Understanding the Impact of Marijuana on Today’s Youth:

Compassionate Care Act

Andrea G. Barthwell, MD, FASAM
CEO of EMGlobal, Founder and Director of Two Dreams
TOI Annual Educational Conference
November 10th, 2014
Disclosures

- No conflict of interest with this content

- Potential perception of conflict:
  - Collaborator: Caron Foundation
  - Consultant: Alvee Laboratories, Braeburn Pharmaceuticals, Millennium Laboratories
  - Founder: The Parents Academy (supported, in part, by Caron Foundation)
  - Managing Partner: Treatment Partners LLC (Two Dreams Outer Banks)
  - Medical Director: Encounter Medical Group, P.C.
  - Partner: EMGlobal LLC
  - Former Consultant: GW Pharmaceuticals
Outline

- Debunking the myths
- Prevention works
My Opinions

- Extensive review of scientific literature
- Personal communications with scientists in the area
- Physician in addiction medicine
- Former member of FDA advisory board
- Former policy advisor to President Bush
The Marijuana Problem

Bigger Than Previously Recognized
The Marijuana Problem

- Most widely used illicit drug in America
- Of 5.6 million suffering, 62% are using marijuana
- Young people represent 23% of the suffering population
Problem, Continued

- Average age of initiation decreasing
- Marijuana’s potency is increasing
- With increasing potency and earlier use, marijuana poses significant threat
Problem, Continued

- Of all teens in drug treatment, 62% had primary marijuana diagnosis
- More young people in treatment than for alcohol
- Almost equal numbers from criminal justice and other sources
Treatment Admissions (Ages 12 - 17) Primary Diagnosis

- Alcohol only: 18%
- Alcohol w/drug: 60%
- Opiates: 2%
- Cocaine: 2%
- Marijuana: 8%
- Stimulants: 8%
- Other/None: 3%

SOURCE: SAMHSA, Treatment Episode Data Set, 1999
Debunking the Myths

- Marijuana is harmless
- Marijuana is not addictive
- Youth experimentation is inevitable
- The criminalization of marijuana use is what leads to crime, not the drug itself
Myth 1: Marijuana Is Harmless

- Health consequences
- Social consequences
- Economic consequences
Health Consequences Defined

- **Acute Effects**
  - while intoxicated

- **Post acute withdrawal**
  - abstinent state in the regular, dependent user
Health Consequences Defined

- Persistent and Chronic Effects
  - Impairments developed as a result of prolonged use, endure beyond the period of intoxication
  - Impairments due to use, structural and functional changes to major organs
Acute Effects

- Time sense alterations
- Short term memory loss
- Attention skills
- General difficulty expressing simple thoughts in words
Acute Effects

- Motor skills
- Increase in hunger
- Nausea
- Dizziness
Acute Effects

- Alter mood
- Euphoria
- State of relaxation
- Panic
Acute Effects

- Trait and state anxiety
- Tension and anger
- Confusion
- Depersonalization and other behavioral effects
Areas of Harm

- Need for acute care
- Central Nervous System
Need for Acute Care

- Relationship to acute need for medical assistance
- Rising faster than heroin caused need for medical assistance
DAWN MENTIONS

Sources: Drug Abuse Warning Network, SAMHSA, August 2003
Univ of Miss Marijuana Potency Report #82, Aug 2003
*NOTE: Data prior to 1994 may not be comparable to 1994 through 2001

Source: SAMHSA, Drug Abuse Warning Network
Central Nervous System

- Sites of action
- Memory
- Psychological vulnerability
Mechanisms of Action

- Produces anticipated and unanticipated effects binding with receptors
- High-affinity sites specific for Cannabinoids
- Two receptors CB1 And CB2
Human Memory

- Most profound effect on recent memory
- Long term memories not affected
- Incapable of functioning on the basis of knowledge regarding his personal life
More on Memory

- Hippocampus has receptors for endogenous "marijuana" (anandamide)
- Hippocampal damage is associated with failure to make new memories
- If stimulate receptor, hippocampus activity decreases
More on Memory

- With repeated use, tolerance to loss of memory develops
- With repeated use, tolerance to drug develops and user uses more drug
- You do the math
Post Acute Effects

- Human aggressive responding

  - Conditions
    - Provoke subjects coming off drug
    - Provide opportunity to retaliate
    - Measure amount of retaliation

- Acute Marijuana, Ss with ASPD
  - Increased aggressive responding
Persistent and Chronic Effects

- Physical
- Psychological
Physical

- Respiratory
  - Carcinogenic components
  - Air obstruction
  - Decreased exercise tolerance
  - Chronic cough
  - Bronchitis
  - Decreased pulmonary function
  - Cancer
Physical

- Cardiovascular
  - Increases in heart rate
  - Can aggravate existing cardiac conditions or hypertension
  - Reversed with abstinence
Physical

- Reproductive
  - Inhibitory effects on pituitary leutenizing hormone, prolactin, and growth hormone
  - Decreases plasma testosterone, sperm count and motility
  - Marijuana is antiandrogenic with decreased libido or impaired fertility
  - Disrupts female reproductive system
  - Impacts pregnancy in adverse ways
Physical

- Immune impairment
  - Contradictory in human studies
  - Animal models show impairment
  - Decreases signals to T helper cells
  - Interferes with macrophage antigen processing
  - May increase the risk of cancer (cancer surveillance system)
Psychological

- Psychiatric illness- no specific syndromes, however, may precipitate an illness
- Visual distortions
- Decrease in color discrimination
- Decrease in ocular tracking
- Decreased detection, recognition and analysis of peripheral visual field
Social Consequences

- Marijuana changes the way sensory information is processed
- Poor performance in school
- Increased delinquency
Psychological- Cognitive

- Impairment in ability to learn
- Listening and repetition learning compromised
- Heavy use associated with deficits in mathematical skill and verbal expression
Economic Consequences:

- Lost employee productivity
- Public health care costs
- Accidents and crashes
- Americans spent $10.6 billion on marijuana purchases in 1999
MYTH 2: Marijuana Is Not Addictive

- Science of dependence and addiction
- Syndrome described
Laboratory Evidence

- Marijuana is much more powerful today than it was 30 years ago
- Marijuana addicts experience withdrawal
- There is an animal model for dependence
Absorption and Metabolism

- Self administration is by smoking and inhalation
- Can be taken orally
Absorption and Metabolism

- Smoke contains more than 150 compounds
- Many of the Cannabinoids have psychoactive properties
Pharmacology Is Complex

- Volatilized THC
- Deep inhalation
- Rapid absorption from the lungs
- THC and major metabolites traced throughout body and brain
Physical Dependence Producing Properties

- Long half life
- Low clearance
- Cumulative drug load
  - High intrinsic pharmacological activity
Reinforcing Properties

- Rapid absorption
- High intrinsic pharmacological activity
- Rapid entry into specific regions of brain
Tolerance

- Extreme tolerance develops quickly and continues for a long time after stopping
Addiction Liability

- Reproducible tolerance
- Acute physical dependence
- Physical dependence
Syndrome Described

- Insomnia
- Abstinence
- Nausea
- Anorexia
Syndrome Described

- Agitation
- Restlessness
- Irritability
- Depression
- Tremor
Syndrome Described

• After 21 days of heavy use
  • Onset 10 hours of cessation
  • Peaks within 48 hours
  • Terminates by fifth day of abstinence
Clinical Observations

- Antisocial problems associated with progression
- One in ten who try develop dependence
MYTH 3: Youth Experimentation With Marijuana Is Inevitable

- Peer to peer spread has been misunderstood
- The majority of young people do not use
- Recent decreases belie the belief that “nothing works”
MYTH 4: Criminalization Leads to Crime, Not the Drug

- Research links
- Why non-dependent use is harmful
- When controls are lifted, harms are increased
Research Links

- Marijuana use and violence
- Availability increases use
- The Dutch experience
- Prison data
  - Numbers of those serving time
  - Percent dealers
Responsible Public Policy

- Stopping Initiation
- Brief and Early Interventions
- Treatment Improvement
  - Denial Gap
  - Motivation Gap
  - Treatment Gap
  - Recovery Gap
When Controls Are Lifted

- Drug Culture Messages
  - Drugs can’t hurt you
  - Drugs are fun
  - You can use responsibly
- 1970s experience
During the 1970s

- 11 states decriminalized marijuana
- 30,000 head shops
- “Responsible-use” messages
- Drinking age of 18
- Sale of cigarettes, alcohol to teens
By 1979:

- 35 percent of adolescents
- 65 percent of high school seniors
- 70 percent of young adults had tried an illicit drug
Prevention Messages

- Drugs can hurt you
- Drugs cause addiction and death
- Drugs are not healthy
- Breaking the law is not responsible
Parent Movement

- Formed 3,000 parent groups
- Stopped decriminalization
- Banned head shops
Parent Movement

- “No-use” messages
- Drinking age of 21
- Worked to stop sale of cigarettes, alcohol to adolescents
Results From 1979 to 1992...

- Drug use drops by 2/3 among adolescents, young adults
- Daily marijuana use drops 500 percent
Fact: We Can Make A Difference

- When communities come together, the drug problem recedes
- Proven techniques can halt marijuana use:
  - Student drug testing
  - Parent involvement
  - Respect for community norms and laws
  - Science-based drug prevention
Parenting

Identifying Risky Behaviors
Objectives

- Describe path to use, abuse, and dependence
- Explain developmental tasks of adolescence
- Explore parenting for development
- Understand variables to use
Objectives, continued

- Minimize enabling feelings, beliefs and behaviors
- Encourage growth and responsibility
- Outline potential consequences of potential insults
- Create recovery plan
Major Forms of Drug Use

- Alcohol Use
- Cocaine Use
- Hallucinogen Use
- Heroin Use
- Inhalant Use
- Marijuana Use
- Methamphetamine Use
- Sedative-Hypnotics and Anxiolytics Use
The Lure and the Trap

- Start to use drugs
- Pleasure experienced
Path to Addiction

- Innocent beginning
  - Minor effects
  - Pleasurable effects
  - Cannot “unlearn”
- Continued social use
  - Unpleasant effects diminish
  - Economic costs minimal
  - No interference with activities
Path to Addiction

- Line crossed
  - Consequences increase
  - Use to feel normal
  - Hard to connect experience to drugs
- Majority of students, no observable major consequences
Why Use a Developmental Model?

- To assess
- To encourage and promote growth
- To understand
Seven Areas of Development

- Physical
- Social
- Emotional
- Cognitive
- Psychosexual
- Temperamental
- Moral
Four Tasks of Adolescence

- Seven areas translate into four major areas where major developmental tasks are defined as:
Goals of Development are Balanced by Preoccupations of Adolescence

- Sexual identity
  - Body image (fertility)
- Self identity
  - Friends
- Separation
  - Independence (family)
- Vocational selection
  - Value clarification (future)
Early Adolescence

- First efforts at separation
- Recognition of non-perfect parent and rebellion against them
- Strong identification with peers
Early, continued

- Abstract thinking
- Verbalization of values
- Mood swings
- Difficulty with impulse control
- Insecurity about body changes
Middle Adolescence

- Peak of rebellion
- Transition from parental to peer direction
- Increased sexual interest
Middle, continued

- Difficulty with postponement of gratification
- Increased cognitive abilities
- Values clarification
Late Adolescence

- Firmer identity
- Increased ability to express emotions
- Increased ability to postpone gratification
Late, continued

- Resolution of relationship with authority figure
- Increased emotional stability
- Increased self reliance
Why Use a Developmental Model?

- To assess
- To encourage and promote growth
- To understand
Parenting

- Description
- Security v. Freedom
- Limits
  - Clear
  - Age Appropriate
  - Earned
  - Growth Oriented
Good Consequences

- Related
- Reasonable
- Timely
- Basic
- Escalate
- Consistently applied
- Calmly applied
Bad Consequences

- Revengeful
- Self-punishing
- Empty
- Shaming
- Primary
Why Kids Use: Contrasting Views

Parents
- School
- Parents
- Peers
- Pushers
- Media
- Police
- Role Models

Adolescents
- Feelings
- Fun
- Risk Taking
- Thrill Seeking
- Autonomy
- Experimentation
- New Identity
Variables to Experimentation

- Availability
- Access
- Perceived Risk
- Prior Use
- Peer Use
- Respect Norms
Enabling: Feelings

- Protective instinct
- Self-doubt
- Fear
- Performance anxiety
- Anger
Enabling: Beliefs

- Pressures are too great
- I am not relevant
- All kids do it
- I love, therefore, I trust
Enabling: Behaviors

- Keeping secrets
- Avoiding conflict
- Shielding from consequences
- Doing their work
Adolescents’ Responsibilities

- Feelings
- Behaviors
- Performance
- Social life
- Outside life
- Future
Teaching Adolescents

- Modeling
- Reinforcement
- Consistency
- Encouraging
- Patience
- Allowing mistakes
Consequences Early

- Ambivalence about separation
- Persistent anger
- Self harming behaviors
- Rebellious peers/subculture
- Doubts
Early, continued

- Frustration and isolation
- Inability to deal with the abstract
- Confusion
- Inability to learn from experiences
Consequences, Middle

- Struggles with parents
- Self involvement
- Peer approval seeking
- Active sexual fantasy life
Middle, continued

- Inability to postpone gratification
- Unable to abstract
- Poorly defined moral values
- Inability to use wisdom and to evaluate situations according to appropriate values
Consequences, Late

- Minor adult disturbances
  - Unresolved relationship and identity issues
  - Expression stunted
  - Unable to postpone gratification
  - Persistent emotional instability
  - Personal responsibility lags
  - Ability to make choices confused
Late, continued

- Mood swings
- Difficulty in defining vocational goals
- Deficits in formulation of moral, religious, and sexual values
Model Treatment Programs

- Bio-behavioral assessment
- Detoxification considerations
- Counseling
- Medical treatment
- Psychiatric care
- Referral to wrap around services
- Long term follow-up
Resources

- ASAM website for PPC  
  (http://www.asam.org/publications/patient-placement-criteria/ppc-2r)
- NIDA (http://drugabuse.gov/)
- Two Dreams (http://www.twodreams.com)
- Dr. AGB (https://twitter.com/dragb)
- Dr. AGB Goes to Back Rehab  
  (http://drbarthwell.wordpress.com/)
- The Challenge in Higher Education: Confronting and Reducing Substance Abuse on Campus  
  (https://www.ncjrs.gov/ondcppubs/publications/pdf/challenge_higher_ed.pdf/)
Thank You!

Questions?