PainWeek®

Pink Elephants:
Is Alcohol a Pain Panacea or Problem?

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Disclosures

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- NIH NIDA (R01DA045027) Psychological Risk Factors for Persistent Opioid Use and Prevention of Chronic Opioid Use and Misuse After Surgery: Postoperative Motivational Interviewing and Guided Opioid Weaning
- NIH NLM (R01LM013362) Advancing Knowledge Discovery for Postoperative Pain Management
- NHLBI, NINDS (U24NS100659, U24NS100655) Clinical Trial of COVID-19 Convalescent Plasma in Outpatients (C3PO)
- Nalu Medical- Consultant
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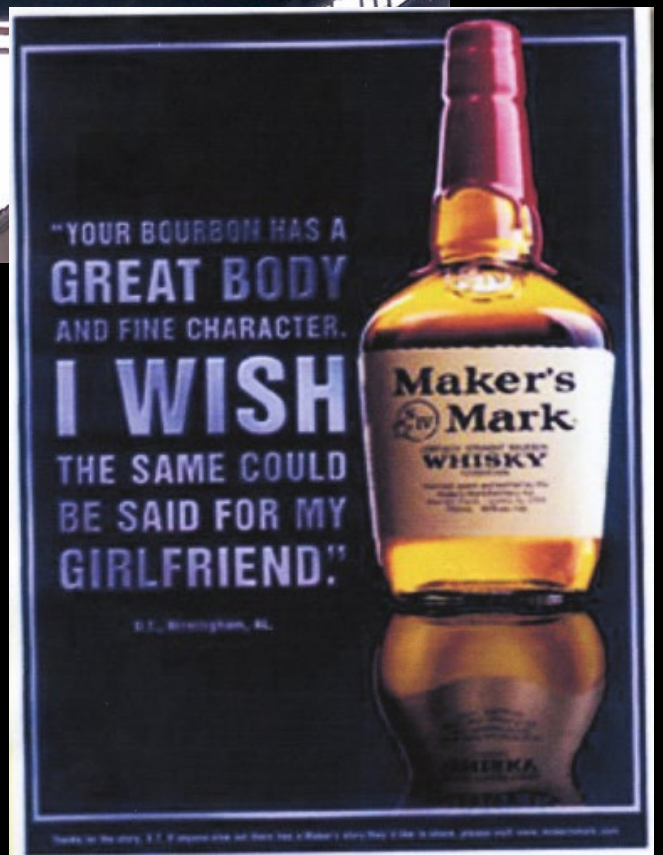
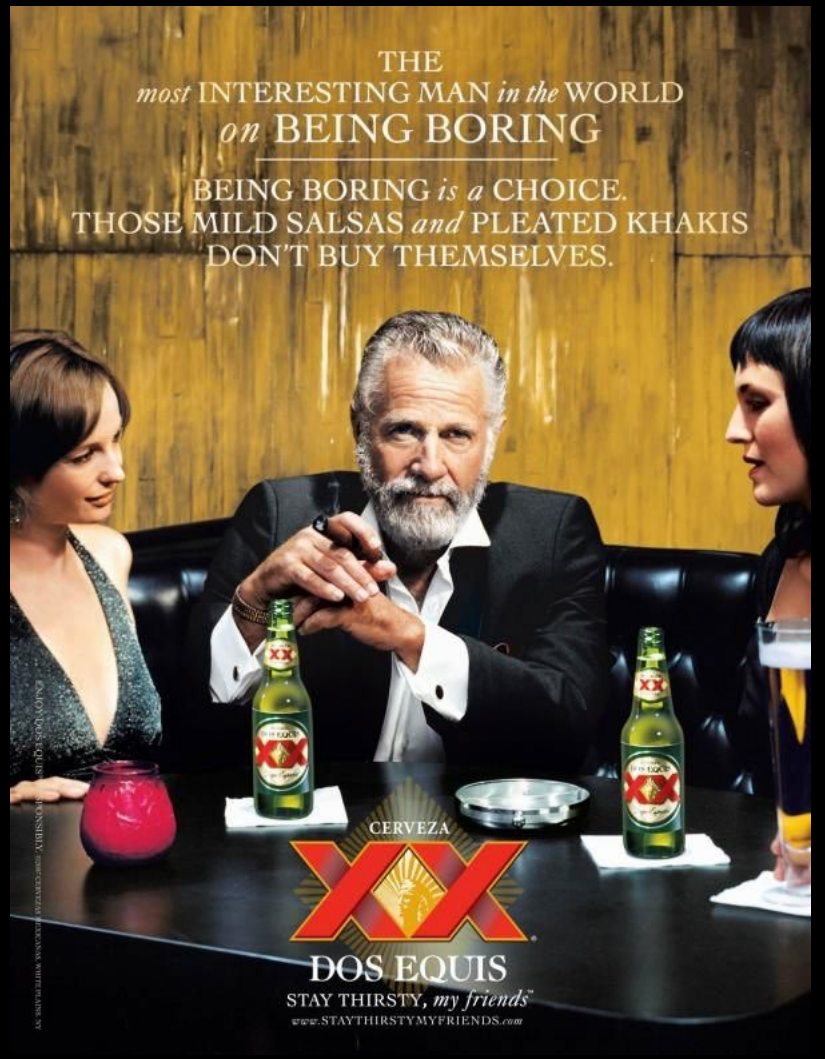
- None

Learning Objectives

- Describe excessive alcohol use
- Summarize the epidemiology of co-occurring pain and alcohol use disorder
- Explain how COVID-19 impacted alcohol use
- Identify psychological/behavioral interventions used in the treatment of alcohol use disorders


BOMBAY SAPPHIRE EAST
Alcohol: It's cheaper than therapy.
Lee's Discount Liquor


"YOUR BOURBON HAS A GREAT BODY AND FINE CHARACTER. I WISH THE SAME COULD BE SAID FOR MY GIRLFRIEND."
Maker's Mark
WHISKY


THE most INTERESTING MAN in the WORLD on BEING BORING
BEING BORING is a CHOICE.
THOSE MILD SALSAS and PLEATED KHAKIS
DON'T BUY THEMSELVES.
CERVEZA
DOS EQUIS
STAY THIRSTY, my friends™
www.STAYTHIRSTYMYFRIENDS.com

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WHAT IS
EXCESSIVE ALCOHOL USE?
FOR WOMEN, BINGE DRINKING IS 4 OR MORE DRINKS CONSUMED ON ONE OCCASION*
FOR MEN, BINGE DRINKING IS 5 OR MORE DRINKS CONSUMED ON ONE OCCASION*
*ONE OCCASION = 2–3 HOURS
ANY ALCOHOL USE BY THOSE UNDER AGE 21
EXCESSIVE DRINKING INCLUDES:
BINGE DRINKING
UNDERAGE DRINKING
PREGNANT DRINKING
HEAVY DRINKING
ANY ALCOHOL USE BY PREGNANT WOMEN
FOR WOMEN, HEAVY DRINKING IS 8 DRINKS OR MORE PER WEEK
FOR MEN, HEAVY DRINKING IS 15 DRINKS OR MORE PER WEEK

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WHAT IS CONSIDERED A "DRINK"?

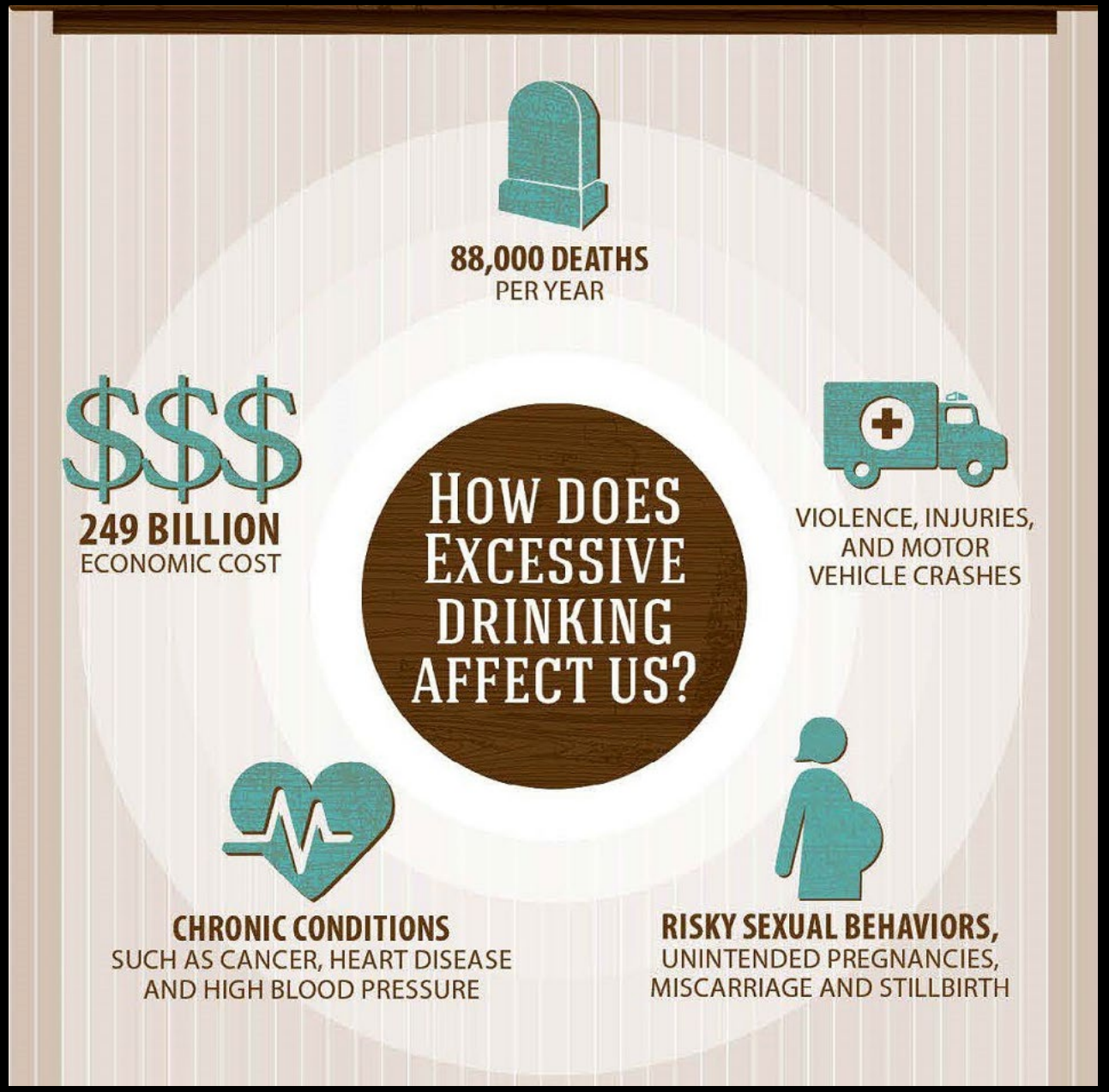
U.S. STANDARD DRINK SIZES

12 OUNCES
OF 5% ABV
BEER

8 OUNCES
OF 7% ABV
MALT LIQUOR

5 OUNCES
OF 12% ABV
WINE

1.5 OUNCES
OF 40% ABV
(80-PROOF)
DISTILLED SPIRITS
OR LIQUOR
(Examples: gin, rum, vodka, whiskey)

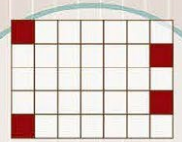

88,000 DEATHS
PER YEAR
$$$
249 BILLION
ECONOMIC COST
HOW DOES EXCESSIVE DRINKING AFFECT US?
VIOLENCE, INJURIES, AND MOTOR VEHICLE CRASHES
CHRONIC CONDITIONS
SUCH AS CANCER, HEART DISEASE AND HIGH BLOOD PRESSURE
RISKY SEXUAL BEHAVIORS,
UNINTENDED PREGNANCIES, MISCARRIAGE AND STILLBIRTH

BINGE DRINKING IS THE MAIN PROBLEM

OVER **90%** OF EXCESSIVE DRINKERS BINGE DRINK

1 IN **6**

MORE THAN **38 MILLION** U.S. ADULTS BINGE DRINK



BINGE DRINKERS DO SO ABOUT **4 TIMES A MONTH**

BINGE DRINKERS AVERAGE **8 DRINKS** PER BINGE

MOST PEOPLE WHO BINGE DRINK ARE **NOT** ALCOHOL DEPENDENT OR ALCOHOLICS

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Alcohol and COVID-19: what you need to know

Under no circumstances should you drink any type of alcoholic product as a means of preventing or treating COVID-19 infection.
Consumption of alcohol WILL NOT protect you from COVID-19.

Avoid alcohol altogether

Reach out for help

Avoid alcohol as a social cue for smoking

Discuss with children and young people the problems associated with drinking and COVID-19

emic worse.

Do not use alcohol as a way of dealing with your emotions and stress

Never mix alcohol with medications

Make sure that children and young people do not have access to alcohol

World Health Organization
REGIONAL OFFICE FOR Europe

COVID and Alcohol Consumption

- Alcohol was consumed 1 day more per month by 3 of 4 adults
  - Pollard MS, Tucker JS, Green HD Jr. Changes in Adult Alcohol Use and Consequences During the COVID-19 Pandemic in the US. JAMA Netw Open. 2020 Sep 1;3(9):e2022942.
- In the Understanding America Study, U.S. adults reported increases in the number of drinking days. Increases were sustained among males, white, and older adults
  - Nordeck CD, Riehm KE, Smail EJ, Holingue C, Kane JC, Johnson RM, Veldhuis CB, Kalb LG, Stuart EA, Kreuter F, Thrul J. Changes in drinking days among United States adults during the COVID-19 pandemic. Addiction. 2021 Jun 22. doi: 10.1111/add.15622. Epub ahead of print.
- Among Canadian adults, self-reported increased alcohol consumption was associated with anxiety, depression, and self-perceived loneliness during the pandemic
  - Shield KD, Chrystoja BR, Ali S, Sohi I, Rehm J, Nigatu YT, Elton-Marshall T, Hamilton H, Jankowicz D, Wells S. Changes in Alcohol Consumption in Canada During the COVID-19 Pandemic: Associations With Anxiety and Self-Perception of Depression and Loneliness. Alcohol Alcohol. 2021 Aug 13:Epub ahead of print.
- 539 participants completed longitudinal surveys in the UK during the pandemic. Increased alcohol consumption was associated with personal coping motives, anxiety, and drinking at home alone or with others.
  - Irizar P, Jones A, Christiansen P, Goodwin L, Gage SH, Roberts C, Knibb G, Cooke R, Rose AK. Longitudinal associations with alcohol consumption during the first COVID-19 lockdown: Associations with mood, drinking motives, context of drinking, and mental health. Drug Alcohol Depend. 2021 Sep 1;226:108913.
- U.S. Veterans reported significant decrease in alcohol use and binge drinking
  - Davis JP, Prindle J, Castro CC, Saba S, Fitzke RE, Pedersen ER. Changes in alcohol use during the COVID-19 pandemic among American veterans. Addict Behav. 2021 Nov;122.

Alcohol Consumption ⟷ Pain


TREASURY DEPARTMENT
U.S. INTERNAL REVENUE
PRESCRIPTION BLANK — NATIONAL PROHIBITION ACT

BOOK NO. C 116808

BLANK NO. 77

FORM NO. 1403 - REVISED FEB. 1922

PERMIT NO. J1952

℞

March 20 1925 (DATE)

FOR (GIVE FULL NAME OF PATIENT)

(STREET AND NO.)

(CITY) (STATE)

Godder Drug (NAME OF DRUGGIST OR PHARMACIST UPON WHOM DRAWN)

(STREET AND NO.)

(CITY) (STATE)

(SIGN FULL NAME) M.D.

(STREET AND NO.)

(CITY) (STATE)

FOR USE OF DRUGGIST OR PHARMACIST ONLY

PERMIT NO. I-703

CANCELLED March 21-25 (DATE DELIVERED)

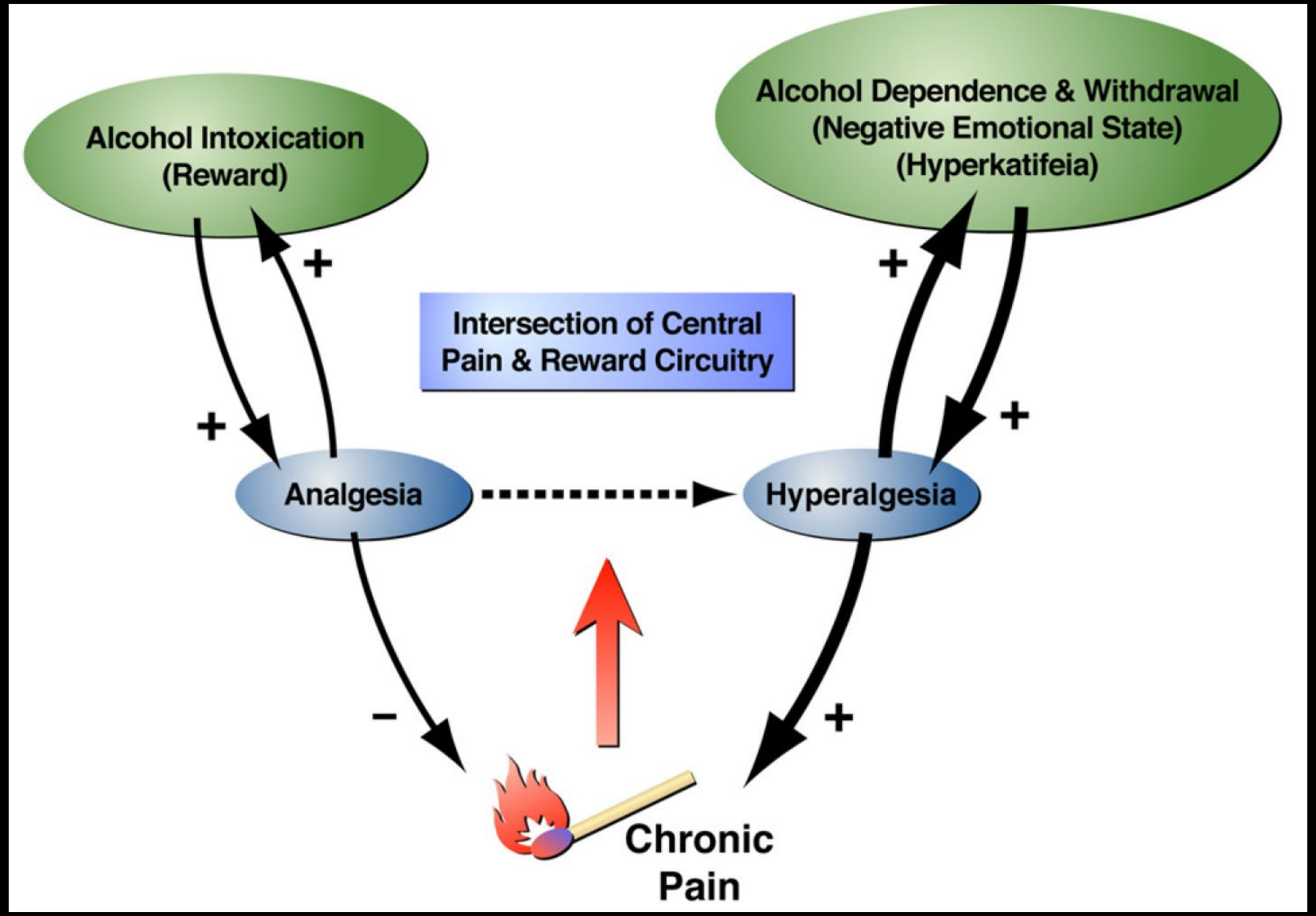
(SIGN FULL NAME AS ON PERMIT)

(STREET AND NO.)

New Bedford, Mass. (CITY) (STATE)

THIS PRESCRIPTION MUST NOT BE REFILLED

SEE REGULATIONS FOR PENALTIES IMPOSED


Alcohol Intoxication
(Reward)
Alcohol Dependence & Withdrawal
(Negative Emotional State)
(Hyperkatifeia)
+
+
+
+
Intersection of Central
Pain & Reward Circuitry
Analgesia
Hyperalgesia
–
+
Chronic
Pain

Acute Consumption

- Intoxication
  - Reward
  - Stimulation
  - Impairment
  - Analgesia
- Withdrawal
  - CNS/ANS hyperexcitability
  - Anxiety
  - Sleep disturbances
  - Dysphoria
  - Hyperalgesia

Analgesic Effects

- Increased pain tolerance to electrical stimulation with IV alcohol (1g/dl)
- Increased analgesic response among those with family history of AUD and high neuroticism
- Analgesia to electric shock pain and mechanical pressure pain with oral alcohol administration
- Acute ingestion stimulates release of endogenous opioids

Co-Occurring Alcohol Use and Pain

- Problem drinkers are more likely to report pain conditions and hyperalgesia
- Alcohol dependence is an important risk factor for pain severity after injury
- A positive family history of alcoholism is associated with heightened pain sensitivity
- Vulnerability to alcohol dependence is proportional to alcohol's pain alleviating effects
- 73% of patients who identified alcohol as their drug of choice in SUD treatment also reported moderate-to-severe past-month pain
- 25% of patients with pain endorse heavy drinking
- Patients with back or neck pain may be twice more likely to meet criteria for AUD

Biopsychosocial Factors

- Men are more likely to drink to cope with pain
- Older adults with pain are more likely to have drinking problems
- Obesity is a risk factor for chronic low back pain and AUD
- Family history of AUD is also prevalent in patients with chronic pain
- Prevalence of tobacco smoking is elevated in patients with AUD (90%) and chronic pain (49-68%)
- Among males, pain-related anxiety is associated with alcohol-related consequences and alcohol dependence symptoms

- Zale EL, LaRowe LR, Boissoneault J, Maisto SA, Ditre JW. Gender differences in associations between pain-related anxiety and alcohol use among adults with chronic pain. Am J Drug Alcohol Abuse. 2019;45(5):479-487.

Tolerance

- Tolerance to analgesic effects with repeated use
- When alcohol is administered to rats in a liquid diet for 10 days, analgesic effects peak within 2–4 days and subside with continued administration until pain responses return to baseline levels by day 10
- Experiences that sustain or exaggerate alcohol's analgesic effects may involve learned mechanisms

Withdrawal

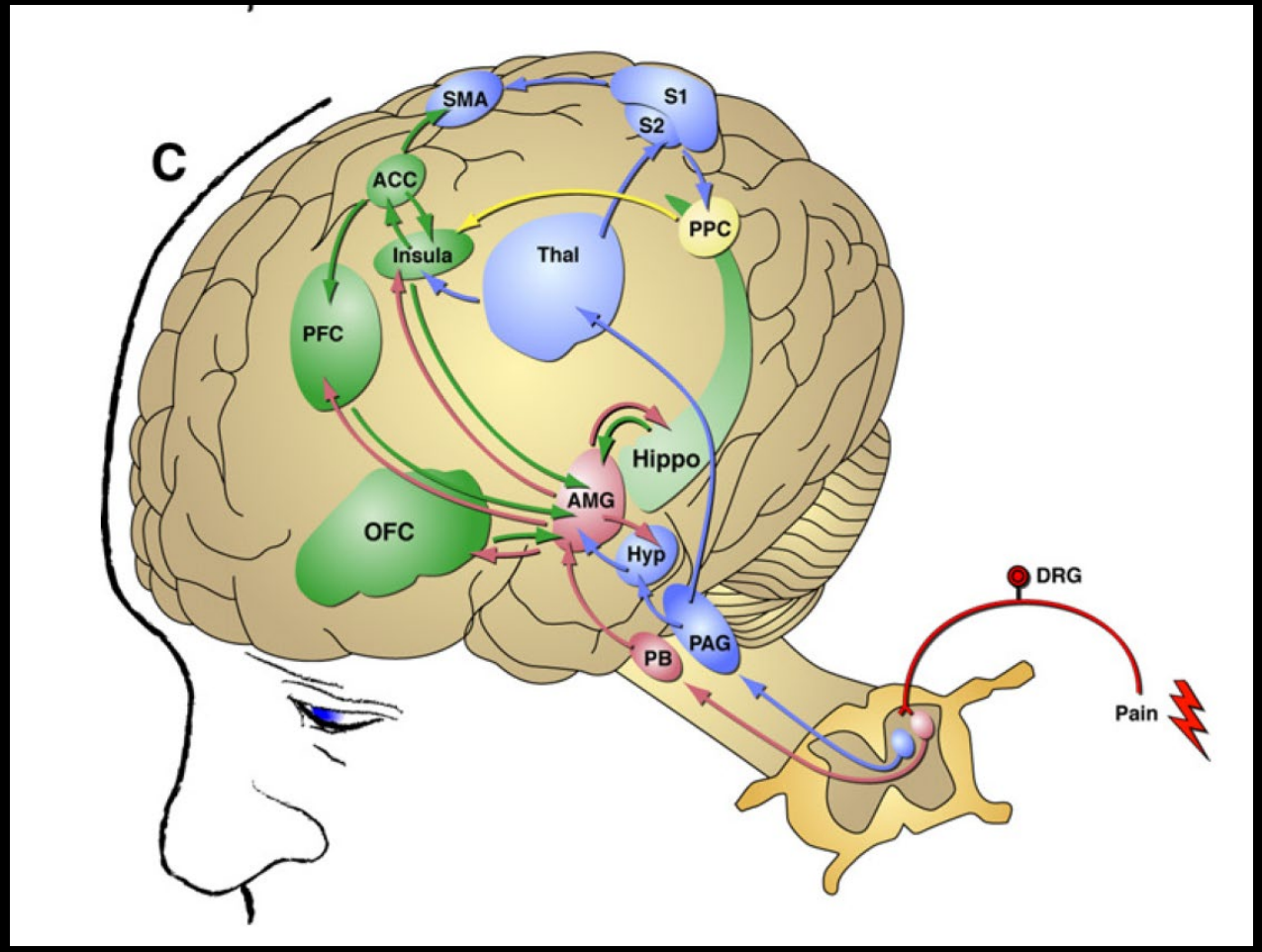
- Decreased GABA activity
- Increased glutamate activity
- Upregulated calcium channel activity
- Increased noradrenergic activity

- **INCREASED CNS activity**

Chronic Excessive Drinking and Alcohol Dependence

- Induces pain and worsens chronic pain conditions
- Withdrawal from chronic use increases pain sensitivity
- Small fiber peripheral neuropathy
  - 25-66% of AUD patients
  - F>M
- Drinking in alcoholics may be motivated by desire to alleviate ethanol withdrawal-induced hyperalgesia

Intersection of Nociception and Alcohol Dependence



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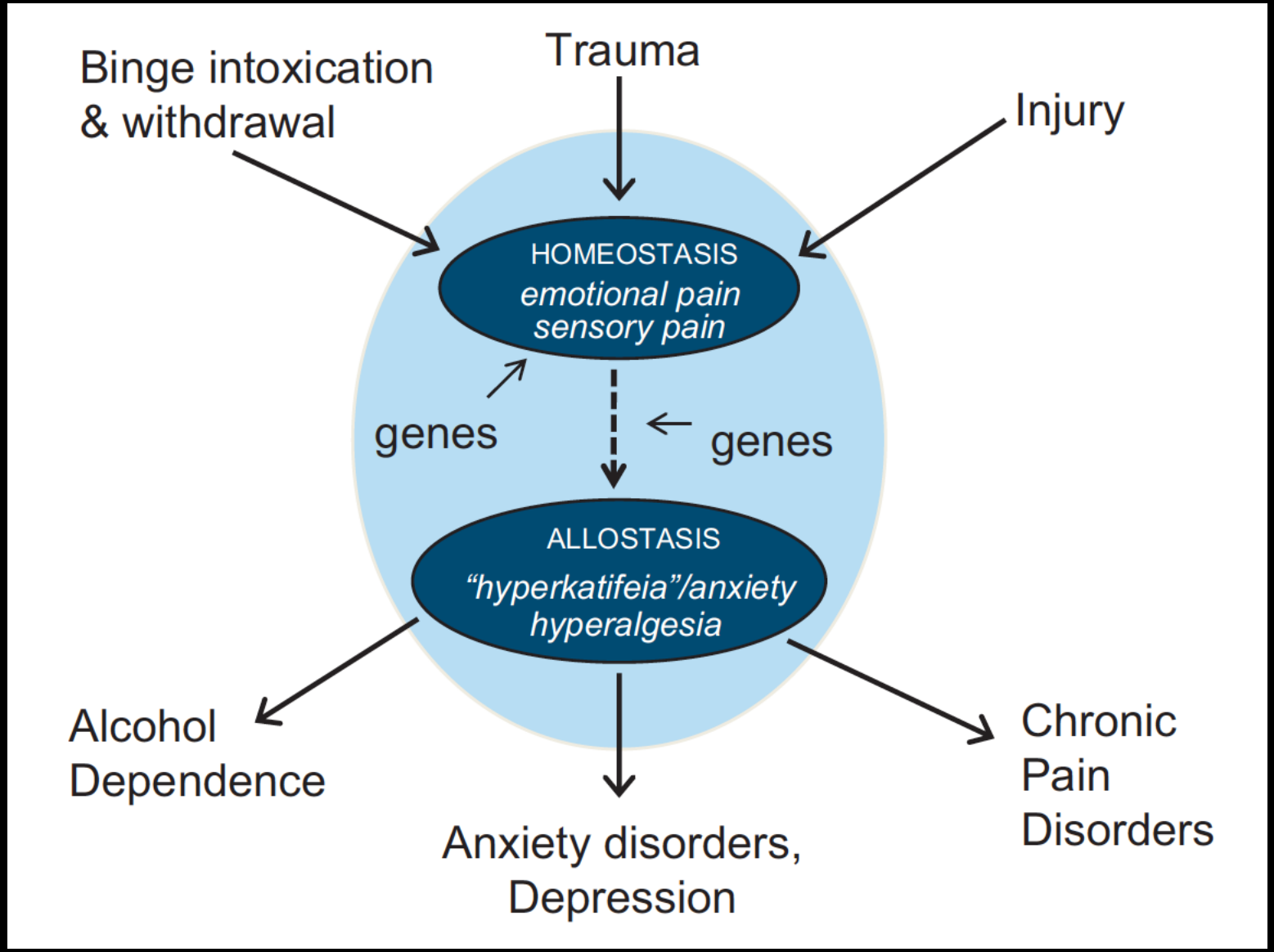

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Alcohol-Induced Painful Conditions

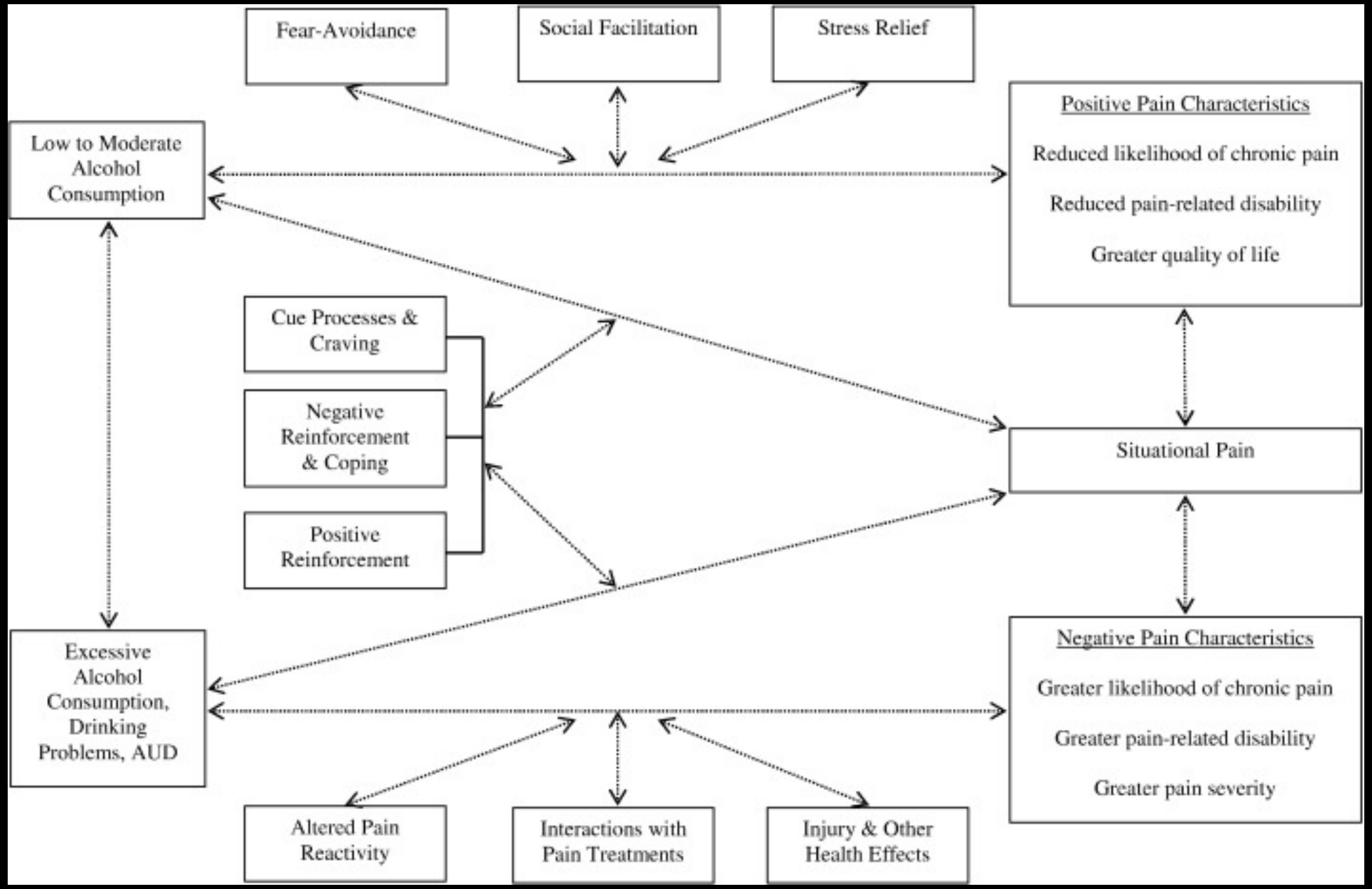
- Alcohol-induced pancreatitis
- Alcohol-related neuropathy (sensory, motor, autonomic)
  - 25-66% of patients with AUD
- Excessive drinking is associated with the development of osteoarthritis and knee pain among men and chronic pain among women
- Excessive drinking is associated with poorer pain-related outcomes after trauma
- Increased risk of traumatic injuries

What about low-to-moderate alcohol consumption?

- Any alcohol use (vs. none) is associated with 80% reduced risk of developing chronic widespread pain, 25% reduced risk of developing back pain
- Moderate alcohol consumption (vs. none) is associated with 40-70% reduced likelihood of developing disabling back or neck pain and chronic widespread pain
- In patients with fibromyalgia, low-to-moderate alcohol consumption (vs. none) was associated with greater QOL and physical functioning, less missed work, and fewer fibromyalgia symptoms

How Does Pain Influence Alcohol Consumption?

- Among patients with chronic pain, greater pain severity and unpleasantness was associated with increased alcohol consumption
- Older adults with more severe pain and pain-related interference were 20% and 50% more likely to have drinking problems
- Persistent pain is associated with post-AUD treatment alcohol consumption
- Self—medication pain coping strategy?
- Situational motivator- increased motivation to drink in response to pain due to negative (negative affect, stress, craving reduction) or positive reinforcement pathways
  - Steeper delay discounting rates are associated with weaker expectancies for alcohol analgesia among men but not women.
    - Ferguson E, Vitus D, Williams M, Anderson M, LaRowe L, Ditre JW, Stennett B, Boissoneault J. Sex differences in associations between delay discounting and expectancies for alcohol analgesia. Exp Clin Psychopharmacol. 2021 Aug 19.


Fear-Avoidance
Social Facilitation
Stress Relief
Low to Moderate Alcohol Consumption
Positive Pain Characteristics
Reduced likelihood of chronic pain
Reduced pain-related disability
Greater quality of life
Cue Processes & Craving
Negative Reinforcement & Coping
Positive Reinforcement
Situational Pain
Excessive Alcohol Consumption, Drinking Problems, AUD
Negative Pain Characteristics
Greater likelihood of chronic pain
Greater pain-related disability
Greater pain severity
Altered Pain Reactivity
Interactions with Pain Treatments
Injury & Other Health Effects

Alcohol and Pain Medications

- NSAIDs- increased risk of GI bleeding
- Acetaminophen-liver toxicity
- Opioids- increased depressive effects
- Benzodiazepines- increased sedative effects

Alcohol and Prescription Opioids

- 36% of patient receiving prescription opioids consume alcohol
- AUD is more prevalent among those who use prescription opioids
- SUDs including alcohol are the strongest predictors of opioid misuse
- Excessive alcohol use precedes the onset of opioid misuse

CAGE Questionnaire

2 or more positive responses are strongly associated with alcohol dependence

- Have you ever felt you should **C**ut down on your drinking?
- Have people **A**nnoyed you by criticizing your drinking?
- Have you ever felt bad or **G**uilty about your drinking?
- Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (**E**ye opener)?

Alcohol Use Disorders Identification Test-Concise (AUDIT-C)

1. **How often do you have a drink containing alcohol?**
   - ☐ Never
   - ☐ Monthly or less
   - ☐ 2-4 times a month
   - ☐ 2-3 times a week
   - ☐ 4 or more times a week
2. **How many standard drinks containing alcohol do you have on a typical day?**
   - ☐ 1 or 2
   - ☐ 3 to 4
   - ☐ 5 to 6
   - ☐ 7 to 9
   - ☐ 10 or more
3. **How often do you have six or more drinks on one occasion?**
   - ☐ Daily or almost daily
   - ☐ Weekly
   - ☐ Monthly
   - ☐ Less than monthly
   - ☐ Never

AUD FDA-Approved Medications (relapse prevention)

- Naltrexone
- Naltrexone IM
- Acamprosate
- Disulfiram

Oral Naltrexone

- 50 mg/day
- Mu, delta, and kappa opioid receptor antagonist
- Adverse effects
  - Abdominal pain, diarrhea, decreased appetite, nausea
  - Sedation, daytime sleepiness, fatigue, insomnia, headache
  - Elevated LFTs

Alcohol Detoxification and Gabapentin

- Normalizes alcohol-induced effects on GABA, glutamate
- No hepatic metabolism
- More effective than lorazepam in reducing drinking after detoxification

Effect of Pain on AUD Treatment

- Reductions in physical pain during AUD treatment predicted lower risk of relapse
- Pain interference and pain intensity at the end of AUD treatment predicted heavy drinking and time to first heavy drinking day during and following treatment

References

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Ravi Prasad, PhD

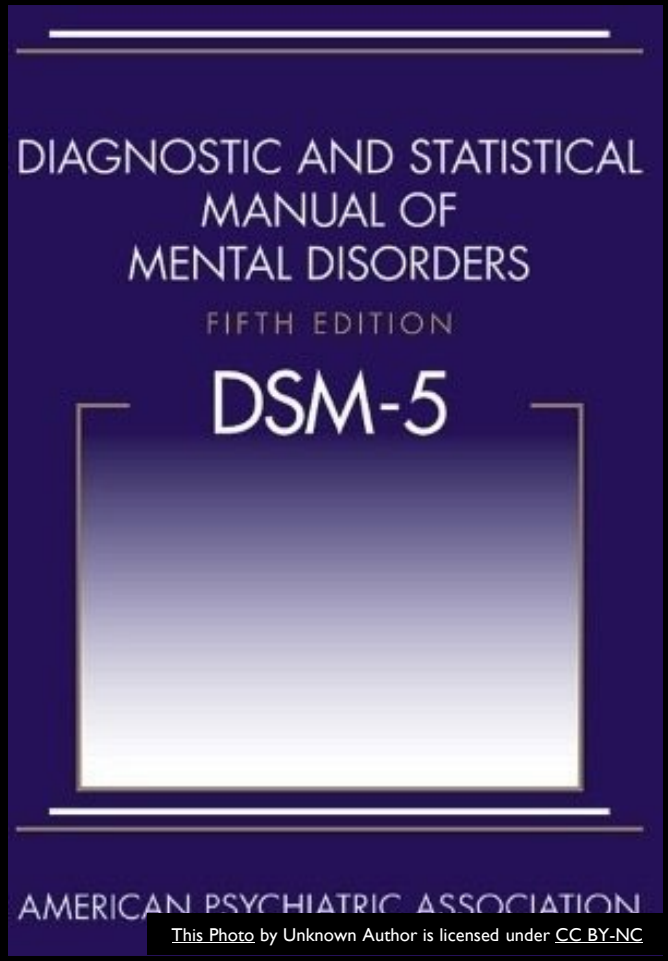
Psychological and Behavioral Approaches to Address Alcohol Use Disorder

The 30,000 Foot Perspective

- 95K deaths per year in the US are attributed to excessive alcohol consumption
- Alcohol misuse in the US was associated with a cost of $249 billion (2010)
- 75% of the above cost is related to binge drinking
- 1 in 6 US adults binge drink ~once per week
- 9 of 10 binge drinkers do not have severe AUD

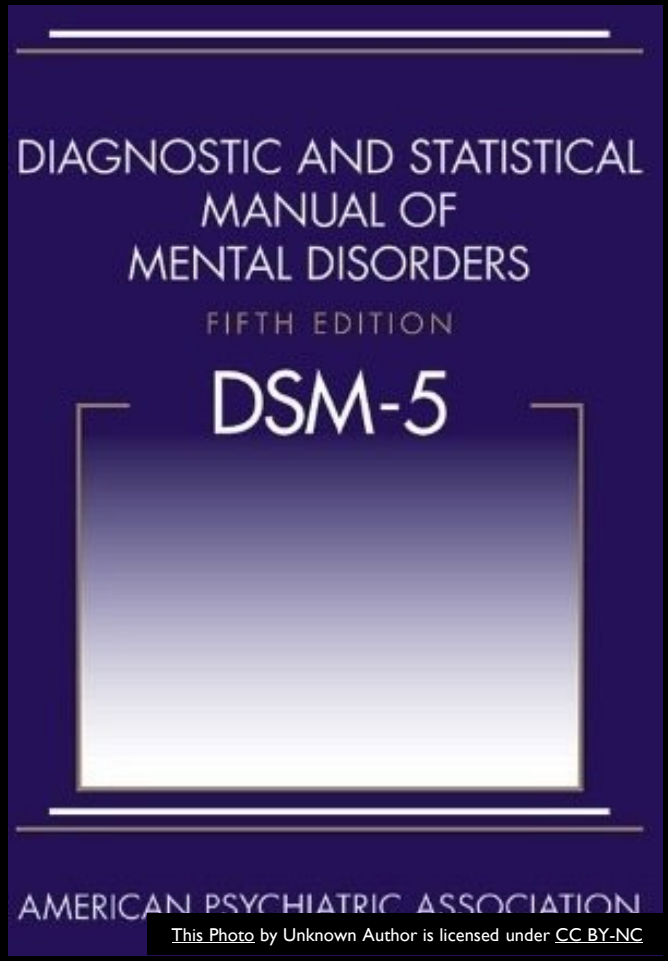
Alcohol Use Disorder: Diagnostic Criteria (DSM-5)

- Problematic pattern of alcohol use leading to clinically significant impairment as evidenced by at least 2 of the following within the last 12 months:
  - Taken in larger amounts or over a longer period than intended
  - Desire/unsuccessful efforts to reduce intake or control use
  - Extensive time spent in activities related to obtaining, using, or recovering from alcohol
  - Presence of craving
  - Failure to fulfill major role obligations secondary to use



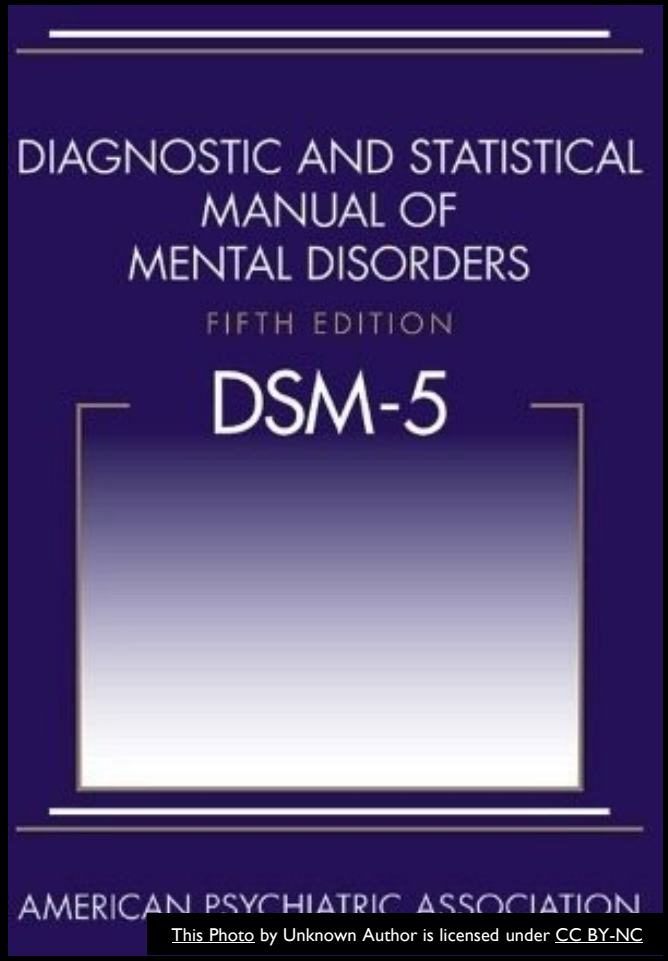
Alcohol Use Disorder: Diagnostic Criteria (DSM-5)

- Problematic pattern of alcohol use leading to clinically significant impairment as evidenced by at least 2 of the following within the last 12 months:
  - Continued use despite negative ramifications
  - Important activities are abandoned because of use
  - Use despite physical/psychological problems caused/worsened by alcohol
  - Use in hazardous situations
  - Tolerance
  - Withdrawal



Alcohol Use Disorder: Diagnostic Criteria (DSM-5)

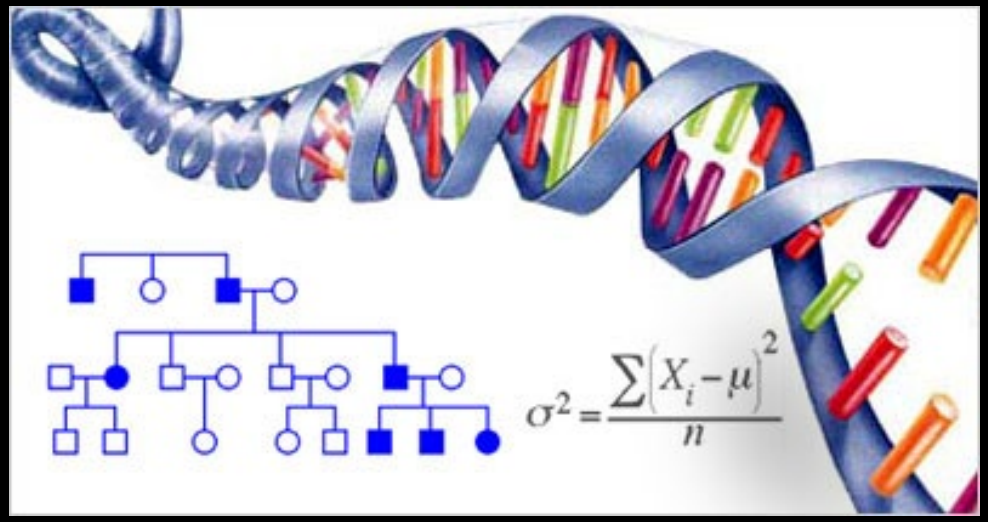
- Specify remission status
  - Early remission (sx in 12 mo but not 3)
  - Sustained remission
- Specify severity
  - Mild (2-3 symptoms)
  - Moderate (4-5 symptoms)
  - Severe (6+ symptoms)



Addressing in Clinical Practice

- Incorporate questions in patient questionnaires
- Consider use of screening tools
- Use information to inform clinical treatment
- Document and track in medical record

Nature or Nurture?



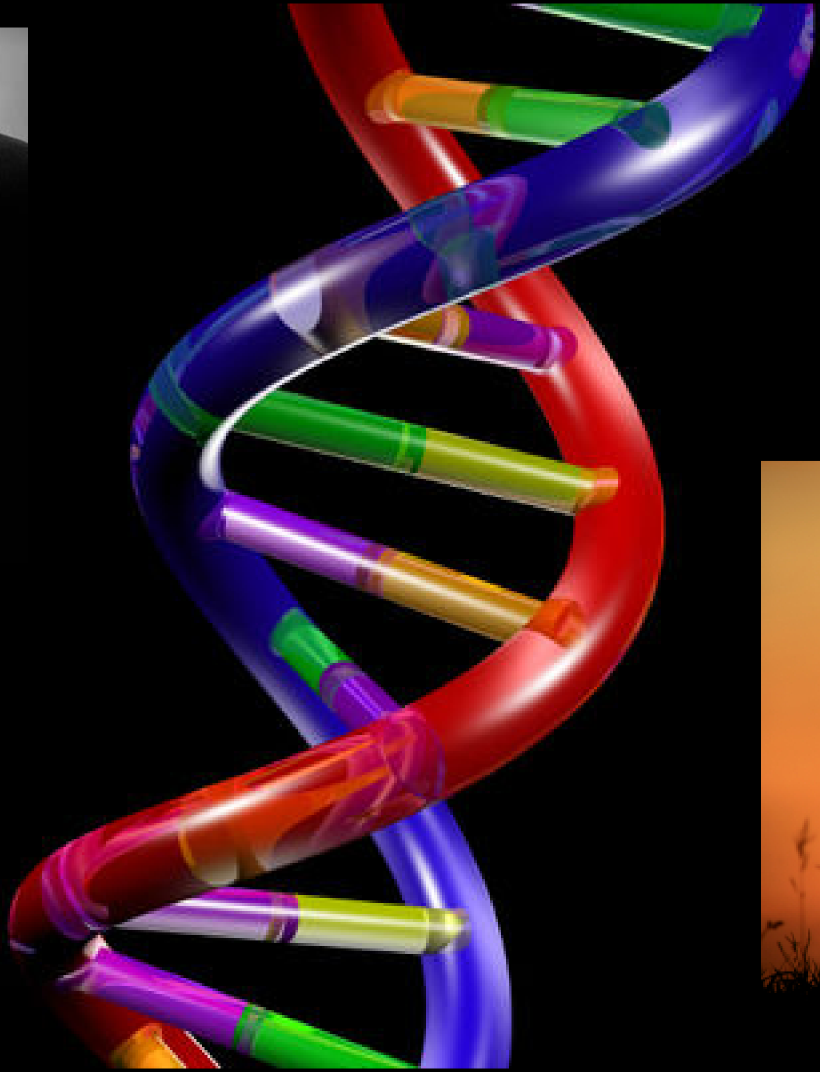
Genetics

- Role of adoption studies
- No single addiction or alcoholism gene
- Approximately 50% heritability of AUD

Environment

- Learning theories shape our responses to environmental stimuli
  - Classical conditioning
  - Operant conditioning
  - Social learning
- Adverse childhood experiences are also associated with substance use behaviors, coping styles later in life

Nature AND Nurture



Psychological and Behavioral Interventions

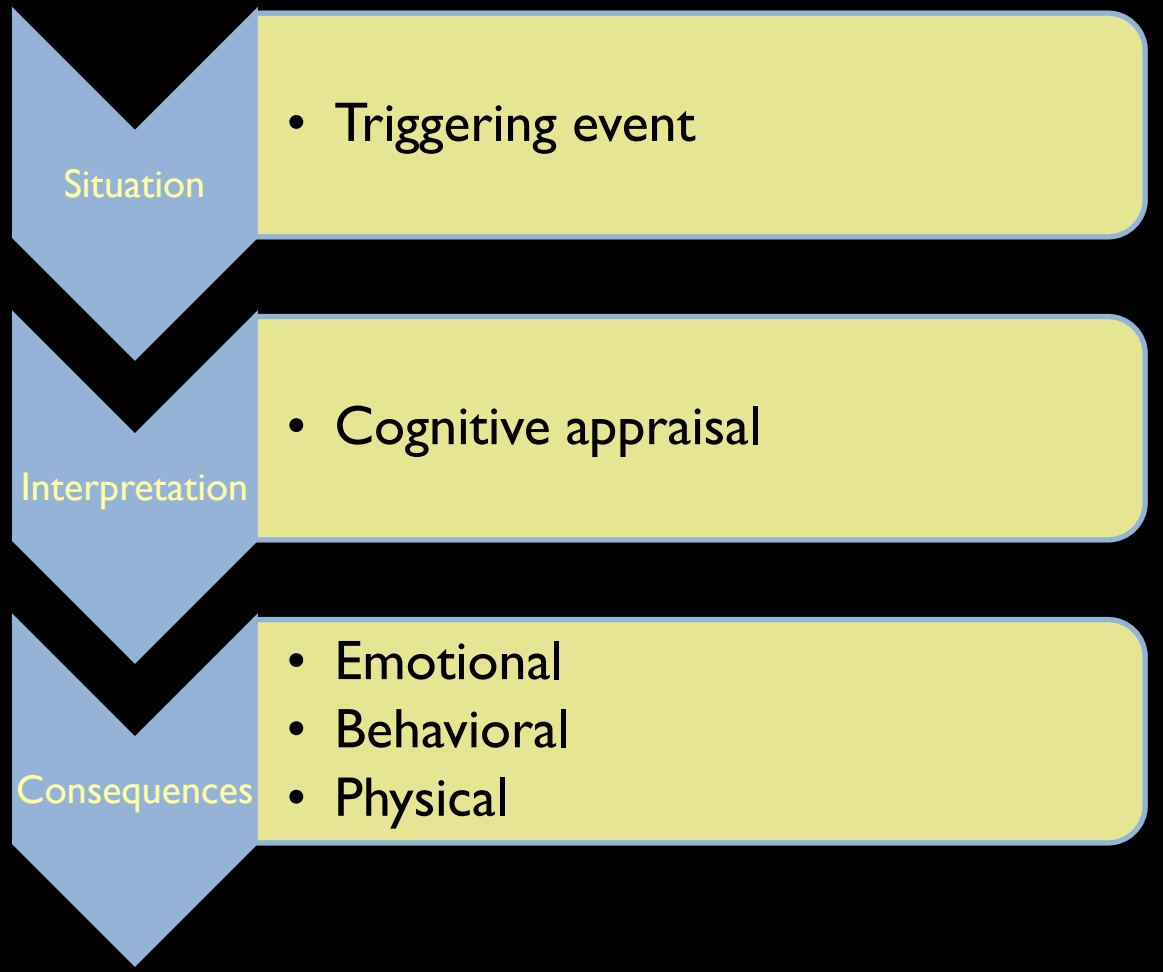
- Motivational interviewing
- Cognitive behavioral therapy
- Contingency management
- Mindfulness approaches
- 12-step model
- Family/systems work

Motivational Interviewing

- Facilitates behavioral change
- Relies on intrinsic motivation
- Multiple steps involved
- Efficacy in promoting health behaviors

Cognitive Behavioral Therapy

- Target thought processes that reinforce maladaptive behavior
- Identification of triggers
  - Psychosocial stressors
  - Physical pain
- Development of strategies to develop healthier responses/relapse prevention



Contingency Management

- Use of operant learning strategies
- Reinforcement system to encourage abstinence-related behaviors
- Promotes treatment adherence

Mindfulness Approaches

- Focuses on being in the present moment
- Does not target changing thoughts
- Used to address cravings/responses to triggers

12-Step Model

- Alcoholics Anonymous
- Accepts powerlessness to control alcohol
- Focus on self-improvement through following The Steps
- No formalized curriculum/clinician facilitator
- Effective for alcohol-related outcomes, supports abstinence

Family/Systems Work

- Acknowledges inter-relationships between alcohol use and relationship functioning
- Inclusion of spouse can improve treatment outcomes versus individual treatment
- May be challenging to incorporate significant other in counseling process

Conclusions

- Strong evidence base for psychological/behavioral interventions to address AUD
- Which treatment to include when is determined in initial evaluation
- If AUD and pain are concurrent, both need to be treated
  - Pain low, AUD severe: SUD tx
  - Pain high, AUD severe: SUD tx + interdisciplinary pain tx
  - Pain high, AUD low: Monitor AUD, consider SUD tx, + interdisciplinary pain tx

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- Substance Abuse and Mental Health Services Administration (SAMHSA). 2015 National Survey on Drug Use and Health (NSDUH). Table 5.5A—Substance Use Disorder in Past Year among Persons Aged 12 to 17, by Demographic Characteristics: Numbers in Thousands, 2014 and 2015.
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