SUBSTANCES OF ABUSE
What are Substances of Abuse?

- All sorts of different drugs can be abused, including:
  - illegal drugs
  - prescription medicines
  - over-the-counter medicines
Commonly Abused Substances

- Alcohol
- Opiates
- Cocaine
- Cannabinoids
- Benzodiazepines
- Amphetamines
- Hallucinogens
- Sedatives/Hypnotics
A Brief History of Alcohol

- Alcohol is as old as human civilization and has served many functions
  - Religion and worship
  - Nutrition
  - Medicine
  - Sanitation
ALCOHOL

• Legal and easily accessible.
• Most commonly abused substance in the United States.
• Other names: Booze, Drink
Alcohol’s Effect on the Brain

• Central nervous system depressant.
  – Has sedating tranquilizing effect

• Depresses the inhibitory control centers of the brain
  – Impairs judgement, vision, memory, balance, and muscle coordination
Drinks and Units

• These drinks contain 1 unit:
  • 1 half-pint (8oz.) of ordinary strength beer, lager or cider
  • 1 small glass (4 oz.) of wine
  • 1 single measure (1 oz.) of spirits

• Strong beers, lagers and ciders can contain up to three units.

• Low alcohol does not mean alcohol-free.
Recommended Daily Benchmark

• For men: No more than 3 - 4 units per day
• For women: no more than 2 - 3 units per day
• Women who are at any stage of pregnancy, or trying to become pregnant, should not consume any alcohol.
• These benchmarks do not apply to people under the age of 21.
Alcohol and Women

- The female body produces lower levels of *alcohol dehydrogenase*
  - Group of enzymes that break down alcohols which could otherwise be toxic
- A woman’s body must work harder than a man’s to metabolize alcohol, making her more susceptible to destructive effects of alcohol
  - Liver damage, heart disease, cancer, suicide
Alcohol and Men

- One in five men drink more than the recommended limit of 28 units per week.
- Alcohol-related deaths among men have risen 19-fold since the 1960's.
- More men than women have a criminal record due to drinking alcohol.
- Men are more prone to alcohol-related harms and have a greater tendency to engage in risk-taking harms while under the influence.
Alcohol-Related Harms

- Vehicle accidents (Car, boat, snowmobile, etc.)
- Fights and arguments
- Spouse abuse
- Child abuse
- Academic failure
- Poor job performance
- Legal problems
- Sexual assault
- Violent crime
- Unplanned sexual activity
- Absenteeism
- Physical health problems
- Increased medical costs
- Financial loss
- Suicide
Alcohol’s Effect in High Doses

- In high doses, alcohol will depress the brain enough to cause unconsciousness, coma, respiratory failure, and death.
- Heavy alcohol use over time damages the liver, heart, stomach, and brain.
Signs of Alcohol Intoxication

- Slurred speech
- Difficulty expressing a thought intelligibly
- Lack of coordination; poor balance
- Can’t walk a straight line
- Can’t focus on your eyes
- Red eyes or flushed face
- Odor of alcohol on breath or in sweat
- Morning headaches, nausea, weakness, or sweatiness; “hangover”
A Brief History of Opiates

- Opiates are derived from a sap taken from a seed pod of the Asian Poppy that becomes highly narcotic upon drying.
- For thousands of years, humans have used opiates to treat a variety of physical and psychological problems.
OPIATES

- Used medicinally and recreationally
- Can be snorted, smoked, injected, eaten, or drank
- 9% of Americans will misuse an opiate at some point in their life
- Other names: Junk, H, Smack, Horse, Black Tar, Brown Sugar
Opiate Categories

**PHARMACEUTICAL**
- Codeine
- Vicodin
- Percocet
- Morphine
- Oxycontin
- Suboxone
- Methadone
- Demerol
- Dilaudid
- Fentanyl
- and others

**ILLICIT**
- Heroin
- Opium
Opiates and the Brain

• Opiates activate the brain’s opiate receptors
  – Triggers increased dopamine production
  – User experiences pleasure and/or pain relief
• Tolerance develops after continued use, causing the effects of the drug to diminish.
  – Over time, larger doses are needed to maintain the same effect.
Opiates Act on Many Places in the Brain and Nervous System

Opiates can change the brain stem, an area that controls automatic body functions, and depress breathing.

Opiates can change the limbic system, which controls emotions to increase feelings of pleasure.

Opiates can block pain messages transmitted by the spinal cord from the body.
Signs of Opiate Intoxication

- Sedation
- Slowed reflexes
- Raspy speech
- Sluggish "rubber-like" movements
- Slowed, shallow breathing
- Cold skin
- Nodding off
- Poor motor coordination
- Depressed reflexes
- Itching of the skin
- Diminished reasoning ability
Opiate Withdrawal

Withdrawal symptoms typically begin 12-36 hours after last use. Opiate withdrawal is very uncomfortable, but rarely life threatening.

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<td>Sweating</td>
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COCAINNE

- Derived from the Coca Plant, cocaine is the most potent stimulant of natural origin
- Two types: Crack cocaine and powder cocaine
- Can be snorted, smoked or injected
- Other names: Blow, coke, nose candy, snow, powder, rock, rock candy
A Brief History of Cocaine

• In ancient times, South American natives used coca for religious and medicinal purposes

• Cocaine was first extracted from the coca plant in 1859

• Sigmund Freud experimented with for the treatment for depression and morphine addiction

• In 1886, Coca-Cola was promoted as a drink "offering the virtues of coca without the vices of alcohol."

- Until 1903, a typical serving contained around 60mg of cocaine
Cocaine’s Effect on the Brain
Signs of Cocaine Intoxication

- Jumpy, nervous behavior
- Restlessness
- Excessively talkative, rapid speech
- Runny nose or bloody nose (no cold or other illness associated)
- Periods of high energy followed by long sleep or exhaustion.
Cocaine Related Harms

- Burns in mouth and on hands from smoking
- "Tracks" - puncture marks on arms or wherever injections are made.
- Infections and sores associated with injection tracks
- Allergic reactions to cocaine or the additives in street drugs.
- Weight loss and malnutrition due to decreased appetite for food.
- Increased risk of HIV/AIDS and hepatitis, either from unsafe sex or using infected needles
- Brain infections - both bacterial and fungal, sometimes leading to abscesses.
- Gangrene (rot) of bowels and other body parts from lack of blood flow.
- More risk-taking behavior, including unsafe sex.
- Incontinence
A Brief History of Cannabis

- One of humanity’s oldest crops
- **Five Uses of Hemp**
  - Fibers
  - Oil
  - Food
  - Medicine
  - Narcotic
- Historically used to manufacture trade goods
CANNABIS

- Cannabis sativa plant is found all across the world.
  - Plant’s name means “useful” (sativa) “hemp” (cannabis)
- Historically used to manufacture trade goods.
- Outlawed in the 20th century.
- Other names: marijuana, hashish, hash oil, pot, grass, weed, bud, Mary Jane, reefer
Cannabis Use

• Marijuana is the most commonly used “illicit” substance in the United States.

• 25.5 million, or 6.1% of the total U.S. population aged 12 and older, report cannabis use within the past 12 months.
Cannabis’ Effect on the Brain

- The main active chemical in cannabinoids is THC (delta-9-tetrahydrocannabinol). The membranes of certain nerve cells in the brain contain protein receptors that bind to THC.

- Cannabinoid receptors regulate movement, coordination, learning and memory, higher cognitive functions such as judgment, and pleasure.
Cannabis' Effect on the Brain

• THC has low toxicity
  – There has never been a documented human fatality from overdosing on cannabis in its natural form

• Methods of Consumption
  – Smoking
    • Produces almost immediate effect, lasts 2-3 hours
  – Eating
    • Usually baked into brownies, cookies, candy, etc.
    • Effects felt in 20-60 minutes, stronger “high”
  – Tea
Signs of Cannabis Use

- Bloodshot eyes (or bottles of eye drops to clear up red eyes)
- Smell in hair or on clothing (sweet, pungent odor)
- Exaggerated appetite (a.k.a. the munchies)
- Wetting lips or excessive thirst (known as “cotton mouth”)
- Burned or sooty fingers (from “joints” or “roaches” burning down)
- Seeds left in devices used to clean marijuana or items used as makeshift smoking devices (e.g.: bongs made out of toilet paper rolls and aluminum foil)
Long-term Effects of Cannabis Use

• Tolerance to effects of the drug
• Memory and attention reduction
• Brain damage and lowered IQ
• Lung problems: coughing, wheezing, COPD, emphysema, asthma, pneumonia
• Increased risk of cancer
BENZODIAZEPINES

- Benzodiazepines belong to the group of medicines called central nervous system (CNS) depressants (medicines that slow down the nervous system).
- Benzodiazepines are most frequently used as treatment for anxiety, sleep, and seizure disorders.
- Familiar Names: Valium, Xanax, Klonopin, Ativan
Therapeutic Use of Benzodiazepines

- Therapeutic use of benzodiazepines:
  - Anxiety and panic disorders, phobias
  - Promotion of sleep - Insomnia
  - Muscle relaxation - Muscle spasms, spastic disorders
  - Anticonvulsant - stops seizures and convulsions due to drug poisoning and some forms of epilepsy
  - Sedation for minor surgical procedures

- Other clinical uses:
  - Alcohol detoxification
  - Acute psychosis with hyper-excitability and aggression
Adverse Effects of Benzodiazepines

- Drowsiness
- Poor concentration
- Loss of coordination
- Muscle weakness
- Dizziness
- Confusion, disorientation
- Memory impairment

- Depression
- Dependency
- Feelings of stimulation instead of calm
- Inability to feel pain and pleasure
Risks of Discontinuation

• Benzodiazepine use is generally contraindicated for patients with a history of substance use disorder, however the choice of pharmacotherapy is made at the discretion of the prescribing physician and based on an individualized assessment.

• Discontinuing a prescribed benzodiazepine should only be done by a physician, as unnecessary discontinuation has the potential to cause harm to the individual.
Benzodiazepine Withdrawal

- Anxiety
- Irritability
- Insomnia
- Gastrointestinal upset
- Malaise (feeling generally unwell)
- Loss of appetite
- Sweating
- Trembling

- Weakness
- Changes in perception (numbness and altered sensitivity to light, sound and smells)
- Psychosis
- Convulsions
- Suicide
CLUB DRUGS

- Substances most frequently used by individuals aged 18-25 at bars, clubs, concerts, and parties
- Some are relatively new and others have been around for years
  - Ecstasy (MDMA), GHB, Methamphetamine, Ketamine, Rohypnol, LSD
Ecstasy (MDMA)

- Often stamped with popular logos or cartoon caricatures.
- Formerly used as a psychotropics prescribed as an intervention in couples therapy.
- Currently considered to have no therapeutic value and classified as Schedule I.
- Other names: X, Adam, XTC, the hug drug, skittles
Short-term Effects of MDMA

Effects generally last less than 4 hours

- Mental and physical euphoria
- A sense of general well-being and contentedness
- Decreased negative feelings such as stress, anxiety, fear, and paranoia
- Increased sociability and urge to communicate with others.
- Increased empathy and feelings of closeness or connection with others
- Enhanced tactile sensations (touching, hugging, and sex for example all feel better)
Adverse Effects of MDMA

- Depression
- Arrhythmia (irregular heart beat)
- Increased blood pressure
- Dehydration
- Hyperthermia/Fever/Overheating of the body
- Teeth grinding
- TMJ
- Renal (kidney) failure
GHB

- Sedative/Hypnotic Central Nervous System Depressant
- Naturally occurring substance
- Regulated in the US and used in medical settings
- Found in liquid or powder form
- Other names: G, Liquid Ecstasy, Grievous Bodily Harm, Georgia Home Boy
Effects of GHB

- Small doses: produces relaxation and increased self-confidence.
- Larger doses: vomiting, seizures, unconsciousness, coma, and death.
- The strength of GHB varies from batch to batch and one overdose can be fatal.
Methamphetamine

- Highly addictive, dangerous, and unpredictable.
- Usually found in powder, chunk or pill form.
- No known therapeutic value.
- Made from common household chemicals such as gasoline, paint thinner and battery acid.
- Other names: Meth, Speed, Crank, Ice, Crystal, Crystal Meth, Glass, Chalk, Fire
Short-Term Effects of Methamphetamine

• Activates psychological reward system
  – Increases alertness, concentration and energy
  – Causes euphoria
  – Enhances self-esteem
  – Increases libido
  – Allows user to go days/weeks without food or sleep
Methamphetamine Withdrawal

Methamphetamine withdrawal is extremely uncomfortable and in some cases life threatening. Symptoms may include:

- Difficulty breathing
- Nausea
- Irritability
- Depression
- Excessive sleeping
- Increased appetite
- Sweats
- Convulsions
- Irregular heart beat
Adverse Effects of Methamphetamine

- Long-term heavy use may lead to malnutrition, skin disorders, ulcers and diseases resulting from vitamin deficiencies; serious diseases such as Parkinson’s, AIDS, and heart and lung diseases; mental illness, suicide and violent death.
“Meth Mouth” is an informal name for advanced tooth decay attributed to heavy methamphetamine use. It is thought to be caused by:

- Meth’s highly corrosive ingredients
- Teeth grinding and clenching
- Poor oral hygiene
- Dry mouth
Ketamine

- Powerful anesthetic used in human and veterinary medicine.
- Recreational use increased through the end of the 20th century
- Causes hallucinations and puts users in a dreamlike state
- Other names: K, Special K, Cat Valium
Effects of Ketamine

• Dissociative Amnesia
  • Experiences of leaving the body, flying, floating, having contact with God or an alien intelligence

• Hallucinations
  • Seeing/feeling limbs grow or shrink
  • Feeling close to death

• Long-term effects
  • Impaired motor function
  • Potentially fatal respiratory problems
  • Lasting brain damage
Flunitrazepam (Rohypnol) is a potent benzodiazepine prescribed for the treatment of severe insomnia. Dissolves easily in liquid and has a reputation for use as a date-rape drug. Use causes extreme sedation and impaired speech and balance. Overdose can result in coma or even death. Other names: Roofies, Roche, Forget-Me-Pill, Date Rape Drug
LSD

- Hallucinogen that has been around for years.
- Causes vivid hallucinations (a trip) that can be very dangerous in a hot, crowded rave atmosphere.
- LSD can cause flashbacks, or sudden recurring hallucinations, years after taking the substance.
- LSD has been documented as precipitant to onset of psychosis.
- Other names: Acid, Micro-dot, Blotter, Yellow Sunshine
Signs of Club Drug Use

- Unusually elated (manic)
- Jumpy, shaky hands, restlessness
- Fast speech, possibly incoherent
- Poor appetite and/or weight loss
- Hyperactivity
- Insomnia
- Periods of sleeplessness, followed by long periods of “catch up” sleep
- Poor attention span
Signs Someone is Using Drugs or Alcohol

• If you notice unexplained changes in physical appearance or behavior, it may be a sign of substance use - it could also be a sign of another problem

• You will not know definitively until you:
  – Talk to your client
  – Conduct a Breathalyzer and/or Urine Drug Screen
Compound Retention

- Amphetamines: 20-25 days
- Barbituates: 10-14 days
- Cocaine: 2-4 days
- Ethyl Alcohol: 1-2 days
- LSD: 20-40 days
- Marijuana: 14-30 days
- Opiates 10-14 days
Common Methods of Cheating a UDS

- There are countless products on the market that claim to detoxify the body and cover up substances detected in a UDS
  - Supplement tablets
  - Detox drinks
  - Hair follicle cleansing shampoo
- Urine substitution
- Synthetic urine
Gas Chromatography-Mass Spectrometry

- Method of testing able to identify different and specific substances within a test sample.
- Considered the “gold standard” of forensic science.
- GC-MS helps to tell the difference between a false positive and a true positive.
Creatine

- Creatinine concentration is checked during standard urine drug tests.
  - High creatinine levels indicate a pure test, whereas low amounts of creatinine in the urine indicate a manipulated test, either through the addition of water in the sample or by drinking excessive amounts of water.

- **Diluted samples may not always be due to a conscious effort to “cheat” the test.**
  - Low creatinine levels in urine may indicate a medical condition such as kidney damage or pregnancy.
Physical Signs of Substance Use

- Change in sleeping pattern
- Bloodshot eyes
- Slurred or agitated speech
- Sudden or dramatic weight loss or gain
- Skin abrasions/bruises
- Neglected appearance/poor hygiene
- Sick more frequently
- Accidents or injuries
Behavioral Signs of Substance Use

- Hiding use; lying and covering up
- Sense that the person will “do anything” to use again regardless of consequences
- Loss of control or choice of use (drug seeking behavior)
- Loss of interest in previously enjoyed activities
- Depression
- Emotional instability
- Absenteeism from work/school
- Failure to fulfill responsibilities
- Furtive or secretive behavior
- Avoiding eye contact
- Going out every night
- Change in friends or peer group
- Change in clothing or appearance
More Behavioral Signs of Substance Use

- Hidden stashes of alcohol
- Prescription medicine missing
- Money missing
- Valuables missing
- Disappearances for long periods of time
- Running away

- Secretive phone calls
- Unusual containers or wrappers
- Hyperactive or hyper-aggressive
- Unusual smells on breath or clothing
Substance Abuse vs Addiction?

- Abuse refers to the use of a substance for purposes for which it was not attended, or using a drug in excessive quantities.

- Addiction (a.k.a. chemical dependency, substance dependence) is a state of physical and/or psychological dependence on a substance.
DSM Criteria: Substance Dependence

- Must meet 3 or more criteria within past 12-month period

- Tolerance (marked increase in amount; marked decrease in effect)
- Characteristic withdrawal symptoms; substance taken to relieve withdrawal
- Substance taken in larger amount and for longer period than intended
- Persistent desire or repeated unsuccessful attempt to quit
- Much time/activity to obtain, use, recover
- Important social, occupational, or recreational activities given up or reduced
- Use continues despite knowledge of adverse consequences (e.g., failure to fulfill role obligation, use when physically hazardous)
DSM Criteria: Substance Abuse

- Must meet 1 or more criteria within past 12-month period. Symptoms must never have met criteria for substance dependence for this class of substance.

- Recurrent use resulting in failure to fulfill major role obligation at work, home, or school
- Recurrent use in physically hazardous situations
- Recurrent substance related legal problems
- Continued use despite persistent social and/or interpersonal problems caused by or exacerbated by use of the substance
Importance of a Proper Diagnosis

Diagnoses follow people for life. If unsure of a diagnosis, confer the case with a clinical supervisor and/or physician.
Importance of a Proper Diagnosis

• Over diagnosis can lead to:
  – Coverage denials by insurance companies
  – Inability to regain a suspended driver’s license
  – Employment problems
  – Inability to qualify for student loans
Importance of a Proper Diagnosis

• Under diagnosis/no diagnosis can lead to:
  – Onset of preventable medical conditions
  – Increased risk for dependents in household
  – Psychiatric crises
  – High utilization of services
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