



Medical Complications of Substance Use Disorders Part 2





DISCLOSURE STATEMENT

- I have no conflicts of interest to report and attest I have no financial relationship with any commercial interests relevant to this presentation and received no monetary support for providing this continuing education opportunity.



OBJECTIVES

- Discuss the respiratory and neurological impact of substances of abuse.



RESPIRATORY

Respiratory depression

Atelectasis

Aspiration syndromes

- Aspiration pneumonitis
- Aspiration pneumonia
- Airway obstruction
- Diffuse aspiration bronchiolitis
- Mild hypoxemia to ARDS and death

Infections



RESPIRATORY—CONTAMINANTS

Adulterants

- Mannitol
- Cellulose
- Talc

Other drugs

- Phenobarbital
- Fentanyl
- Methaqualone
- Caffeine
- Procaine
- Noscapine
- Levamisole

Manufacturing by-products

- Lead
- Aluminum
- Glass

Microorganisms

- *Aspergillus*
- *Bacillus*
- *Clostridium*



RESPIRATORY

Injected Drugs

- Talc granulomatosis
- Pulmonary hypertension
- Septic thromboemboli
- Drug and needle embolization
- Pneumothorax
- Empyema
- Mycotic aneurysms
- Hemothorax
- Pulmonary emphysema

Inhaled Drugs

- Chronic bronchitis and emphysema
- Bronchospasm
- Barotrauma
- Hemoptysis
- Asphyxiation



RESPIRATORY

TOBACCO, NICOTINE, AND MARIJUANA*

- Chronic bronchitis
- Pulmonary emphysema
- Airway reactivity
- Interstitial lung disease
- Pulmonary hypertension
- Cor pulmonale
- Pneumothorax
- Hemoptysis
- Lung cancer
- Hypersensitivity pneumonitis
- Water pipes
- Electronic cigarettes
- COPD*
- Pathogen-associated complications*
- Lipoid pneumonia*



RESPIRATORY COCAINE

- Barotrauma
- Upper airway complications and hemoptysis
- Bronchitis
- Airway burns
- Bronchospasm
- Diffuse alveolar hemorrhage
- Pulmonary edema
- Pulmonary vascular disease and infarction
- Eosinophilic hypersensitivity pneumonitis
- Cryptogenic organizing pneumonia
- Interstitial pulmonary fibrosis



RESPIRATORY

Amphetamines and other stimulants

- Metabolic acidosis and respiratory alkalosis
- Barotrauma
- Respiratory depression
- Pulmonary edema
- Pulmonary hypertension
- Bulbous emphysema

Opioids

- Bronchospasm
- Pulmonary edema
- Sleep-disordered breathing
- Hypersensitivity pneumonitis



RESPIRATORY

Alcohol

- Acute metabolic acidosis and respiratory alkalosis
- Chronic respiratory alkalosis
- Asthma
- Hepatic hydrothorax
- Pulmonary restriction from ascites
- Hepatopulmonary syndrome
- Portopulmonary hypertension
- Acute respiratory distress

Sedative-Hypnotics

- Overdose
 - Hypoventilation
 - Respiratory acidosis
 - Aspiration
 - Atelectasis
- Withdrawal
 - Tachypnea
- Sleep-disordered breathing



RESPIRATORY

Volatile Substance

- Methemoglobinemia
- Metabolic acidosis and respiratory alkalosis
- Asthma
- Tracheobronchitis
- Asphyxiation

Nitrous oxide

- Pneumomediastinum
- Respiratory depression
- Hypoxemia

Anabolic steroids

- Pulmonary embolism
- Stroke
- Thrombosis



NEUROLOGICAL

Traumatic Brain Injury

Spinal Cord Injury

Headaches

- Migraine
- Cluster



NEUROBEHAVIORAL AND COGNITIVE DISORDERS

Alcohol

- Wernicke-Korsakoff disease
- Korsakoff syndrome
- Pellagra
- Marchiafava-Bignami disease

Barbiturates and Benzodiazepines

- Mental clouding
- Paradoxical hyperactivity

Psychostimulants

- Impairments to executive function
- Impulsivity
- Impaired memory
- Mood disorders
- Psychosis



NEUROBEHAVIORAL AND COGNITIVE DISORDERS

Cannabis and Synthetic Cannabinoids

- Impairments with learning, memory and executive function
- Risk factor for schizophrenia
- Psychosis

Heroin and Opioids

- Impaired impulse control
- Impaired affect
- Impaired motivation and reward/decision making



NEUROBEHAVIORAL AND COGNITIVE DISORDERS

Hallucinogens

- Panic attacks
- "Bad trip"
- Psychosis
- Deficits in working memory and word recall

Phencyclidine

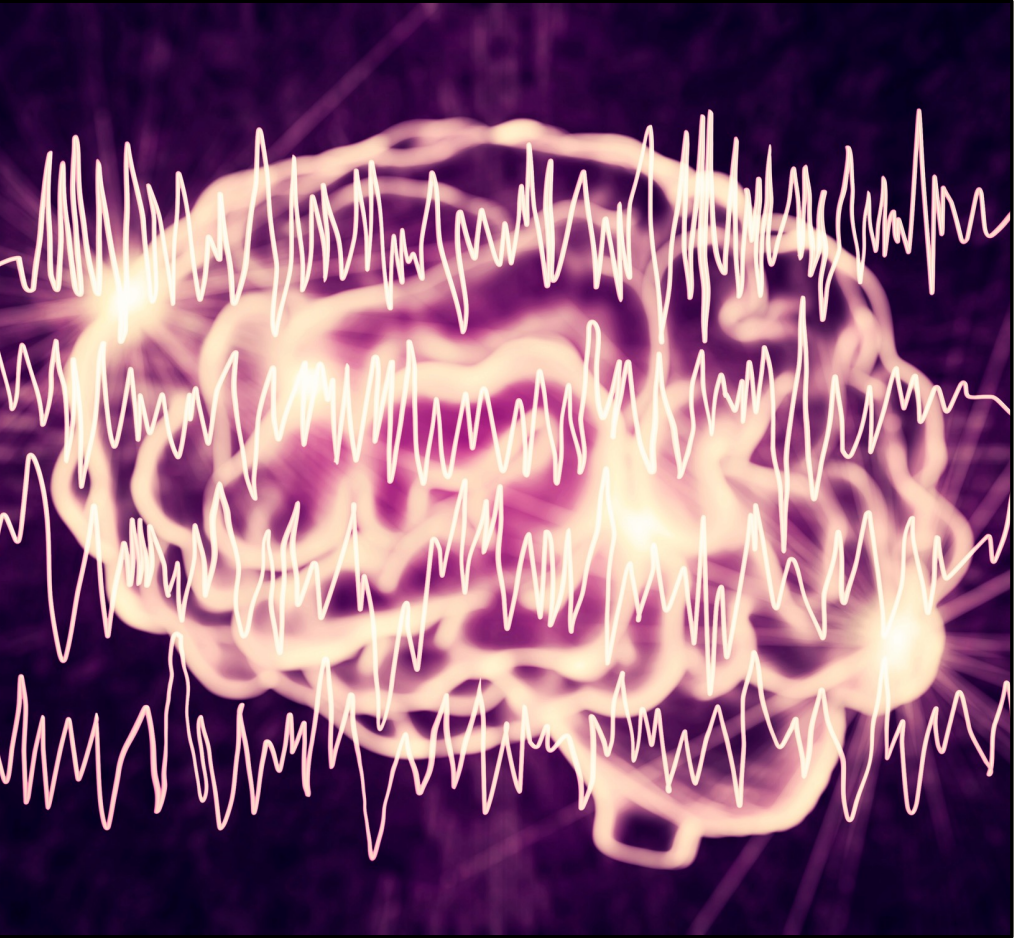
- Schizophrenia-like symptoms

Inhalants

- White matter lesions
- Lead encephalopathy



SEIZURES



- Alcohol
 - Withdrawal
 - Traumatic brain injury
- Sedative-Hypnotics
 - Withdrawal
- Cocaine
 - IV administration
 - Smoking crack
 - Passive exposure
- Stimulants
 - Hyponatremia
- Heroin and Opioids
 - Lower seizure threshold
 - Combined with tripelethamine
- Phencyclidine
- Hallucinogens
- Inhalants
- Anticholinergic poisoning



STROKE



Tobacco

- Elevated risk ischemic and subarachnoid
- Oral contraceptives
- Anticoagulant agents

Alcohol

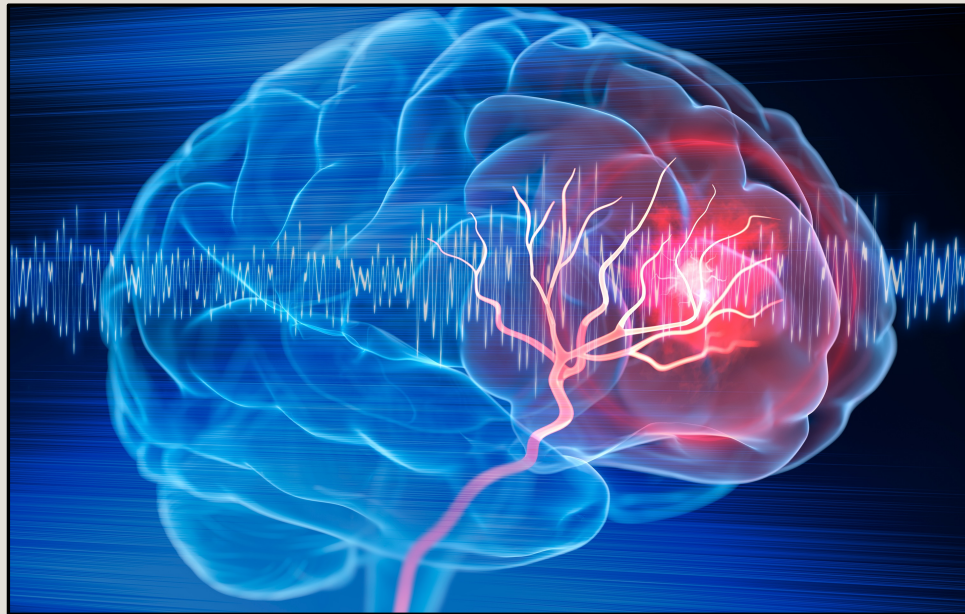
- Trauma
- Poststroke seizures
- Poststroke pneumonia
- IV thrombolytic therapy

Stimulants

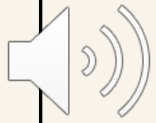
- Ischemic and hemorrhagic
- TIAs
- Saccular aneurysms and vascular malformations



STROKE

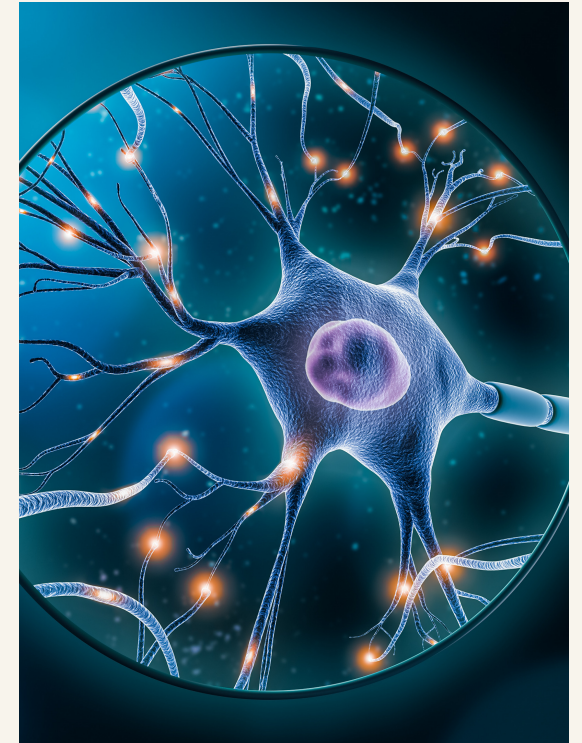


- Heroin and Opioids
 - Endocarditis
 - Basilar meningitis
 - Hepatitis
 - Heroin nephropathy
- Cannabis and Synthetic Cannabinoids
 - Ischemic
- Hallucinogens
 - Related to severe hypertension
- Phencyclidine
- Anabolic Steroids



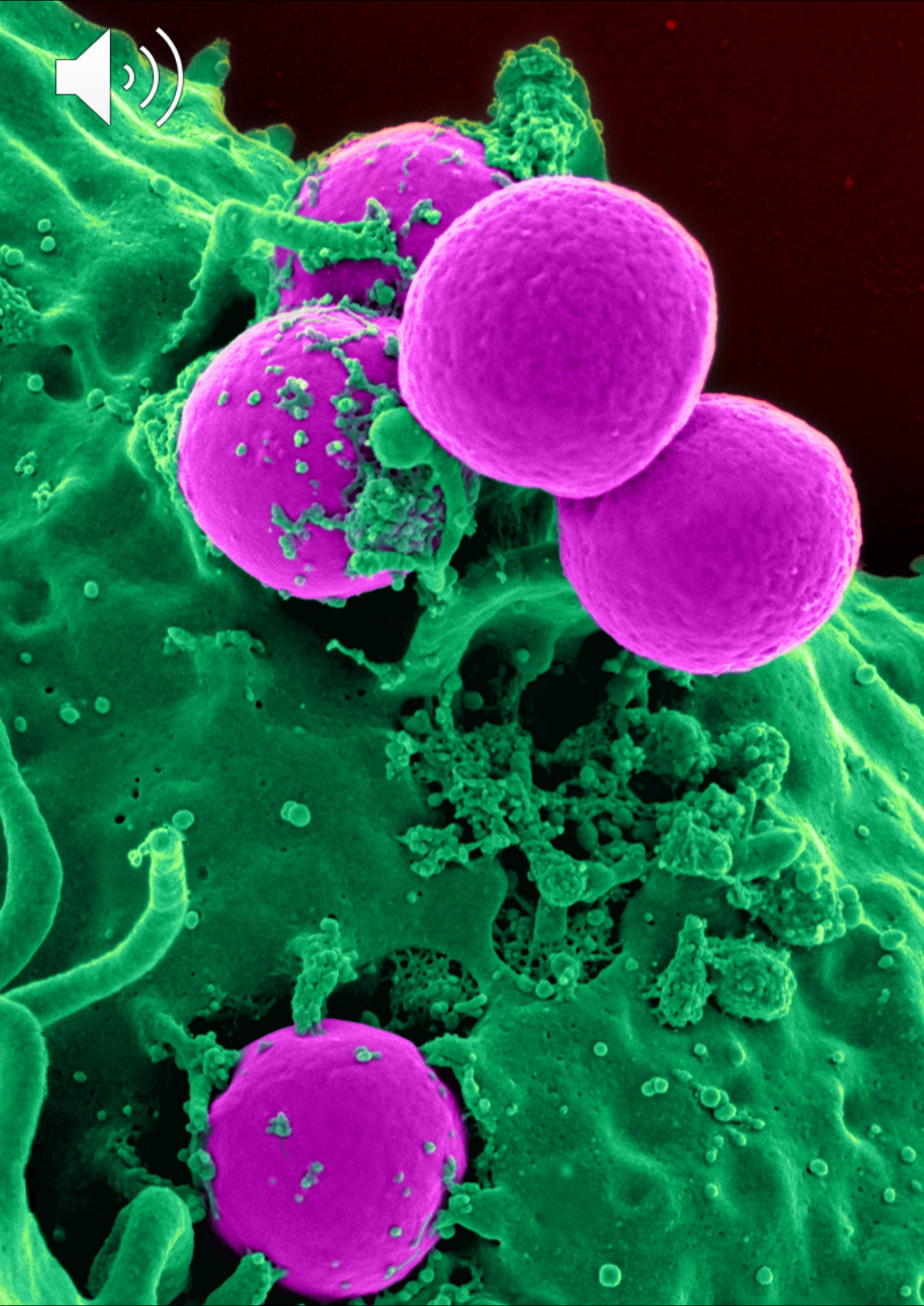
NEUROMUSCULAR DISORDERS

- Alcohol
 - Numbness
 - Paresthesias
 - Myopathy
- Heroin and Opioids
 - Guillain-Barre syndrome
 - Acute transverse myelitis
- Inhalants
 - Quadriplegia
- Other drugs
 - Rhabdomyolysis



NEUROLOGICAL MOVEMENT DISORDERS

- Alcohol
 - Tremors
 - Cerebellar dysfunction
 - Asterixis
 - Parkinsonian symptoms
 - Choreiform movements
 - Dyskinesias
- Stimulants
 - "Boca torcida"
 - Tremors
- Exacerbation of tics
 - "Punding"
 - Bruxism
 - Repetitive tongue protrusion
- Heroin and Opioids
 - Myoclonus
 - Intractable hiccups
- Levadopa



OTHER NEUROLOGICAL COMPLICATIONS

- Infections
 - Encephalopathy
 - Meningitis
 - Ptosis
 - Diplopia
 - Blurred vision
 - Dysphagia
 - Dysarthria
 - Weakness



THANK YOU
FOR LISTENING!

Feel free to contact me at
karenzak@flanp.org

REFERENCE

Miller, S. (2018). *The ASAM Principles of Addiction Medicine* (6th Edition). Wolters Kluwer Health.

NHTSA. 2022. Traffic safety facts. Retrieved from <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813294>

Patel, A.K. Reddy, V, Shumway, K.R., & Araujo, J.F. (2022). Physiology, sleep stages. StatPearls [Internet]. Treasure Island, FL: StatPearls Publishing Available from: <https://www.ncbi.nlm.nih.gov/books/NBK526132/>

SAMHSA. 2020. Highlights for the 2020 national survey on drug use and health. Retrieved from https://www.samhsa.gov/data/sites/default/files/2021-10/2020_NSDUH_Highlights.pdf

Vuong, C., Van Uum, S.H.M., O'Dell, L.E., Kabirullah, L., & Friedman, T.C. (2010). The effects of opioids and opioid analogs on animal and human endocrine systems. *Endocrine Reviews* 31(1):9–132.

REFERENCE—IMAGES

Medscape. 2021. Muehrcke lines of the fingernails. Retrieved from: <https://emedicine.medscape.com/article/1106423-overview>

All other images were obtained online from Pexels and Shutterstock