Adolescent Addiction: Opportunities for Early Intervention

Jennifer Creedon, MD
Podesta Wellness
Disclosures

- I have nothing to disclose
Objectives:

- Recognize the signs and symptoms of substance use and addiction in adolescent patients.
- Identify effective treatment options for adolescent patients.
- Explore the impact of the opioid epidemic on teenage substance use.
Adolescent Substance Use: Why do We Care?

- 90% of adults with a substance use disorder initiated use prior to age 18
  - 50% initiated use prior to age 15
- Youth who initiate alcohol use prior to age 14 are 7x more likely to develop an alcohol use disorder
- Substance use is associated with the three leading causes of death in adolescents:
  - Accidents (including vehicular)
  - Homicide
  - Suicide
Epidemiology

- National Co-Morbidity Study Replication-Adolescent Supplement
  - Increased prevalence of substance use disorders (SUDS) in adolescents and young adults
    - By age 18, 15.1% of youth met criteria for alcohol use disorder
    - 40.5% of youth used drugs if given the opportunity
      - Of those, 36.6% went on to develop a drug use disorder
2016 National Survey on Drug Use and Health

Alcohol
- Ages 12-17 years: 9.2% current users (2.3 million) 2% with ETOH use disorder
- Ages 18-25 years: 57.1% current users 10.7% with ETOH use disorder

Drug Use
- Any in the past month (marijuana most common):
  - 12-17 yo: 7.9%
  - 18-25 yo: 23.2%
- Prescription Drugs in the past month
  - 12-17 yo: 1.6%
  - 18-25 yo: 4.6%
- Heroin Use in the past month: 0.2% of population 12 and over
  - 12-17 yo: <0.1% (approx 3000 adolescents), 0.1% in past year (approx 13000 youths)
  - 18-25 yo: 0.3% (approx 88,000), 0.7% in past year (approx 227,000)
2016 National Survey on Drug Use and Health

Substance Use Disorders

- Alcohol
  - 12-17 yo: 2%
  - 18-25 yo: 10.7%

- Marijuana
  - 12-17 yo: 2.3%
  - 18-25 yo: 5%

- Opioid Use Disorder
  - 12-17 yo: 0.6%
  - 18-25 yo: 1.1%

- SUD in the past year
  - 12-17 yo: 4.3%
  - 18-25 yo: 15.1%
Niethammer 2007: Adolescent Psychiatric Inpatients

- Co-morbid Substance Use Disorders
  - ETOH: 29% of inpatients
  - Other Substance Use disorders: 26%

- Teens with co-morbid substance use disorders:
  - 6-12x more likely to have a history of physical abuse
  - 18-20x more likely to have a history of sexual abuse

- History of sexual abuse predicted:
  - Earlier onset of substance use disorder
  - Higher frequency of co-morbid MDD, PTSD
  - More frequent substance relapse
Monitoring the Future 2017

DAILY MARIJUANA USE MOSTLY STEADY

2007 – 2017

2017

8th graders 0.8% 10th graders 2.9% 12th graders 5.9%

71.0% OF HIGH SCHOOL SENIORS DO NOT VIEW REGULAR MARIJUANA SMOKING AS BEING VERY HARMFUL, BUT 64.7% SAY THEY DISAPPROVE OF REGULAR MARIJUANA SMOKING.
Monitoring the Future 2017

**Binge Drinking Rates Steady After Decades of Decline**

*Binge drinking is defined as having 5 or more drinks in a row in the last 2 weeks.*

Binge drinking appears to have leveled off this year, but is significantly lower than peak years.
Monitoring the Future 2017

PAST-YEAR MISUSE OF PRESCRIPTION/OVER-THE-COUNTER VS. ILLICIT DRUGS

VICHODIN

PRESCRIPTION/OTC

- Adderal
- Tranquilizers
- Episodes other than Heroin
- Drowsy/Cold Medicine
- Sedatives
- Naltrexone

ILICIT DRUGS

- Marijuana/Oilshion
- Synthetic Cannabinoids
- LSD
- Cocaine
- MDMA (Ecstasy/MDMA)
- Inhalants
- Heroin

Past-year use among 12th graders

STUDENTS REPORT LOWEST RATES SINCE START OF THE SURVEY

Across all grades, past-year use of heroin, methamphetamine, cigarettes, and synthetic cannabinoids are at their lowest by many measures.
Neurobiology of Adolescent Substance Use
Adolescence is a time of major brain reorganization and development

- Second surge of neuronal growth just before puberty
- During puberty, high rates of synaptic pruning
- Increased myelination
  - Increased speed of impulse conduction
  - Augments information processing

Period of increased plasticity

- Opportunity to develop talents and skills
- Increased vulnerability to toxins, stress, trauma
IS THAT NORMAL TEENAGE BEHAVIOR?

I'M NOT SURE 'NORMAL TEENAGE BEHAVIOR' IS EVEN A THING.
The Adolescent Brain: All Gas and No Brakes
The Adolescent Brain

- Limbic system (emotions, reward) develops before pre-frontal cortex (cognitive control, inhibition), resulting in “typical” teenage behavior
  - difficulty holding back or controlling emotions
  - a preference for physical activity
  - a preference for high excitement and low effort activities (video games, sex, drugs,)
  - poor planning and judgement (rarely thinking of negative consequences)
  - more risky, impulsive behaviors, including experimenting with drugs and alcohol
- Decreased baseline dopamine in striatal structure (nucleus acumbens, amygdala)
  - High risk behaviors may compensate for DA void
The Adolescent Brain

- Functional brain imaging has identified neurocognitive risk factors for initiation of substance use
  - Poorer performance on inhibition (PFC), working memory tasks
  - Small brain volumes in reward and cognitive control regions
  - Less brain activation during executive function tasks
  - Heightened reward responsivity
Risk Factors for Adolescent Substance Use Disorders

- Use before age 14
- Family history of SUD
- Comorbid Psych Illness
  - ADHD, depression, anxiety, ODD/CD
- Exposure to peer and parental use
- Poor academic performance
- Antisocial peer group
- Poor family management
- Physical and Sexual abuse
Protective Factors

- Positive family relationships
- Religiosity
- Mutually affectionate parent-adolescent relationship
- Parental monitoring
- Positive attachment to school and community
- Strong academic performance
- Pro-social peer group
Signs and Symptoms of Adolescent Substance Use

- Change in behavior
- Change in peer group
- Withdrawal from activities
- Decreased motivation
- Increased aggression
- Stealing
- Decreased academic performance
- Isolation
- School delinquency
- Changes in energy

- Bloodshot eyes
- Dilated or pinpoint pupils
- Weight changes
- Changes in hygiene
- Poor oral hygiene
- Impaired coordination
- Track marks
  - Wearing long sleeves
- Smell of alcohol/marijuana
Psychological Warning Signs
(AKA Why is this kid in my office?)

- Depression
- Irritability
- Decreased motivation
- Decline in school performance
- Anxiety
- Isolation
- Sleep changes
- Oppositional behavior
- Trouble concentration
- Suicidal ideation/behavior
Screening Tools

- NIDA: 2 Online Tools (https://www.drugabuse.gov/ast/bstad/#/)
  - Brief Screening for Tobacco, Alcohol and Drugs (BSTAD)
  - Screening to Brief Intervention (S2BI)
    - Patients 12-17 years old
    - Take less than 2 minutes
    - Provide risk stratification and recommendations for next steps

- CRAFFT Screening Questionaire
  - 6 item questionnaire
    - Have you ever ridden in a CAR driven by someone who was using substances?
    - Do you ever use drugs or alcohol to RELAX, feel better, or fit in?
    - Do you ever use drugs or alcohol ALONE?
    - Do you ever FORGET or regret things you did while using drugs or alcohol?
    - Do your FAMILY or FRIENDS ever tell you you should cut down on drinking/drug use?
    - Have you ever gotten in TROUBLE while using alcohol or drugs?
  - Score of 2 or more sensitive and specific for problem use, abuse, and dependence
## Comprehensive Assessment Tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Format</th>
<th>Time to Administer</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAIN (Global Appraisal of Individual Needs)</td>
<td>Semi-Structured Interview</td>
<td>75-100 minutes</td>
<td>Fee for Use</td>
</tr>
<tr>
<td>T-ASI (Teen Addiction Severity Index)</td>
<td>Semi-Structured Interview</td>
<td>25-45 minutes</td>
<td>Free</td>
</tr>
<tr>
<td>PEI (Personal Experience Inventory)</td>
<td>Self-Reports</td>
<td>45-60 minutes</td>
<td>Fee for Use</td>
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</tbody>
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Treatment

- Up through 1980’s, adolescents typically treated in adult programs
- Unique needs:
  - Higher rates of binge use
  - Lower problem recognition
  - Higher rates of psychiatric co-morbidity
  - Higher susceptibility to peer influence
  - More focused on immediate concerns
Levels of Care

1. Early intervention services, which commonly consist of educational or brief intervention services.

2. Outpatient treatment, in which adolescents typically attend treatment for 6 h/wk or less for a period dependent on progress and the treatment plan.

3. Intensive outpatient, in which adolescents attend treatment during the day (up to 20 h/wk) but live at home (ranging in length from 2 months–1 year).

4. Residential/inpatient treatment includes programs that provide treatment services in a residential setting (lasting from 1 month–1 year).

5. Medically managed intensive inpatient, which is most appropriate for adolescents whose substance use, biomedical, and emotional problems are so severe that they require 24-hour primary medical care for a length dependent on the adolescent’s progress.
Treatment Modalities

- Motivational Enhancement
- Contingency Management
- Cognitive Behavior Therapy
- Family Behavioral Therapy
- Mutual Help Groups
- Pharmacotherapy
Behavioral Approaches

- Help adolescents actively participate in their recovery
- Enhance ability to resist substance use
- Group and/or individual therapy
Behavioral Approaches

- **Cognitive Behavioral Therapy (CBT)**
  - Thoughts cause feelings and behaviors
  - Learn to monitor thoughts and feelings, recognize distorted thinking patterns
  - Identify high-risk situations, practice utilizing self-control skills
    - Unlearn detrimental responses, learn new ones
  - Homework is a key component

- **Motivational Enhancement Therapy**
  - Resolve ambivalence about treatment, abstinence from substance use
  - Non-confrontational feedback from therapist
  - Focuses on eliciting self-motivation for change from adolescent
  - Increases self-efficacy
Behavioral Approaches

- **Contingency Management**
  - Based on positive reinforcement/negative punishment
  - Immediate and tangible rewards for positive behaviors
    - Low-cost incentives (cash, vouchers, etc) for engagement in treatment, appropriate UDS, other positive changes
  - Weaken influence of reinforcement from substances, replace with more constructive alternatives

- **Twelve Step Facilitation Therapy**
  - Brief, structured approach to facilitate early recovery
  - Increase likelihood that adolescent will engage in 12-Step Recovery program (AA, NA, etc)
    - Accept need for abstinence, focusing on unmanageability
    - Surrender/willingness to engage in 12 Step program
Family-Based Approaches

- Highlight need to engage family
  - Parents, caretakers, siblings, peers
  - Particularly important for adolescents: often still under care of at least one parent/guardian
- Address wide array of problems
  - Family communication and conflict
  - Co-occurring disorders
  - School/work problems
  - Peer networks
- Some studies suggest superior to other individual and group treatment approaches
Family-Based Approaches

- **Brief Strategic Family Therapy (BSFT)**
  - Based on family systems approach
    - One family member’s problems stem from unhealthy family interactions
  - 12-16 sessions with counselor
  - Counselor establishes relationship with each family member, assists in changing negative interaction patterns

- **Family Behavioral Therapy (FBT)**
  - Combines behavioral contracting with contingency management
  - Involves adolescent and at least one parent/guardian
  - Choose from a menu of intervention options
  - Focused on goal-setting, minimizing risky behaviors
    - Goals reviewed at each session
    - Rewards for meeting goals
Family-Based Approaches

- **Functional Family Therapy (FFT)**
  - Combines family systems view with behavioral interventions
    - Unhealthy family interactions underlie problematic behaviors
    - Improve communication, conflict resolution, problem-solving, parenting skills
  - Utilizes motivational enhancement, contingency management, behavior contracts

- **Multi-dimensional Family Therapy (MDFT)**
  - Comprehensive family and community based treatment for teens with substance abuse and/or other high risk behaviors
  - Collaboration with schools, juvenile justice programs, family court
  - Shown to be effective even in severe SUD, helps facilitate reintegration from juvenile justice system
Family-Based Approaches

- **Multi-Systemic Therapy (MST)**
  - Comprehensive and intensive family and community based treatment
    - Effective for adolescents with severe substance use disorder, conduct disorder, violent/antisocial behavior
  - Adolescent’s substance use viewed in relation to characteristics of the system
    - Adolescent: Favorable attitudes toward substance use, low academic aspirations
    - Family: Poor discipline, conflict, parental drug use
    - Peers: Positive attitude toward drug use
    - School: High dropout rates, low performance, chaotic environment
    - Neighborhood: High crime rates, drug availability, violence
  - Therapist works with family together, as well as parents, adolescent alone
Outcomes

- Limited studies on outcomes of psychosocial treatments
  - Lipsey et al meta-analysis
    - Focused on 12 Step, contingency management, CBT, MET, family based therapy, mixed therapy
    - All showed positive effects compared to controls
    - Best outcomes for family therapy, CBT, MET/CBT
    - Small samples sizes, limited control for confounds
  - Relapse is common
    - Most treatment is abstinence-based
    - Of adolescents who receive treatment 1/3-1/2 will use substances again at least once within 1 year of treatment
    - Factors impacting relapse risk
      - Decrease risk: Good rapport with therapist, aftercare involvement
      - Increased risk: Poor coping skills, psychiatric co-morbidity, lack of family involvement, ongoing involvement with drug-using peers
Treatment

Core Elements associated with effective drug treatment for adolescents

- Screening and comprehensive assessment to ensure understanding of the full range of issues the youth and family are experiencing.
- Comprehensive services to address the adolescent’s substance abuse problem as well as any medical, mental health, familial, or education problems.
- Family involvement. Parents’ involvement in their adolescent’s treatment and recovery increases the likelihood of a successful treatment experience.
- Developmentally appropriate services and therapies offered address the different needs and capabilities of adolescents.
- Strategies to engage and keep adolescents in treatment to help adolescents recognize the value of getting help for their problems.
- Qualified staff: staff should have knowledge of and experience working with adolescents/young adults with substance abuse problems and their families.
- Cultural and gender differences: programs should consider and address cultural and gender differences within their population.
- Aftercare support: effective programs plan for care after the formal treatment program is completed to ensure support and successful recovery.
- Data gathering to measure outcomes and success of the program.

Few programs meet all of these criteria
Treatment: Multidimensional is Key!
Medications

- Limited evidence for efficacy, safety for most medications used in adult MAT for patients under 18
- Only one medication (buprenorphine-naloxone) has approval for patients 16 and over
- In select cases, some patients between the ages of 16-18 may qualify for methadone treatment
  - Two documented failed treatments of opioid detox and/or MAT-free interventions
  - Parent/guardian consent for treatment
- Naltrexone (opioid receptor antagonist) had promising results in RTC of opioid dependent adolescents in 2010
  - Does not have an FDA indication for use in patients under 18
  - Is used off-label in pediatric population for compulsive behaviors (autism, OCD)
Adolescents and the Opioid Crisis

- In 2015, 276,000 adolescents (ages 12-17) were current nonmedical users of pain reliever, with 122,000 having an addiction to prescription pain relievers.
- In 2015, an estimated 21,000 adolescents had used heroin in the past year, and an estimated 5,000 were current heroin users. Additionally, an estimated 6,000 adolescents had a heroin use disorder in 2014.
- The prescribing rates for prescription opioids among adolescents and young adults nearly doubled from 1994 to 2009.
- Increase in adolescent ED visits related to opioids
  - Based on Nationwide Emergency Data Sample of 945 hospitals
    - 88 adolescents (age 21 and under) a day in 2008
    - 136 adolescents/day in 2013
Adolescents and the Opioid Crisis

- It is estimated that only 1 in 12 adolescents who needs treatment for opioid use disorder receives it.
- Only 2.6% of adolescents in treatment for heroin, and 0.4% in treatment for prescription opioid use d/o receive MAT, compared to 26.3% and 12% of adults respectively.
- The American Academy of Pediatrics has recommended that pediatricians consider medication-assisted therapy for adolescents with severe opioid use disorders.

Barriers to treatment
- Access/cost
- Pediatric providers (including psychiatrists) uncomfortable with treating addiction
- Only 300-400 pediatricians have buprenorphine waivers
- Stigma
Adolescents and the Opioid Crisis

- Novel Program: Wareham Pediatrics in Massachusetts
  - Pediatric clinic pilot program started March 2017 to provide addiction treatment to adolescents in primary care setting
  - Pediatricians have buprenorphine waiver
    - Weekly suboxone prescriptions for appropriate patients
  - Drug counselor integrated into clinic
    - Screening
    - Counseling
    - UDS protocols
  - Phone consultation available with Children’s Hospital addiction specialists
  - Early results promising, with good patient retention and engagement
Take Home Points

- Adolescent substance use is common and under-treated
  - Alcohol and marijuana use most frequent, but opioid use a growing concern
- Early onset substance use increased risk of substance use disorders
- Aspects of teenage brain development contribute to increased frequency of substance use and other risky behaviors
- Adolescents with substance use disorders have unique treatment needs
- Routine primary care visits, as well as mental health visits, are opportunities to screen for substance use concerns
- Behavioral interventions are the core of therapy, but medications should be considered as appropriate
  - Treat co-morbid psychiatric illness!
  - MAT may be indicated for older teens with opioid use disorder
Case 1:

17 yo CM with hx of ADHD per history, referred by therapist due to dad’s concerns regarding alcohol, tobacco use, and “lying”.

- HPI: Dad has noticed alcohol bottles at home have been going down in volume the past few months. Pt admits drinking 4-5 swigs of liquor with friends every few weeks. Sometimes will drink at home alone. Has tried marijuana 3x but dad found out and started urine testing at home so pt stopped. Smokes a few cigarettes a week, which dad also disapproves of. Has also been sleeping late, missing 1st period class (math) which has affected grade. As punishment for oversleeping, dad has taken away patient’s bed.
- Pt is rising senior at Catholic all-boys schools. On honor roll. Musician, plays in 2 bands, is in ROTC. Lots of friends, no behavioral issues.
- Parents are divorced. Pt lived with mom, who has limited boundaries, substance use issues, up until 8th grade, when he moved in with dad and step-mom in order to attend current HS. Difficult transition due mainly to differences in expectations at dad’s house.
- Dad fears that pt is depressed, pt denies depression, though feels somewhat defeated at home.
Cases

- **Risk factors:**
  - Family history of SUD and psychiatric illness
  - Co-morbid psychiatric dx
  - Exposure to family use

- **Protective factors:**
  - Positive community and school attachments
  - Good academic performance

- **Substance use disorder vs normative teenage behavior?**
  - CRAFFT: 2
  - Family dynamics issues

- **Current Treatment plan:**
  - Sleep hygiene
  - Expectation management with Dad, family therapy
  - MI around substance use
Case 2:

16 yo CF with hx of depression, referred by therapist for depression

HPI: Recently hospitalized for depression with SI. Started on fluoxetine. Admits irritability, mood swings, interpersonal distress, low frustration tolerance, cutting. Started drinking ETOH in early HS, drinks at parties, usually gets drunk and sometimes blacks out. Reports alcohol makes her feel “happy.”

Over course of time, has multiple episodes of self harm (cutting, OD on prozac) as well as sexually acting out while under the influence of alcohol.

When drinks, usually drinks more than her friends. Friends have expressed concern. Mom is concerned about potential for harm when she goes to college next year.

Family hx: Paternal uncle with opioid use d/o, dad with depression and anxiety on citalopram.

No identified history of trauma or abuse.
Cases

- **Risk Factors:**
  - Use before age 14
  - Family history of SUD
  - Comorbid Psych Illness
  - Exposure to peer and parental use

- **Protective Factors:**
  - Positive family relationships
  - Mutually affectionate parent-adolescent relationship
  - Parental monitoring
  - Positive attachment to school and community
  - Strong academic performance

- **Current Treatment Plan:**
  - Psychopharm for psychiatric symptom management
  - DBT-informed therapy
  - Further exploration of substance use, consideration of sobriety
Case 3:

Patient: 18 year old CF presenting to IOP for treatment of opioid use d/o.

HPI: Starting using substances at age 12. Smoked marijuana with her mother daily from age 16 until present. Started using heroin at 16 years old. Currently using 1-2g/day IV. Has never received treatment. Has used “everything” but substance of highest reward is heroin. Makes her feel “numb.”

Diagnosed with ADHD, depression, borderline personality disorder, anxiety. Treated with psychotropics starting at age 12, but stopped at age 16 because she was told she couldn’t smoke marijuana while on medications.

Mom has used substances for patient’s whole life. Dad died of an opioid OD when pt was 13. Highest grade pt completed was 9th grade (took 4 attempts).

History of sexual abuse by an employer at age 16, was a well-publicized case.
Cases

- Risk Factors: All of them!
  - Use before age 14
  - Family history of SUD
  - Comorbid Psych Illness
  - Exposure to peer and parental use
  - Poor academic performance
  - Antisocial peer group
  - Poor family management
  - Physical and Sexual abuse

- Treatment considerations and concerns:
  - MAT?
  - Technically an adult, but adult treatment environment may not address her needs.
  - Management of co-morbid psychiatric illness, particularly trauma and attachment d/o.
Discussion
Resources