional, benign, and pleasant experiences with recreational cannabis use.
- There is evidence of therapeutic roles of some cannabinoids.
- However, there may be times when benefits are outweighed by risks and/or alternatives.
- The balance between risk and benefit may depend on several factors:
  - Human level: age, genetic, and environmental factors.
  - Cannabis level: strain, constituency, route of administration.
Why Do Adolescents Use Cannabis?

- Enjoyment of intoxication/“high”
- Social factors – valuing peer acceptance and facilitation of social encounters
- Using to cope – youth experiencing depressed mood, anxiety, and other psychiatric symptoms may see cannabis as a viable method to reduce these symptoms, at least acutely
  - Using to cope and using alone predict a more complicated course of cannabis involvement (Chassagne, 2022; Okey et al., 2022)
  - This is particularly important to consider amid an adolescent mental health crisis
  - While adolescents may perceive symptom relief with acute use, the bulk of evidence indicates that cannabis use in adolescence worsens the course of psychiatric illnesses (Gobbi et al., 2019)
What Do We Know About Cannabis-Associated Risks?

- Acute/intoxication
  - Driving performance and decision-making

- Chronic/repeated use
  - Cannabis use disorder (CUD)
    - More prevalent than previously thought: 1/5 lifetime users, of whom 23% are symptomatically severe, of whom 48% are not functioning in any role (e.g., work, school)
    - Treatment outcomes are limited – room for improvement!

- Use during pregnancy – effects on neonate/child

- Use during childhood/adolescence
  - 2× the rate of developing CUD compared to adult-onset use
  - Effects on cognition, emotion, and development

(for review, Hasin 2018)
Other Reasons for Concern?

- In a dose-dependent manner, adolescent cannabis use is associated with adverse academic (Pope et al., 2003; Fergusson et al., 2015), occupational (Fergusson et al., 2015), cognitive (Jager & Ramsey, 2008; Meier et al., 2012; Randolph et al., 2013; Camchong et al., 2016), psychiatric (Fergusson et al., 2002; Patton et al., 2002; Moore et al., 2007; Gobbi et al., 2019), and substance use (Patton et al., 2007) outcomes (for review, Volkow et al., 2014, 2016; Levine et al., 2017)

- Cannabis use in adolescence is associated with increased incidence and worsened course of psychotic, mood, and anxiety disorders, and increased suicidality (Hayatbakhsh et al., 2007; Moore et al., 2007; Gage et al., 2016; Gobbi et al., 2019)
What Should We Do?

- Adolescents are navigating a complex developmental stage in a dynamic world
  - Rapidly changing cannabis and cannabinoid marketplace
  - Increased prevalence of youth mental health problems and related coping motives
- As clinical providers, we have an important role to play in providing up-to-date objective information on topics important to adolescent health
  - Our role is to inform their decisions, rather than attempting to make decisions for them
- Our messaging should ideally be tailored to the patient’s individual presentation and context
  - This is critical across prevention, assessment, and intervention approaches
What Works for Treating Adolescent CUD?

- Psychosocial approaches supported by evidence
  - Motivational Interviewing (Walker et al., 2011)
  - Cognitive-behavioral therapy (Hendriks et al., 2011)
  - Family therapy (Rigter et al., 2012)

- While these treatments are effective for cannabis reduction, long-term abstinence outcomes are generally limited (Compton & Pringle, 2004; Dennis et al., 2004; Waldron & Turner, 2008; Hogue et al., 2014)

- Contingency management enhances abstinence outcomes (Stanger et al., 2009; Stanger et al., 2015)

- There are no FDA-approved pharmacotherapies
  - N-acetylcysteine (NAC), added to contingency management, appears efficacious in adolescents but not in adults (Gray et al., 2012, 2017)
Summary

- Adolescence is complicated *but navigable*
- Cannabis use is complicated *but understandable*
- As mental health providers, we are uniquely positioned to help mitigate adverse outcomes of adolescent cannabis use and co-occurring mental health problems
- We must consider substance use prevention, assessment, and management as core elements of mental health practice
- Evidence-based strategies are available and may be effectively tailored to the individual patient presentation
Teen Substance Use and Suicide: An Exploration of the Relationship

David Atkinson, MD
UT-Southwestern; Children's Health
Disclosures

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Substance and Suicide

- Long-standing link with substance and suicide in youth, is it cause or effect? Or both?
- Alcohol and drug use (O’Neil and O’Connor 2020) in Northern Ireland – Significant increase in suicide rates despite a calming of the domestic situation. Drug-related?
- Differences coincidental? As use of a drug increases, other drivers of suicide could be increasing along with them. Social changes could lead to increased adversity or decreased coping supports, at the same time as increased drug availability.
What Effects of the Drugs are We Talking about? Acute or Chronic?

- Honyiglo et al. 2018, psilocybin use can lead to suicide during acute intoxication
- Chronic drug use could lead to increasing conflicts with parents, legal/educational systems, social networks
- Chronic drug use could have neurochemical effects on neurotransmitter firing and brain connectivity, could lead individuals to become more prone to depression, mood lability, or impulsive responding
- Or those facing other adversities/rejections could turn to greater drug use as coping or due to decreased opportunity cost of potentially competing prosocial activities
Pathways to Causality?
Bidirectional Associations Are Possible

- Suicide
- Drug Use
- Impulsivity
Adolescent Alcohol Use and Suicide

- Acute intoxication in young adults correlated with suicide (Kaplan 2013)
- 15% of alcohol related deaths among Danish youths were suicides (Holt-Udesen et al. 2023)
- High frequency intoxication at ages 15-16 and high inherent alcohol tolerance were associated with strong HR’s (5.39, 6.20) for suicide at age 33 (Levola et al. 2020)
- Stephenson found that alcohol use may be correlated with suicide risk due to impulsivity (Stephenson et al. 2023)
- aPR 1.87 alcohol risk on suicidal behavior in Nairobi (Mokaya et al. 2022)
Cigarette Smoking and Suicide

- Multinational study found an aOR of 1.21 for suicide attempt with those who smoked cigarettes (Peprah 2023)
  - Truancy partly mediated this effect
- “Smoking appears to contribute to psychopathological disorders, including depression, the use of other psychoactive substances, or psychosocial suffering which are often associated with an increased risk of suicide in young people” (Uderner et al. 2023)
- 2nd hand smoke? Environmental confounders?
- Risk associated with both smoking and 2nd hand smoke (Park and Lee 2021); why not other types of smoke?
Cannabis users 1.5 OR of SI, those who increased cannabis during the pandemic had a 1.9 increased OR (Geda 2022)

Early cannabis use is associated with an aOR of 4.38 for suicide attempt, versus 2.56 for late onset cannabis use, with similar results for suicidal ideation (Ahuja et al. 2022)

Borge et al. 2016 found that there was a higher risk for cannabis use on suicide attempt and ideation, and there was evidence of greater risk from heavy use, but no information on whether acute cannabis use caused greater SI
Cannabis Use In Adolescents and Suicide

- Gobbi 2019: OR 1.5 for ideation and 3.46 for attempts
- “Not knowing where to turn to for support, feeling worthless, endorsing low self-esteem, being bullied, and using cannabis were each associated with greater odds of suicide ideation. Feeling hopeless, social media use, using alcohol and tobacco, and being cyberbullied were not associated with suicide ideation” Rakoff 2022
- Borges et al. showed cannabis use, particularly onset before 15 was associated with ideation and attempt (Borges 2017)
- Greater risk of suicide attempt, planning, ideation, and SA related injury for users, with female e-cig/THC vape co-users more at risk (Jacobs 2022)
Cannabis Use In Adolescents... continued

- Cannabis use and suicidal ideation were positively and reciprocally related over time (Zhu 2022)
- Higher SI in female youth and other gender (Reddy Katapally 2022)
- Past-year CUD, daily cannabis use, and nondaily cannabis use were associated with a higher prevalence of past-year suicidal ideation, plan, and attempt in both sexes (Han et al., 2021)
- “Adolescent cannabis users scored higher on all variables assessed: anomalous perception of reality (Cohen's $d = .60$), rumination ($d = .48$), intolerance of uncertainty ($d = .11$), suicidal attempt (affirmative answer: 25.9% of users vs 7.7% of non-users), hopelessness ($d = .85$), symptoms of depression ($d = .80$), and anxiety ($d = .39$)” (Moreno-Mansilla et al. 2021)
Reasons for the Overlap? Causality?

- Part of the association with any drug use and suicide could be the correlated liabilities: genes that predispose to early substance use also predispose to suicidal ideation (Lynskey et al. 2004) – i.e., Transmissible Liability Index (Tarter, Vanyukov)

- Agrawal 2017 “the monozygotic twin who used cannabis frequently was more likely to report MDD (odds ratio 1.98, 95% CI 1.11-3.53) and suicidal ideation (2.47, 1.19-5.10) compared with their identical twin who had used cannabis less frequently, even after adjustment for covariates.” Early onset cannabis use also increased risk further.

- Orri 2019: multivariate mendelian randomization showed 1.25 OR of cannabis use with suicide attempt, only cannabis showed direct pathway
Biological Reasons for Cannabis and Suicide Overlap

- Impulsivity, as in other substance use problems?
- Possible serotonin decrease when exposed to WIN-55 in rats (Bambico et al. 2007)
- THC is depressogenic when given to adolescent rats – but no effect found with adult exposure--caused anhedonia in adolescent rats (de Gregorio et al., 2020)
- THC withdrawal? Agitation, depression, restlessness, and sleep difficulties are symptoms of withdrawal and conditions that could increase suicide risk
Suicide and Substance - Psychosis

- Cantwell *et al.* 1999 also showed a correlation with high substance and suicidal ideation in those with early-onset psychosis.
- Escelsior showed a link between acute cannabis use and self-harm, synthetic cannabinoids were possibly linked to self-harm due to psychotic effects.
- Cannabis in first-episode psychosis is a risk factor for attempt, ideation, and planning (Fresan 2022).
- Bjorkenstam *et al.* 2014 showed that substance use was associated with greater risk of suicide in first-episode psychosis patients.
Adolescent Substance Use and (in)Justice System Involvement

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Chief Behavioral Health Officer, City of Boston;
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## Disclosures

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Language Matters

- Stigma

- Criminal Justice ≠ Just

- Criminal Justice = Carceral System
Background: Normative Development
Narratives

The Rage of Innocence: How America Criminalizes Black Youth

Ta-Nehisi Coates

Between the World and Me

Pushout: The Criminalization of Black Girls in Schools

Monique W. Morris

How the Word Is Passed: A Reckoning with the History of Slavery Across America

Clint Smith

“This is required reading.” – Toni Morrison

“We need this book.” – Ibram X. Kendi
Carceral-Involved Youth (CIY) Epidemiology

- 30M youth are involved in the carceral system annually.

- Arrest of ppl < 18 reduced by 50+% over the past decade.
  - ~1.8M arrests in ‘09
  - ~696K arrests in ‘19
  - Office of Juvenile Justice and Delinquency Prevention, 2009, 2019

- CIY are more likely (~60%) than other youth to have co-occurring disorders.
Carceral-Involved Youth (CIY) Epidemiology

- Psychiatric disorders are exceedingly common in CIY.
  - 75% met the mood, anxiety, or behavioral disorder criteria.
    (Burkeet et al., 2015)
  - 98% were diagnosed with ≥ one psychiatric disorder.
    (Harzkeet et al., 2012)
  - 61.7% conduct disorder, 17.3% ADHD, 10.1% MDD, 8% PTSD, 2.7% psychotic disorder.
    (Beaudry et al., 2021)
Risk Factors

Best Practices

**MA Youth Screening Instrument (MAYSI-2)**

**Youth Level of Service/Case Management Inventor 2.0**

**Screening & Assessment Tools Examples**

**Youth Assessment & Screening Instrument (YASI)**

**Structured Assessment of Violence Risk in Youth (SAVRY)**
What Works for Treating CIY SUD?

- Psychosocial approaches supported by evidence
  - Motivational Interviewing (Walker et al., 2011)
  - Cognitive-behavioral therapy (Hendriks et al., 2011)
  - Family therapy (Rigter et al., 2012)

- While these treatments are effective for SUD reduction, long-term abstinence outcomes are generally limited (Compton & Pringle, 2004; Dennis et al., 2004; Waldron & Turner, 2008; Hogue et al., 2014)

- The difficulty in providing CIY SUD treatment is that multiple systems within the carceral system are often non-integrated. The greatest risk related to poor outcomes in CIY is the transition back into the community.
Summary

- Substance use and carceral-involvement share overlapping risk factors
- Substance use often predicts worse outcomes for CIY
- Interventions that include family and target family-level risk factors are key
- Service provision across multiple providers and systems is non-ideal
- Evidence-based SUD treatment promotes positive outcomes and reduces recidivism
Kevin M. Simon, MD

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DrKMSimon
DrKMSimon
Q&A

Amy Yule, MD
Boston Medical Center; Boston University School of Medicine
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