Substance Abuse

Ascension

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Disclosure Information

- I have no relevant financial relationships with any ACCME-defined commercial interests to disclose

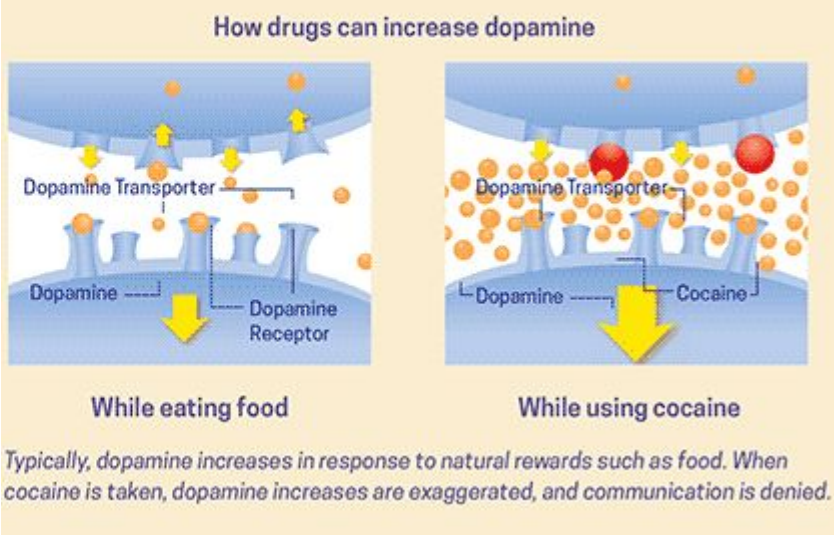
Objectives

- Describe the pathophysiology for substance use
- Identify the difference between substance use disorder and substance induced disorder
- Describe the difference between psychological and physical dependence
- Identify treatments for alcohol and opioid use disorder

Background

Pathophysiology

- Normal physiology: mesolimbic dopamine pathway allows a person to feel pleasure in response to stimuli
- Memory of stimuli associated with pleasure
- Substances
  - Either mimic or interfere with brains natural chemical balance
  - Create more powerful response than natural stimuli
  - Continued use can lead to diminished effects leading to more cravings and more usage



Substance Use Disorder

DSM5: Substance use disorder describes problematic pattern of using alcohol or another substance that results in impairment in daily life or noticeable distress

- Diagnosis based on pathological pattern of behaviors related to substance use
  - Impaired control
  - Social impairment
  - Risky use
  - Pharmacological

Substance Induced Disorders

DSM5: Substance-induced disorders include intoxication, withdrawal, and other substance/medication induced mental disorders

- Criteria is separated
  - Intoxication
  - Withdrawal
  - Other substance/medication-induced mental disorders

Physical vs Psychological Dependence

Physical dependence

- Chemical level changes in the brain
- Withdrawal will occur upon cessation of substance

Psychological dependence

- Emotional/mental attachment
- Described as repeated and compulsive substance seeking behavior
- Urge to continue even when wanting to quit

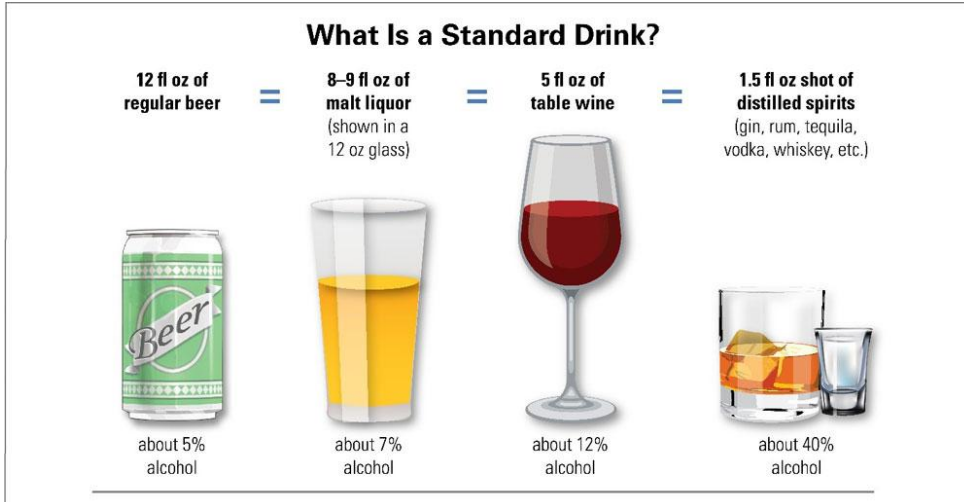
Alcohol

Epidemiology

- 12 month prevalence of alcohol use disorder in United States:
  - 1.7% 12-17 year olds in 2019
    - Decreased from 5.9% in 2002
  - 9.3% among adults 18-25 years old in 2019
  - 5.1% among adults ≥ 26 years old in 2019
  - Rates are greater among adult men than women @ 12.4% compared to 4.9%
- Estimated 3.8% cause of global deaths

Risk factors for Alcohol Use Disorder

- Binge drinking
- Heavy alcohol use
- Drinking at an early age
- Genetics / family history
- Mental health conditions / history of trauma
- Female gender



Symptoms

Intoxication

- Slight euphoria
- Relaxation
- Sensation of warmth
- Dysphoria
- Nausea

Withdrawal

- 6-8 hrs: Anxiety, hypertension, insomnia
- 24 hrs: Auditory/visual hallucinations
- 24-48 hrs: Generalized seizures
- 3-5 days: Delirium

Clinical Institute Withdrawal Assessment-for Alcohol Revised

- 10 item scale well documented and validated by clinicians
- Measures the severity of withdrawal symptoms
- Symptom triggered benzodiazepine dosing
- Potential issues
  - 7 items are addressed by patient communication
  - Not always used as written in practice
  - Ignores abnormal vital signs

Alcohol

NAUSEA AND VOMITING -- Ask "Do you feel sick to your stomach? Have you vomited?" Observation.
0 no nausea and no vomiting
1 mild nausea with no vomiting
2
3
4 intermittent nausea with dry heaves
5
6
7 constant nausea, frequent dry heaves and vomiting

TACTILE DISTURBANCES -- Ask "Have you any itching, pins and needles sensations, any burning, any numbness, or do you feel bugs crawling on or under your skin?" Observation.
0 none
1 very mild itching, pins and needles, burning or numbness
2 mild itching, pins and needles, burning or numbness
3 moderate itching, pins and needles, burning or numbness
4 moderately severe hallucinations
5 severe hallucinations
6 extremely severe hallucinations
7 continuous hallucinations

TREMOR -- Arms extended and fingers spread apart. Observation.
0 no tremor
1 not visible, but can be felt fingertip to fingertip
2
3
4 moderate, with patient's arms extended
5
6
7 severe, even with arms not extended

AUDITORY DISTURBANCES -- Ask "Are you more aware of sounds around you? Are they harsh? Do they frighten you? Are you hearing anything that is disturbing to you? Are you hearing things you know are not there?" Observation.
0 not present
1 very mild harshness or ability to frighten
2 mild harshness or ability to frighten
3 moderate harshness or ability to frighten
4 moderately severe hallucinations
5 severe hallucinations
6 extremely severe hallucinations
7 continuous hallucinations

PAROXYSMAL SWEATS -- Observation.
0 no sweat visible
1 barely perceptible sweating, palms moist
2
3
4 beads of sweat obvious on forehead
5
6
7 drenching sweats

VISUAL DISTURBANCES -- Ask "Does the light appear to be too bright? Is its color different? Does it hurt your eyes? Are you seeing anything that is disturbing to you? Are you seeing things you know are not there?" Observation.
0 not present
1 very mild sensitivity
2 mild sensitivity
3 moderate sensitivity
4 moderately severe hallucinations
5 severe hallucinations
6 extremely severe hallucinations
7 continuous hallucinations

Alcohol

ANXIETY -- Ask "Do you feel nervous?" Observation.
0 no anxiety, at ease
1 mild anxious
2
3
4 moderately anxious, or guarded, so anxiety is inferred
5
6
7 equivalent to acute panic states as seen in severe delirium or acute schizophrenic reactions

HEADACHE, FULLNESS IN HEAD -- Ask "Does your head feel different? Does it feel like there is a band around your head?" Do not rate for dizziness or lightheadedness. Otherwise, rate severity.
0 not present
1 very mild
2 mild
3 moderate
4 moderately severe
5 severe
6 very severe
7 extremely severe

AGITATION -- Observation.
0 normal activity
1 somewhat more than normal activity
2
3
4 moderately fidgety and restless
5
6
7 paces back and forth during most of the interview, or constantly thrashes about

ORIENTATION AND CLOUDING OF SENSORIUM -- Ask "What day is this? Where are you? Who am I?"
0 oriented and can do serial additions
1 cannot do serial additions or is uncertain about date
2 disoriented for date by no more than 2 calendar days
3 disoriented for date by more than 2 calendar days
4 disoriented for place/or person

Benzodiazepines

- Used in symptom-triggered therapy and fixed dose therapy
  - Patients with a history of withdrawal seizures should use fixed dosing
- Reduce seizure risk during withdrawal
- All agents are similarly efficacious
- Diazepam most commonly used
- Long acting agents recommended (diazepam, chlordiazepoxide)
  - More effective in preventing seizures
  - Provides smoother withdrawal
- Lorazepam used when liver failure is seen
- Can be used in combination with other agents

Other Treatment Options

- Phenobarbital: 260 mg IV once followed by 130 mg PRN, or oral taper
  - Narrow therapeutic window
- Carbamazepine: 800 mg daily
- Gabapentin: initial 300-400 mg TID with short taper.
- Valproic acid: 500 mg TID
- Thiamine: 100 mg daily x 3-5 days
  - Deficiency seen frequently in alcohol dependence/withdrawal
- Beta-blockers

Outpatient Treatments for Dependence

- Acamprosate: 666 mg TID
- Disulfiram: 500 mg daily x 1-2 weeks, followed by 250 mg daily
- Naltrexone: 50 mg daily, may increase to 100 mg daily
- Gabapentin: 300 mg daily increase to target of 600 mg TID
- Pharmacotherapy should be accompanied by psychological interventions
  - Cognitive behavioral therapy
  - Community reinforcement approach
  - Motivation enhancement therapy
  - 12-step facilitation

Opioids

Epidemiology

- 12-month prevalence of opioid use disorder in the United States:
  - 0.6% in 12-17 year population in 2019
  - 0.7% among adults 18-25 years old in 2019
  - 0.6% among adults ≥ 26 years old in 2019
  - Rates higher in males than females
- Heroin use is reported separately
  - 0.2% reported for adults 18-25 and adults ≥ 26 years old in 2019

Symptoms

Intoxication

- Pupillary constriction
- Inattention to environment
- Euphoria
- Develops shortly after administration

Withdrawal

- Anxiety and restlessness
- Muscle aches, nausea, dysphoric mood
- Symptoms usually present 6-12 hrs from last dose

Management of Acute Withdrawal

- Clinical Opiate Withdrawal Scale
  - 11 item scale assessing symptoms of opiate withdrawal
- Clonidine
- Methadone
- Naloxone
- Symptomatic treatment
  - Antidiarrheals
  - Analgesics
  - Antiemetics

Opioids

Resting Pulse Rate: _____beats/minute *Measured after patient is sitting or lying for one minute* 0 pulse rate 80 or below 1 pulse rate 81-100 2 pulse rate 101-120 4 pulse rate greater than 120	**GI Upset**: *over last 1/2 hour* 0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhea 5 multiple episodes of diarrhea or vomiting
Sweating: *over past 1/2 hour not accounted for by room temperature or patient activity.* 0 no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 beads of sweat on brow or face 4 sweat streaming off face	**Tremor** *observation of outstretched hands* 0 no tremor 1 tremor can be felt, but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
Restlessness *Observation during assessment* 0 able to sit still 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous movements of legs/arms 5 unable to sit still for more than a few seconds	**Yawning** *Observation during assessment* 0 no yawning 1 yawning once or twice during assessment 2 yawning three or more times during assessment 4 yawning several times/minute

Opioids

Pupil size 0 pupils pinned or normal size for room light 1 pupils possibly larger than normal for room light 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible	**Anxiety or Irritability** 0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 not present 1 mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	**Gooseflesh skin** 0 skin is smooth 3 piloerrection of skin can be felt or hairs standing up on arms 5 prominent piloerrection
Runny nose or tearing *Not accounted for by cold symptoms or allergies* 0 not present 1 nasal stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks	Total Score _____ The total score is the sum of all 11 items Initials of person completing assessment: _____

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawal

Clonidine

- Suppress autonomic symptoms
- Initial 0.1mg twice daily adjusted as needed
- Gradual taper down over 3-10 days
- Monitor BP and other symptoms
- Use in combination with other symptomatic treatment
- Does not treat cravings

Methadone

- Long acting synthetic opioid
- Black-box warning
  - Abuse potential
  - Respiratory depression
  - QT prolongation
- Multiple drug interactions with CYP pathway
- Acute management
  - 20-30 mg when there are no signs of sedation
  - Dose tapered based on opioid used
- Some hospitals cannot use for detoxification
- May also be used for maintenance therapy
  - Titrate to dose that prevents withdrawal symptoms
  - Usual range 80-120 mg/day

Buprenorphine

- Partial agonist at opioid receptor
  - High affinity
- Many formulations available
- Less abuse potential and lower level of dependence
- May be used for detoxification and maintenance therapy
  - Physicians must meet certain criteria before prescribing for maintenance
  - Acute management: 0.3-0.9 mg every 6-12 hrs
  - Maintenance: dose dependent on formulation
- Also found in combination with Naloxone
  - Naloxone used as abuse deterrent

Naloxone

- Competitive antagonist at mu opioid receptor
- Available as intranasal, IV, and autoinjector
  - Not active when taken orally due to first-pass metabolism
- Can cause withdrawal in dependent patients
- Mostly used for opioid reversal in overdose situations
- Usual dose 0.4-2 mg depending on route of administration
- Can also be given as continuous infusion

Other Substances of Abuse

Other Substances of Abuse

- Hallucinogens
- Cocaine
- Inhalants
- Amphetamine/methamphetamine
- Benzodiazepines
- Tobacco
- Cannabis
- Sedatives
- Hypnotics and anxiolytics
- Stimulants
- Other

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