SUBSTANCE USE DISORDER SIMPLIFIED

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DISCLOSURES

- None

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LEARNING OBJECTIVE

- Review the different patient presentations of the 9 categories of substance use disorder
- Compare various treatment modalities for substance abuse including off-label uses of medication
- Recognize withdrawal management options
- Briefly discuss emerging drugs of abuse
- Outline components of comprehensive recovery plans/programs

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"I DON'T HAVE A PROBLEM" CRITERIA FOR DIAGNOSIS OF SUD

DSM-5 (2013)

1. Substance taken in larger amounts than intended
2. Persistent desire or can't cut down
3. Time is spent obtaining, using, recovering
4. Craving
5. Failure to fulfill obligations
6. Continued use despite having problems
7. Activities given up to use
8. Use of substance when it is physically hazardous
9. Use despite knowing it's a problem
10. Tolerance
11. Withdrawal

~~Legal problems~~

http://www.samhsa.gov/disorders/substance-use
DSM 5, 2013; pg 481-589 http://bit.ly/1U8FX04

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USE SPECTRUM

- Use
  - Responsible, "normal" use; no resulting problems
- Misuse
  - Situational, infrequent maladaptive use of substance that causes minor levels of impairment and distress (e.g. a hangover, not studying because you're drinking)
- Substance Use Disorder
  - Pattern of usage that prompts major levels of impairment, distress, and life problems (e.g. DUI, divorce).
  - DSM-5: exclusions made for tolerance and withdrawal symptoms when using medications within prescribed guidelines.

What is a "functional alcoholic"?

- Remains somewhat arbitrary- efforts to 'standardize" language https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5460151/

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WHAT IS ADDICTION?

- Reward Pathway
  - Ventral Tegmental Area (VTA)
  - Connected to the Nucleus Accumbens (NAc) and the Prefontal Cortex (PFA)
  - Communicates via Dopamine (DA)
- Psychological vs Physical Addiction
  - Probably not accurate to separate → overlap
  - Vietnam War
- Some argue disease of human connection (J Hari "Chasing the Scream")
  - Rat Park
- Others say developmental/learning disorder
  (M Szalavitz "Unbroken Brain")

http://bit.ly/29JUr7D
http://bbc.in/1uDPRvN
http://n.pr/1NwIsFx

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RISK FACTORS

- Family history (genetics, epigenetics)
  - 50% genetic risk
  - Intra-uterine stress exposure
- Age of first use
  - Including tobacco!
  - Method
- History of trauma
  - ACE Study

http://bit.ly/2aWFS07
http://bit.ly/1SsIlNa
https://www.cdc.gov/violenceprevention/acestudy/

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SCREENING

- USPSTF: screen all adults for alcohol misuse
  - +/- for screening for drug use
  - +/- for screening 12-17yo but AAP says "yes" [CRAFFT]
- DAST, AUDIT
  - Substance specific screening tools available (e.g. CAGE)
- DSM 5 Level I → Level 2
- SAMHSA → SBIRT*
- NIDA Screen → Ask, Advise, Assess, Assist, Arrange
  - Comparison of screening tools http://bit.ly/1MR43oA

*Clarification: SBIRT is a method of approaching patients, not a specific screening tool per se

https://epss.ahrq.gov/
https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Pages/Substance-Use-Screening.aspx

http://bit.ly/29H1cr3
http://www.samhsa.gov/sbirt
http://bit.ly/29LD2dm

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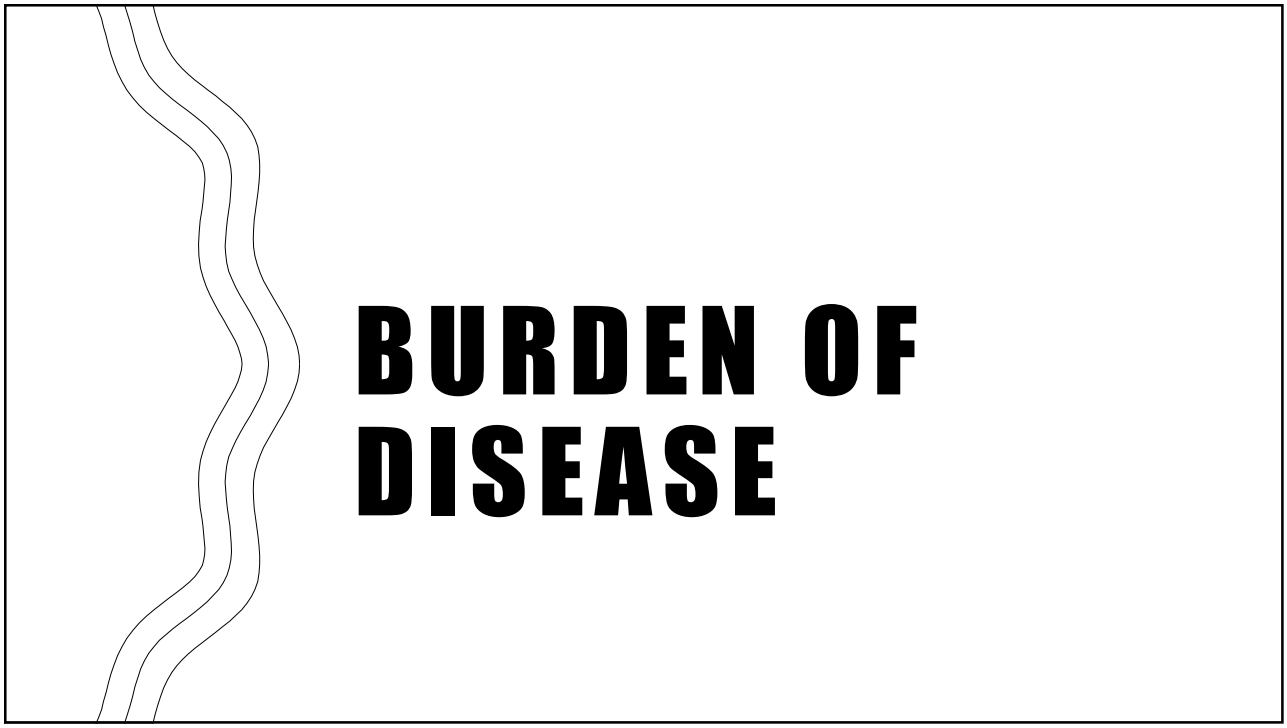

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BURDEN OF DISEASE

- Addiction has always been a problem
- Now higher fatality rates
- Some changing demographics re: addiction

We scorned addicts when they were black. It is different now that they are white.

https://wapo.st/2qIDUFv

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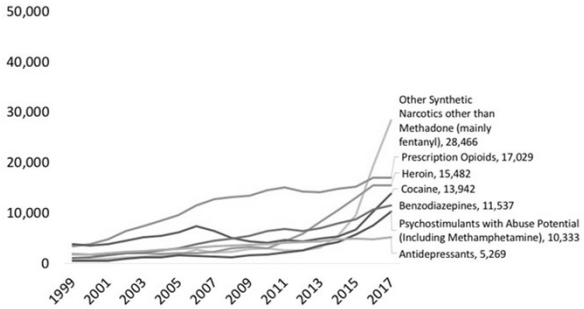
OVERDOSE DEATHS

- Rates of overdose deaths are rising
  - Most often deaths are due to combined drug + opioid
- Starting to see return of stimulant abuse (cocaine, meth)

Figure 2. **National Drug Overdose Deaths** Number Among All Ages, 1999-2017



Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates

CATEGORIES OF SUBSTANCE USE PER DSM-5

- Alcohol
- Caffeine
- Cannabis
- Hallucinogens
  - Includes bath salts, MDMA,
- Inhalants
- Opioids
- Sedative/hypnotics/anxiety
  - Includes BZDs,
- Stimulants
  - Cocaine, meth
- Tobacco
- Other

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SIGNS OF DRUG INTOXICATION

Drug	Eyes	Pulse, BP	Speech	Coordination	Arousal
Alcohol	Bloodshot, nystagmus	Reduced	Slurred/slow	Impaired	High/low
Opiates	Pinpoint pupils, shut	Reduced	Slurred/slow	Impaired	Low
Stimulants	Saucer pupil, open	Increased	Fast, may not make sense	May improve	High
Cannabis	Red eye, shut	Increased	Slow, may not make sense	Impaired	High/low
Hallucinogens	Dinner plate pupils, shut	Increased	All of the above	Impaired	High

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URINE TOX/DRUG SCREENS

- False positives can be caused by antihistamines, antidepressants, antipsychotics
- Synthetic THC rarely positive on UDS
- Always remember to get APAP/ASA levels in ODs

UDT: Detection Windows in Urine

Drug/Medication	Primary Metabolite	Ave. Detection Time (days)
Opiates (heroin, morphine)	Morphine	2-3
Semisynthetic Opioids (oxycodone, hydrocodone)	Variable Must be tested specifically	2-3
Methadone	EDDP	2-3
Buprenorphine	Nor-buprenorphine	2-3
Cocaine	benzoylecgonine	2-3
Amphetamines		2-3
Benzodiazepine	Varies by medication type	Variable with half life Unreliable immunoassays
Marijuana Occasional Marijuana Chronic	THC	1-3 Up to 30

ASAM White Paper http://bit.ly/29Xe0cl MDaware blog http://bit.ly/29HEDwO FOAMCast Episode 48 http://foamcast.org/
Brahm NC, et al "Commonly prescribed medications and potential false-positive urine drug screens." *American Journal of Health-System Pharmacy*, 67(16): 1344-1350.

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ALCOHOL – ACUTE WITHDRAWAL

- Gold standard is BZD taper
  - Long acting preferred: Diazepam (Valium) or Chlordiazepoxide (Librium)
  - If bad liver- use Lorazepam (off label)
- Newer protocols using AEDs ONLY *off label
  - Carbamazepine (Tegretol), Gabapentin (Neurontin), Phenobarbital, Dexmedetomidine (Precedex)
- Adjuvants
  - Antidepressants/antipsychotics, Antihypertensives *off label
- Outpatient management possible (AAFP)
- Don't forget Thiamine/Folate/Magnesium
  - IM/IV >> PO; (~~Banana Bag~~)

http://www.aafp.org/afp/2013/1101/p589.html
http://www.ncbi.nlm.nih.gov/pubmed/27002274
http://bit.ly/2bfmCJl

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ALCOHOL

- Potentially fatal withdrawal
  - Even if not a "detox facility", may warrant hospital admission
- Use Prediction of Alcohol Withdrawal Severity Scale (PAWSS)
- Also use Clinical Institute Withdrawal Assessment (CIWA-Ar)

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ALCOHOL RECOVERY MEDICATIONS

- FDA Approved:
  - Acamprosate (Campral®)
  - Disulfiram (Antabuse®) *must avoid ALL alcohol
  - Naltrexone (Vivitrol®) injection every 4 weeks
    - Pill also available (ReVia®)
- Clonidine, Gabapentin, Topiramate, Baclofen for sobriety
  - *All off label
- Treat underlying reason(s) for drinking, e.g. depression, anxiety

http://bit.ly/2bnXnad
http://bit.ly/2bynp70

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INTOXICATION AND OVERDOSE

- Intoxication: Must have consumed a high dose of caffeine **in excess of 250 mg** and have five or more physical symptoms
- Cup of regular coffee has 100 mg of caffeine → caffeine blood levels to 5 - 6 mg/L
- Caffeine blood levels of those who died from caffeine overdose averaged 180 mg/L (2017)
  - About 30 cups of coffee
- BUT most energy drinks have other substances which are synergistic

How much is 330 mg of caffeine?

https://www.researchgate.net/publication/315611897_Review_of_Caffeine-Related_Fatalities_along_with_Postmortem_Blood_Concentrations_in_51_Poisoning_Deaths

DAILY CAFFEINE LIMITS

- Kids
  - No caffeine under 12yo
  - 12yo-18yo: limit to 100mg per day
- Pregnant women
  - CDC- no comment
  - ACOG- 200mg "appears safe"
    - Canada says 300mg ☺
- Withdrawal
  - Slow reduction
  - Symptomatic support

https://health.usnews.com/wellness/for-parents/articles/2017-06-01/caffeine-a-growing-problem-for-children
https://www.marchofdimes.org/pregnancy/caffeine-in-pregnancy.aspx
https://mothertobaby.org/fact-sheets/caffeine-pregnancy/
https://www.acog.org/Patients/FAQs/Nutrition-During-Pregnancy

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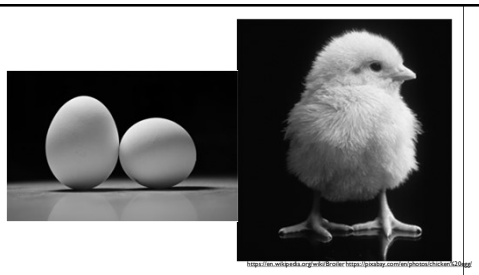
CANNABIS



https://en.wikipedia.org/wiki/Broiler https://pixabay.com/en/photos/chicken%20egg/

- Risk of psychosis with exposure in early adolescence
- Increasing evidence of cardiovascular effects
  - Lower doses: there is increased sympathetic (and reduced parasympathetic) activity, causing tachycardia and HTN
  - High doses: sympathetic activity is inhibited, parasympathetic increases, bradycardia with hypotension is seen (J Arrhythm 2020;36:189)
- "You can't get addicted"
  - Cannabis/Cannabinoid Hyperemesis Syndrome
  - Rate of cyclic vomiting DOUBLED in Colorado
  - Hot showers → Capsaicin on the tummy (*off label)
- Treatments *off label
  - Haloperidol, Gabapentin, N-acetyl cysteine, Propranolol, Buspirone, Dronabinol

http://bit.ly/24QX4pT http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4469074/ http://bit.ly/1R6H1wH
http://bit.ly/2bNq4Zx http://www.ncbi.nlm.nih.gov/pubmed/27549375
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5542986/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6461323/

SYNTHETIC THC

- Smoked, used in e-cigs
- High variability in products and symptoms
- Presents: psychosis, rhabdomyolysis, cardiac arrhythmias
  - Usually not found on tox screens
- Supportive care
- Addiction possible

- Note: DEA reports dealers applying Fentanyl to marijuana to get people addicted to opioids

http://www.medscape.com/viewarticle/779391_3
http://bit.ly/1Ogadye

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"MEDICAL" MARIJUANA

- "I've done my research"
- All studies with "medical" side effects look at CBD (cannabidiol) ***not*** THC
  - But very limited research because it is Schedule I
  - Also 'newer' products are markedly more potent
- Remember it's not regulated- no guarantee on strength/dose between brands or batches
- Edibles are LEAST consistent and most "dangerous", especially for kids/poisoning

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HALLUCINOGENS

- Works on Dopamine and Serotonin Receptors
  - Targets prefrontal cortex as well as areas of arousal and physiologic response
- Take effect in minutes, can last 12+ hrs
- Presents: psychosis/delirium, tachycardia
  - Serotonin syndrome, anticholinergic side effects, toxidrome from poisonous mushrooms
- Supportive care, safety of patient and staff
- Long term: memory impairment, mood disorder
  - Hallucinogen Persisting Perception Disorder (HPPD) = flashbacks

http://bit.ly/2czxTb3
http://bit.ly/2cqHK1p

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MDMA – ECSTASY/MOLLY

- Started as club drug, raves
  - Broader popularity now
- Not always 'pure'
- Presents: dehydration, rhabdomyolysis, arrhythmia, hyperthermia, renal failure
- May permanently alter serotonin, memory

- Mixed with Sildenafil (Viagra) – so increased risk of STD/HIV
- Often take Zolpidem (Ambien) to "come down" after

http://bit.ly/2c4aF9G
http://bit.ly/2cbVJb2

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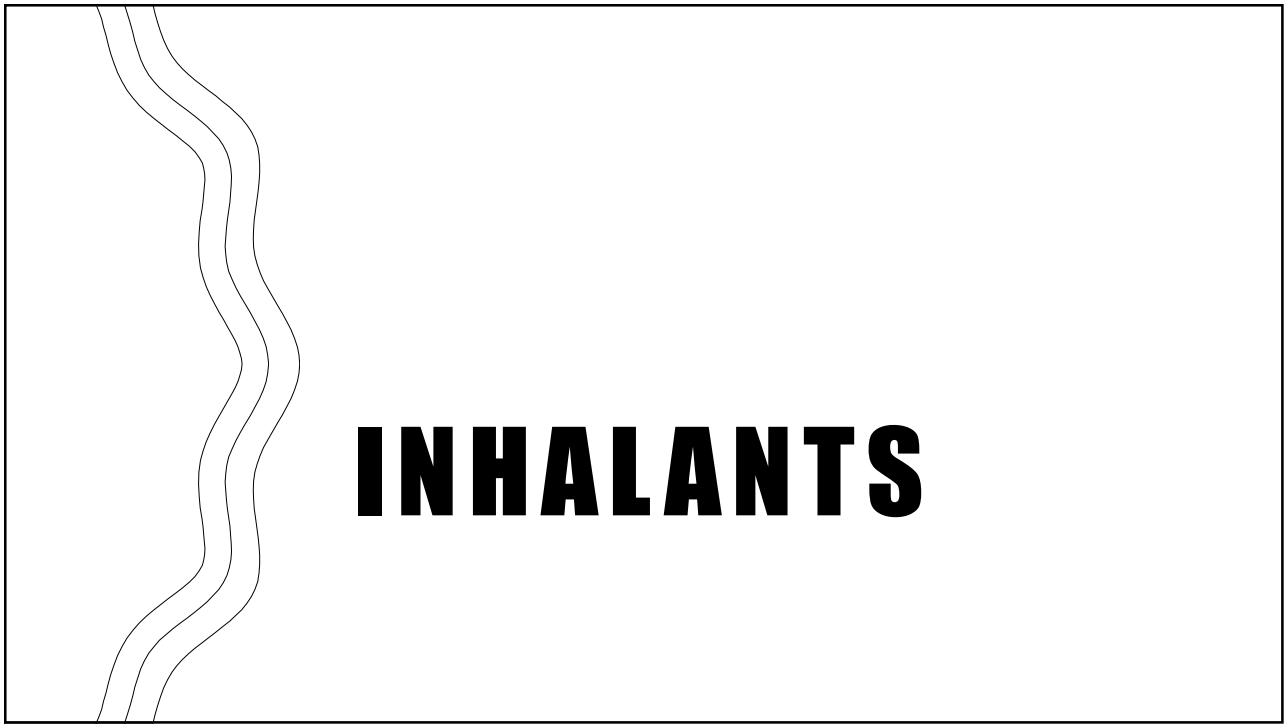

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INHALANTS

- Presents: depends on what's inhaled
  - Confusion/delirium, N/V, Weakness, Gait issues
  - Tachycardia, hypoxia, chemical burns of nasopharynx/oral cavity, aspiration of vomit, chronic lung damage/cognitive impairment
- Supportive care for acute intoxication
- Chronic users may have withdrawal syndrome
  - Some inhalants are fat soluble so longer withdrawal cycle
  - All meds off label
- Aromatherapy as Inhalant Risk
  - https://www.ncbi.nlm.nih.gov/pubmed/22936057

http://bit.ly/2cH9P68

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OPIATE DETOX

- Lofexidine – only FDA approved medication for opiate withdrawal
- Otherwise symptomatic support
  - Clonidine
  - Trazodone/Mirtazapine
  - Promethazine/Metoclopramide/Ondansetron
  - Baclofen/Cyclobenzaprine
  - NSAIDs/Acetaminophen

https://www.ncbi.nlm.nih.gov/books/NBK310652/
https://acphospitalist.org/archives/2009/10/residents.htm
https://www.cochrane.org/CD007522/ADDICTN_medications-management-opium-withdrawal

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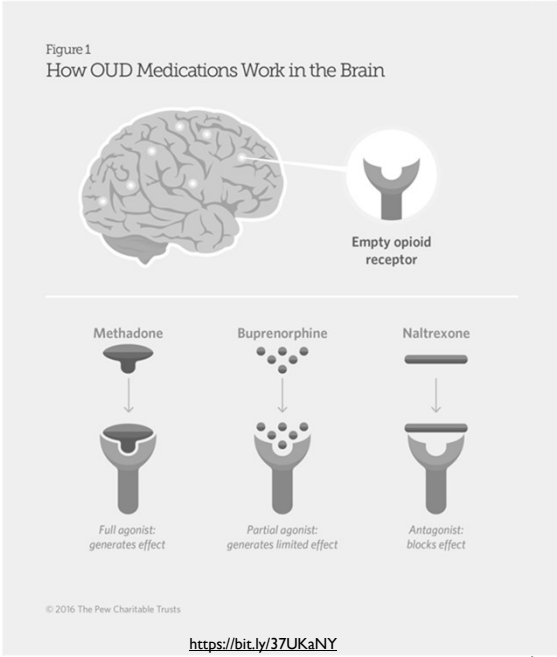
MEDICATION OPTIONS (MAT/MOUD)

- **Methadone**
  - Full agonist
  - Slow build to necessary dose
  - Half life of several days
  - Cautions/complications: prolonged QT, dental issues, can only get through OTP
- **Buprenorphine**
  - Partial Agonist
  - Faster build to necessary dose
  - Cautions/complications: higher street value, must be DEA X Waivered
- **Naltrexone**
  - Antagonist
  - Pill or Injection
  - Cautions/Complications: must be opioid/alcohol free for 7-10 days before starting



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INFORMATION ABOUT OPIOID MEDS

- Buprenorphine – reduces withdrawal symptoms AND reduces cravings
  - Subutex, Suboxone, Zubsolv (Buprenorphine HCl and naloxone HCl)
    - Only ones FDA approved for opioid use disorder
  - Temgesic (sublingual tablets for moderate to severe pain)
  - Buprenex (solutions for injection often used for acute pain in primary-care settings)
  - Norspan and Butrans (transdermal preparations used for chronic pain)
  - **IMPLANT:** Probuphine – good for 6 months, but low dose (=8mg)
  - **INJECTION:**
    - Sublocade- good for 1 month
    - Brixandi- weekly, biweekly, monthly options

https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm503719.htm
https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm587312.htm

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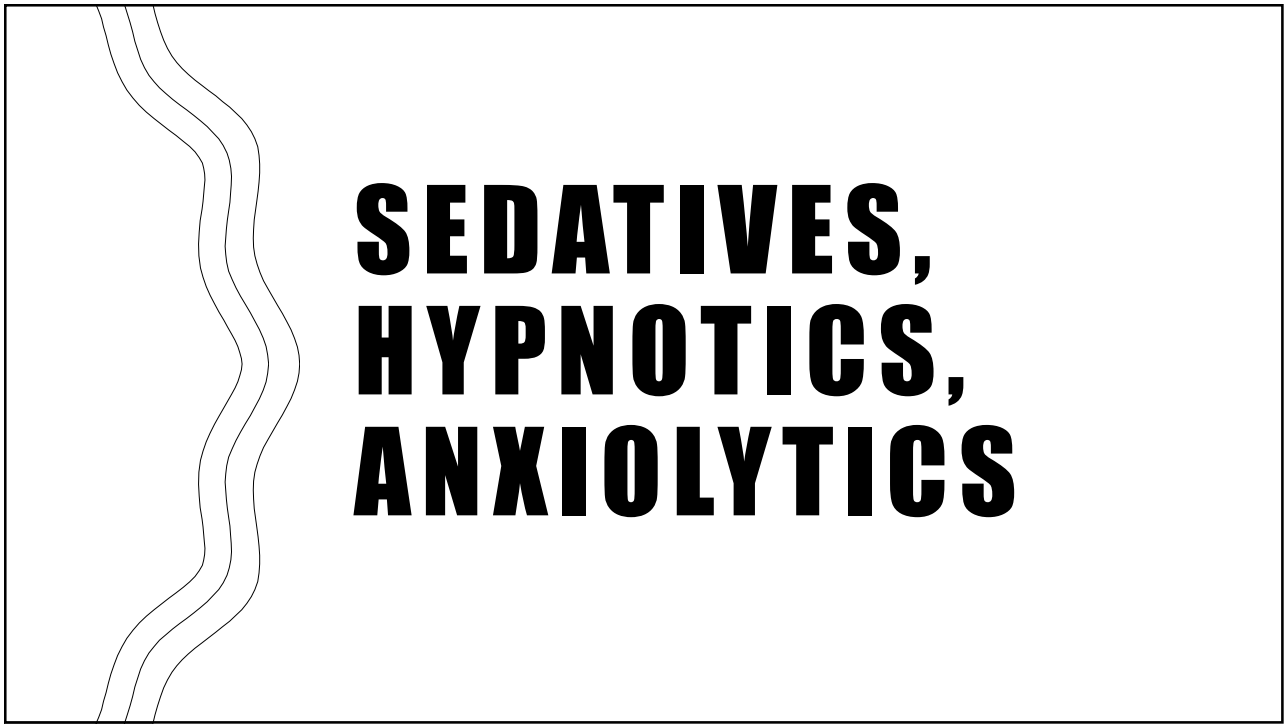

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SEDATIVES, HYPNOTICS, & ANXIOLYTICS

- Central nervous system depressants, slow normal brain function
- Negative effects: Tolerance, dependence (addiction), accidental overdoses.
  - Long term use associated with increased risk of dementia
- Abrupt withdrawal can be fatal
- Some have paradoxical reaction - become agitated or aggressive
  - Especially present in extremes of age
- Synergistic effect with opioids and alcohol

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6325366/

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BENZODIAZEPINES

- Taper (can be 6+ months!)
  - Change to XR- but rarely covered
  - 5-10% reduction every 2 weeks – if faster consider adding AED
    - Off label use of Flumazenil for detox
  - UK has great resources – Ashton Manual
- Seizure risk
  - Phenobarbital withdrawal protocol *off label

http://www.ncbi.nlm.nih.gov/pubmed/22285834
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4014019/

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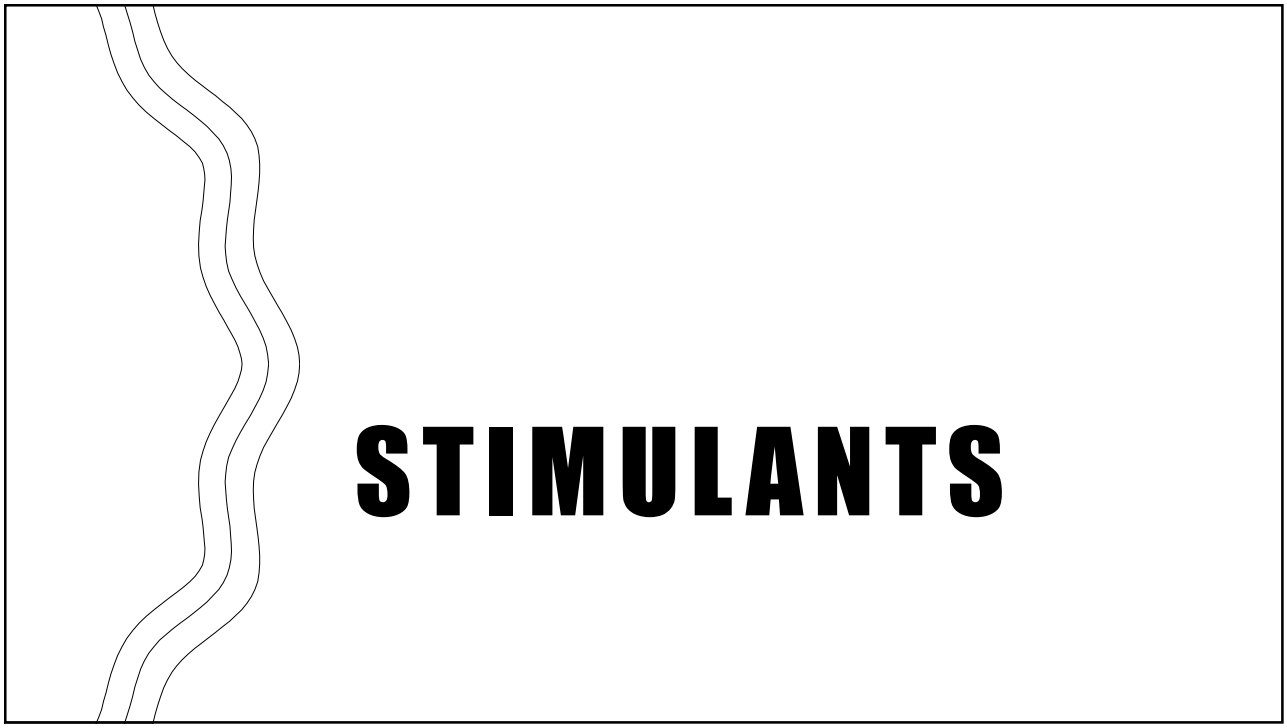

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STIMULANTS (COCAINE, AMPHETAMINES, METH)

- Presents: tachycardia, vasospasm (MI, CVA), rhabdomyolysis, seizures
- Supportive care, interventions as needed
- No approved treatments for sobriety (all off label)
  - Focus on GABA, Dopamine
  - Some promise for Propranolol, Topiramate, Disulfiram, Clonidine
  - Cochrane reviewed showed no improvement of 4 meds to placebo for amphetamine abuse
    - Dexamphetamine, Bupropion, Methylphenidate, Modafinil

http://bit.ly/2bUCuiH
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2797110/
http://www.ncbi.nlm.nih.gov/pubmed/21399902

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TOBACCO CESSATION

- If still smoking, some argue addiction isn't being treated
- Pills
  - Bupropion (Zyban®/Wellbutrin®)
  - Varenicline (Chantix®): black box warning
- Nicotine Replacement Therapy (NRT):
  - Patch, nasal spray, inhaler
  - Lozenge, gum → parking
- Pairing (Beer, Commute to Work)
- 800-QUIT-NOW (784-8669), SmokeFree.gov (National)

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EVALI

- E-cigarette/Vaping Associated Lung Injury
  - Ask about e-cig/vaping use for respiratory, GI, or 'constitutional' complaints (e.g. weight loss)
  - Diagnosis of exclusion
- Was area of rising concern through late 2019
- THC and Vitamin E acetate seemed to be linked but not definitive source

https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html

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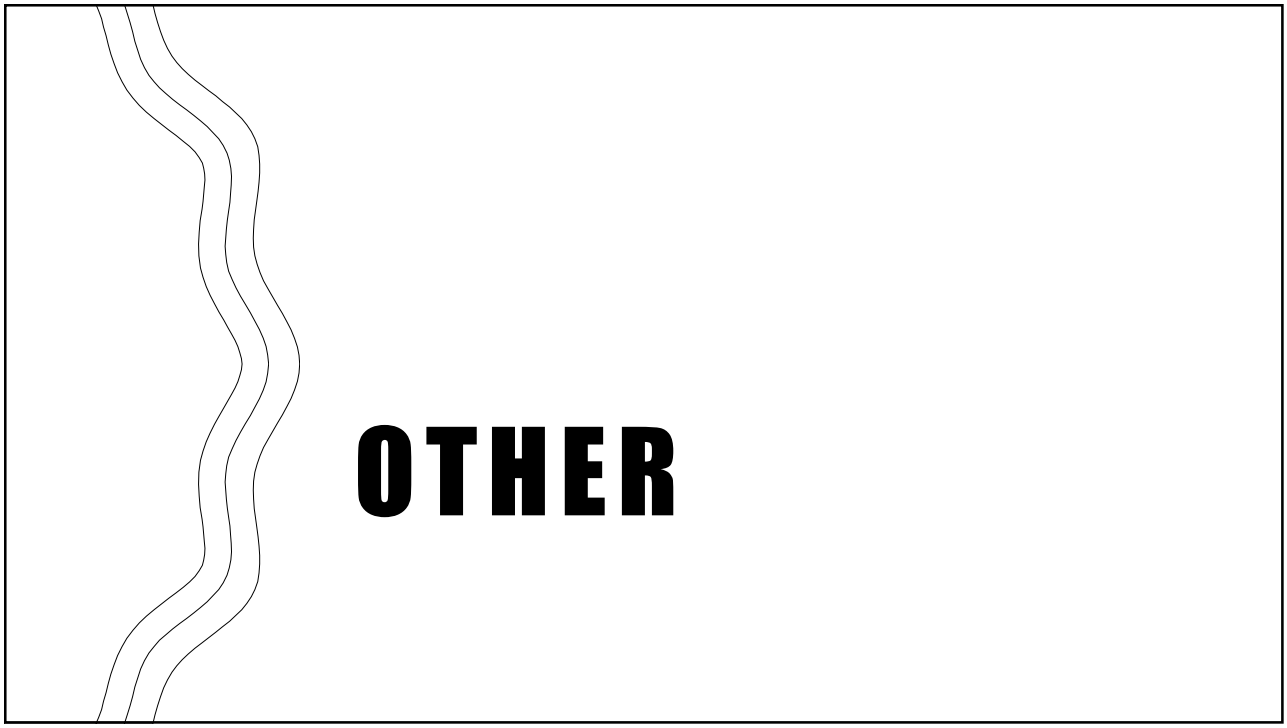

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NEW & EMERGING SUBSTANCES OF ABUSE

- Almost none will be detected on point of care tox screens
  - Usually some labs that can run more complex testing but days to weeks for results
- Variable presentation (sedation to agitation)
- Supportive care based on presentation
- Public health alerts if sudden increase in overdose presentations (OD Map, Bad Batch, etc.)

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NEW & EMERGING SUBSTANCES OF ABUSE

- Synthetic cathinones (bath salts) - combo of stimulant and hallucinogen
- Synthetic cannabinoids (synthetic marijuana)
- Salvia – powerful naturally occurring hallucinogen
- Desomorphine (Krokodil) – synthetic opioid made from household products
- MDMA/Molly/2C-P/2C-E
  - A more potent form of Ecstacy linked to several deaths

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NEW & EMERGING SUBSTANCES OF ABUSE

- Dabbing
  - Using butane oil to extract THC from cannabis, highly concentrated
- Syrup, RoboTripping
  - Non-prescribed use/dosage of OTC cough syrups or abuse of prescribed cough syrups containing Codeine or Promethazine with Dextromethorphan
- PCP (Wet)
  - Dipping the tip of a cigarette in PCP, NOT embalming fluid as lore suggests.
- Alcoholic-related
  - Alco-pops, Four Loko, and alcohol nebulizers
  - Alternative administration means: gummy bears, tampons, enemas

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INTERVENTION

- Detox
  - Technically only alcohol/benzo withdrawal is fatal
- "Rehab"
  - 28 day vs 90 day
  - Residential
  - PHP (all day, most days a week)
  - IOP (several hours, several days a week)
  - Outpatient
- D & A – different privacy / licensing criteria than 'regular' therapy
- Co-occurring or Dual Dx
- SAMHSA Treatment Locator:
  FindTreatment.SAMHSA.gov or 800.662.HELP (4357)

Continues to be research into vaccine for substance use
https://cen.acs.org/articles/96/i8/Vaccines-against-addictive-drugs-push.html

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SUPPORT GROUPS

- 12 Steps
  - AA, NA,
  - Support for family: Al-Anon, AlaTeen, ACoA
- Secular Organizations for Sobriety
- Women for Sobriety/Men for Sobriety
- SMART Recovery
- LifeRing Secular Recovery
- Celebrate Recovery

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746426/
http://bit.ly/1hmY9yy

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SUPPORT GROUPS

- Cochrane Review of 12 step:
- "No experimental studies unequivocally demonstrated the effectiveness of AA or TSF approaches for reducing alcohol dependence or problems."

http://bit.ly/2cdGHO0

- Narconon
- Run by Church of Scientology, treatment based on idea of purification, linked to several deaths

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2746426/
http://bit.ly/1hmY9yy

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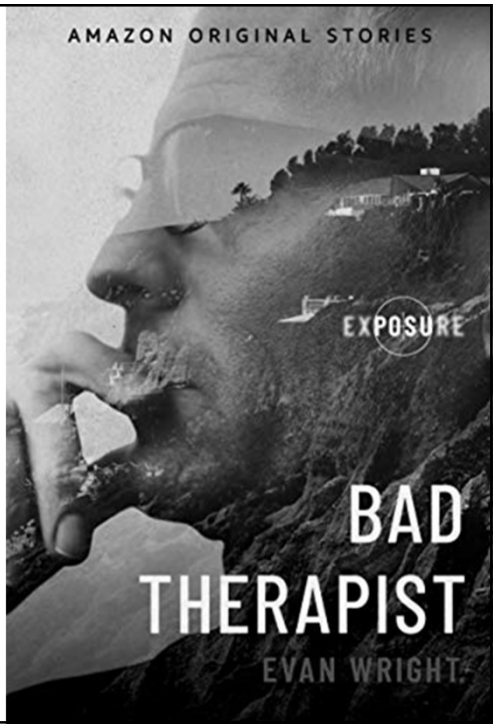
SOBER LIVING PITFALL

- Mental Health Parity + Affordable Care Act = increased insurance coverage for SUD
- Americans with Disabilities Act + Fair Housing Act = civil rights protections for individuals with disabilities (including mental impairment)
- Combined this means that many Sober Houses can operate with impunity
  - Not all bad… but not all good



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TREATING MINORS

- In many states, minors can access care without parental consent/involvement
  - Mental health
  - Substance use disorders
  - STI/HIV
- Sometime depends of level of care
  - Inpatient vs outpatient
- HIPAA vs parental rights

Table 2

Number of states with each of four types of decision-making authority for inpatient and outpatient drug and mental health treatment

	Drug Treatment		Mental Health Treatment	
Type of Authority	**Inpatient**	**Outpatient**	**Inpatient**	**Outpatient**
Parent Consent Only [a]	9	4	18	13
Either Parent or Minor Consent	18	16	13	10
Both Parent and Minor Consent	2	0	6	4
Minor Consent Only	22	31	15	24
Total Number of States	51	51	52[b]	51

[a]States with No Specified Law were counted in the Parent Consent Only category.
[b]Iowa is counted twice because of their law regarding both parent and minor consent for treatment.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4393016/
https://www.hhs.gov/sites/default/files/when-your-child.pdf
https://bit.ly/2SU5Rtp

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UTILIZING PEERS

- Peer Recovery Counselors/Specialists (PRC/PRS)
- Individuals with lived experience w/ MH/SUD
- Bedside interventions and follow up
- Increasing reimbursement

Consider becoming a Peer Recovery Supervisor

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COMPREHENSIVE HARM REDUCTION STRATEGIES

- Point of care HIV/Hep C
- Pregnancy testing, access to contraception
  - Need to watch for contraceptive coercion
- Overdose Fatality Review Teams
- Mental health services
- Primary Care
- Naloxone distribution
- Needle exchange
- Safe injection sites
- MAT/MOUD
- Education
- Childcare
- Food Pantry
- Legal services/ "drug court"
- Shelter/housing
- Utility assistance
- Transportation
- Job placement
- Dental services
- Integrated care settings

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SUMMARY

- Substances will always be abused
- Best treatment is one that addresses many aspects of a person's life
- No "right" or "one" way
- Will often take many attempts
  - Goal is always to keep person alive until they find treatment plan that works for them at this point in their lives
- Stressful but also very rewarding work
- Consider joining the Society for PAs in Addiction Medicine
  - http://www.spaam.org/

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RESOURCES

- Lots of "live" experts you can consult
  - PCSS- has webinars, free DEA X waiver training and also has mentoring https://pcssnow.org/mentoring/frequently-asked-questions/
  - California's statewide program- https://ed-bridge.org/.
    - Has algorithm https://ed-bridge.org/guide and other resources including one-on-one live support https://ed-bridge.org/office-hours
  - Clinician Consultation Center- substance use management support, free, Mon-Fri 9am-8pm, phone 855- 300-3595 http://nccc.ucsf.edu/clinician-consultation/substance-use-management/

- Other great training resources
  - American Society of Addiction Medicine- live and online education for CME credit https://www.asam.org/education
  - Project SHOUT - training for providers throughout the hospital setting https://www.projectshout.org/webinars/
  - National Conference of Addiction Disorders https://www.theaddictionconference.com/ (Will be in Baltimore this August)
  - American Academy of Addiction Psychiatry https://www.aaap.org/clinicians/

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