Substance-Related Disorders
Perspectives on Substance-Related Disorders

• Substance-Related Disorders
  – Use and abuse of psychoactive substances

  – **Wide-ranging effects:** 8% of general population uses illegal drugs:
    • Psychophysiological
    • Behavioral

  – Significant impairment

  – Costs
Perspectives on Substance-Related Disorders

• **Abuse**
  vs.

• **Dependence (Addiction)**
  – Tolerance
  – Withdrawal
  – “Drug seeking behaviors”

• **Levels of Involvement**
  – Use
  – Intoxication
  – Abuse
  – Dependence
  (not necessarily sequential)
Diagnostic Issues

• **Comorbidity/Dual Diagnosis**
  – (e.g. Anorexia, Borderline, Schizophrenia, Depression)

• **Causality**
  – does substance cause psychiatric symptom or is it a result of the disorder (e.g., psychosis)?

• **Level of involvement**
• **Depressants**
  - Alcohol

• **Stimulants**
  - Amphetamines
    - Methane Amphetamine
    - Ecstasy
  - Nicotine
  - Cocaine
  - Caffeine

• **Opiates**
  - Heroin/morphine/opium
  - Painkillers
    - Codiene/vicodin/ocxycodone

• **Hallucinogens**
  - LCD
  - Marijuana
  - Psilocybin (Mushrooms)

• **Other drugs of abuse**
  - Inhalants
  - Anabolic Steroids
  - Others
The Depressants: Alcohol Use Disorders

- Clinical Description
  - CNS depressant
    - Inhibitory centers
    - Global
  - Neurotransmitter systems
    - GABA
    - Glutamate
    - Serotonin
Alcohol Use Disorders

• Effects of Chronic Alcohol Use
  – Intoxication
  – Withdrawal
    • Delirium tremens
  – Dementia
  – Wernicke’s disease/Korsokoffs Syndrome
The Depressants: Alcohol Use Disorders

- **FAS: Fetal Alcohol Syndrome**
  - Growth retardation
  - Cognitive deficits
  - Behavior problems
  - Facial abnormalities

- Glutamate x alcohol =
  - Blackouts
Statistics on Use and Abuse

• Use
  – Most adults: light drinkers or abstainers
  – Current use = ~50%
  – Binge drinking = 23%
  – Dependence = 15 million
  – Males > Females
Progression of Alcohol Related Disorders

• Fluctuations in involvement
• Spontaneous remission

• Jellinek’s Four Stage Model
  – Limited empirical support
  – Story of Surveys
  – Inaccurate given the pattern of binge drinking in the country

• Course of dependence = progressive
• Course of abuse = variable
Alcohol and Violence

• **Links with aggression**
  – Impulsive
  – disinhibited

• Overlap versus causality

• Multiple factors
  – Quantity
  – Timing
  – History of violence
  – Expectations
  – Consequences
Stimulants: An Overview

• Nature of Stimulants
  – Caffeine is the most widely consumed drug (US)
  – Increase alertness and energy
  – Examples:
    • Amphetamines
      – Methane Amphetamine
      – Ecstasy
    • Cocaine
    • Nicotine
    • Caffeine
Amphetamine Use Disorders

- Effects of Amphetamines
  - “Up”
    - Elation
    - Vigor
    - Reduced fatigue
  - “Crash”
    - Extreme fatigue
    - Depression
Amphetamine Use Disorders

- **DSM Criteria**
  - Behavioral symptoms
  - Changes in sociability
  - Interpersonal sensitivity
  - Anxiety, tension, anger
  - Stereotyped behaviors
  - Impaired judgment
  - Impaired function
  - Physiological symptoms
Amphetamine Use Disorders

- **Designer drugs**
  - **MDMA (Ecstasy)**
    - Effects similar to speed
    - Minimal “comedown”
  - **Methamphetamine**
    - Purified, crystallized form of speed
    - Longer half-life
    - Incredible potential for dependence

- Both have long-term risks
Amphetamine Use Disorders

• CNS Effects of Amphetamines
  – Significant agonist and reuptake blocking effects
    • Norepinephrine
    • Dopamine

  – Link with hallucinations and delusions
Stimulants: Cocaine Use Disorders

• **Effects of Cocaine**
  – Blocks dopamine reuptake
    • Euphoria
    • Feelings of power and confidence (short term)
  – Increased blood pressure/pulse
  – Insomnia
  – Decreases appetite
  – Paranoia

Misconception as a wonder drug up until 1980:

“*Taken no more than two or three times per week, Cocaine creates no serious problems*” (Comprehensive Text of Psychiatry, 1980)
Stimulants: Cocaine Use Disorders

• Statistics
  – Second most frequently abused drug
    • 1.5 million
  – ER admissions for cocaine
    • 29% Caucasian males
    • 23% African American males
    • 12% African American females
  – 17% also used crack
Stimulants: Cocaine Use Disorders

• Dependence
  – Highly addictive
  – Develops slowly
    • Tolerance
    • Atypical withdrawal
    • Cyclical pattern

Intervention Episode
Stimulants: Nicotine Use Disorders

• Effects of Nicotine
  – Stimulates nicotinic acetylcholine receptors
  – Sensations of relaxation, wellness, pleasure

• Highly addictive
  – Relapse rates = alcohol and heroin
Relapse: Nicotine, Alcohol, & Heroin
Stimulants: Nicotine Use Disorders

• “Dosing”
  – Maintain a steady level of nicotine in the bloodstream
  – Examples:
    • before sleep
    • after waking
Stimulants: Nicotine Use Disorders

• DSM-IV-TR Criteria for Nicotine Withdrawal Only
  – Psychological symptoms
    • Depressed mood
    • Irritability
    • Anxiety
    • Difficulty concentrating
  – Physiological symptoms
    • Restlessness
    • Weight gain
Effects of Caffeine

- Used by over 90% of Americans
  - Tea, coffee, cola, and cocoa products
- Blocks adenosine reuptake
- Small doses
  - Elevate mood
  - Reduce fatigue
- Regular use
  - Tolerance
  - Dependence
Stimulants: Caffeine Use Disorders

- **Withdrawal symptoms**
  - Psychological
    - Irritability
    - Unpleasant mood
  - Physiological
    - Drowsiness
    - Headaches
Opioids: An Overview

• Nature of Opiates and Opioids
  – Opiates
  – Opioids
  – Referred to as analgesics

  – Examples: heroin, opium, codeine, and morphine
Opioids: An Overview

- **Effects of Opioids**
  - Activate enkephalins and endorphins
  - **Low doses**
    - Euphoria
    - Drowsiness
    - Slow breathing
  - **High doses = fatal**
Opioids: Associated Features

- Withdrawal symptoms (1-3 days)
  - Excessive yawning
  - Nausea and vomiting
  - Chills
  - Muscle aches
  - Diarrhea
  - Insomnia

- High mortality rates

- Increased HIV risk
Hallucinogens: An Overview

- **Nature of Hallucinogens**
  - Alter sensory perception
  - Can produce delusions, paranoia, hallucinations

- Examples: marijuana, psilocybin, LSD
Hallucinogens: An Overview

- **Marijuana** (*cannabis sativa*)
  - Most frequently used drug
    (14.6 million Americans last month!)
  - **Tetrahydrocannabinol (THC)**
  - **Anandamine (bliss):**
    - Endogenous cannabinoid messenger
  - Variable, individual reactions
    - **Euphoria**
    - **Mood swings**
    - **Paranoia**
    - **Hallucinations**
  - Tolerance = questionable
  - Withdrawal and dependence = uncommon

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**DSM-IV-TR**

**DSM TABLE 11.12** Diagnostic Criteria for Hallucinogen Intoxication

- A. Recent use of a hallucinogen.
- B. Clinically significant maladaptive behavioral or psychological changes (e.g., marked anxiety or depression, ideas of reference, fear of losing one's mind, paranoid ideation, impaired judgment, or impaired social or occupational functioning) that developed during, or shortly after, hallucinogen use.
- C. Perceptual changes occurring in a state of full wakefulness and alertness (e.g., subjective intensification of perceptions, depersonalization, derealization, illusions, hallucinations, synesthesia) that developed during, or shortly after, hallucinogen use.
- D. Two (or more) of the following signs developing during, or shortly after, hallucinogen use:
  1. Pupillary dilation
  2. Tachycardia
  3. Sweating
  4. Palpitations
  5. Blurring of vision
  6. Tremors
  7. Incoordination
- E. The symptoms are not due to a general medical condition and are not better accounted for by another mental disorder.
Hallucinogens: An Overview (cont.)

• LSD and Other Hallucinogens
  – LSD = most common hallucinogenic drug
  – Tolerance = rapid
  – Withdrawal symptoms = uncommon
  – Intoxication
    • Altered sensory perceptions
    • Depersonalization
    • Hallucinations
    • Mystical experiences?
Other Drugs of Abuse: Inhalants

- **Nature of Inhalants**
  - Found in volatile solvents
  - Breathed into the lungs directly
    - Rapid absorption
  - Examples: spray paint, hair spray, paint thinner, gasoline, nitrous oxide

- Effects similar to alcohol intoxication
- Produce tolerance and prolonged withdrawal symptoms
- Several negative physiological effects
Other Drugs of Abuse: Anabolic Steroids

- **Nature of Anabolic-Androgenic Steroids**
  - Derived or synthesized from testosterone
  - Used medicinally or to increase body mass
  - No associated high
  - “Cycling” or “stacking” patterns of use
  - Long-term mood disturbances
  - Physical problems
Other Drugs of Abuse: Designer Drugs

- **Dissociative Anesthetics and Designer Drugs**
  - “Club drugs”
  - Ecstasy, MDEA (“eve”), BDMPEA (“nexus”), Phencyclidine (PCP)/**Ketamine** (“special K”), GHB
  - Heightened sensory perception
  - Popular in nightclubs, raves, or large gatherings
  - All can produce tolerance and dependence

Lab Ketamine Story
• http://www.youtube.com/watch?v=-v5RPLoMKOE

• http://www.youtube.com/watch?v=HlcIKekEldg

• http://www.youtube.com/watch?v=lJ01Z5H6SeA&feature=related