parties, pills & pot
rite of passage or Russian roulette?

Amy LaHood MD MPH FAAFP
March 23, 2017
Disclosure

- Volunteer member of Indiana Attorney General’s Prescription Drug Abuse Prevention Task Force, 2012-present
- Family Physician- St. Vincent Indianapolis
Adolescent Brain (<24 years old)

- Has traditionally been viewed with adult brain prism
- Societal norms based on incorrect assumption of brain development
- Die is not cast at puberty
- Immeasurable neuroplasticity; extraordinary ability to learn new things
- Life Experiences during adolescence often significant primer future
- Harness a skill or talent
Adolescent Brain (<24 yo)

Immature Frontal Lobe & Executive Function

Executive function includes impulse control, problem solving, and inhibition, working memory and recognition of long term consequences.
Teen Brain (<24 years old)

- Primed to take risks
- Seek experimentation
- Immature decision making, judgment, impulse control
- Emotion & memory are not yet fully developed in adolescence

- Addictive substance use physically alter brain structure and function faster and more intensely than in adults
  - Interfering with brain development
  - Further impairing judgment
  - Significantly increase the risk of addiction
Risk of Addiction

- **90%** adults with substance abuse (nicotine/ alcohol /drugs) began smoking, drinking or using drugs < 18yo

- If use of substance <18yo
  - **25%** become addicted

- If use of substance >21
  - **4%** become addicted

- Children <15yo who use any addictive substance are 6.5X more likely to develop a substance use disorder as those who delay use until age 21 or older (**28.1 percent vs. 4.3 percent**).

Source:
"Adolescent Substance Abuse: America’s #1 Public Health Problem," National Center on Addiction and Substance Abuse at Columbia University, June 2011, p. 2.
Why do adolescents use drugs or alcohol?

If using/abusing...

▪ To fit in
▪ To escape or relax
▪ To feel grown up
▪ To relieve boredom
▪ To rebel
▪ To experiment (curiosity)
▪ Peer Pressure
▪ To stay awake

If dependent on them...

▪ Craving ... a strong need or urge ingest substance
▪ Loss of control ... not being able to stop or cut down
▪ Feeling bad physically and emotionally when not using
Brain Physiology 101

When your brain releases one of these chemicals, you feel good.

Dopamine  Serotonin  Oxytocin  Endorphin

MeetYourHappyChemicals.com

Loretta G. Breuning, PhD
Dopamine hardwires brain “Reward/Motivation” in Teen Brain

- Typically, dopamine (feel-good hormone) in the brain increases in response to natural rewards, such as food, sex and social interaction. When cocaine is taken, dopamine increases are exaggerated, and communication is altered.
Reward Pathway - Feel Good (Motivation) hormones
Spectrum of Substance Use

- Beneficial Use
- Casual Non-Problematic Use
- Problematic Use (all adolescent use of addictive substances)
- Chronic Dependence/Addiction
Consequences of Adolescent Substance Use

- Injuries
- Unintended pregnancies/STI’s/Sexual assault
- Asthma
- Depression, anxiety, psychosis
- Impaired brain function
- Reduced academic performance
- Reduced educational achievement
- Criminal involvement
- Death (75% caused by substance use)
DRUG ADDICTION

Addiction is a condition characterized by repeated, compulsive seeking and use of drugs, alcohol or similar substances despite adverse social, mental and physical consequences.
Collateral Damage from Substance Use

>700B/year

- Lost productivity
- Educational loss
- Medical (1/3 of all hospital costs)
- Judicial Costs
- Homelessness (>1/3 Addiction)
- Domestic Abuse
- Crime (80% related to drugs/alcohol)
- Death
- Abuse/Neglect of children (40-80% all CPS cases)

HIV Epidemic In Scott County Indiana
Risk of Addiction Depends on . . . .

- Genetic inheritance (40-60%)
- Biological responses to the reward (Cannot control this)
- Past adverse experiences (neglect or abuse)
- Temperament
- Social influences
- Underlying mental health (including stress)
- Maturity of the brain
Treatment of Addiction

• Lifelong Recovery
• Cost prohibitive $$$$  
• Difficult to access  
• Relapse is the norm  
• No Cure
LAST TWO DECADES OF ALCOHOL, CIGARETTE, AND ILLICIT DRUG USE*

*Past-month use

<table>
<thead>
<tr>
<th>Year</th>
<th>Alcohol</th>
<th>Cigarettes</th>
<th>Illicit drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>2015</td>
<td>35.3% of 12th graders</td>
<td>11.4% of 12th graders</td>
<td>23.6% of 12th graders</td>
</tr>
<tr>
<td>2015</td>
<td>21.5% of 10th graders</td>
<td>6.3% of 10th graders</td>
<td>16.5% of 10th graders</td>
</tr>
<tr>
<td>2015</td>
<td>9.7% of 8th graders</td>
<td>3.6% of 8th graders</td>
<td>8.1% of 8th graders</td>
</tr>
</tbody>
</table>

NIH National Institute on Drug Abuse
WWW.DRUGABUSE.GOV
<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>79%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>38%</td>
</tr>
<tr>
<td>Alcohol with caffeine</td>
<td>34%</td>
</tr>
<tr>
<td>Tobacco using Hookah</td>
<td>23%</td>
</tr>
<tr>
<td>Cigars</td>
<td>20%</td>
</tr>
<tr>
<td>Cigarette use</td>
<td>20%</td>
</tr>
<tr>
<td>Illicit (not marijuana)</td>
<td>20%</td>
</tr>
<tr>
<td>Adderall</td>
<td>10.7%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>4%</td>
</tr>
<tr>
<td>Narcotics</td>
<td>3%</td>
</tr>
<tr>
<td>Heroin</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Monitoring the Future 2015 College Students

- Cigarette use past 30d – 11%
- Daily Cigarette use – 4%

Monitoring the Future 2015
College Students

- Intoxication past 30d - 38%
- Alcohol Binge in past 2 weeks - 31%
- Daily Alcohol use - 3%

Binge Drinking (>5 drinks)

- **46%** Indiana College Students past month
- **25%** college students academic consequences
- **1,825** college students die accidents/yr
- **696,000** college students assaulted/yr
- **98,000** sexually assaulted or raped/yr
- **Costs US $191 Billion**
  - Lost productivity, accidents, health care

**THE CONSUMPTION AND CONSEQUENCES OF ALCOHOL, TOBACCO, AND DRUGS IN INDIANA: A STATE EPIDEMIOLOGICAL PROFILE 2015.**
[https://www.healthpolicy.iupui.edu/PubsPDFs/2015%20State%20Epidemiological%20Profile.pdf](https://www.healthpolicy.iupui.edu/PubsPDFs/2015%20State%20Epidemiological%20Profile.pdf)


Monitoring the Future 2015
College Students

- Annual Marijuana
  38% (39% Non-college peers)
- Past 30d Marijuana
  21% (25% Non-college peers)
- Daily Marijuana use-
  4.6% (11.8% non-college peers)

Marijuana Use is Common

- Marijuana is the most commonly used illicit drug in the U.S.
- **48%** of adults in the US report having used marijuana at some time in their life
  - Recreational use - California, Massachusetts, Maine, Alaska, Nevada, Washington, Oregon, Colorado

Why Do People Use Marijuana?
Among people who used marijuana in the past year:

- 47% For Fun
- 30% For Medical Reasons
- 23% For Fun and for Medical Reasons

SOURCE: Pew Charitable Trust, 2013
Marijuana growers have worked to make the drug as potent as possible.

- 1960s-70s THC concentrations were 1-2%. Today, they are as high as 20%

“IT’S NOT YOUR DAD’S ‘POT’ ANYMORE”
Marijuana Short Term Effects

Potential Upside

▪ Reduce anxiety
▪ Promote Euphoria
▪ Promote Relaxation

Potential Downside

▪ Impaired memory
▪ Impaired learning attention
▪ Impaired reaction time/coordination (drugged driving)
▪ Increase risk of Paranoia/Psychosis
▪ Impair decision making
▪ Acute intoxication (rare)
Teen Marijuana Use & Long-Term Associations

- Persistent and heavy use among adolescents reduces IQ by 8 points
- Increased risk of mental illness (??cause or effect)
  - Schizophrenia (6 fold)
  - Psychosis
  - Depression/Anxiety
  - Amotivational syndrome
1 in 6 teens become addicted

1 in 10 adults and 1 in 6 adolescents who try marijuana will become addicted to it.

- The adolescent brain is especially susceptible to marijuana use.
- When kids use, they have a greater chance of addiction since their brains are being primed.

# Prescription/Over-the-Counter vs. Illicit Drugs

<table>
<thead>
<tr>
<th>Drug Type</th>
<th>Prescription/OTC</th>
<th>Illicit Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetamines</td>
<td>7.7%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Adderall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opioids other than Heroin</td>
<td>5.4%</td>
<td></td>
</tr>
<tr>
<td>Tranquilizers</td>
<td>4.7%</td>
<td></td>
</tr>
<tr>
<td>Cough Medicine</td>
<td>4.6%</td>
<td></td>
</tr>
<tr>
<td>Vicodin</td>
<td>4.4%</td>
<td></td>
</tr>
<tr>
<td>OxyContin</td>
<td>3.7%</td>
<td></td>
</tr>
<tr>
<td>Sedatives</td>
<td>3.6%</td>
<td></td>
</tr>
<tr>
<td>Ritalin</td>
<td>2.0%</td>
<td></td>
</tr>
<tr>
<td>Marijuana/Hashish</td>
<td></td>
<td>34.9%</td>
</tr>
<tr>
<td>Synthetic Marijuana</td>
<td></td>
<td>5.2%</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td></td>
<td>4.2%</td>
</tr>
<tr>
<td>MDMA (Ecstasy)</td>
<td></td>
<td>3.6%</td>
</tr>
<tr>
<td>Cocaine (any form)</td>
<td></td>
<td>2.5%</td>
</tr>
<tr>
<td>Inhalants</td>
<td>1.9%</td>
<td></td>
</tr>
<tr>
<td>Salvia</td>
<td>1.9%</td>
<td></td>
</tr>
</tbody>
</table>

*The percentage of 12th graders who have used these drugs in the past year.

Despite the ongoing opioid overdose epidemic, past-year use of opioids other than heroin has decreased significantly each year over the past 5 years among the nation's teens.

Heroin use has also decreased over the past 5 years and is at the lowest rate since the MTF survey began.

[www.drugabuse.gov](http://www.drugabuse.gov)
What is “Spice” “K2”? (Synthetic Marijuana)

- Spice or K2 is a mixture of herbs or spices sprayed with synthetic chemicals
- Smoked to get high
- Spice is NOT Marijuana, it is a dangerous Hallucinogenic Drug!
- Intentionally Mislabeled as “herbal incense”, and “potpourri”
- Marked “Not For Human Consumption”
Spice (synthetic marijuana)
Effects on Mind & Body

- Increased BP / Increased heart rate
- Blood shot eyes
- Insomnia
- Tingling, numbness, Tremors
- Vomiting
- Seizures
- Cardiac Arrest

- Agitation
- Anxiety / panic attacks
- Depression
- Paranoia / Psychosis
- Hallucinations – Visual or Auditory
- Suicidal Thoughts?
Prescription Drug Misuse

- **USA <5%** of world population
- consumes **>80%** global opioid
- consumes **2/3** global illicits

Source: NSDUH 2009
Unintentional Drug Poisoning Deaths Involving Opioid Analgesics, Cocaine and Heroin: United States, 1999–2011

% CHANGE
2006-11

+ 28%

- 35%

+ 119%

Number of Deaths

Year

1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011

CDC, National Center for Health Statistics, National Vital Statistics System, CDC Wonder. Updated with 2011 mortality data
Commonly Abused Prescription Drugs
Most common misused prescription drugs

• Pain Medications - Opioids or Narcotic
  • Euphoria, Ease stress, help students relax

• Sedatives
  • relax, sleep or treat anxiety

• Stimulants – Adderall, Ritalin, Vyvance
  • study or stay awake
Every 19 minutes an American Dies of a Prescription Drug Overdose
MVA vs. Poisoning Deaths

NCHS Data Brief, December, 2011. Updated with 2009 and 2010 mortality data
Rates of Opioid Overdose Deaths, Sales, and Treatment Admissions, United States, 1999–2010

CDC. MMWR 2011. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm60e1101a1.htm?s_cid=mm60e1101a1_w. Updated with 2009 mortality and 2010 treatment admission data.
Source of Prescription Narcotics Among Those Who Used in the Past Year, 12th Grade*

*Categories not mutually exclusive

SOURCE: University of Michigan, 2015 Monitoring the Future Study
ABUSE OF PRESCRIPTION PAIN MEDICATIONS
Risks Heroin Use

In 2010 almost 1 in 20 adolescents and adults – 12 million people – used prescription pain medication when it was not prescribed for them or only for the feeling it caused. While many believe these drugs are not dangerous because they can be prescribed by a doctor, abuse often leads to dependence. And eventually, for some, pain medication abuse leads to heroin.

1 IN 15

People Who Take Non Medical Prescription Pain Relievers Will Try Heroin Within 10 Years

Number of People Who Abused or were Dependent on Pain Medications and Percentage of Them that Use Heroin

- 2004: 1.4 million, 9%
- 2010: 1.9 million, 14%

Heroin users are 3X as likely to be dependent.

- 14% of non medical prescription pain reliever users are dependent.
- 54% of heroin users are dependent.

Heroin Emergency Room Admissions Are Increasing

- 2005: 200K
- 2008: 230K
- 2011: 260K
Heroin: Killing A New Generation
US Heroin prices

(U) Chart 6. Retail-level Average Price Per Gram Pure, for Heroin in the United States, 1981 to 2012

Source: Institute for Defense Analyses and ONDCP
Lethal Dose of Heroin/Fentanyl
New Hampshire State Police Forensic Laboratory
National Overdose Deaths
Number of Deaths from Heroin

Source: National Center for Health Statistics, CDC Wonder
Heroin’s downward spiral

- Intoxicating euphoria
- Use to get High
- Use to Feel Good
- Context becomes etched in memory
- Ordinary rewards lose power
- Increased sensitivity to stress
- Negative emotions

Addiction
Who are these people?
Mia Culpa - We Send Mixed Message

THE FIFA WORLD CUP™ IS HERE
BUDWEISER OFFICIAL SPONSOR

SMOKE WEED EVERYDAY IN YOUTH
BECOME PRESIDENT OF THE US
Russian Roulette or Right of Passage?

If you could substantially improve the chances that students would avoid accidents, Injuries (including car accidents, rape and STI’s), a range of medical and mental health problems, unintended pregnancies, criminal involvement and even death, AND that they would do better academically and professionally, would you do it?
What Can Be done?

DELAY ONSET and MIMIMIZE EXPOSURE TO SUBSTANCE USE be it tobacco, alcohol, or drugs
Russian Roulette

Even Once - Doing Meth, Bath Salts, Synthetic Marijuana, Prescription Narcotics, Heroin or Cocaine
Will harm an adolescent & could kill them
How can Universities minimize substance use?

- Commit to long term change in the campus culture
- Become Tobacco, Drug and Alcohol Free Campus
- Ban alcohol advertising during any Collegiate events
- Require student education about drug & alcohol abuse
- Foster a culture that supports non-drug/non-alcohol events
- Support a Collegiate Recovery Network
- Incorporate Life Skills into campus experience to learn coping/problem solving skills
- Encourage student involvement in Spiritual Practices/Activities/Communities
- Create environment where students can access evaluation/treatment of stress, anxiety, depression or any mood issues

- **Limit Campus Access to addictive substances**
Indiana Lifeline Law

INDIANA LIFELINE LAW
MAKE THE CALL
SAVE A LIFE

NALOXONE
SAVES LIVES
AND SHOULD BE
AS READILY
AVAILABLE AS
EPI-PEN

Diary Of An Addict
Thank you