

Collison of COVID-19 and Substance Use Disorders. A Brief Review.

Objectives

- Describe the changes that can occur with different SUDs that predispose patients to infections and/or complications, especially once hospitalized.
- Be aware of signs/symptoms, family input, screening tools, chart reviews, as well as lab values, that may alert you to a possible SUD.
- Develop an understanding that patients with SUDs have higher incidences of COVID infections and worse outcomes
- If time permits, review the changes in outpatient treatment of OUD in a pandemic

Review of common use disorders presenting during hospitalization:

- Alcohol
- Tobacco
- Opioid





Current Statistics

- **Alcohol use disorder:**

- Life-time prevalence of AUD in US: ~18%
- Most widely used and abused substance world-wide
- Up to 40% of hospitalized patients have AUD
- 20-40% of inpatients have alcohol-related condition
- Excessive ETOH use impacts 1/5-1/3 of all patients admitted to an ICU



Current Statistics

- Prevalence of AUD with another drug use disorder reaches up to 70% of trauma admissions
- Tobacco users:
 - 67% drink ETOH
- Non tobacco users:
 - 47% drink ETOH



Alcohol

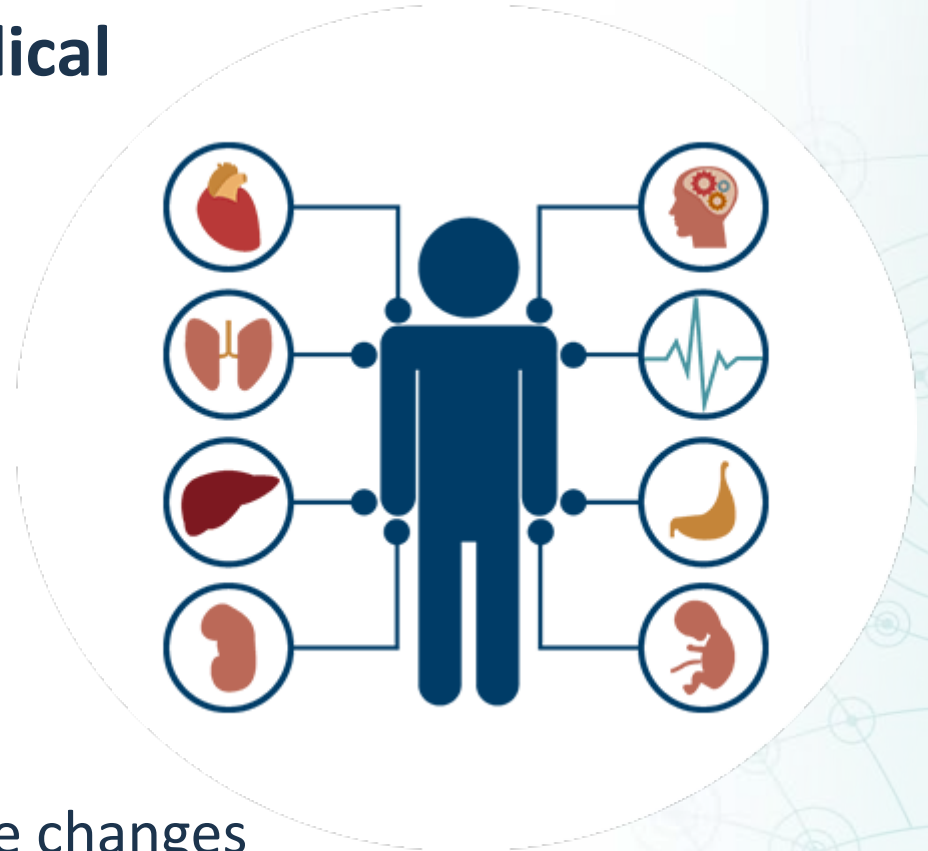
- **Pre-disposition to worse health outcomes:**
 - Poor nutrition
 - Poorer access to health care or less likely to access health care
 - Often co-occurring mental health
 - Co-occurring tobacco use
 - Increased trauma or trauma/violence related conditions



Alcohol

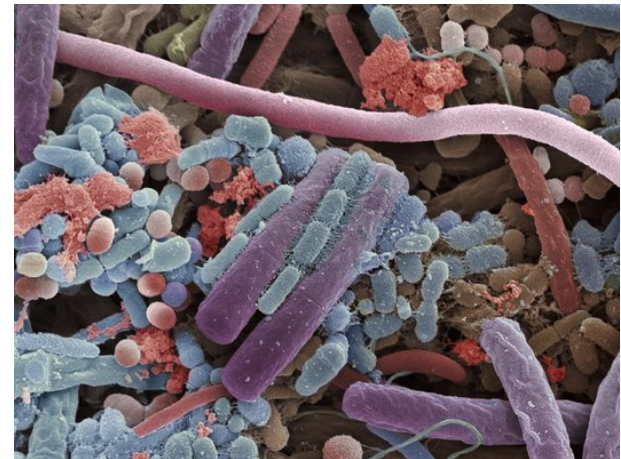
- **Co-occurring/resulting medical complications:**

- Liver disease
- Pancreas dysfunction
- Bone marrow suppression-pancytopenia
- Cardiac:
 - Cardiomyopathy
 - HTN
 - Afib
- Renal dysfunction- electrolyte changes
- GI: ulcers, varicele bleeding



Mechanisms of Predisposition

- Alters the flora of the mouth (more gram – organisms)
- Blunted upper airway reflexes- increases aspiration
- Decreased mucociliary clearance
- Impairs normal host defense mechanisms
 - Innate immunity changes- macrophage
 - Impaired adaptive immunity (T-cell function)
 - Induced epithelial dysfunction



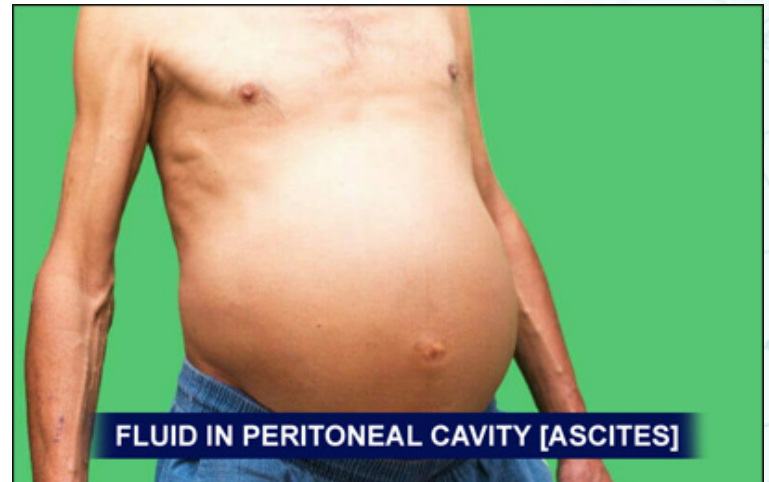
Alcohol and Sepsis

- Patients with alcohol use disorder have significantly higher need for mechanical ventilation
- Independent risk factor for development of sepsis
 - Mortality even higher with concurrent hepatic dysfunction
 - Pneumonia most common cause of sepsis in AUD
 - Viral and bacterial
- 2-4x's the rate of ARDS



Things to Note

- **History of AUD** (obviously)
- **Labs:**
 - GGT: elevated in AUD and in other things
 - MCV: less sensitive but when elevated with elevated GGT should raise suspicion
 - CDT: 4-7 drinks per day for at least 1 week will significantly raise
 - Carbohydrate deficient transferrin
 - MELD (bilirubin, INR, AST/ALT)
- **Physical findings:**
 - Tremor
 - Enlarged (tender) liver
 - Obvious ascites
 - Alcohol odor on breath





Current Statistics

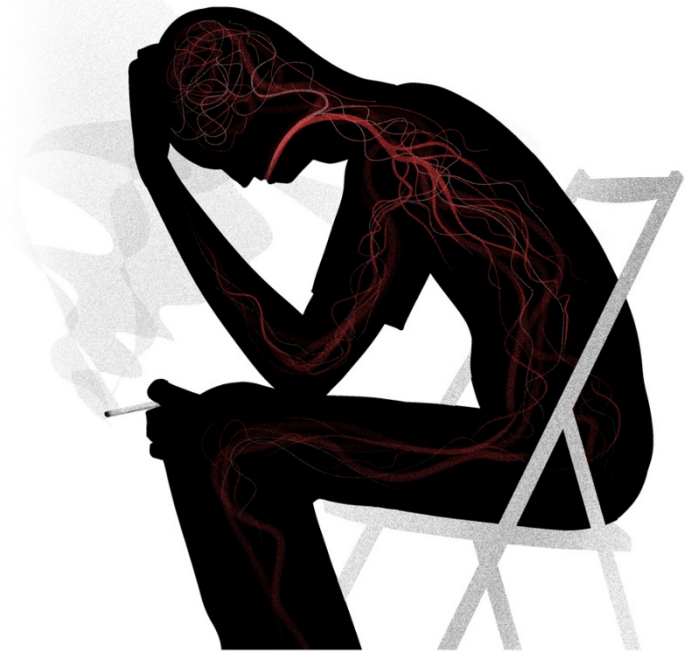
- **Nicotine use disorder:**
 - Main addiction in the world
 - High co-occurrence with ETOH and drug use
 - High co-occurrence of depression/anxiety disorders
 - 11% US population daily smokers



Current Statistics

- **Medical Implications**

- Increased agitation in ICU vs nonsmokers: 64% vs 32%
- 2-4 fold increased risk of invasive pneumococcal
- Several fold higher risk of influenza
- Increased risk TB
- Admission to ICU higher at 25-47% patients



Tobacco

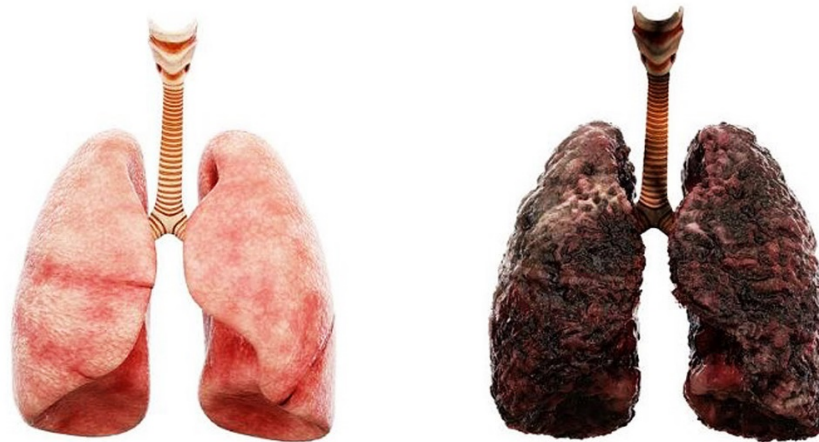
- **Pre-disposition:**

- Alterations in mechanisms of the host defense system
- Ciliary function impaired
- Mucous volume increased
- Humoral response to antigens altered
- Qualitative and quantitative changes in cellular components occur
- Periodontal disease



Current Statistics

- **Journal of Intensive Care (6, article number: 42 (2018))**
 - Sepsis: 56% smokers vs 40% nonsmokers
 - Death during hospital stay: 32% smokers vs 22% nonsmokers
 - ICU admission: 70% smokers vs 53% nonsmokers
 - Ventilators: 58% smokers vs 29% nonsmokers
 - Vasopressors: 53% smokers vs 39% nonsmokers



Abrupt Nicotine Discontinuation

- Nicotine withdrawal syndrome
 - ↑ Psychomotor agitation
 - ↑ Self removal of tubes/catheters
 - ↑ Doses of neuroleptics, sedatives, and analgesics
 - ↑ delirium
 - ↑ hospital costs and length of stay

An Aside

- To treat or not to treat? That is the question...
- Unclear data in critically ill patients



- Management of heavy smokers in the intensive care unit. Grmaish Jawaher. Year: 2019 | Volume: 3 | Issue Number: 1 | Page: 38-42



Opioid Use Disorder

- 16 million affected world wide
- 2.1 million in the U.S.A
- 21-29% of chronic pain patients misuse
- 8-12% develop an OUD while on opioids for chronic pain
- 4-6% transition to heroin

Opioid Use Disorder

- Frequent co-occurring substance use disorders
- Common co-occurring medical illness- heart, respiratory, HCV, cancer, diabetes
- Withdrawal may be missed due to other medical issues

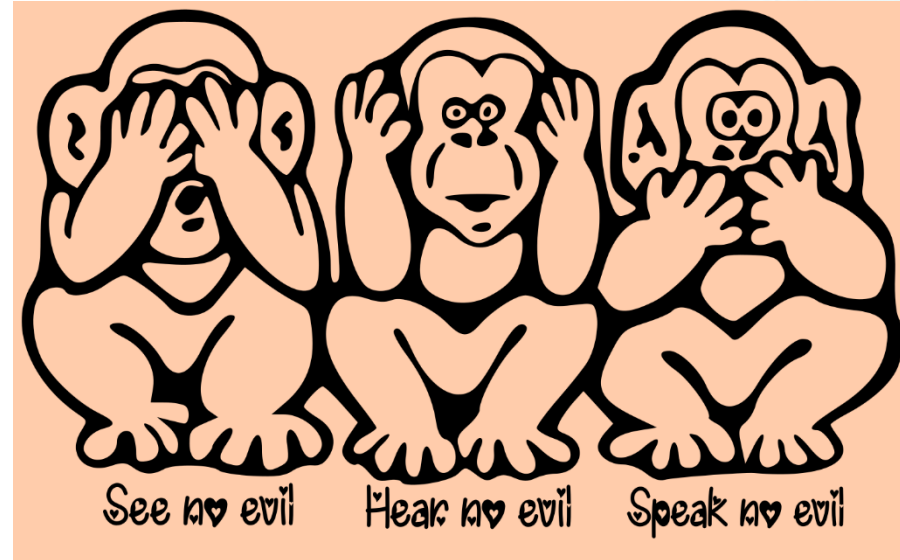
Substance Use Disorders

- **Physical findings:**
 - Conjunctival irritation
 - Tobacco odor
 - Heart murmur
 - Injection sites
 - Pupils
 - Tremors
 - Respiratory status
 - Weight changes
 - Somnolence
 - Tachycardia



Roadblocks to Recognizing SUD

- Too ill to give history
- Not forthcoming with their history
- Not understanding their own use disorder
- Family unaware
- Family downplaying (embarrassment/stigma)
- Not well documented in the chart
- Not asked by providers
- Deemed not “relevant” by providers
- OTP Methadone not on PDMP



COVID-19 Colliding with Substance Use Disorders

- Retrospective case controlled study of EHR
 - 73 million patients
 - >12,000 with COVID-19



Results

- Diagnosis of substance use disorder in last year increased risk of COVID adjusted odds ratio (AOR) > 8.6
- Opioid use disorder association was stronger at AOR 10.2
- Tobacco use disorder AOR 8.2

Results

- Compared to people without substance use disorders, patients with substance use disorders have greater
 - Chronic liver, lung, and kidney disease
 - CV disease
 - Type II diabetes
 - Obesity
 - Cancer
- And often if an IV drug user we see
 - Infections: endocarditis, Hepatitis, HIV

Results

- COVID patients with substance use disorders had worse outcomes overall

	Death	Hospitalization
With Substance Use Disorder	9.6%	40%
Without Substance Use Disorder	6.6%	30%

- Medication assisted treatment does not increase risk

Results

- People with substance use disorders are over represented among those with COVID-19- making up 15.6% of COVID-19 patients although only 10.3% of those of the sample
 - Highest risk in those with recent diagnosis in the last year

Results

- Indirect risks during this pandemic to persons with substance use disorders
 - Housing instability
 - Incarceration
 - Reduced access
 - Decreased social support

Nora Volkow. NIDA Annals of Internal Medicine. July 7 2020.

Sources

- Arcavi L, Benowitz NL. Cigarette smoking and infection. Arch Intern Med. 2004;164(20):2206-2216.
- deJong B, Schuppers AS, et al. The safety and efficacy of nicotine replacement therapy in the intensive care unit: a randomized controlled pilot study. Annals of Intensive Care (2018)8:70.
- deWit M et al. Alcohol-use disorders in the critically ill patient. Chest. 2010 Oct;138(4):994-1003.
- Lucidarme O et al. Nicotine withdrawal and agitation in ventilated critically ill patients. Crit Care. 2010;14(2):R58.
- Marcy TW, Merrill WW. Cigarette smoking and respiratory tract infection. Clin Chest Med. 1987 Sep;8(3):381-91.
- Mehta AJ. Alcoholism and critical illness: A review. World J Crit Care Med. 2016 Feb 4;5(1):27-35.
- Mersy, D. Recognition of Alcohol and Substance Abuse. Am Fam Physician. 2003 Apr 1;67(7):1529-1532.
- Prunty LM et al. Acute opioid withdrawal: identification and treatment strategies. US Pharm 2016;41(11):HS2-HS6.
- Turner CC, Fogger SA, Frazier SL. Opioid Use Disorder: Challenges During Acute Hospitalization. Journal for Nurse Practitioners. Volume 14, Issue 2 February 2018.
- Management of heavy smokers in the intensive care unit. Grmaish Jawaher. Year : 2019 | Volume: 3 | Issue Number: 1 | Page: 38-42
- COVID-19 Risk and outcomes in patients with substance use disorders: analysis of electronic health records in the United States. Wang, Kaelber, Su, Volkow. Molecular Psychiatry 2020.