ADOLESCENT SUBSTANCE USE DISORDERS

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OBJECTIVES

• Understand and identify substance use disorders in the adolescent clinical population

• Develop strategies, pharmacologic and non-pharmacologic, for adolescents with substance use disorders
SUBSTANCE USE DISORDERS: DSM-5

• Larger amounts/longer
• Can’t cut down/quit
• Excess time obtaining
• Craving
• Miss major obligations
• Social/interpersonal problems
SUBSTANCE USE DISORDERS: DSM-5

- Fewer activities
- Hazardous
- Use despite physical/psychological consequences
- Tolerance
- Withdrawal
- *Mild 2-3, Moderate 4-5, Severe 6+
ADOLESCENT SUBSTANCE USE

- Criteria, developed for adults, not established as applicable to adolescents
- Use of a substance is not sufficient for a diagnosis of a disorder
- Developmental disorders with genetic, temperament, and environmental antecedents
  - About 50% heritability
  - One of highest risk groups has biological parent with substance use disorder
  - “Difficult” temperament (impulsive and high levels behavioral activity)
  - Environmental factors: stress, access, peer-group, parental attitudes/monitoring, social norms, and religiosity
ADOLESCENT SUBSTANCE USE

• 90% of substance use begins during adolescence

• Initiation, regular use, and development of disorders peaks adolescence/young adult

• Most adolescents experiment with alcohol and cigarettes, some advance to cannabis, and smaller portion advance to use of other drugs

• Substance use is usually illegal in adolescents, sometimes as status offense

• Over 2/3 with substance use disorders also have comorbid psychiatric disorders
  • Each increase the risk for the other
EPIDEMIOLOGY

- Past-year (2016) use of illicit drugs, other than cannabis, declining
  - But decline in perceived risk of harm and disapproval of using substances
  - Alcohol has greatest past year use although more students use cannabis on regular basis
  - 6% of 12th graders use cannabis daily, also exceeding cigarette use
  - Decline in use of prescription opioids

- Major source of morbidity and mortality in teenage years
  - Opioids and vehicular deaths (1/2 related to alcohol) of especially high risk
WHY ADOLESCENTS?

- In brain development, frontal lobe last to mature
  - Impulsive and emotionally dysregulated
  - Motivational reactivity (striatum) outpaces cognitive control (prefrontal)
  - Use increases until brain mature in early 20s and better inhibitory feedback to limbic
- Peer influence/behavioral contagion
- Feelings of being invulnerable
- Adolescent anhedonia
  - High-risk choices /immediate reward
ADDITION: BRAIN CHANGES

• Structural and functional
  • Might interfere with normal synaptic pruning and white matter development
    • Interference with endocannabinoid system
  • Lower levels of D2 receptors/less dopamine production and altered pleasure set point
  • Corrupts normal drives such as learning and motivation
ADDICTION IN ADOLESCENCE

• Susceptibility to drug-induced toxicity
  • Cells remain disabled longer and more cells affected
  • Blocking of cell signaling may impair learning/memory, especially with frequent/heavy use
  • However, lowered sensitivity to some acute effects (for example, less sedation with alcohol)
    • Worse long term
CANNABIS

• Stronger than in the past
  • Higher THC (psychoactive), lower cannabidiol (therapeutic)

• Risk of psychosis, deficits in cognition and memory, especially with heavy, frequent, early adolescent use
  • Disruption of normal pruning process important in adolescent brain development
  • Endocannabinoid system plays role in mediating HPA axis stress responsiveness

• Gateway drug?
  • Often predates use of other illicit drugs
  • 26% next stage versus 4% never used cannabis
WHEN TO SUSPECT SUBSTANCE USE

• Acute changes in mood, cognition, and behavior
  • For example, somnolence, disinhibition, and impaired concentration

• Impaired social and academic functioning
  • Family or interpersonal conflict, and academic failure

• Deviant and risk-taking behaviors

• Comorbid conduct disorder (69%), ADHD, depression, and anxiety
  • Common to have both an externalizing and internalizing disorder (50-75%)
CLINICAL APPROACH

• Screen for substance use in adolescents at all routine clinical visits!
  • Clinical interview still gold standard for diagnosis
  • Screening, brief intervention, and referral to treatment (SBIRT) for primary care
  • POSIT and CRAFFT
CLINICAL APPROACH

• Nonjudgmental attitude
• Ask about family history of substance use
• Common behavioral or emotional triggers
• Stages of change
• Urine drug screen
  • Negative result does not mean not using drugs!
PREVENTION

• Strengthening resilience factors
  • Problem-solving skills
  • Nurturing relationships with adults

• Reducing risk factors
  • Poor self-image/esteem
  • Abuse
  • Untreated mental illness
  • Family discord/conflict with parents
  • Learning problems
  • Delinquent peers
TREATMENT

• 7% of adolescents need treatment for substance use
• Fewer than 1 in 10 adolescents receive needed treatment
• Even with treatment, long-term abstinence rates relatively low
  • 32% at 12 months
• 75% of all adolescent treatment admissions related to cannabis
  • 13% alcohol, 3% opioids, 3% amphetamines, and 1% cocaine
TREATMENT

• Psychosocial interventions small to moderate effect sizes and few youth achieve sustained remission

• *Family* and behavioral therapy approaches have most supporting evidence
  • Supervision and limit-setting
  • Cognitive Behavioral Therapy (CBT)
  • Multisystemic Therapy (MST) addresses antisocial behaviors in substance using youth

• Also 12-step groups, motivational interviewing, and contingency management
  • Contingency management involves positive reinforcement in form of rewards
TREATMENT

• Evaluate for and treat comorbid psychiatric conditions
  • Comorbidity is associated with worse addiction
  • Medications with lower potential for abuse (for example, concern for misuse or diversion of stimulants for ADHD)
    • Parental supervision of medications (or school) and longer-acting medications
PHARMACOTHERAPY FOR SUBSTANCE USE

• Targets
  • Reduce craving
  • Decrease withdrawal symptoms
  • Decrease impulsive use

• Combined with psychosocial interventions improves adult outcomes
ALCOHOL

• Alcohol withdrawal rare in adolescents (5-10%)

• RCTs of pharmacotherapy for maintenance
  • Naltrexone (oral)
    • Long-acting opiate receptor antagonist
    • Attenuates rewarding effects
  • Disulfiram
    • Increases acetaldehyde and causes aversive symptoms
TOBACCO

• Adolescent studies of pharmacotherapy more mixed than adult
• Nicotine patch superior to gum or spray short-term efficacy for tobacco cessation
  • Elevated relapse after discontinuation
• Buproprion SR
  • Dopamine and norepinephrine reuptake inhibition along with nicotinic acetylcholinergic receptor antagonism
  • 300 mg/d dosage best studied
  • Especially effective combined with psychosocial interventions and contingency management
• Preliminary evidence for varenicline
  • Nicotinic receptor partial agonist
CANNABIS

• Limited evidence for pharmacotherapy

• N-acetyl cysteine (NAC)
  • Modulates glutamate
  • 1200 mg twice daily
  • More effective combined with psychosocial interventions and contingency management

• Gabapentin also promising

• Topiramate inconsistent effects and poor toleration
OPIOIDS

• Withdrawal
  • Buprenorphine, opioid receptor partial agonist, superior to clonidine

• Overdose
  • Intranasal naloxone, opiate receptor antagonist

• Maintenance
  • RCT and observational studies suggest methadone, opioid receptor full agonist, and buprenorphine effective
  • Controversial impact of chronic opioid agonism on brain and endocrine system development, and prolonged state of physical dependence in youth
  • Standard is detoxification followed by behavioral counseling
OPIOIDS

- Methadone
  - Adolescents, even under age 16, can be treated but require documentation of 2 treatment failures of drug-free detoxification followed by psychosocial interventions before referred

- Buprenorphine
  - FDA-approved for age 16 or older
  - Multisite RCT of buprenorphine-naloxone in higher risk youth (IV, comorbid psychiatric, treatment failures, etc)
    - Best outcomes with detoxification followed by maintenance

- Naltrexone being studied
TREATMENT

• Inpatient
  • As young as 12/13 years old for adolescent inpatient
  • 16 and up may sometimes receive treatment in adult services
  • Parents may choose to send youth as old as 17 for inpatient

• No parental consent necessary for substance treatment in minors although information may be given to parents at discretion of provider

• Substance treatment may be required as part of probation or drug court
RESOURCES

• Substance Abuse and Mental Health Services Administration (SAMHSA) National Helpline
  • Free, confidential, 24-hour treatment referral and information service, including support groups
  • 1-800-662-HELP

• For Adolescents
  • Above the Influence, The Real Cost (tobacco), and The Cool Spot (alcohol) websites

• For Parents
  • Partnership for Drug-Free Kids, Get Smart About Drugs, and Smokefree.gov websites
  • Make a difference: Talk to your child about alcohol (PDF)
REFERENCES

• Evidence for the Risks and Consequences of Adolescent Cannabis Exposure, JAACAP, 2017


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• Monitoring the Future Survey: High School and Youth Trends, December 2016

• The Role of Pharmacotherapy in the Treatment of Adolescent Substance Use Disorders, Child and Adolescent Psychiatry Clinics of North America, 2016
