



"Adolescent Substance Use Disorders: Trends, the Brain, and Treatment"

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Agenda



- ▶ The lay of the land with youth and stress, mental health overall, etc.
- ▶ A review of trends regarding a variety of substances youth use.
- ▶ Review the impact on adolescent brain development from the use of these substances.
- ▶ Review various evidence based treatment options for youth struggling with substance use disorders
- ▶ Questions and Answers along the way!!

The post 9/11-Generation Z



- ▶ Never known a time with no terrorism.
- ▶ Never known a time with no school shootings
- ▶ Never know a time with no internet
- ▶ Never know a time with no social media.
- ▶ “If you want to create an environment to churn out angsty people, we’ve done it,” says Janice Whitlock, director of the Cornell Research Program on Self-Injury and Recovery. “It’s that they’re in a cauldron of stimulus they can’t get away from or don’t want to get away from, or don’t know how to get away from,” she says.



The American Psychological Association (APA) conducted its 12th annual Stress in America survey in August 2018 to understand what causes stress in Americans' lives and their strategies for coping with stress

- ▶ 56 percent of Gen Zs who are in school say they experience stress at least sometimes when considering the possibility of a shooting at their school
- ▶ While more than half of Gen Zs say social media provides a feeling of support, nearly two in five of Gen Zs report feeling bad about themselves as a result of social media use
- ▶ 34% report that they expect their stress to increase next year!

Stress in America Survey



- ▶ Gen Z is significantly more likely to report their mental health as fair or poor, with 27 percent saying this is the case.
- ▶ Millennials (15 percent) and Gen Xers (13 percent) have similar numbers reporting fair or poor mental health.
- ▶ Fewer than one in 10 Boomers (7 percent) and older adults (5 percent) consider their mental health fair or poor.

Stress in America Results



- ▶ 25 percent of Gen Zs say they would not know where to find help if they had a problem with drugs or alcohol.
- ▶ 35 percent of Gen Zs say they would not know how to get help for a family member or friend facing this problem.

Additional Sources of Stress



- ▶ 35% Bullying, not getting along with others
- ▶ 33% Personal/Family Debt
- ▶ 31% Housing Instability
- ▶ 28% Hunger/getting enough to eat
- ▶ 21% Drug and alcohol use or addiction in their family
- ▶ 21% Dealing with gender issues relating to their sexual orientation
- ▶ Teens reported sleeping an average of 7.4 hours on school nights and 8.1 hours on non-school nights, far less than the 9-10 hours recommended by the CDC.

Speaking of Sleep.....



- ▶ Teens who sleep fewer than eight hours on a school night are more likely to report experiencing symptoms of stress such as irritability, nervousness, sadness, and/or feeling overwhelmed.

Teens and Social Media



- ▶ The average teen consumes an average of 7.5 hours of media per day.
- ▶ Half of teens send 50 or more text messages a day, or 1,500 texts a month, and one in three send more than 100 texts a day, or more than 3,000 texts a month. Older girls who text are the most active, with 14-17 year-old girls typically sending 100 or more messages a day or more than 3,000 texts a month.
- ▶ One in five teens reports exercising less than once a week or not at all, despite the proven stress-relieving benefits of physical activity.
- ▶ Teens who don't get enough sleep are four times as likely as well-rested teens to develop major depressive disorder according to a recent University of Texas study (Wellness, Carolyn Gregoire 2/11/14)

Wait, there's even more!

- ▶ According to a new study from researchers at the University of Portland in Oregon. A sample that included 32,150 adolescent boys and 32,521 adolescent girls.
- ▶ **Nearly 18% of teens in the US reported harming themselves at least once during the previous year!**
- ▶ The rates of self-injury among teens were highest (above 20%) in Idaho, **Kentucky**, New Mexico, and Nevada. Delaware had the lowest rates of self-injury (12%) for both boys and girls. The study found that the prevalence of self-harm was highest among 14-year-olds (19%) and decreases with age.

Self-Harm and Youth

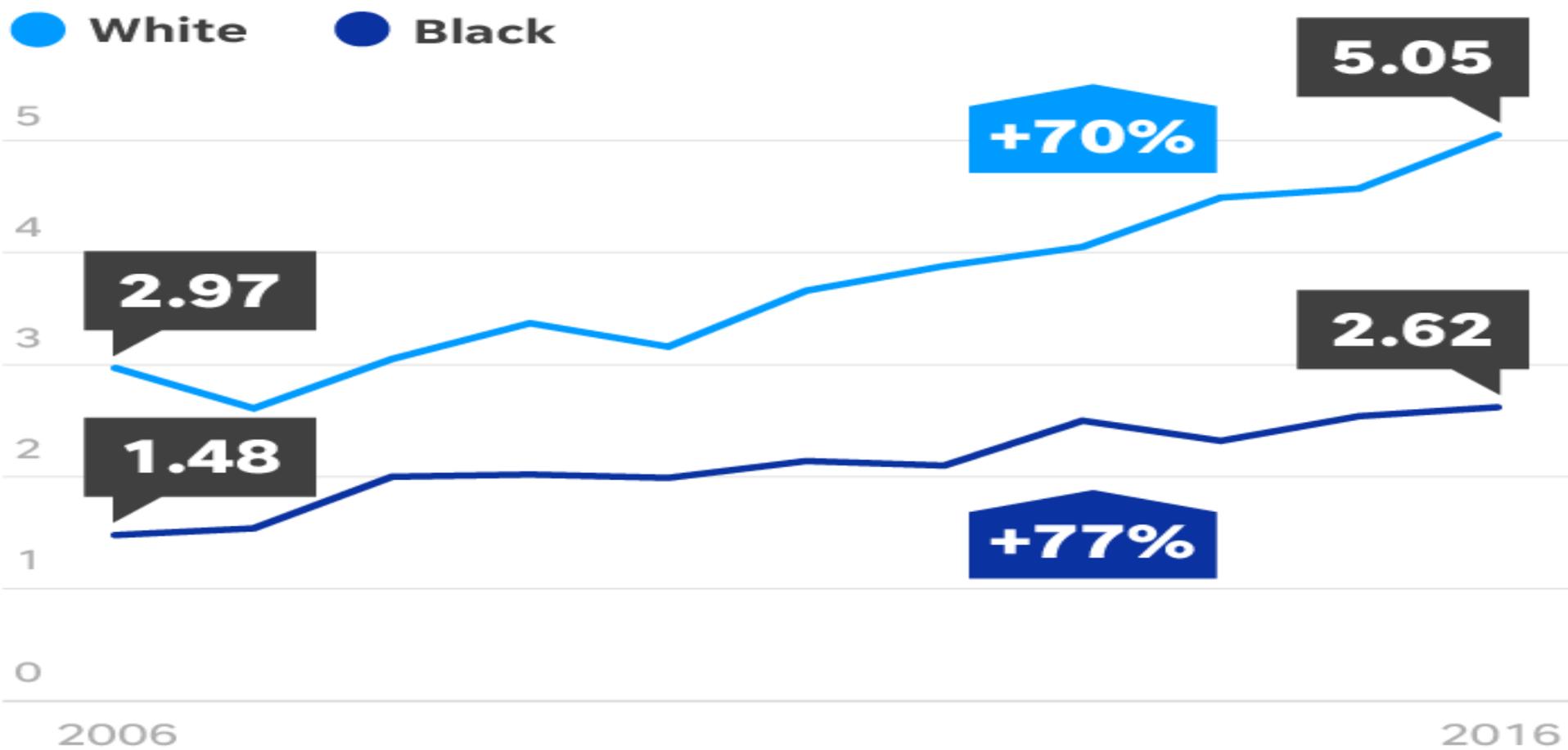
- ▶ “Self-harm is certainly not universal among kids with depression and anxiety, but it does appear to be the signature symptom of this generation’s mental-health difficulties.” **(TIME, Teen Depression and Anxiety: Why the Kids Are Not Alright, June 2017)**
- ▶ 1. “They don’t feel real, and there’s something about pain and blood that brings them into their body.”
- ▶ 2. “They feel an overwhelming amount of emotion. They need to discharge those feelings somehow, and injury becomes their way.”

Anxiety and Depression

- ▶ **Anxiety disorders** affect 25.1% of children between 13 and 18 years old.
- ▶ Specifically, about 30% of girls and 20% of boys, totaling 6.3 million teens-have had an anxiety disorder.
- ▶ As many as 2 to 3 percent of children ages 6 to 12, and 6 to 8 percent of teens may have **serious depression**.
- ▶ About 3 million teens ages 12 to 17 had at least one major depressive episode in the past year according to the Department of Health and Human Services
- ▶ Furthermore, about 80 percent of kids with an anxiety disorder and 60 percent with depression are not getting treatment!!

Teen suicide is soaring. The biggest rate increase was among black youth

Suicides per 100,000 10-to-17 year-olds from 2006 to 2016:



SOURCE Centers for Disease Control and Prevention
Karl Gelles/USA TODAY

A Growing Problem!



- ▶ More teenagers and young adults die from suicide than from cancer, heart disease, AIDS, birth defects, stroke, pneumonia, influenza, and chronic lung disease, COMBINED!!
- ▶ Each day in our nation there are an average of over 5,400 attempts by young people grades 7-12.
- ▶ In the US by age 16, 25% of all youth have experienced a traumatic event.



So.....teenagers have a lot of reasons to experiment with substances!!

- ▶ Nearly one in three (29%) adolescents has experimented with illegal drugs, and 41% have consumed alcohol by the time they finish 8th grade.
- ▶ One in five American adolescents between the ages of 12 and 17 engages in problematic, abusive or dependent use of illicit drugs or alcohol.

Monitoring the Future 2018

- ▶ Monitoring the Future is an annual survey of 8th, 10th, and 12th graders conducted by researchers at the Institute for Social Research at the University of Michigan, Ann Arbor, under a grant from the National Institute on Drug Abuse, part of the National Institutes of Health. Since 1975, the survey has measured how teens report their drug and alcohol use and related attitudes in 12th graders nationwide; 8th and 10th graders were added to the survey in 1991.
- ▶ 44,482 students from 392 public and private schools participated in the 2018 survey.

COCAINE HOOKAHS SYNTHETICS ALCOHOL
PRESCRIPTIONS CIGARETTES COLD MEDICINES
ECSTASY CRACK VAPING MARIJUANA STEROIDS RITALIN
"BATH SALTS" INHALANTS ADDERALL
HEROIN SEDATIVES TRANQUILIZERS
K2/SPICE SALVIA VTCODIN
METHAMPHETAMINES

TEEN DRUG USE

MONITORING THE FUTURE 2018

Monitoring the Future is an annual survey of 8th, 10th, and 12th graders conducted by researchers at the Institute for Social Research at the University of Michigan, Ann Arbor, under a grant from the National Institute on Drug Abuse, part of the National Institutes of Health. Since 1975, the survey has measured how teens report their drug, alcohol, and cigarette use and related attitudes in 12th graders nationwide; 8th and 10th graders were added to the survey in 1991.

**44,482 STUDENTS FROM 392 PUBLIC AND
PRIVATE SCHOOLS PARTICIPATED IN THE 2018 SURVEY.**



National Institute
on Drug Abuse

DRUGABUSE.GOV

Alcohol and Teens

- ▶ 1 in 3 children starts drinking by the end of 8th grade ... and of them, half report having been drunk.
- ▶ Binge Drinking- 5 or more drinks in the past two weeks:
 - ▶ 16.6% 12th Grades
 - ▶ 9.8% 10th Graders
 - ▶ 3.7% 8th Graders

BINGE DRINKING* RATES CONTINUE DOWNWARD TREND



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

BINGE DRINKING: SIGNIFICANT DROP IN PAST FIVE YEARS ACROSS ALL GRADES.



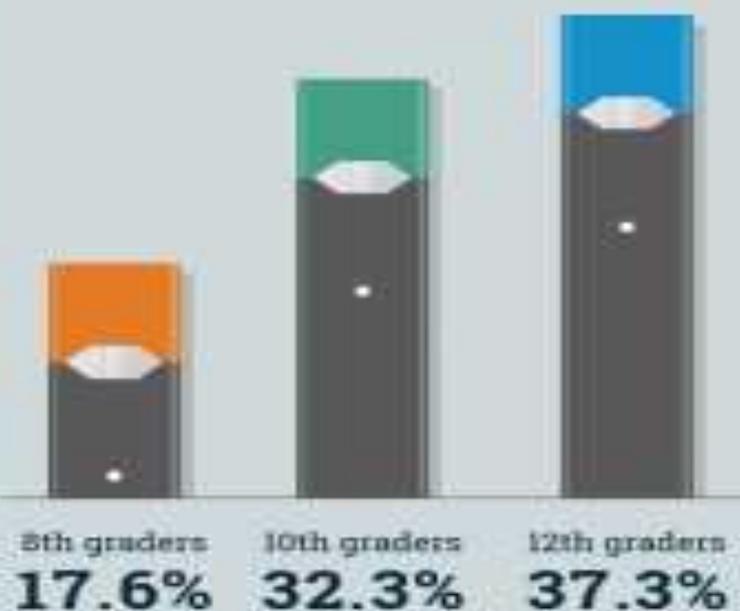
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Houston, We Have a BIG Problem!!

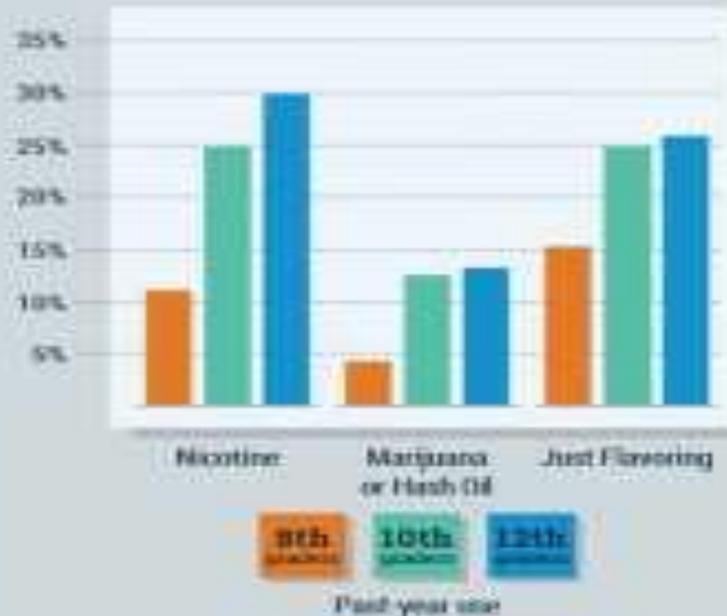
- ▶ “Vaping is reversing hard-fought declines in the number of adolescents who use nicotine,” said Richard Miech, the lead author and principal investigator of the study. “These results suggest that vaping is leading youth into nicotine use and nicotine addiction, not away from it.”

TEENS USING VAPING DEVICES IN RECORD NUMBERS

PAST-YEAR VAPING



WHAT DO TEENS SAY THEY ARE VAPING?



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



Teens and Juuling



- ▶ The Juul, a trendy vape that resembles a flash drive and can be charged in a laptop's USB port, accounted for 33% of the e-cigarette market as of late 2017, according to Wells Fargo data.
- ▶ Each Juul cartridge—which lasts about 200 puffs—has as much nicotine as an entire pack of cigarettes

Teens and Juuling





Mild and Flavorful...

Inhale to your heart's content!



A gentle, mild, flavorful smoke that gives your mouth a clean, easy feel and throat. Enjoy the rich taste of Sea, and the pleasant, generous notes of tobacco that give you a sense of adventure. The Embassy® taste is just what you need.




Blow in her face and she'll follow you anywhere.

Hit her with long Tropicana, British, gassy Tasted, Regatta, or Andros. Tasted, Sherbro, it's a real Tasted. It's nice. Different. Delicious in taste and aroma. And it's her decision and she'll follow you, anywhere. Drink, you get smoking satisfaction without eating smoke.

20,679 Physicians say LUCKIES are less irritating



I too prefer LUCKIES because...

Toasting removes dangerous irritants that cause throat irritation and coughing

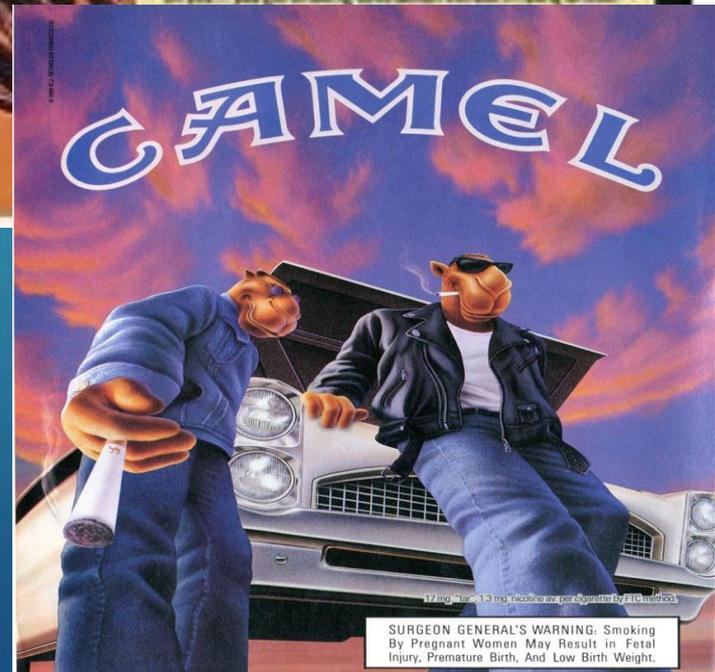
"It's toasted"

Your Throat Protection — against irritation — against cough.

LUCKY STRIKE
"IT'S TOASTED"
CIGARETTES

© 1998, The American Tobacco Co. - MIA

CAMEL



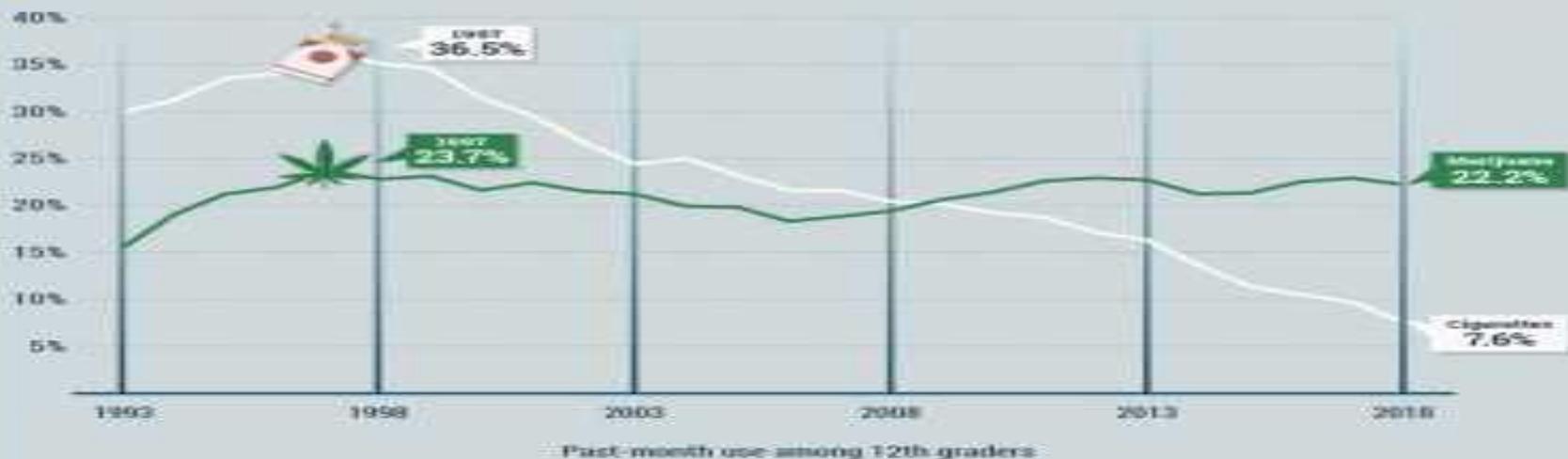
17 mg. "tar," 1.3 mg. nicotine av. per cigarette by FTC method.

SURGEON GENERAL'S WARNING: Smoking By Pregnant Women May Result in Fetal Injury, Premature Birth, And Low Birth Weight.

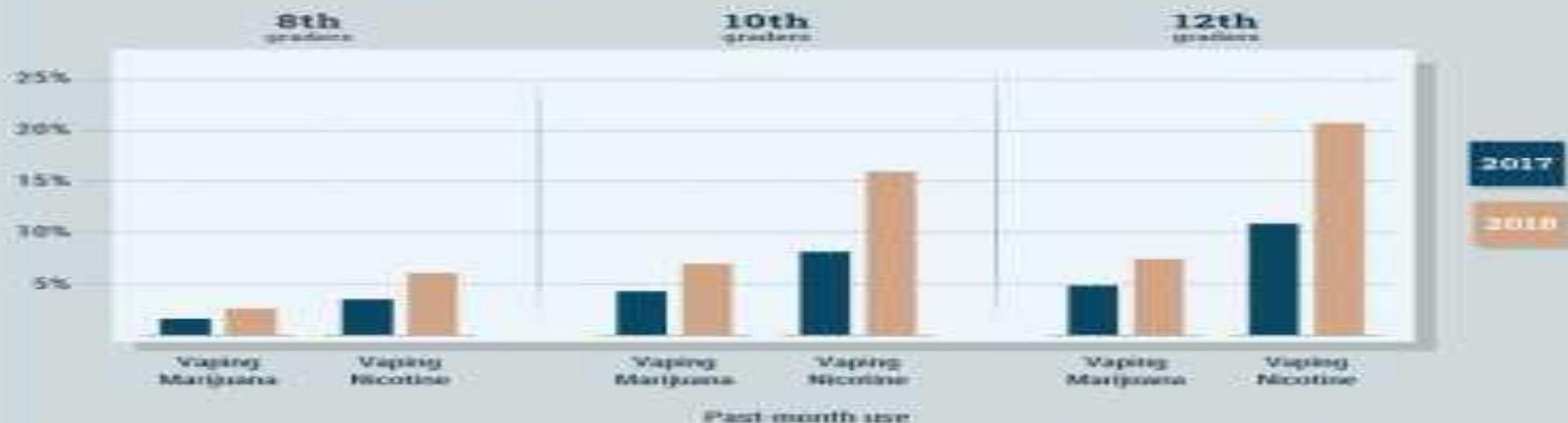
The FDA Is Taking 'Historic Action' Against What It Calls a Youth Epidemic of E-Cigarettes

- ▶ On Sept. 12, the FDA told e-cigarette companies they have 60 days to come up with a plan for reducing e-cig use among young users. The FDA sent letters to 1,300 retailers selling e-cigarettes made by Juul, Vuse, Blu, MarkTen XL, and Logic Labs, which together make up 97% of the market. It reserved its strongest action for the manufacturers themselves.
- ▶ **“Unfortunately, I now have good reason to believe that it’s reached nothing short of an epidemic proportion of growth,”** FDA Commissioner Scott Gottlieb said in a briefing. “I use the word epidemic with great care. E-cigs have become an almost ubiquitous—and dangerous—trend among teens... **The FDA won’t tolerate a whole generation of young people becoming addicted to nicotine as a tradeoff for enabling adults to have unfettered access to these same products.”**

TEENS MORE LIKELY TO USE MARIJUANA THAN CIGARETTES



TEENS VAPING NICOTINE OR MARIJUANA INCREASED ACROSS ALL GRADES



PAST-MONTH VAPING OF NICOTINE OR MARIJUANA JUMPED ACROSS ALL GRADES. PAST-MONTH USE OF MARIJUANA IS STEADY AS CIGARETTE USE DECLINES.



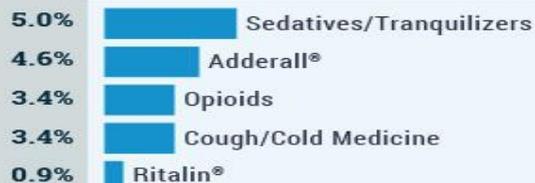
Smoking Cannabis in an E-Cig

- ▶ One in every 11 teens has used marijuana in electronic cigarettes, according to a research published Monday in [JAMA Pediatrics](#), the pediatrics-focused peer-reviewed journal of the American Medical Association.
- ▶ Of the slightly more than 20,000 teens surveyed in the school-based study, 9% self-reported that they had vaped marijuana. That extrapolates to 2.1 million middle and high school students using e-cigarettes to get high on cannabis products.



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

PRESCRIPTION/OTC



ILLICIT DRUGS



Past-year use among 12th graders

VICODIN® VS. OXYCONTIN®



Past-year misuse of Vicodin® and OxyContin® among 12th graders has dropped dramatically in the past 15 years.



STUDENTS REPORT LOWEST RATES SINCE START OF THE SURVEY

Across all grades, past-year use of illicit drugs other than marijuana holding steady at the lowest levels in over 20 years.

*Synthetic cannabinoids are called "synthetic marijuana" in the survey.



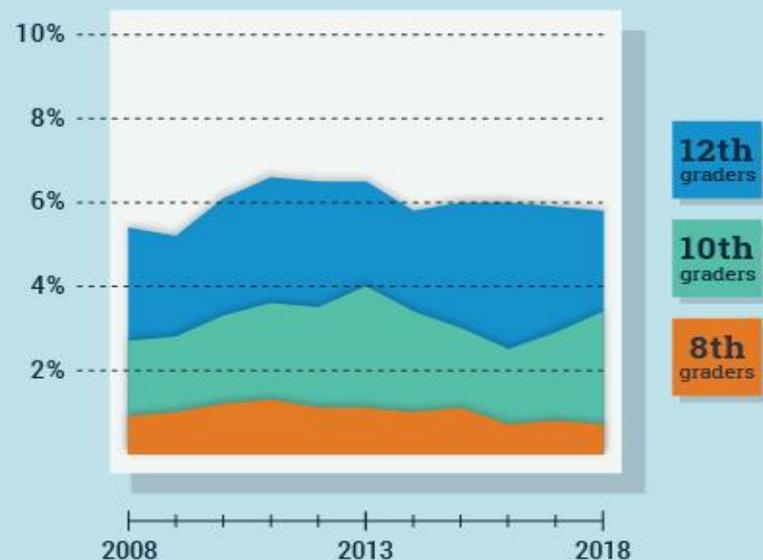
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Past-year use of illicit drugs among 12th graders in 2018 were:

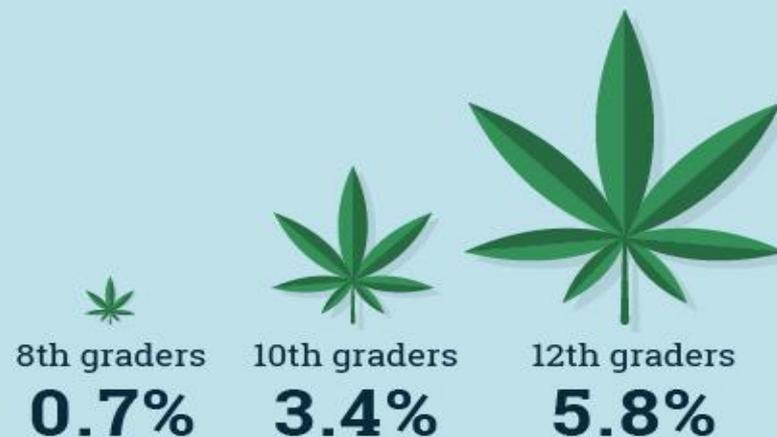
- ▶ Marijuana/hashish: 35.9%
- Synthetic cannabinoids*: 3.5%
- LSD: 3.2%
- Cocaine: 2.3%
- MDMA (Ecstasy/Molly): 2.2%
- Inhalants: 1.6%
- Heroin: 0.4%

DAILY MARIJUANA USE MOSTLY STEADY

2008 – 2018



2018



FIVE-YEAR TRENDS IN DAILY MARIJUANA USE REMAINS STEADY FOR 10TH AND 12TH GRADERS BUT SHOWS A DECLINE IN 8TH GRADERS.



Past-year misuse of prescription/OTC drugs among 12th graders in 2018 were:

- ▶ Sedatives/Tranquilizers: 5.0%
- Adderall®: 4.6%
- Opioids: 3.4%
- Cough/cold medicine: 3.4%
- Ritalin®: 0.9%

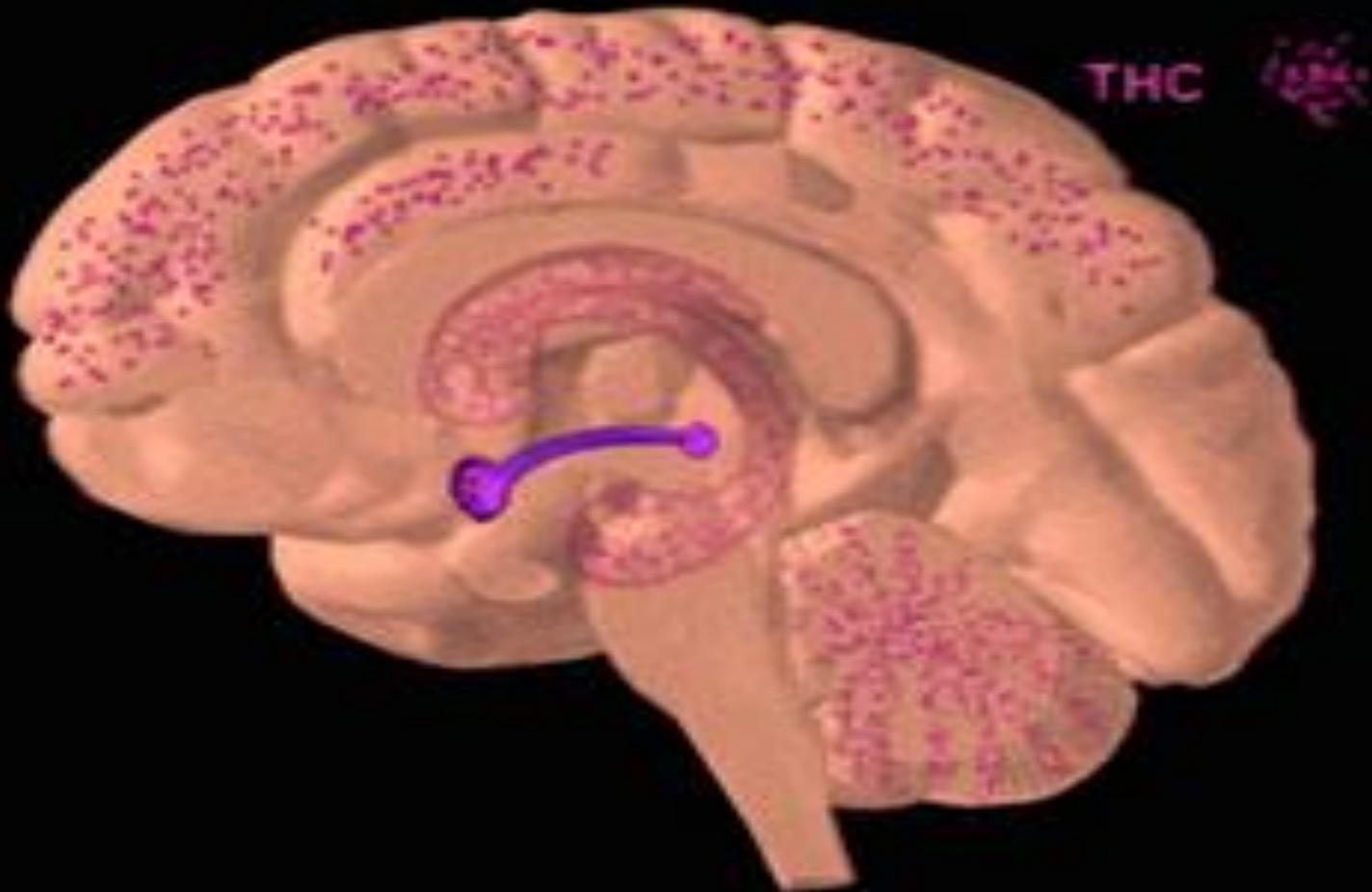
Marijuana

- ▶ So Let's Talk About Cannabis for a Minute!

Where does THC like to go???

- ▶ Some drugs love water in our bodies and hate fat: Cocaine, Alcohol, Opiates..... How long will Cocaine stay in the body?
- ▶ Some drugs hate water and love fat: Marijuana!! How long can you pick up Marijuana in a urine screen? And it hates water....think about how long it stays in the fat in our body!!
- ▶ Where is the highest concentration of fat in the human body??

Where Does THC Like To Go??



Long Term Effects of Cannabis Use

- ▶ A study showed that people who started smoking marijuana heavily in their teens and had an ongoing cannabis use disorder lost an average of eight IQ points between ages 13 and 38. The lost mental abilities did not fully return in those who quit marijuana as adults. Those who started smoking marijuana as adults did not show notable IQ declines (Meier, 2012).

MARIJUANA USE & EDUCATIONAL OUTCOMES

Studies show that marijuana interferes with attention, motivation, memory, and learning. Students who use marijuana regularly tend to get lower grades and are more likely to drop out of high school than those who don't use. Those who use it regularly may be functioning at a reduced intellectual level most or all of the time.



MOST MARIJUANA USE BEGINS IN
ADOLESCENCE



78%

of the 2.4 million people who began using in the last year were aged 12 to 20.¹

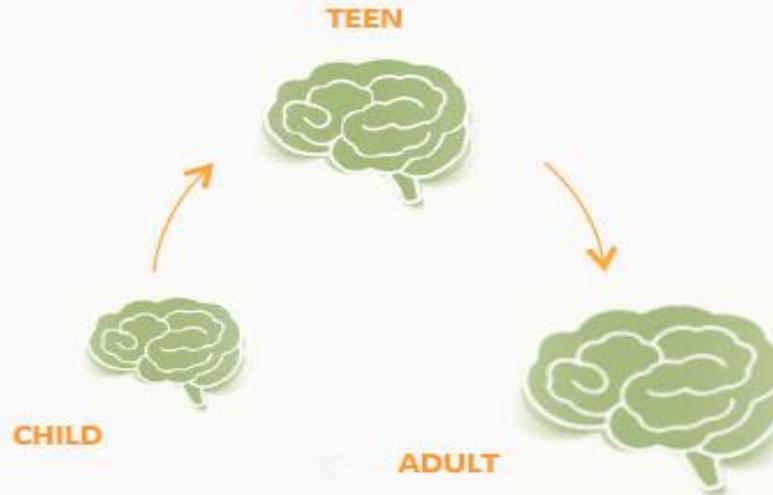
As perception of harm decreases...



EVERY DAY,
3,287 TEENS
USE MARIJUANA
FOR THE
FIRST TIME¹

MARIJUANA MAY HURT THE DEVELOPING TEEN BRAIN

The teen brain is **still developing** and it is especially vulnerable to drug use.



IQ

Regular heavy marijuana use by teens can lead to an IQ drop of up to **8 points**³

HEAVY MARIJUANA USE BY TEENS IS LINKED TO⁴:

Educational Outcomes



lower
grades and
exam scores



less likely
to graduate
from HS or
college



less likely
to enroll in
college

Life Outcomes



lower
satisfaction
with life



more
likely to be
unemployed



more likely to
earn a lower
income



National Institute
on Drug Abuse

1. NSDUH, SAMHSA, 2014; 2. MTF Survey; 3. Meier et al 2012; 4. MTF Survey; Cobb-Clark et al, 2013; Silins et al 2014; Tucker et al 2005; Homel et al, 2014; Volkow et al 2014; Fergusson and Boden 2008; Brooks et al 2013

Peter Pan is alive and well and
living in your basement!!!



TEEN-AGE MOUSE

I CAN TOTALLY
GET AWAY
WITH THIS!



Brain Development

When the pruning is complete, the brain is faster and more efficient.

But... during the pruning process, the brain is not functioning optimally.



Source: Giedd, 2004.

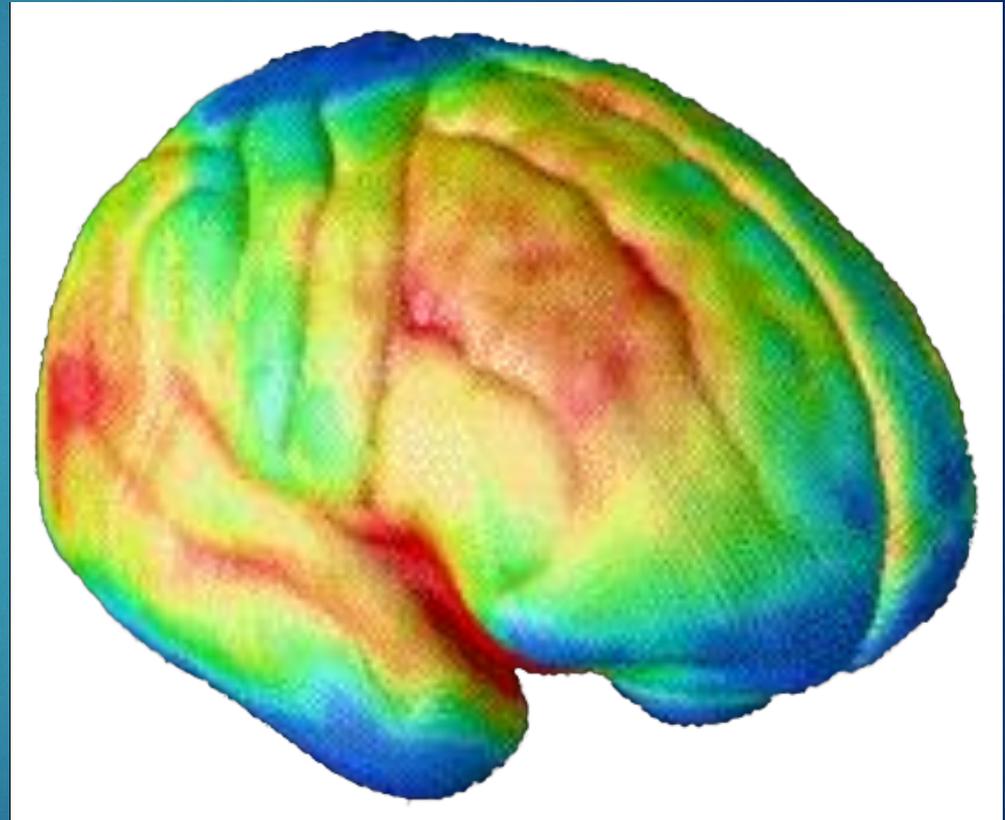
Brain Development

Maturation Occurs from Back to Front of the Brain

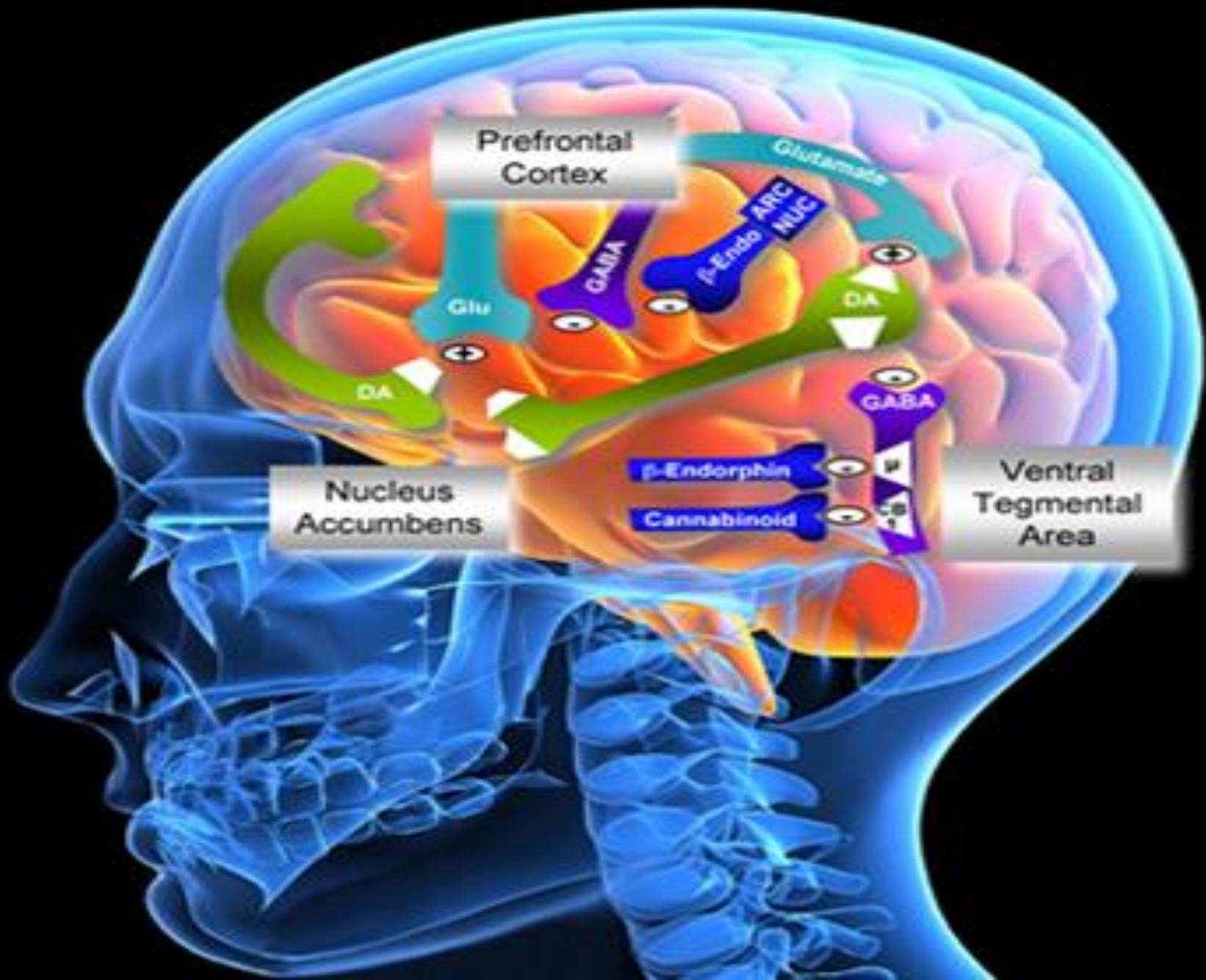
Images of Brain Development in Healthy Youth (Ages 5 – 20)

Blue represents maturing of brain areas

Brain maturation not complete until Around age 25!



Source: Gogtay, Giedd, et al., 2004.



Adolescent Brain Development

Four Areas to Focus On:

1) Mid-Brain or “Old Brain”:

The way-station for incoming sensory information on the way to the prefrontal-cortex.

Mid-Brain is the SURVIVAL Brain

What handles the next thirty seconds.

Plays major role in how brain reacts to STRESS!!!

Drugs and Alcohol can become SURVIVAL.

Ventral Tegmental Area is part of the Mid-Brain

Adolescent Brain Development

2) Pre-Frontal Cortex:

Seat of the self and personality

Center for love, morality, decency, responsibility, spirituality

Conscious

If it is immature, it's the neurobiological explanation for why teenagers show poor judgment and act before thinking.

Average age of maturity? _____

Adolescent Brain Development

3) Nucleus Accumbens:

It directs motor behavior.

Is responsible for how much effort we will expend in order to seek rewards, “Pay Offs”.

If it is immature, adolescents will lean toward activities that require little effort, yet produce high “Pay Off”, like video games, drugs, etc.

Let's play some Fortnite baby!!!

Adolescent Brain Development

4) Amygdala:

It integrates our emotional reactions to pleasurable and aversive experiences.

Lights up for food, sex, survival.

Lights up for cues to using and for using drugs.

As it develops, two distinct behavioral effects tend to occur:

Teenagers react explosively to situations rather than calm.

Teenagers have a propensity to misread neutral facial expressions as being angry/disappointed.

Engagement and the Pre-treatment Process.

Adolescents need the opportunity to examine the correlation between their drug/alcohol use and the life consequences they are experiencing.

Families also need the opportunity to examine the effect their adolescent's drug/alcohol use is having on them.

This opportunity may be effectively implemented on an early intervention/outpatient/intensive-outpatient basis.

Cognitive-Behavioral Therapy (CBT)

- ▶ CBT strategies are based on the theory that learning processes play a critical role in the development of problem behaviors like drug abuse. A core element of CBT is teaching participants how to anticipate problems and helping them develop effective coping strategies.

Cognitive-Behavioral Therapy (CBT)

- ▶ In CBT, adolescents explore the positive and negative consequences of using drugs.
- ▶ They learn to monitor their feelings and thoughts and recognize distorted thinking patterns and cues that trigger their substance abuse; identify and anticipate high-risk situations; and apply an array of self-control skills, including emotional regulation and anger management, practical problem solving, and substance refusal.
- ▶ CBT may be offered in outpatient settings in either individual or group sessions (see "[Group Therapy for Adolescents](#)") or in residential settings

Motivational Enhancement Therapy

- ▶ (MET) is a counseling approach that helps individuals resolve their ambivalence about engaging in treatment and stopping their drug use.
- ▶ This approach aims to evoke rapid and internally motivated change, rather than guide the patient stepwise through the recovery process.
- ▶ This therapy consists of an initial assessment battery session, followed by two to four individual treatment sessions with a therapist. In the first treatment session, the therapist provides feedback to the initial assessment, stimulating discussion about personal substance use and eliciting self-motivational statements. Motivational interviewing principles are used to strengthen motivation and build a plan for change. Coping strategies for high-risk situations are suggested and discussed with the patient.

Motivational Enhancement Therapy (MET)

- ▶ Motivational interviewing principles are used to strengthen motivation and build a plan for change. Coping strategies for high-risk situations are suggested and discussed with the patient.
- ▶ **Express Empathy**
- ▶ **Develop Discrepancy**
- ▶ **Avoid Argumentation**
- ▶ **Roll With Resistance**
- ▶ **Support Self-Efficacy**
- ▶ **Work with the Adolescent's own specific reasons to change-"I need to get that !@#\$% out of my life!!"**
- ▶ **Understanding ambivalence and using reflective listening.**

The Seven Challenges

- ▶ Independent studies funded by The Center for Substance Abuse Treatment in Washington, D.C. and published in peer reviewed journals -- one study at the University of Iowa and the other at the University of Arizona -- have provided evidence that demonstrates the effectiveness of The Seven Challenges as a "co-occurring" program that significantly decreases the substance use of adolescents and greatly improves their overall mental health status.

The Seven Challenges

- ▶ Developed by Dr. Robert Schwebel
- ▶ Guides youth through a process of weighing the benefits vs. harm of their drug use and behavior.
- ▶ Starts where the youth are, as an alternative to a rush to abstinence.
- ▶ Looks at what youth like about substances, as well as their trauma history
- ▶ Encourages and supports “flights into abstinence”
- ▶ Recognizes that teens are generally dragged into treatment and in early stage of change
- ▶ Manualized treatment w consistent therapist feedback. (www.sevenchallenges.com)

Brief Strategic Family Therapy (BSFT)

- ▶ BSFT is based on a family systems approach to treatment, in which one member's problem behaviors are seen to stem from unhealthy family interactions.
- ▶ Over the course of 12–16 sessions, the BSFT counselor establishes a relationship with each family member, observes how the members behave with one another, and assists the family in changing negative interaction patterns.
- ▶ BSFT can be adapted to a broad range of family situations in various settings (mental health clinics, drug abuse treatment programs, social service settings, families' homes) and treatment modalities (as a primary outpatient intervention, in combination with residential or day treatment, or as an aftercare/continuing care service following residential treatment).

What about AA with Teens?

- ▶ Although not a lot of research, 67% of youth facilities incorporate 12 Step principles (Drug Strategies, 2009)
- ▶ John F. Kelly, Ph.D.-Harvard Addiction Research Institute
- ▶ Top 3 + Aspects Youth Acknowledged:
 - ▶ Universality (I'm Not Alone!)
 - ▶ Positive Attention (People Care!)
 - ▶ Instillation of Hope (I Can Change!)
 - ▶ Least helpful aspect-The content!!

References

- ▶ American Journal of Public Health
- ▶ APA 12th Annual Stress in America Survey.
- ▶ Janice Whitlock, Cornell Research Program on Self-Injury and Recovery
- ▶ (TIME, Teen Depression and Anxiety: Why the Kids Are Not Alright, June 2017)
- ▶ (Wellness, Carolyn Gregoire 2/11/14)
- ▶ Centers for Disease Control and Prevention
- ▶ NIDA, 2018 Monitoring the Future Survey
- ▶ NIDA, Principles of Drug Addiction Treatment
- ▶ Harvard Addiction research Institute, John Kelly

Wrap Up!!

Questions, comments, and concerns???

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