Understanding Substance Use Disorders

Igor Koutsenok, MD
University of California San Diego
School of Medicine
Center for Criminality & Addiction Research, Training & Application
Why study substance use disorders?

- You will encounter it
- It could happen to you
- You need to know how to deal with it
- Help eliminate the negative prejudice and stigma
- Substance abuse & addiction are treatable
- You can make a difference
S.P.A.M.

• Stigma
• Prejudice
• Anger
• Misunderstanding

All of these lead to myths: widely spread inaccurate beliefs as compared to research-generated facts

"Absinthe Drinker“ Pablo Picasso (1910)
Why do we call certain chemicals “psychoactive substances”?
Drug Categories

Based on usual effects at usual doses
Drug Categories

- Depressants
- Stimulants
- Opiates
- Cannabinoids
- Hallucinogens
- PCP
- Solvents
- Others
Effects of CNS depressants
Effects of CNS stimulants (amphetamines)
Effects of CNS stimulants
Caffeine addiction
Definitions

- **Abuse** - intentional overuse in cases of celebration, anxiety, despair, self-medication or ignorance. Tends to decline with consequences.

- **Dependence** - impaired control over drug use, caused by a dysfunction of the mesolimbic system, or “pleasure pathway”.

- Dependence ≠ Addiction
Addiction is:

- A pattern of chronic, relapsing, compulsive drug-taking behavior
- Characterized by impaired control over drug use
Remember...

Addiction is a disorder no one chooses to have.

It is marked by a resistance to give up drugs.
Why only some people develop problems?
Common risk factors and vulnerabilities

- Alcoholism and drug addiction are primarily psychological problems.
- Alcoholism and drug addiction are primarily socio-environmental problems.
- Alcoholism and drug addiction are medical problems – diseases.
Psychological Models

- Addictive Personality - ???
- Self Medication
- Personality Disorders (anti-social, OCD, etc.)
- Self Esteem Problems
- Excessive Risk Taking
- Low Tolerance for Tension

Drugs Reduce Tension = People Use it and Get this Response = Reinforcement
Socio-Cultural Explanations

- Attitude Toward Drug Taking
- Availability
- Cultural Acceptance
Medical/Biological Explanation

- Genetic evidence
  - Adoption and twin studies
  - Tolerance in sons of alcoholics
  - Genes as protective factors
  - What gets genetically transferred?
  - Genetically determined vs. genetically influenced
Environment
40%

Genetics
60%
Mesolimbic Dopamin System

- Ventral-tagmental area (VTA)
- Lateral hypothalamus (LH)
- Nucleus accumbens (NA)
- Fronto-orbital cortex (FOC)
- Extended Amigdala (EA)
Neurotransmitters most involved in dependence

- Dopamine (cocaine, alcohol)
- Serotonin (5-HT) – (amphetamines, alcohol)
- Endorphines – (opiates, alcohol)
- GABA - (BZ, alcohol, MDMA (？))
- Glutamate – (alcohol, amphet. (？), THC (？))
- Acetylecholine (THC, nicotine, alcohol)
A Brain Chemistry Disease

Drugs seem to “match” the transmitter system that is not normal
In other words...

The problem of dependence is not in the bottle or syringe

The problem is in the brain dysfunction
Constellation of Factors

- Biological
- Psychological
- Social
- Genetic
- Environment
- Personality Traits

ADDICT

Conditioning
Risk Factors

- Adolescence
- Academic Difficulties
- Family History of Drug Use
- Excessive Risk Taking Behavior

No One Is Immune
Pathways to Addiction

1. Experimentation
2. Active Seeking
3. Preoccupation
4. Addiction
“Look, his behavior is improving!”

“Not at all, I just told him that I hid the drugs in the backyard”
If you have more questions...

ikoutzenok@ucsd.edu
858/551 2946
- The End -