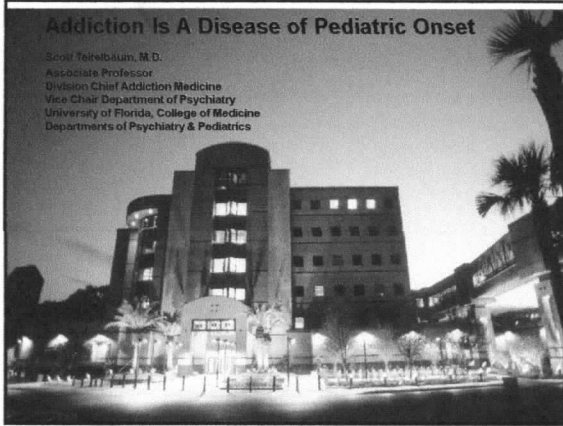


Addiction Is A Disease of Pediatric Onset

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Departments of Psychiatry & Pediatrics



Objectives

- To review current trends in drug use nationally in adolescents
- To recognize that childhood has multiple critical periods for brain development that are particularly vulnerable to DOA
- To discuss the implications of the above

Risk In Utero

- Recent animal studies have shown an increase in heroin self-administration in rats exposed to THC in utero
 - There were demonstrated changes in mRNA expression in the nucleus accumbens and amygdala

Age Spectrum of DOA

- Effect on Fetal Outcome/Child Development
- Children of Alcoholics and Addicts
- Adolescent Drug Use and Abuse
- Primary, Secondary and Tertiary Prevention

Marijuana & ADHD

- Significant increased risk of ADHD in children exposed to MJ in utero
- Questionable effect of development of fetal brain

History

- Dearth of data
- Lack of historical differentiation between child/adolescent culture and adult culture
- Only past 35 years has been researched and described with following patterns noted
 - Adult → young adult → adolescent → preadolescent
 - Large cities → small towns
 - Lower SEC → all classes
 - Minorities → all ethnicities
 - Anti-social population → general population

Adolescent Substance Abuse

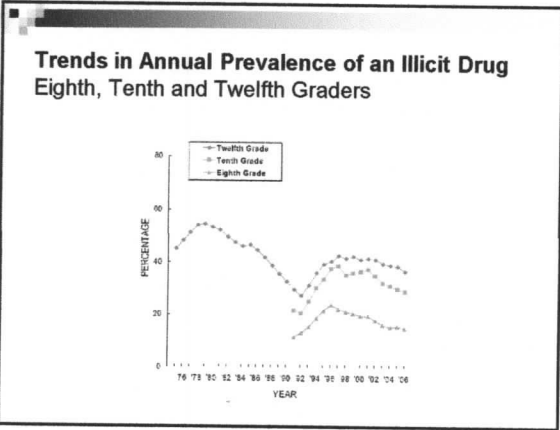
- In vulnerable individuals, the teenage years seem to be the greatest risk period for the development of SUDs
- 20% of problem drinkers are adolescents
- By 2010 the largest number of adolescents ever will be alive in this country
- Developmental issues make application of adult models for diagnosis and treatment difficult

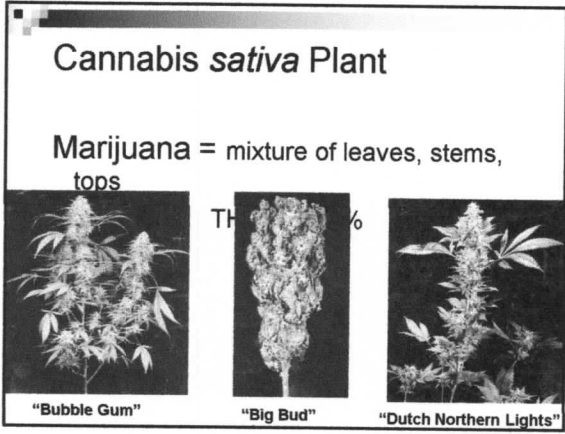
Monitoring The Future Study

- Measured drug use in high school seniors since 1975
- Included 8th and 10th graders since 1991
- Funded by National Institute of Drug Abuse
- Conducted by University of Michigan Institute for Social Research

Common Drugs of Abuse

- Alcohol
- Tobacco
- Marijuana
- Inhalants
- Cocaine/Stimulants
- Club Drugs ie ecstasy, GHB
- Hallucinogens
- Opioids
- Sedative hypnotics
- Sports Drugs ie steroids

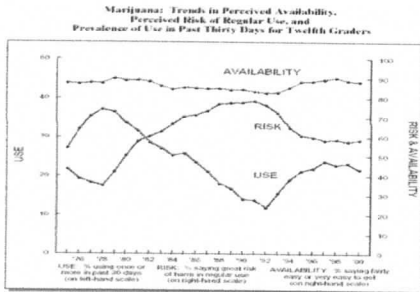




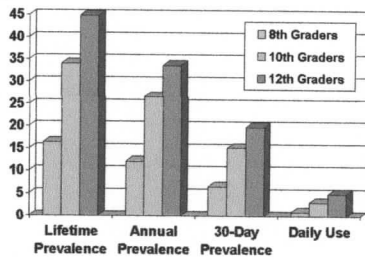
THC Concentration

- In the last decades, the percentage of THC has drastically increased
- A 1 gram, unlaced marijuana cigarette provided
 - ~10mg THC in the early 1970's
 - 1% THC by volume
 - ~150mg THC in the early 1990's
 - 6-14% THC by volume
- If laced with hashish oil one joint can provide ~300mg of THC
- Users prefer high THC content marijuana to less potent marijuana

Perceived Risk vs. Use



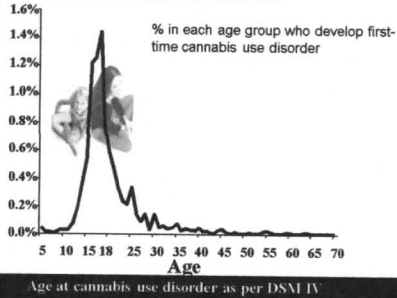
Prevalence of Marijuana Use in 2005



Marijuana Epidemiology

- Used by 75% of all illicit drug users
 - 50% of all illicit drug users use only marijuana
- 23-79% of marijuana users have concurrent alcohol use
- Accounts for \$15 billion per year in sales in the US

**Addiction Is A Developmental Disease
Starts in Adolescence and Childhood**

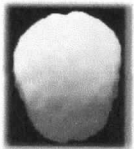


SMAA National Epidemiologic Survey on Alcohol and Related Conditions, 2001

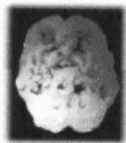
Marijuana and Adolescents

- Use in early adolescence correlates with higher rates of adult substance dependence
- ~ 60% of adolescents in drug treatment programs have primary diagnosis of marijuana dependence
- The percentage of middle-school students who reported using marijuana increased throughout the early 1990s
- In the past few years, illicit drug use, including marijuana, by 8th-, 10th-, and 12th-graders has leveled off

Chronic Marijuana Use cont.



Brain with normal blood flow



12 years of marijuana

SPECT images (top-down surface view) depicting a normal brain vs. a brain affected by chronic marijuana use

- Defects of this type have been associated with attention Problems, disorganization, procrastination, and lack of motivation

Chronic Marijuana Use cont.



Normal brain



Marijuana affected brain

SPECT images show the underside surface where defects appear in areas of decreased blood flow & brain activity

- Defects of this type have been associated with attention problems, disorganization, procrastination, and lack of motivation

Psychiatric Issues

- Naive users smoking high potency marijuana most common to receive ER treatment (anxiety/panic, paranoia)
- Marijuana can precipitate anxiety/panic and even psychotic disorder in vulnerable individuals
- Associated with other affective/mood disorders
 - Increases suicide risk
- ADHD? Marijuana associated with impairment in memory, attention and executive function in numerous studies
- Estimated attributable risk of cannabis use was:
 - 13% for psychotic symptoms
 - 50% for any disorder requiring psychiatric treatment

Marijuana and Psychosis

- Heavy marijuana use may lead to earlier onset of schizophrenia in some adolescents
 - Phenomenon is dose-response related
 - Homozygous for the Val/Val variant of the catechol-o-methyltransferase gene which codes for dopamine at greatest risk
 - Effect not due to self medication as no relationship found between early psychotic symptoms and risk of cannabis use
- IV Δ^9 THC provokes dose-dependant positive and negative symptoms in people with schizophrenia

Marijuana and Psychosis cont.

- Cannabinoid receptors in the brain regulate the release of GABA, glutamate, dopamine, noradrenaline, serotonin, and acetylcholine
 - Use of cannabis may set off a "cascade of changes in neurotransmitter functioning"
 - Most likely pathway leading to psychosis is by Δ^9 THC effects on dopamine and serotonin
 - Remember the "dopamine hypothesis" of schizophrenia
- Marijuana use may account for ~10% of cases of psychosis in the general population

Amotivational syndrome

Snapshots at goodtv.com



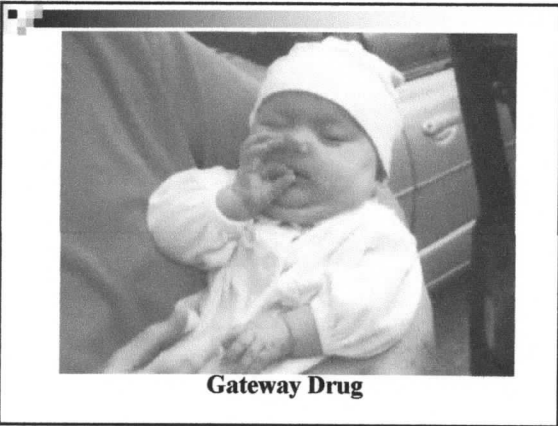
- Much debated state of chronic apathy said to be seen in regular marijuana users even when not high
- Aimlessness, passivity, uncommunicativeness, and lack of ambition are reported

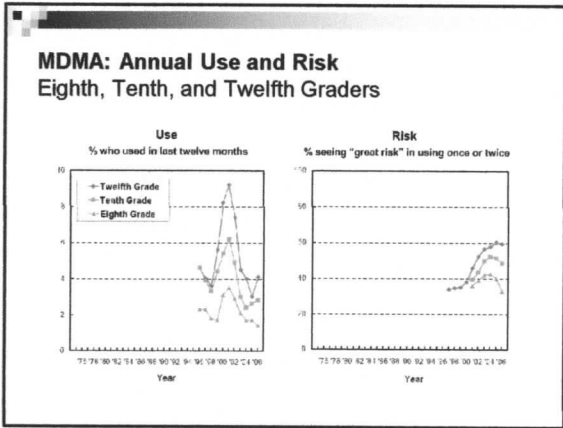
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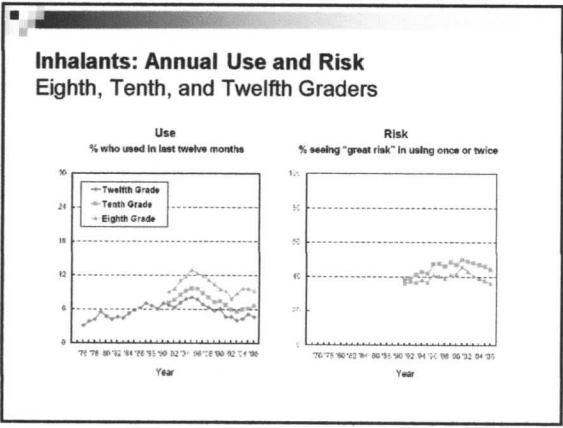
Is Marijuana a Gateway Drug?

- 60% of teens who use marijuana before age 15 will subsequently use cocaine
- Teens who use marijuana are 85 times more likely to use cocaine than teens who abstain

National Center on Addiction and Substance Abuse of Columbia University, October 27, 1997



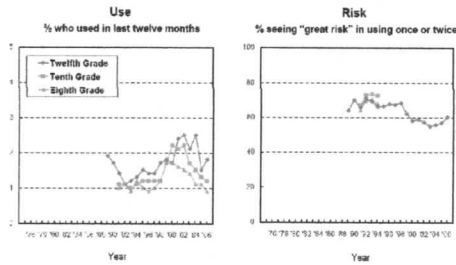




Inhalant Use

- Has consistently shown the highest annual prevalence among 8th graders and lowest among 12th graders
 - Reversal of the usual pattern of drug use
- Pattern of increasing use may be the cohort effect working its way up the age spectrum
- Perceived risk has been falling steadily for the past four years
 - May reflect generational forgetting

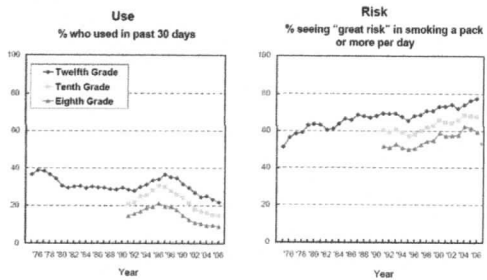
Steroids: Annual Use and Risk Eighth, Tenth, and Twelfth Graders



Don't Forget Cigarettes & Alcohol

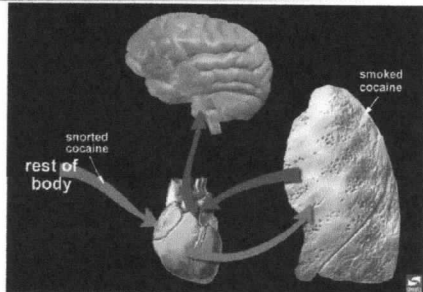
- 50% have smoked by 12th grade
 - 23% are current smokers
- 26% of 8th graders have smoked
 - 9% are current smokers

Cigarettes: 30 Day Use and Risk Eighth, Tenth, and Twelfth Graders



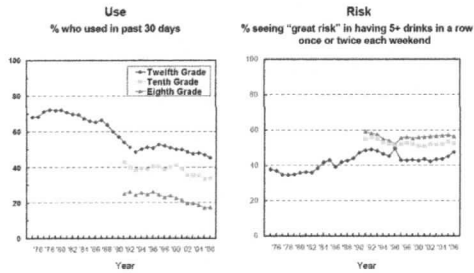
Smoking

- Many Black teens report that they took up cigarette smoking after marijuana smoking
- Prolonging MJ high, reversing MJ sedation and role models who smoke both are stated reasons given by youth
- According to George Koob, Ph.D. the combined use of tobacco and MJ boost the reward effect of each...making addiction more likely

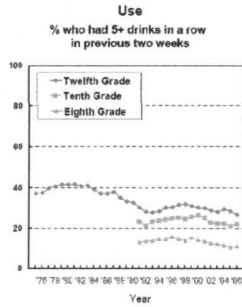


Smoke > IV > IM ≅ sniff > oral

Alcohol: 30 Day Use and Risk Eighth, Tenth, and Twelfth Graders



Alcohol: 2 Week Binge Drinking Eighth, Tenth, and Twelfth Graders



Binge Drinking

- Binge drinking (5 drinks or more in one sitting)
 - ~13% of 8th graders
 - ~25% of 10th graders
 - ~30% of 12th graders
- No perceived risk of binge drinking
 - ~44% of 8th graders
 - ~50% of 10th graders
 - ~58% of 12th graders

Where are we now?

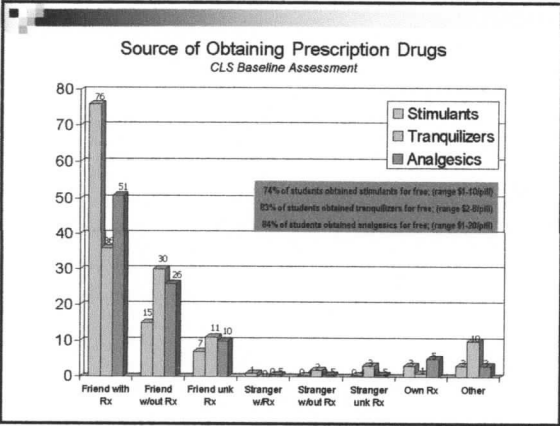
- By the time of the 8th grade, 1/3rd have used illicit drugs (including inhalants)
- 50% of HS seniors have tried an illicit drug
- 27% of those who have used an illicit drug have used a drug other than THC
- REMEMBER, in 1962 only 2% of pop had ever used an illicit drug!!!

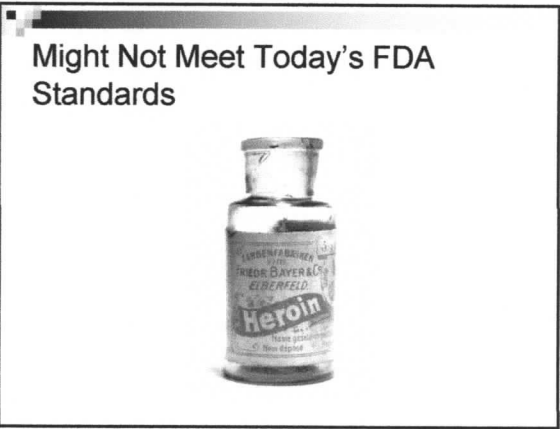
'Prescription' Drugs

- 1 in 4 high school seniors report using psychoactive medication without medical supervision
 - Sedatives
 - Narcotics
 - Barbiturates
 - Amphetamines

Generation Rx

- 18% of teens have abused Vicodin
- 20% tried Ritalin or Adderall without Rx
- 9% abused OTC cough syrup to get high
- More teens had abused a prescription painkiller in 2004 than Ecstasy, cocaine, crack or LSD
- April 21, 2005. Partnership for a Drug Free America. 17th annual study of teen drug abuse.





- ### Sub-Group Differences
- Males > Females (except cigs)
 - 10th grade girls overtook boys in 2005
 - Non-college bound > college bound
 - Used to be Northeast and West had highest rates, but this is no longer true
 - No consistent difference for socioeconomic status or population density

Sub-Group Differences

- Contrary to popular beliefs;
 - 8th, 10th and 12th grade African-American youngsters have substantially lower rates of illicit drug use verses whites
 - Also includes tobacco

Possible Reasons for Diverging Trends

- Determinants of drug often specific to the drugs
- Perceived benefits vs. perceived risk
- Word of perceived “benefits” spread much faster than perceived “risks”
- “Grace period” for new drugs


Implications for Prevention

- Must occur drug by drug – kids don’t generalize
- Perceived risks tend to vary inversely with changes in use
- New drugs introduced keep epidemic going
- Old drugs make come backs – “generational forgetting”

The psychic effect of cocaine...does not differ from the normal euphoria of a healthy person...absolutely no craving for further use of cocaine appears after the first, or repeated taking of the drug.

Sigmund Freud, 1884

“Even in its severe forms “coming down” from stimulants *does not cause a desire for more*. Unlike the heroin addict, the amphetamine or cocaine abuser... feeling the effects of overindulgence does not seek more of the drug to relieve his misery.”

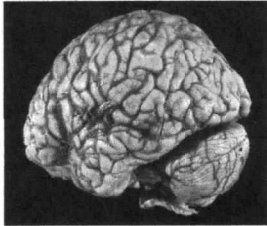


Schizophrenia and Related Psychology Today, Volume 18:10 March, 1977

Initiation and Cessation

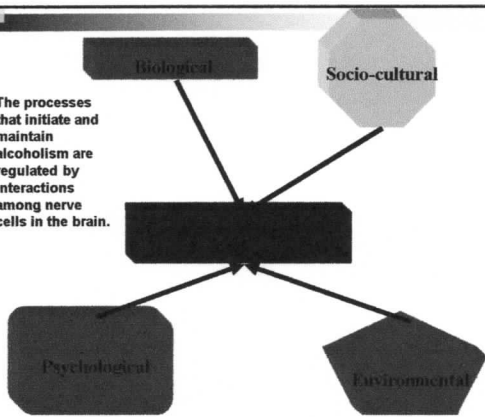
- Much more known about initiation
- Frequency of use and age most important factors in cessation
- Attitudes toward use effect initiation but not cessation

Addiction is a brain disease...



So What.....

The processes that initiate and maintain alcoholism are regulated by interactions among nerve cells in the brain.



The Developing Brain...



What happens when you expose the developing brain to drugs during childhood?

Brain Anatomy and Function

- Lateral ventricle: brain volume increases from ages 12-18
- There is a progressive increase in white matter density in the frontal cortex from ages 4-17
- Brain energy use matches that of the adult by age 2 and is twofold greater than that of the adult by age 9
- Synaptic density in major axonal reception zones is nearly double that of the adult between ages 1 and 5

Chenabey, R. et al., Developmental Neurobiology of Motivation in Adolescence: A Critical Period of Addiction Vulnerability. *Am J Psychiatry* 2007; 164: 1948-52

Brain Remodeling

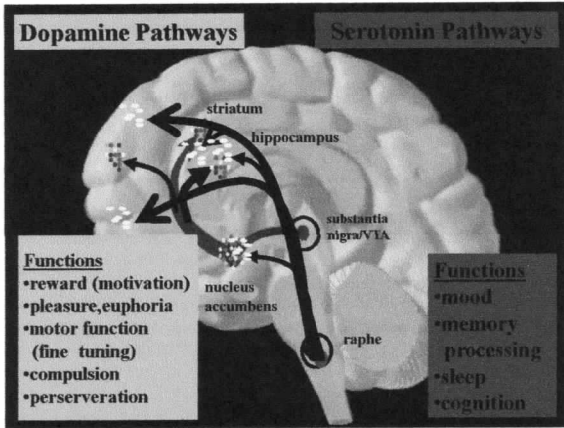
- Gray matter volume peaks in adolescence
 - Overproduction of axons in early puberty and rapid pruning shortly thereafter
- Prefrontal cortex and limbic system undergo reorganization

F. Craven et al., *Pharmacology, Biochemistry and Behavior* (2007)

Major Neurotransmitters in Childhood Brain Development

- Glutamate and NMDA receptor systems
- GABAergic systems
- Dopaminergic systems
- Serotonergic systems

F. Craven et al., *Pharmacology, Biochemistry and Behavior* (2007)



Dopaminergic Systems

- Remodeling during adolescence possibly contributes to behavior stabilization
- Maturation of dopamine neurotransmission during adolescence may be altered by alcohol and drug exposure leading to change in attitude, action, and social rewards

© Crowe et al., Pharmacology, Biochemistry and Behavior (2007)

Dopamine

- "Go!" signal
- When released into the nucleus accumbens is associated with motivational stimuli, subjective reward, thought, and learning of new behaviors
- Influences the response of the nucleus accumbens to glutamatergic input
- Children and adolescents operate at higher levels of baseline dopamine

Chamberlain R et al., Developmental Neurobiology of Methadone in Adolescence: A Critical Period of Addiction Vulnerability. Am J Psychiatry 2003, 160: 1040-53

Novelty

- Novelty in combination with food, sex, drugs, etc, synergistically increases dopamine increase for even higher levels of motivation

Chambers, R et al. Developmental Neurobiology of Attention in Adolescence: A Critical Period of Attention Vulnerability. *Am J Psychiatry* 2003; 160: 1949-52

Serotonergic Systems

- Serotonergic neurotransmitters are highly expressed at birth and decline dramatically in adolescence
- Low activity has been suggested to contribute to common adolescent behaviors, including
 - hypersensitivity to mild stressors
 - increased anxiety
- Binge drinking may increase the levels of serotonin transporters and create a relative paucity of serotonin

F. Crews et al. *Pharmacology, Biochemistry and Behavior* (2007)

Transcription Factor CREB and Growth Factor BDNF

- cAMP Response Element Binding protein (CREB)
 - Propagates signals from synapses to the nucleus leading to the expression of genes necessary for synaptic plasticity
- Brain-Derived Neurotrophic Factor (BDNF)
 - Involved in regulation of neuronal differentiation, neuronal survival, and neuroplasticity
- Both play a role in brain development and in addiction

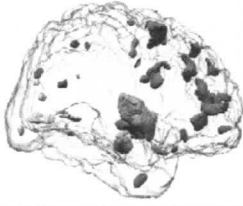
F. Crews et al. *Pharmacology, Biochemistry and Behavior* (2007)

The Adolescent Brain is Still Developing

- During adolescence, the brain is undergoing dramatic transformations
 - In some brain regions, over 50 % of neuronal connections are lost
 - Some new connections are formed
 - Net effect is pruning (a loss of neurons)

Ken Winters, Ph.D.

The Adolescent Brain is Still Developing



Brain areas where volumes are smaller in adolescents than young adults

Sowell, E.R. et al., Nature Neuroscience, 3(10), pp. 859-861, 1998

Childhood		Adolescence		Adult	
P6	P16	P25	P35	P45	P65
<i>During Adolescence the COGNITION-EMOTION Connection is Still Forming</i>					

Cunningham, M. et al., J Comp Neurol 453, pp. 116-135, 2002

Prefrontal Cortex

- Has long been associated with impulse control
 - Documented as early as 1848
- Abnormalities are associated with greater risk of SUD
- Dysfunction may result in
 - Preferential motivational response to the pro-dopamine effects of drugs
 - An unchecked progression of the neuroadaptive effects of drugs leading to compulsive drug seeking

Chamberlain, D. et al., Developmental Neurobiology of Motivation in Adolescence: A Critical Period of Addiction Vulnerability. Am. J. Psychiatry 2003; 160: 1040-52

The Critical Period

- “the adolescent brain is a critical period of vulnerability for disruption of brain regions important for individual development.”
 - Critical periods = windows during development when nature and nurture interact to establish functional characteristics
- “environmental alterations in gene transcription are unique during adolescence and likely impact the active remodeling of synaptic connections”

© Cohen et al., Pharmacology, Biochemistry and Behavior (2007)

Adolescence: A Critical Period

- Adolescents exhibit higher rates of experimental use and SUD than other adults
- SUD in adults most commonly have onset in adolescence
- The earlier the onset of substance use, the greater the predicted severity and morbidity
- Adolescents have heightened biological vulnerability!

Chambers, N et al. Developmental Neurobiology of Addiction in Adolescence: A Critical Period of Addiction Vulnerability. Am J Psychiatry 2003; 160: 1040-52

Examples

- Most adult smokers began smoking before age 18 in the US
- 40% of adult alcoholics had symptoms of alcoholism before the age of 19
- 16 is the median age of initiation of drug use in adults with SUD
- Adolescents show higher rates of tobacco dependence with fewer cigarettes smoked per day than adult smokers

Chambers, N et al. Developmental Neurobiology of Addiction in Adolescence: A Critical Period of Addiction Vulnerability. Am J Psychiatry 2003; 160: 1040-52

Age of Onset of First Alcoholic Symptoms Among Alcoholics

Age (years)	%
10 – 14	3
15 – 19	39
20 – 24	22
25 – 30	15
30 – 34	5
35 – 40	4

Natural History of Primary Alcoholism

	Years
Age at first drink	12-14
Age at first intoxication	14-18
Age at first minor problem	18-25
Usual age of onset	23-33
Usual age of treatment entry	40
Usual age of death*	55-60

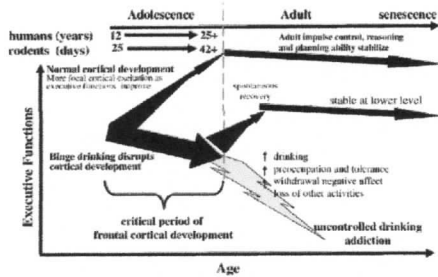
* Leading cause: Heart or liver disease, Cancer, Accidents, Suicide

Alcohol

- Exposure before and during critical periods of cortical development reduce functionality permanently
- The adolescent brain is particularly sensitive to alcohol-induced degeneration

F. Crews et al., Pharmacology, Biochemistry and Behavior (2007)

Alcohol & Cortical Development



© Crane et al., Pharmacology, Biochemistry and Behavior (2007)

Adolescent Brain Changes

- Earlier drinking more likely to result in alcohol dependence independent of family history
- Exposure of alcohol may indeed cause alterations in brain chemistry.... There are studies indicating heavy drinking during adolescence causes memory and neuropsychological changes
- Alternative explanation that early use may simply be a marker for example high novelty seeking behavior which is associated with early use as well as a risk for alcohol dependence

Crane et al., Age of onset of drug use: results from the National Longitudinal Alcohol Epidemiologic Survey. J Subst Abuse 1999; 10:103-12

Are adolescents more susceptible to alcohol than adults?

Most certainly YES

- 1 **Reduced sensitivity to intoxication**
- 2 **Increased sensitivity to social disinhibitions**
- 3 **Greater adverse effects to cognitive functioning**
- 4 **Medicates "excitability"**

Ken Winters, Ph.D.

■ People who reported starting to drink before age 15 were 4 times more likely to report meeting the criteria for alcohol dependence at some point in their lives

GRANT, S.P., AND DAWSON, D.A. Age at onset of drug use and its association with DSM-IV drug abuse and dependence: Findings from the National Longitudinal Alcohol Epidemiologic Survey. *Journal of Substance Abuse* 18:183-192, 1998.

Adolescent Brain

■ These brain changes are relevant to adolescent behavior

- Prefrontal cortex (PFC) is pruned and not fully developed until mid-20's
- Amygdala (and n.a.) show less pruning and tend to dominate the PFC

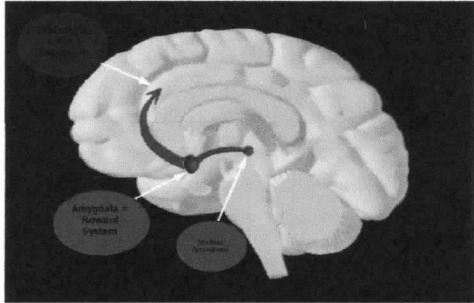
Adolescent Brain Changes

> These brain changes are relevant to adolescent behavior

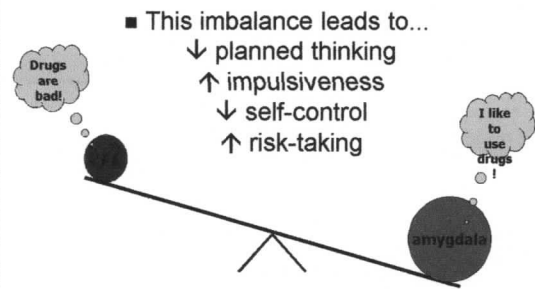
- > Prefrontal cortex (PFC) is pruned; not fully developed until mid-20's
- > Amygdala (and n.a.) show less pruning and tend to dominate the PFC

Ken Winters, Ph.D.

Judgment vs. Reward



Adolescent Brain



Reward-Related Learning

- Future behavior is shaped by past experiences associated with rewards
- Rewards are "stored" by means of neuroplastic changes in the nucleus accumbens
- This can be driven by repeated drug-provoked dopamine release
- These processes may underlie behavioral sensitization
 - Reward becomes stronger as it is repeatedly experienced

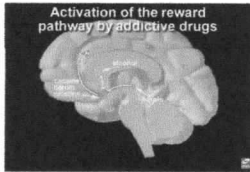
Chamber, R et al. Developmental Neurobiology of Motivation in Adolescence: A Critical Period of Addiction Vulnerability. *Am. J. Psychiatry* 2002; 160: 1045-52

From "Oops" to Dependence

Ken Winters, Ph.D.

"Oops Phenomenon"

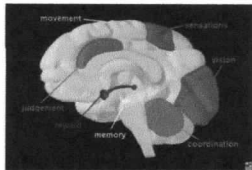
- First use to "FEEL GOOD"
- Some continue to compulsively use because of the reinforcing effects (e.g., to "FEEL NORMAL")
- Changes occur in the "reward system" that promote continued use



Ken Winters, Ph.D.

Reward System

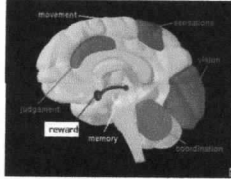
- The reward system is responsible for seeking natural rewards that have survival value
 - seeking food, water, sex, and nurturing
- Dopamine is this system's primary neurotransmitter



Ken Winters, Ph.D.

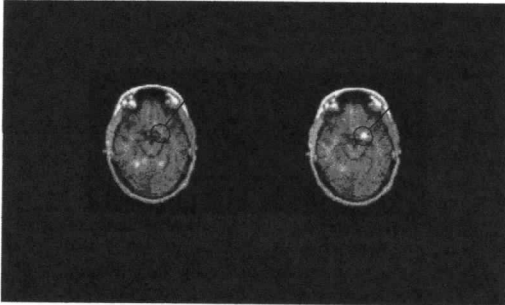
Drugs Hijack the Brain's Reward Circuitry

- > Immediate effect of drug use is an increase in dopamine
- > Continued use of drugs reduces the brain's dopamine production.
- > Because dopamine is part of the reward system, the brain is "fooled" that the drug has survival value for the organism.
- > The reward system responds with "drug seeking behaviors"
- > Craving occurs and, eventually, dependence.



Ken Winters, Ph.D.

The Memory of Drugs



Motivational Toxicity

- Intense motivation is critical in the disease of addiction
- Hierarchy of work-reward disrupted
- Brain is unprepared by evaluation for reward n demand or cocaine

Stages of Addiction to Drugs of Abuse

- Drug taking invariably begins with social drug-taking and acute reinforcement and often, but not exclusively, then moves in a pattern of use from escalating compulsive use to dependence, withdrawal, and protracted abstinence.
- During withdrawal and protracted abstinence, relapse to compulsive use is likely to occur with a repeat of the cycle.
- Genetic factors, environmental factors, stress, and conditioning all contribute to the vulnerability to enter the cycle of abuse/dependence and relapse within the cycle.

Koob 2006

Psychiatric Comorbidity

- Comorbidity of adolescent substance use disorder and other psychiatric disorders is common
 - Young adults with a history of an anxiety or depressive disorder are shown to have twice the risk for later substance abuse
 - Individuals with onset of substance use disorders during adolescence are 3 times more likely to be depressed, 4 times more likely to attempt suicide than later onset

Why the High Incidence of Comorbidity?

- Biological and psychosocial factors may predispose to both alcohol addiction and emotional disorders (i.e., uncontrollable trauma, schizophrenia)

Relationship Between AOD and Psychiatric Symptoms

- **AOD withdrawal can cause psychiatric symptoms or mimic psychiatric syndromes**
- **Psychiatric and AOD use disorders can independently coexist**
- **Psychiatric behaviors can mimic AOD use problems**

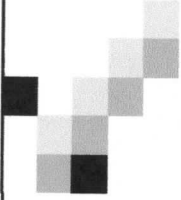
CSAT, Assessment and Treatment of Patients with Coexisting Mental Illness and AOD

Prevalence

1-Addiction + other psych → frequent

2-Other psych + addiction → frequent

3-Addiction alone → frequent



Addiction

The Great Masquerader

Common Psychiatric Diagnoses Occurring With Alcohol and Drugs

- Affective Disorders
- Anxiety Disorders
- Personality Disorders
- Psychotic Disorders
- Organic and Neurological Disorders
- ADHD

Assessment and Treatment
Factors unique to adolescents that must be addressed

- Entrenched denial
- Accelerated progression of disease
- Prevalence of dual diagnoses
- Habilitation vs. rehabilitation
- Need to provide comprehensive, individualized, adaptable and multidisciplinary continuums of care that include inpatient/outpatient treatment and on going care

More about Alcoholism

- *The idea that somehow, someday he will control and enjoy his drinking is the great obsession of every abnormal drinker.*

□ AA Big Book pg 30

Assessment Basics

- Establish ground rules, especially regarding confidentiality (“your secrets keep you sick”)
- Interview patient, parents together and separately – need collateral history
- Assessment must include question about:
 - Relationships (parent and peers)
 - Spirituality (including belief in satanic rituals)
 - Presence of family and personal secrets
 - Use of drugs by other family members
 - Other risk taking behavior

Testing for Alcohol and Drugs

- **Alternate Specimens and Technologies**
 - History Lesson– Urine Testing in the Laboratory
 - Saliva Testing
 - Sweat Testing
 - Hair Testing
 - Point of Collection (on site) Testing

Dimensions

- Dimension 1: Acute Intoxication/ Withdrawal Potential
- Dimension 2: Biomedical Conditions and Complications
- Dimension 3: Emotional/Behavioral Cognitive Conditions/Complications
- Dimension 4: Readiness to Change
- Dimension 5: Relapse/Continued Use Potential
- Dimension 6: Recovery Environment



Post acute withdrawal

- Sleep disturbances
- Mood lability
- Impaired concentration
- Decreased energy
- Stress sensitivity
- Anxiety

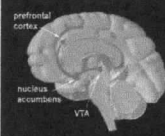
"Restless, irritable and discontented"

	Recovery			
	Normal	Drug Use	Addiction	Treatment

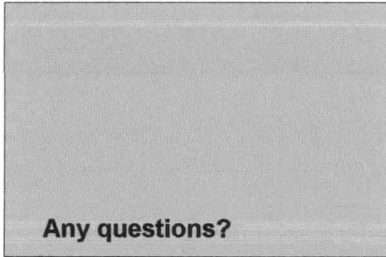
Treat both!

When treating other mental health disorder avoid mood altering drugs.

Remember all drugs of abuse work thru same pleasure area of the brain and may re-activate the addiction.



Following is a list of all drugs which are predictably effective for the treatment of addiction:



Any questions?

Treatment Outcome

- In general, adolescent substance abuse treatment decreases substance use
- Better outcome is associated with parental involvement, attendance at aftercare and treatment completion
- Abstinence has been associated with improvement in multiple domains

Treatment Outcomes

- **Quality of treatment, satisfaction of social supports, greater self-esteem and coping skills are associated with abstinence**
- **Greatest risk for relapse is within first 3 months post-treatment**
- **Relapse rates for adolescent substance abusers greater than that of adults**

Agents of Treatment

- Detoxification
- Group therapy
- Educational lectures
- Individual therapy
- Spiritual component
- Family therapy
- Network therapy
- Recreation & exercise therapy
- Attendance of self help groups (AA, NA)
- Nutritional management
- Medical management
- Psychiatric management



Team is necessary!

Making the 12-steps Adolescent Friendly

- **Must remember the developmental stages and tasks of adolescents (i.e. spiritual, emotional, physical and cognitive)**
- **Steps must be presented/"worked" in language understandable to adolescents**
 - **Step 1: Powerlessness vs. acknowledgment of a problem**
 - **Step 2: "Higher powers" of childhood may have been abusive, rejecting, abandoning, etc.**

How Much are We Missing ?

- **NCASA found:**
 - > 40% of pediatricians failed to diagnose illegal drug use, even with classic presentation.
 - > 40% of chemically dependent pts report PCP failed to diagnose addiction.
 - Only 1 in 5 PCPs feel adequately trained to diagnose addiction.
 - Time constraints, pt dishonesty about use and poor reimbursement sited as greatest barriers to diagnoses.
 - "Skepticaemia" about success of treatment.

Practice Implications

- Ask
 - Urine drug testing at all well child exams
 - UDS for all initial psych evaluations
 - Random UDS as indicated

Implications

- Prevention
 - Primary
 - Prevent initiation
 - Secondary
 - Limit progression
 - Tertiary
 - Treatment at some level
- Medical education
- Residency training
 - All specialties
- Continuing education (CME)
