



# **Alcohol Use Disorder in Clinical Practice: What's New**

**Massachusetts General Hospital/Harvard Medical School 2020  
Internal Medicine Comprehensive Review and Update**

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June 9, 2022**



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Gene is an Instructor in Medicine at Harvard Medical School. He is board certified in internal medicine and addiction medicine. He has practiced hospital medicine at Massachusetts General Hospital for the past twenty years, previously served as director of hospital medicine. He completed a fellowship in Addiction medicine at Massachusetts General Hospital in 2019. He currently serves as the medical director and director of clinical operations for the Addiction Consult Team, part of the Substance Use Disorders Initiative at Massachusetts General Hospital.

# Disclosures

*Gene Lambert has no relevant financial or advisory relationships with corporate organizations related to this activity.*

# Words Matter: Using person-centered, medically accurate terminology

NON-STIGMATIZING LANGUAGE	STIGMATIZING LANGUAGE
<ul style="list-style-type: none"> <li>• Person with a substance use disorder</li> </ul>	<ul style="list-style-type: none"> <li>• Substance abuser or drug abuser</li> <li>• Alcoholic</li> <li>• Addict</li> <li>• User</li> <li>• Abuser</li> <li>• Drunk</li> <li>• Junkie</li> </ul>
<ul style="list-style-type: none"> <li>• Substance use disorder or addiction</li> <li>• Use, misuse</li> <li>• Risky, unhealthy, or heavy use</li> </ul>	<ul style="list-style-type: none"> <li>• Drug habit</li> <li>• Abuse</li> <li>• Problem</li> </ul>
<ul style="list-style-type: none"> <li>• Person in recovery</li> <li>• Abstinence</li> <li>• Not drinking or taking drugs</li> </ul>	<ul style="list-style-type: none"> <li>• Clean</li> </ul>
<ul style="list-style-type: none"> <li>• Treatment or medication for addictions</li> <li>• Medication for Addiction Treatment</li> <li>• Positive, negative (toxicology screen results)</li> </ul>	<ul style="list-style-type: none"> <li>• Substitution or replacement therapy</li> <li>• Medication-Assisted Treatment</li> <li>• Clean, dirty</li> </ul>

# Framework for the clinical approach to patients with substance use disorders

## 1. Healthcare quality

## 2. Chronic disease model

Domain	
Safe	Access to substance use care that saves/improves lives
Effective	Evidence-based pharmacotherapy that impacts morbidity and mortality
Patient-centered	A trauma-focused approach to patient care
Timely	Screen patients at every encounter for unhealthy substance use
Efficient	Access to standardized substance use care
Equitable	High-quality care for patients with substance use disorders, all patient settings

# OUTLINE

- Define Unhealthy Alcohol Use (UAU)
- Prevalence of alcohol use disorders
- Explore a Cascade approach to alcohol use disorder (AUD)
- Pharmacotherapy

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# Clinical scenario

63-year-old female well-controlled hypertension presenting for annual visit. Her blood pressure during her last visit was 128/82.

She notes at the onset of the pandemic, she lost her job as a book editor.

Prior alcohol screening was consistent with low-risk drinking, she reported 1-2 glasses a wine, several times a week.

Does she meet diagnostic criteria for unhealthy alcohol use?



# USDA Dietary Guidelines for Americans 2020-2025, 9<sup>th</sup> Ed

## Alcoholic Drink-Equivalents<sup>a</sup> of Select Beverages

Drink Description	Drink-Equivalents <sup>b</sup>
<b>Beer, beer coolers, and malt beverages</b>	
12 fl oz at 4.2% alcohol <sup>c</sup>	0.8
12 fl oz at 5% alcohol (reference beverage)	1
16 fl oz at 5% alcohol	1.3
12 fl oz at 7% alcohol	1.4
12 fl oz at 9% alcohol	1.8
<b>Wine</b>	
5 fl oz at 12% alcohol (reference beverage)	1
9 fl oz at 12% alcohol	1.8
5 fl oz at 15% alcohol	1.3
5 fl oz at 17% alcohol	1.4
<b>Distilled spirits</b>	
1.5 fl oz 80 proof distilled spirits (40% alcohol) (reference beverage)	1
Mixed drink with more than 1.5 fl oz 80 proof distilled spirits (40% alcohol)	> 1 <sup>d</sup>

## Moderate drinking (USDA Dietary Guideline)

♀ 0-1 drink/day

♂ 0-2 drinks/day

## High-risk drinking

♀ ≥4 drinks on any day or ≥8 drinks per week

♂ ≥5 drinks on any day or ≥15 or more drinks per week

## Heavy drinking

♀ ≥8 drinks per week

♂ ≥15 or more drinks per week

## Binge drinking, consumption within 2 hours (NIAAA)

♀ ≥4 drinks

♂ ≥5 drinks

<sup>a</sup> One alcoholic drink-equivalent is defined as containing 14 grams (0.6 fl oz) of pure alcohol. The following are reference beverages that are one alcoholic drink-equivalent: 12 fluid ounces of regular beer (5% alcohol), 5 fluid ounces of wine (12% alcohol), or 1.5 fluid ounces of 80 proof distilled spirits (40% alcohol). Drink-equivalents are not intended to serve as a standard drink definition for regulatory purposes.

<sup>b</sup> To calculate drink-equivalents, multiply the volume in ounces by the alcohol content in percent and divide by 0.6 ounces of alcohol per drink-equivalent. For example: 16 fl oz beer at 5% alcohol:  $(16 \text{ fl oz})(0.05)/0.6 \text{ fl oz} = 1.3$  drink-equivalents.

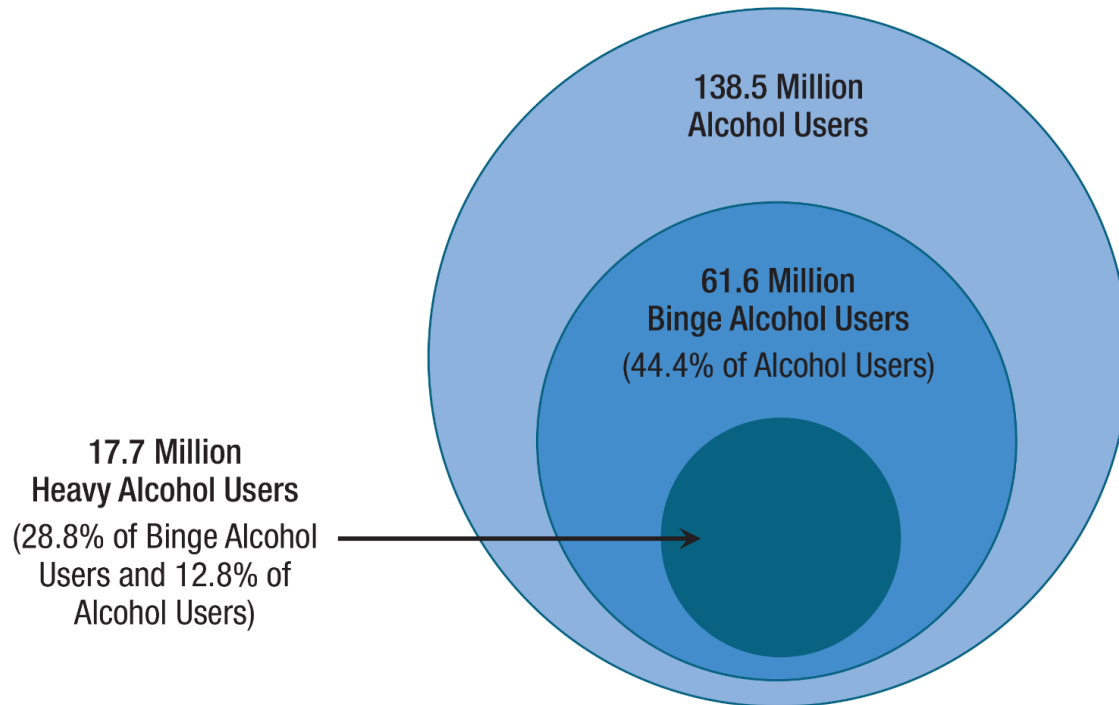
<sup>c</sup> Light beer represents a substantial proportion of alcoholic beverages consumed in the United States. Light beer is approximately 4.2% alcohol or 0.8 alcoholic drink-equivalents in 12 fluid ounces.

<sup>d</sup> Depending on factors, such as the type of spirits and the recipe, one mixed drink can contain a variable number of drink-equivalents.

# What is unhealthy alcohol use

Aspects of unhealthy alcohol-related behaviors

1. Any alcohol use that increases the risk or likelihood of health consequences **hazardous use**
2. Alcohol use that has already led to health consequences **harmful use**
3. Harmful alcohol use that meets DSM-5<sup>®</sup> criteria for an **alcohol use disorder**



## 62 million Americans engage in Binge/Heavy episodic (HED) drinking, defined as

- a pattern of drinking alcohol that brings the BAC  $\geq$  80 mg/dL
- $\geq$ 5/ $\geq$ 4 standard drinks (♂/♀)
- 2 hours

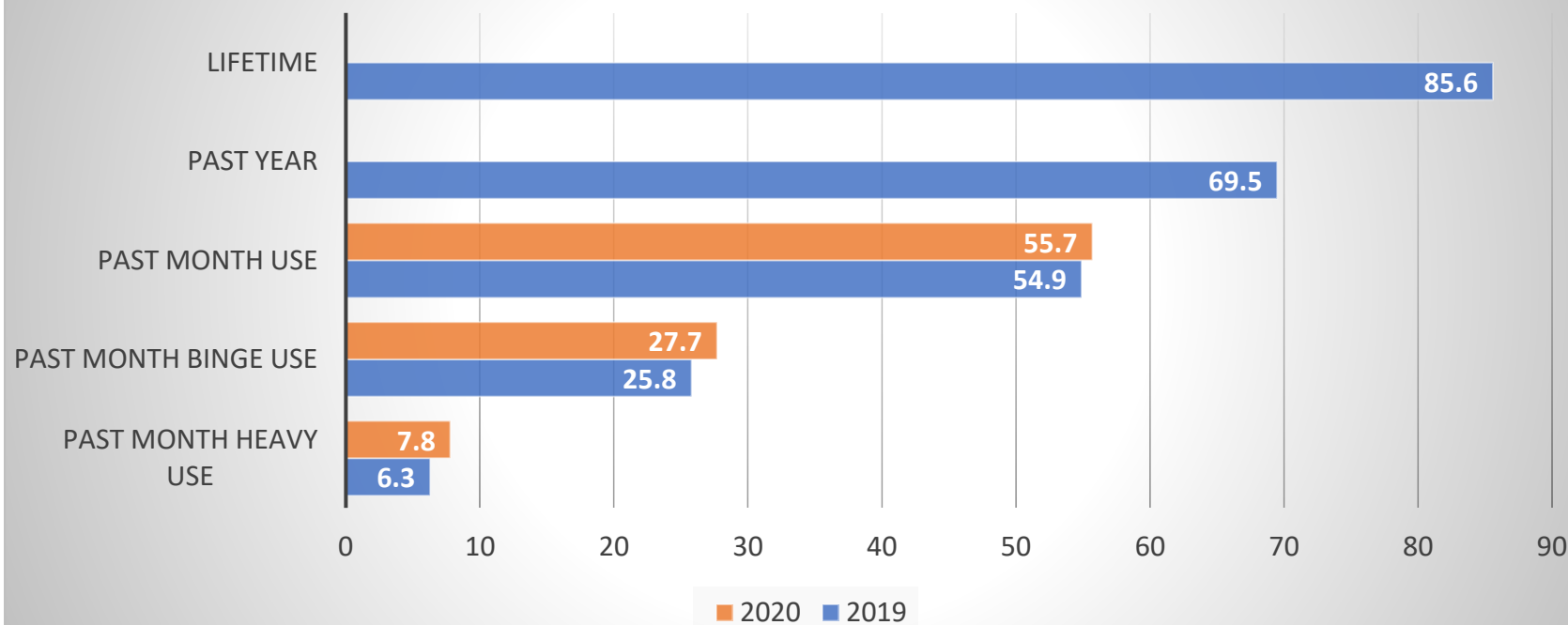
## 18 million Americans engage in Heavy alcohol use (NIAAA definition)

- ♂  $\geq$ 4 drinks on any day or  $\geq$ 14 drinks/week
- ♀  $\geq$ 3 drinks on any day or  $\geq$ 7 drinks/week (applies to older adults  $\geq$ 60 years of age)
- Binge drinking  $\geq$ 5 days in the past month (**SAMHSA**)

# Prevalence of hazardous alcohol use in the United States 2019–2020



U.S. adults age ≥18 (%)



## U.S. Prevalence

- 54% of American adults binge drank in the past month
- Nearly 3 in 10 adults are binge drinkers
- 15% of adults are heavy drinkers

# Clinical scenario

In preparation for her visit, you reviewed her medical records.

You notice two ED presentations for falls in the past four months. During one of the ED visits her BAL was 300 mg/dL.

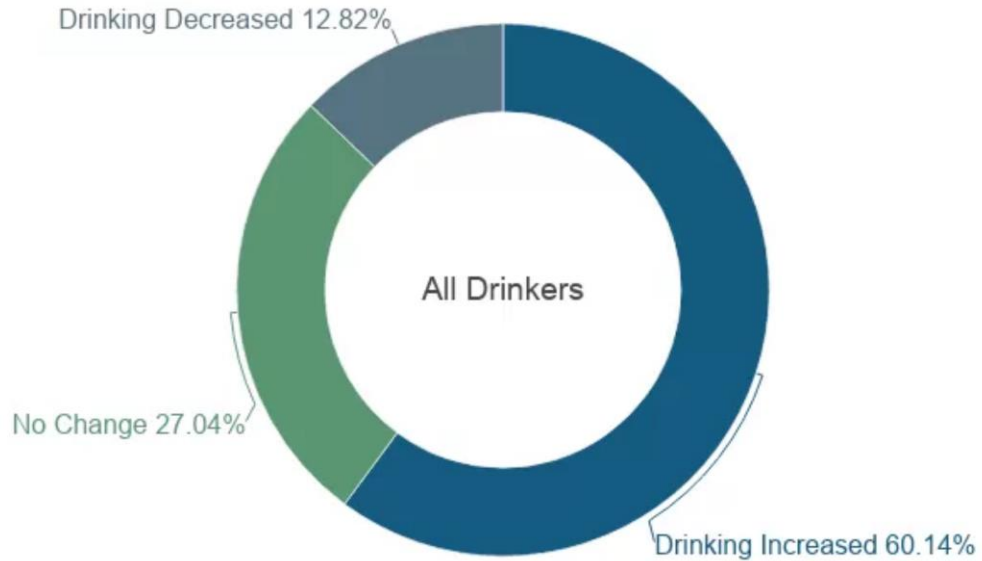
You wonder how has the pandemic effected her drinking?

# Alcohol consumption and the early pandemic

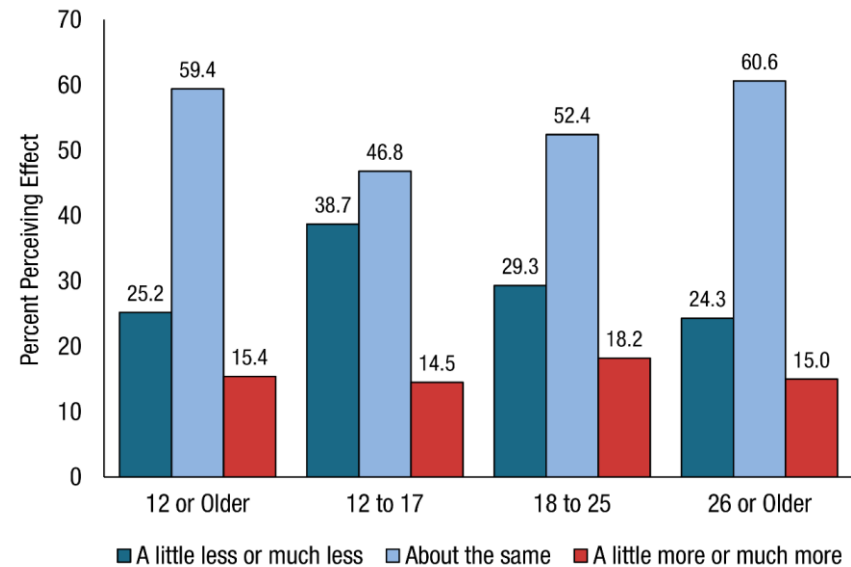
- 29% reported drinking more during early pandemic
- Binge drinking increased 21%
- ♀ reported exceeding drinking limits compared ♂
- Individuals 1.48x more likely to drink to forget one's worries
  - significant association among ♀
- Presence of depression (OR 2.94) and anxiety (OR 1.56) to drink to forget one's worries
- In adults 55+, increased drinking associated with mental health symptomatology (ORs 2.96 depression, 1.8 anxiety, 2.45 loneliness)

# Alcohol related complications during COVID-19 pandemic

COVID Effect on Alcohol Consumption

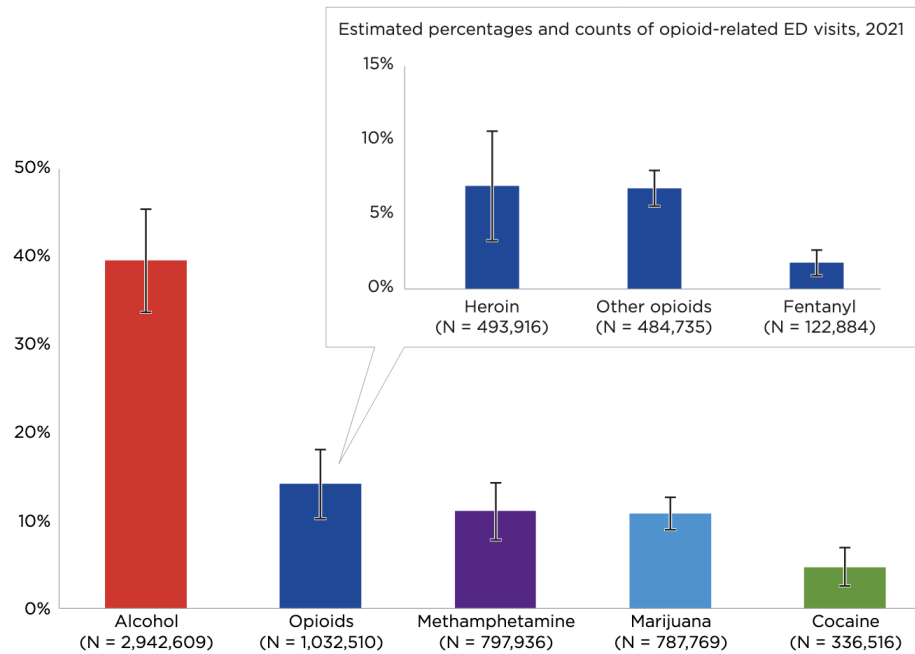


COVID-19 pandemic effect on alcohol use, last four months 2020

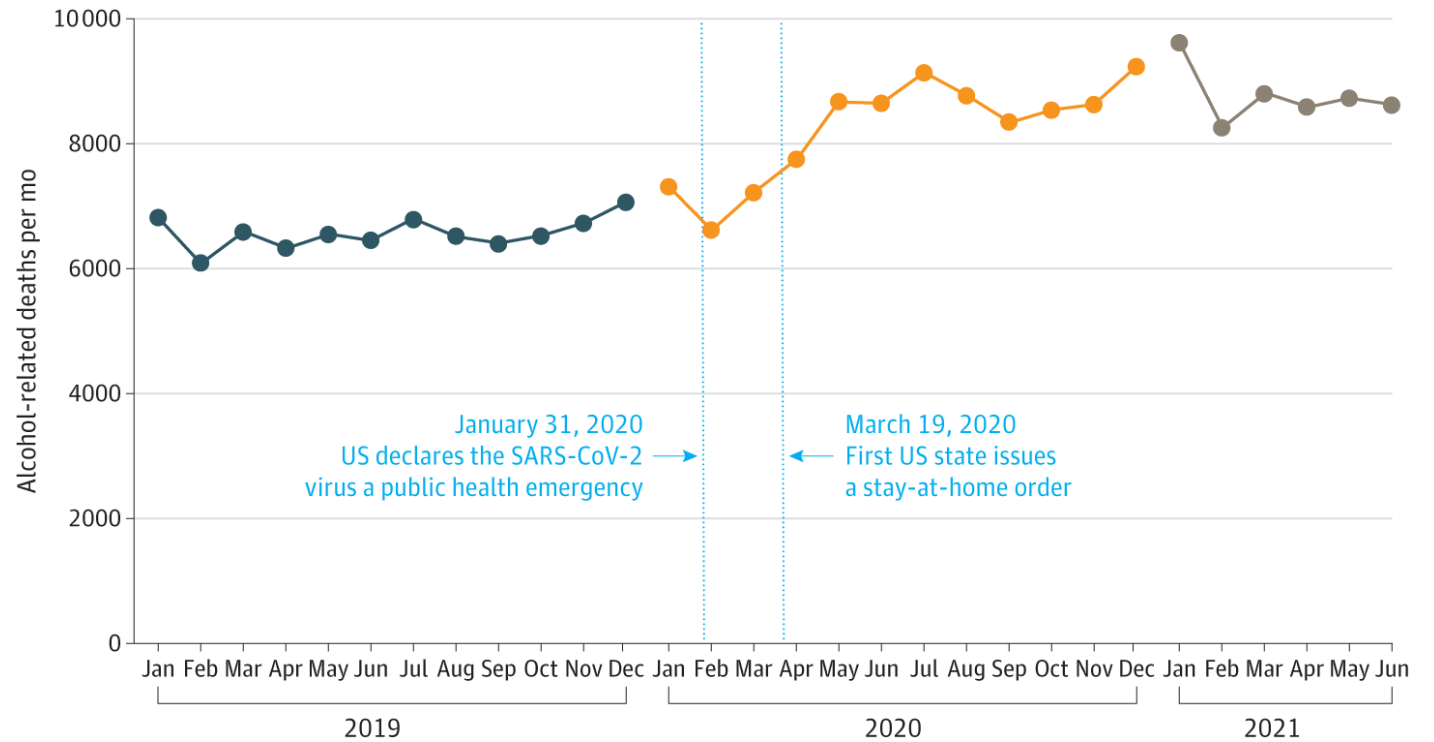


# Alcohol related complications during COVID-19 pandemic

2021 Drug Abuse Warning Network (DAWN)  
Alcohol involved in ~40% of all drug-related ED visits

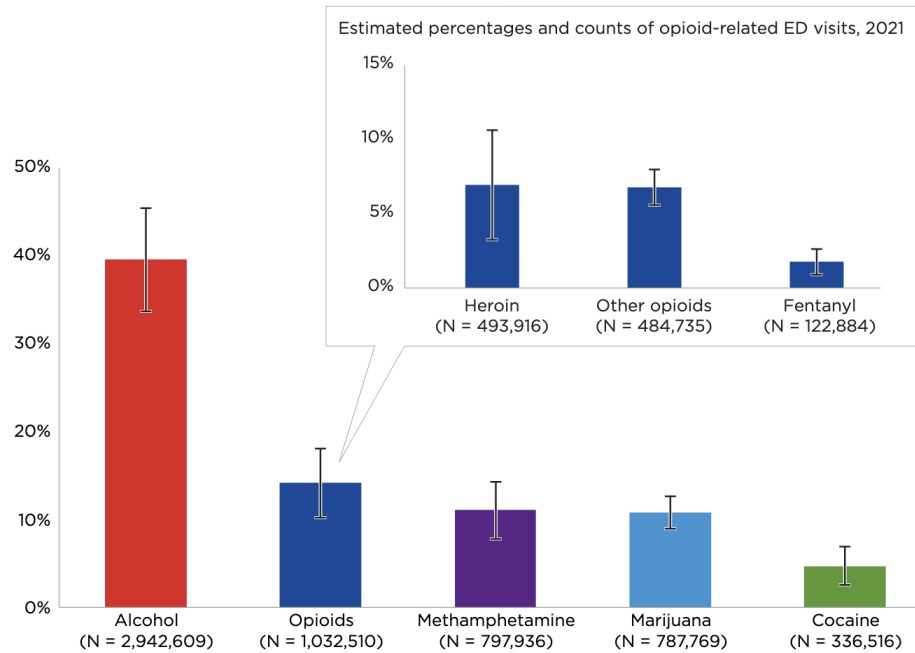


- Alcohol-related deaths 25.5% ↑
- Age-adjusted alcohol mortality rate 25.9% ↑
- Outpaced all-cause deaths and mortality rate

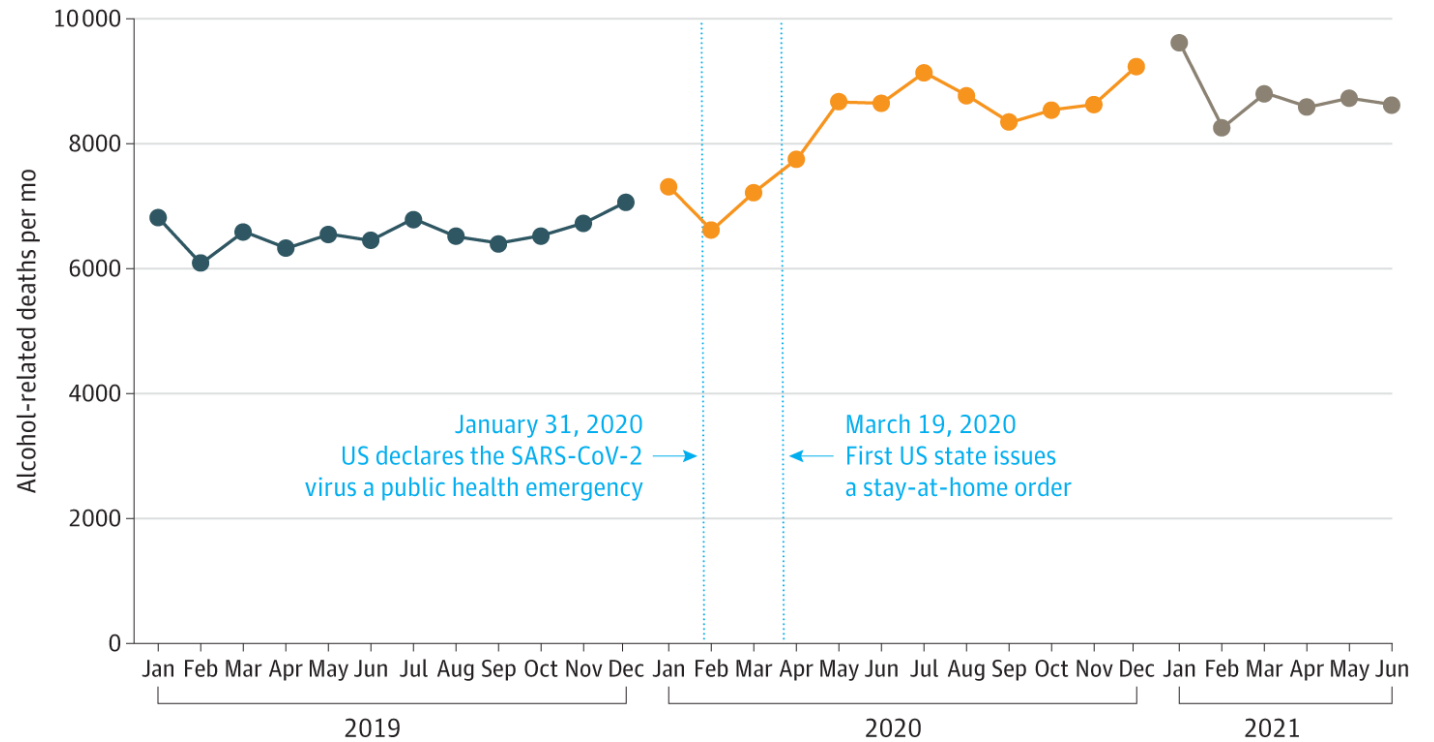


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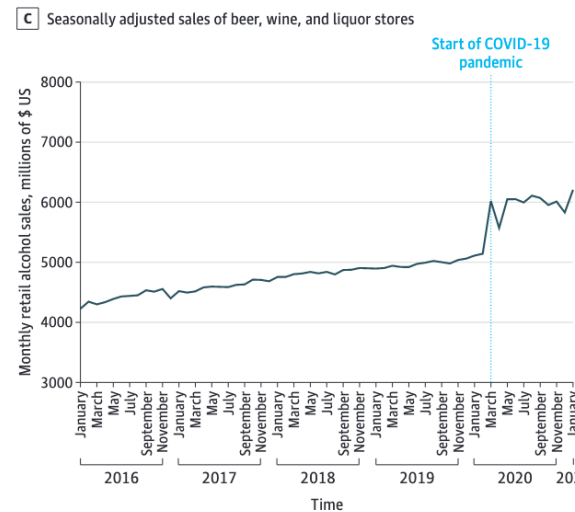
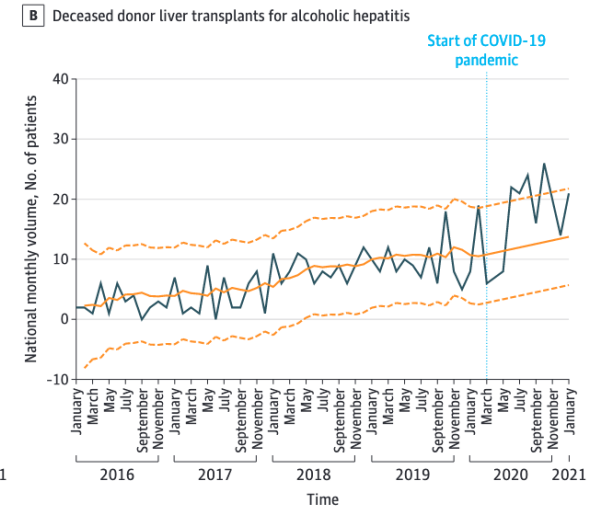
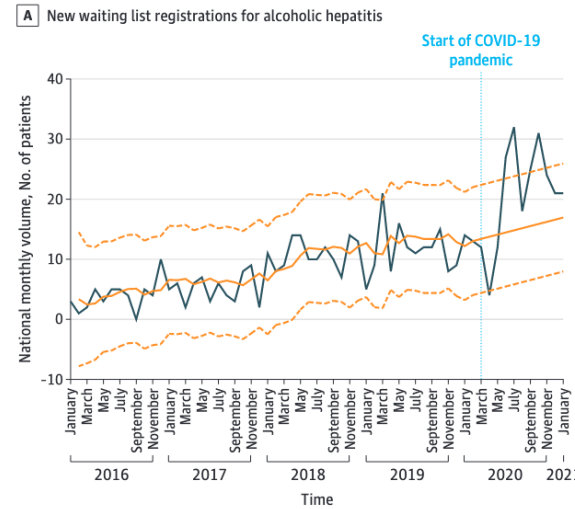
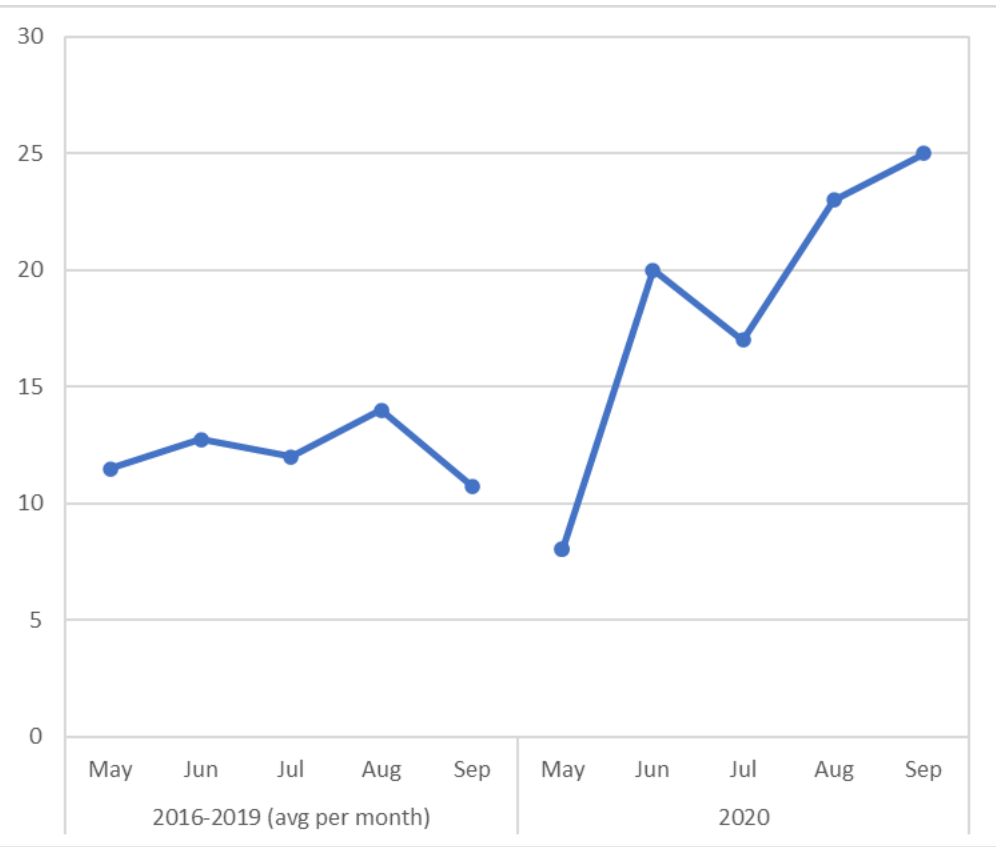




# Alcohol related complications during COVID-19 pandemic

## pandemic

Alcohol-related hepatitis admissions increased 50% in the first months of the COVID-19 pandemic in the US



- New waiting list registrations exceeded forecasted values by mean 60%
- Liver transplants exceeded forecasted values by mean 62%
- Temporal association and positive correlation b/w increasing waiting list registrations and DDLT for alcohol-associated hepatitis and increasing retail alcohol sales

Observed values are shown in blue. Historical trends and forecasted values in the absence of COVID-19 (solid line) with 95% CIs (dashed lines) are shown in orange.

# Clinical scenario

She tells you her alcohol use has escalated during the pandemic, she identifies social isolation, financial stressors and anxiety about the future as reasons.

She reports she is now drinking a bottle of wine 3-4 times/week.

You remember reading about an emerging public health crisis. You wonder if she meets criteria for high-intensity drinking

# High Intensity Drinking (HID)

A new approach to the assessment of unhealthy alcohol use

High Intensity Drinking (HID) defined as the consumption of alcohol at levels  $\geq 2x$  the gender-specific binge drinking/HED thresholds (NIAAA)

- Mild = 1-2x HED (4-7 ♀ / 5-9 ♂)
- Moderate = 2-3x HED (8-11 ♀ / 10-14 ♂)
- Severe =  $>3x$  HED ( $\geq 12$  ♀ /  $\geq$  ♂)

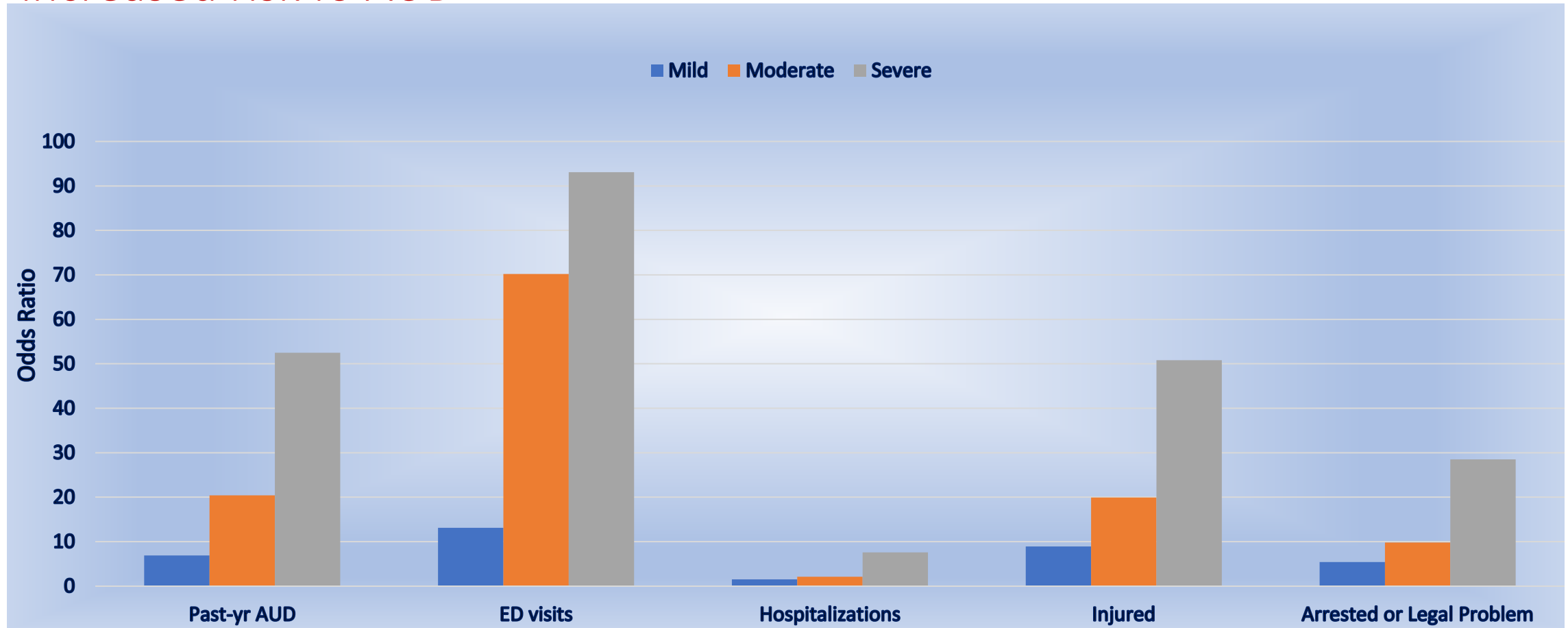
The amount, frequency and size of the bottle of alcohol are all important determinants of HID

Type of alcohol	Percent alcohol by volume	Bottle size	Number of drinks
Wine	12 percent	Standard (750 milliliters)	5
Wine	12 percent	Magnum (1.5 liters)	10
Liquor	40 percent	750 milliliters	17
Liquor	40 percent	Handle (1.75 liters)	40
Liquor	30 percent	750 milliliters	12.7
Liquor	30 percent	Handle (1.75 liters)	30
Liquor	60 percent	750 milliliters	25
Liquor	75.5 percent (Bacardi 151, Everclear)	750 milliliters	32
Beer	5 percent	12 ounces	1
Beer	5 percent	40 ounces	3.3
Beer	7 percent	12 ounces	1.5

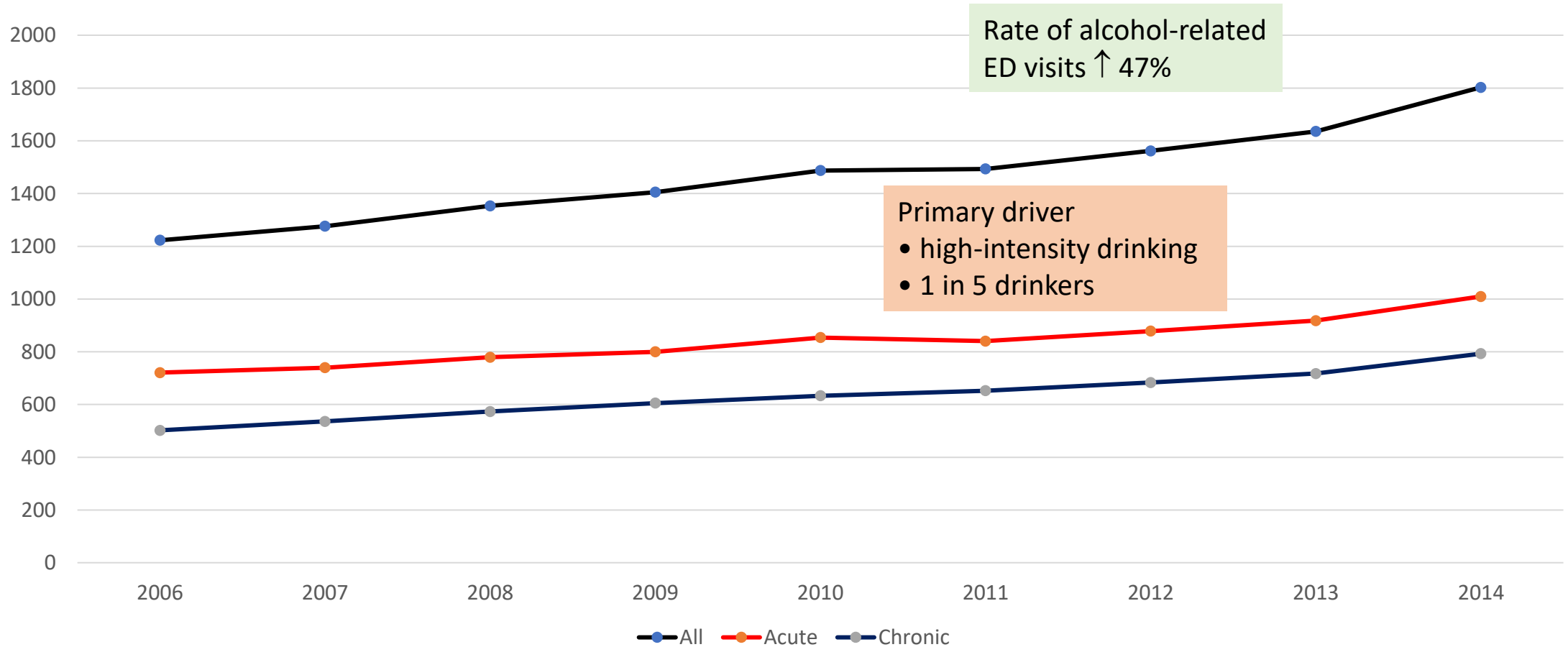
# An emerging public health threat...

High-Intensity Drinking (HID) associated with increased risk fo AUD

- Mild HID= 1-2x HED (4-7 ♀ / 5-9 ♂)
- Moderate HID = 2-3x HED (8-11 ♀ / 10-14 ♂)
- Severe HID = >3x HED ( $\geq 12$  ♀ /  $\geq$  ♂)



# Rates of All, Acute, and Chronic Alcohol-related ED visits and High-Intensity Drinking



White et al. Trends in Alcohol-Related Emergency Department Visits in the United States: Results from the Nationwide Emergency Department Sample, 2006 to 2014. *Alcohol Clin Exp Res*. 2018. Linden-Carmichael et al. Contemporary alcohol use patterns among a national sample of U.S. adult drinkers. *J Addict Dis*. 2017.

# OUTLINE

- Define Unhealthy Alcohol Use (UAU)
- **Prevalence of alcohol use disorders**
- Explore a Cascade approach to alcohol use disorder (AUD)
- Pharmacotherapy

# Clinical scenario

You tell her you are concerned about her drinking, especially given her age, the pandemic's effect on alcohol consumption and her prior ED visit for a fall in the context of BAL of 300 mg/dL.

You emphasize you will not judge or make her feel stigmatized, you are only concerned with her well-being and safety.

After some reflection, reports she is actually drinking a Magnum bottle of wine (1.5L, 10 SDs) nearly every day of the week.

Her blood pressure is now 165/95.

Her drinking pattern is consistent with moderate HID, and her odds of having a past-year alcohol use disorder is 20x higher.

**You wonder if she has an alcohol use disorder?**

# DSM-5® criteria to make a diagnosis of a Substance Use Disorder (SUD)

Problematic pattern of substance use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period (mild = 2-3; moderate = 4-5; severe = 6+)

1. Substance used in larger amounts or over a longer period of time than was intended (loss of **C**ontrol)
2. There is a persistent desire or unsuccessful effort to cut down or control substance use (**C**an't cut down)
3. A great deal of time spent in activities to obtain, use, or recover from the substance (**C**ompulsive use)
4. Craving, or strong desire or urge to use substance (**C**ravings)
5. Recurrent substance use results in failure to fulfill major role obligations  
(**R**ole failures)
6. Continued substance use despite having persistent or recurrent social or interpersonal problems  
(**R**elationship issues)
7. Important social, occupational, or recreational activities are given up or reduced
8. Recurrent substance use in situations in which it is physically hazardous  
(**R**isk of bodily harm)
9. Continued substance use despite ongoing physical or psychological problem  
(**C**onsequences)
10. Tolerance\*
11. Withdrawal\*

**Impaired  
Control**

**Social  
impairment**

**Risky use**

**Pharmacologic  
dependence**

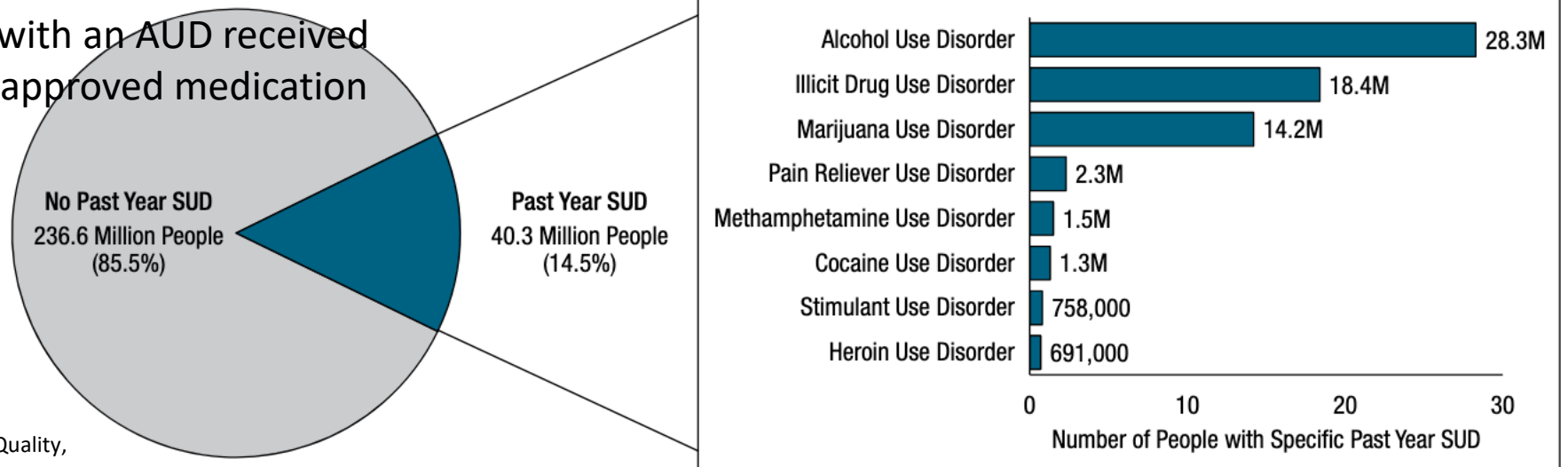
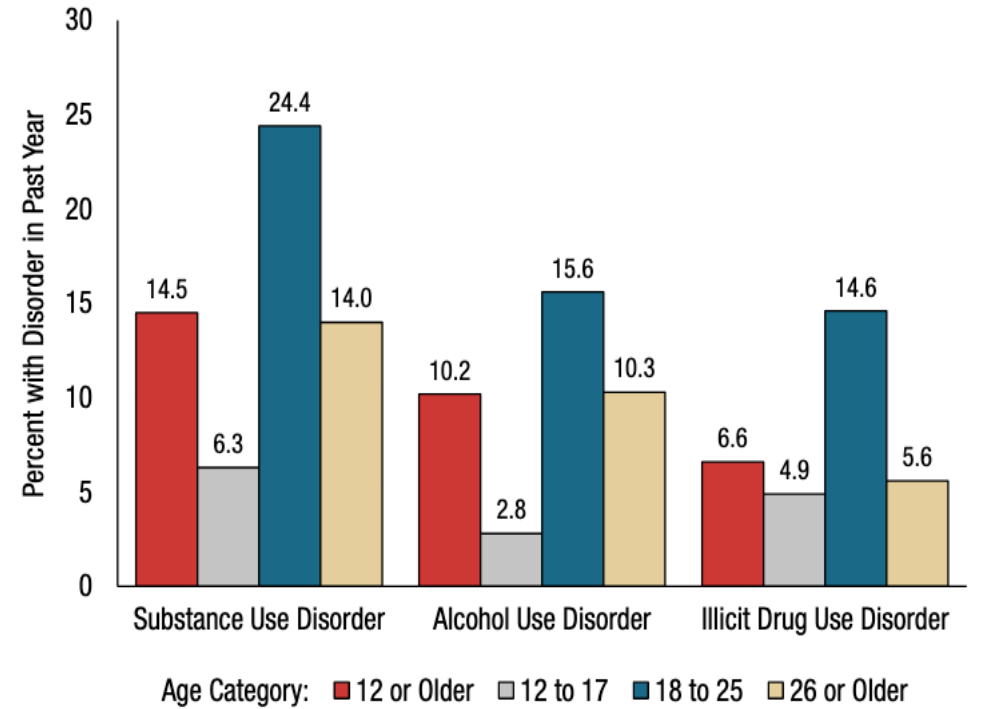
\* Tolerance and withdrawal insufficient to make diagnosis if due to prescribed medication

## 5 Cs and 3 Rs of addiction



# Alcohol use disorders are the most prevalent substance use disorders in the U.S., 2020

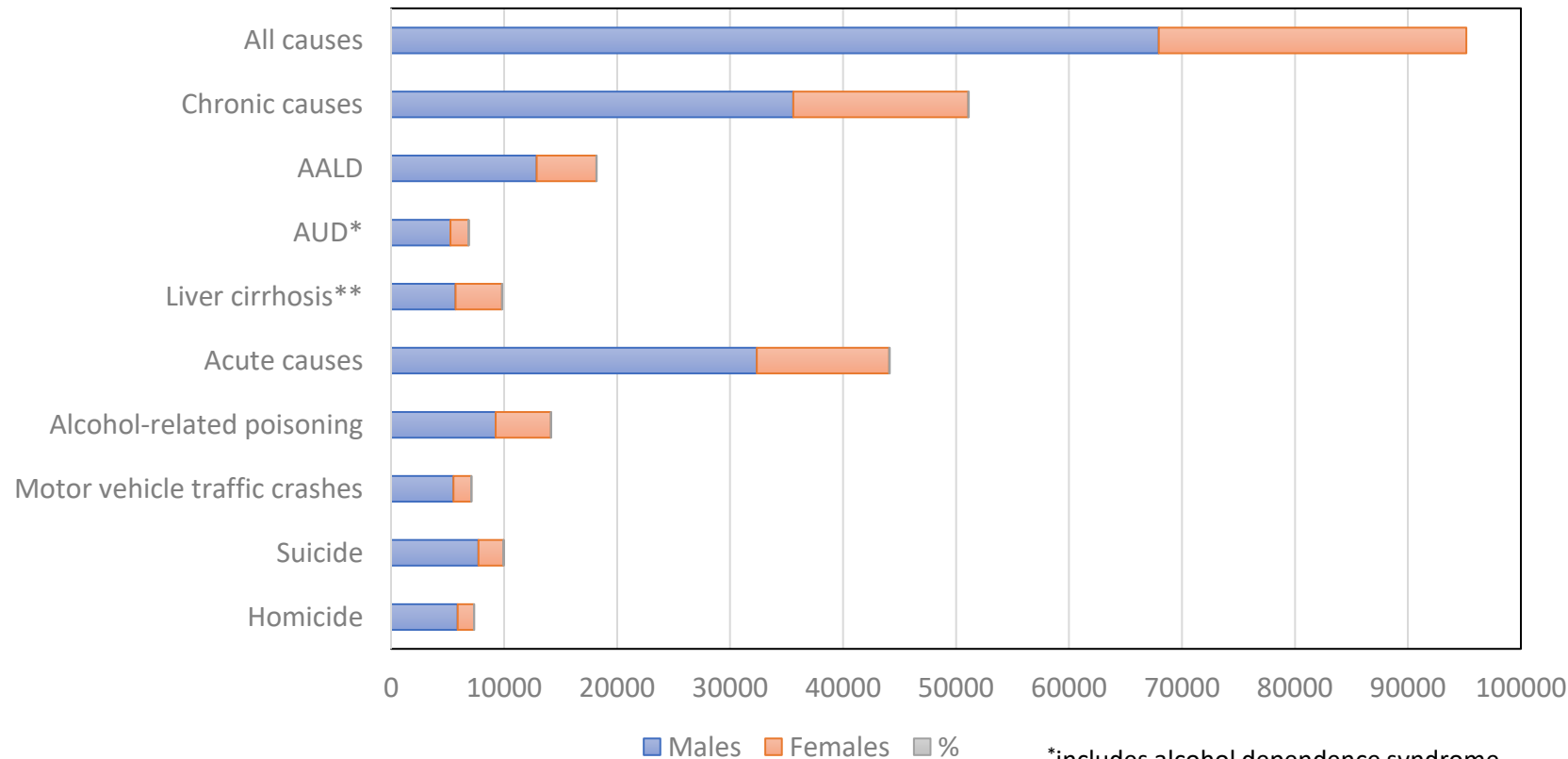
- 27.6 million American adults had a DSM-5® alcohol use disorder
- 7 out of every 10 individuals with a SUD had an AUD
- 1 out of every 5 individuals with an AUD had a concurrent SUD
- Less than 4% of individuals with an AUD received pharmacotherapy with a FDA-approved medication





ARDI is an online application that provides national and state estimates of alcohol-related health impacts, including deaths and years of potential life lost (YPLL). These estimates are calculated for 58 acute and chronic causes using alcohol-attributable fractions, and are reported by age and sex for 2011-2015.

**Annual average Alcohol-attributable deaths due to excessive alcohol use**



\*includes alcohol dependence syndrome and alcohol abuse  
 \*\*not 100% alcohol-attributable

Every year, excessive alcohol use causes,

- **95,158 deaths/261 deaths per day**
- 2,736,055 years of potential life lost (YPLL) – 29.3% ☠
- Harmful drinking causes 88,309 deaths
- AUD causes 6,849 deaths (6.8% of all deaths)

# Alcohol and mortality in the U.S.

Relationship of alcohol consumption to all-cause, cardiovascular, and cancer-related mortality in U.S. adults

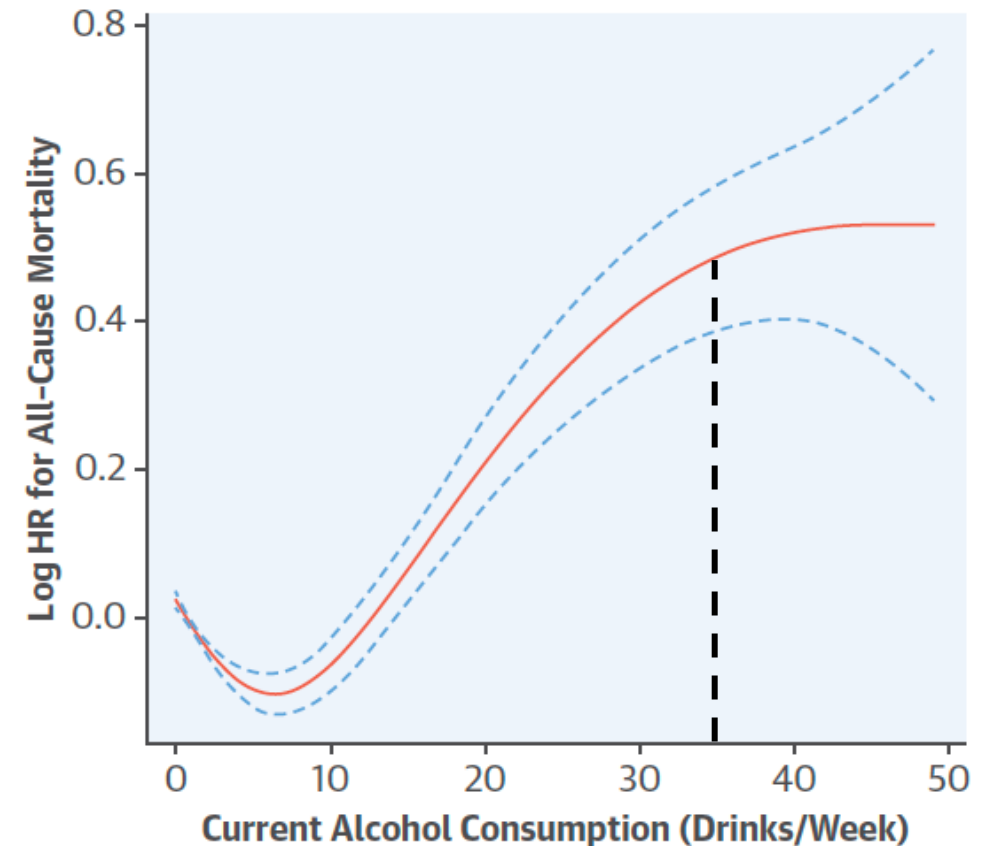
## Heavy drinking

all cause ↑29%  
cancer ↑86%  
CVD ↓3%

## Binge drinking (≥1 day/week)

all-cause ↑44%  
cancer ↑84%  
CVD ↑20%

>35 drinks/week approach 50%  
mortality

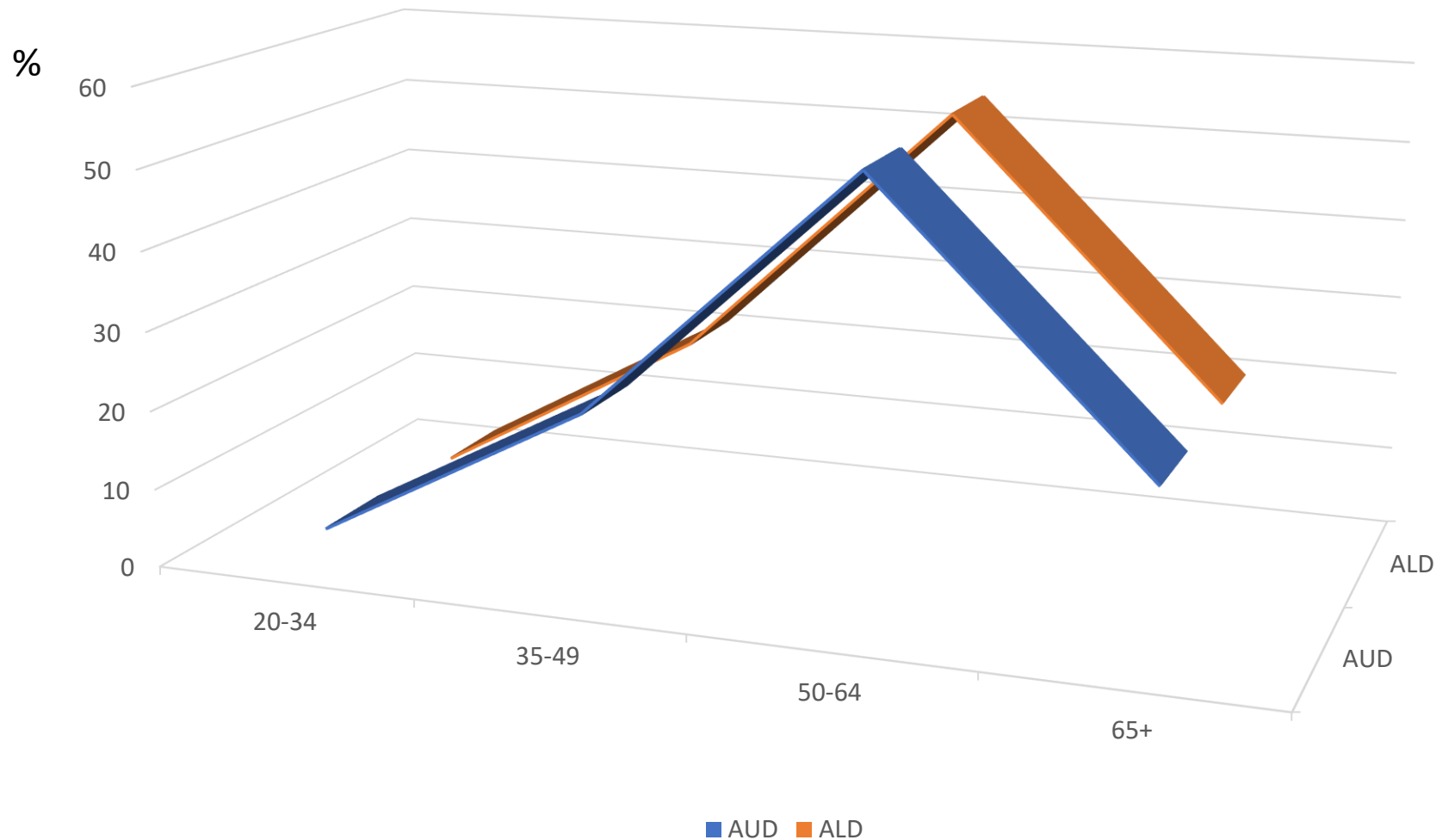


This study examined the association between alcohol consumption and mortality risk in U.S. adults, using data from the National Health Interview Surveys of 333,247 participants  $\geq 18$  years of age and categorizing participants according to self-reported alcohol consumption patterns. Median follow-up was 8.2 years. Compared with lifetime abstainers, individuals who were light or moderate consumers were at a reduced risk of all-cause mortality, but that risk increased significantly with heavy alcohol consumption, as seen in this J-shaped curve. HR = hazard ratio. **Blue lines** = 95% confidence interval.

# Alcohol use disorders are the second leading cause of alcohol-related deaths

- AUD and ALD = 93.5% wholly attributable chronic causes
  - AUD 6,849 (25.6%)
  - ALD 18,164 (67.9%)

AUD and ALD-related deaths, by age cohort



# Sacks et al. 2010 National and State Costs of Excessive Alcohol Consumption. American Journal of Preventive Medicine. November 2015.

Category of cost	Total costs (\$)	Government costs (\$)	Binge drinking (\$)	Underage drinking (\$)	Drinking while pregnant (\$)
Total	249,026.4	100,674.8	191,126.9	24,268.3	5,494.1
Health care	28,379.1	16,915.1	16,273.8	3,795.8	2,830.0
Specialty care for abuse/dependence	12,044.6	9,031.3	8,245.2	2,120.4	—
Hospitalization	5,948.5	2,828.1	2,007.5	198.9	48.6
Ambulatory care	1,524.5	524.0	1,070.8	144.4	7.0
Nursing home	1,166.8	691.6	863.4	2.1	0.5
Drugs/services	1,545.5	471.6	1,085.5	146.4	7.1
Fetal alcohol syndrome	2,750.0	1,248.5	1,160.5	449.5	2,750.0
Prevention and research	1,048.8	1,048.8	496.1	454.4	10.1
Training	34.8	11.5	16.4	6.3	—
Health insurance administration	2,315.6	1,059.7	1,328.5	273.3	6.7
Lost productivity	179,084.9	57,219.0	134,035.4	13,666.6	2,290.0
Impaired productivity at work	76,858.6	25,440.2	52,614.1	1,924.3	—
Impaired productivity at home	6,218.0	—	4,256.6	205.0	—
Absenteeism	4,619.9	1,529.2	4,619.9	201.5	—
Impaired productivity while in specialty care	1,983.4	656.5	1,358.6	349.1	—
Impaired productivity while in hospital	228.4	75.6	64.1	6.4	2.6
Mortality	75,204.5	24,892.7	58,373.4	6,044.2	170.7
Incarceration of perpetrators	9,150.5	3,028.8	9,150.5	3,855.3	—
Crime victims	2,704.8	895.3	2,704.8	734.7	—
Fetal alcohol syndrome	2,116.8	700.6	893.3	346.0	2,116.8
Other	41,562.5	26,540.7	40,817.7	6,806.0	374.1
Crime victim property damage	559.4	—	559.4	216.1	—
Criminal justice: corrections	15,865.9	15,865.9	15,865.9	1,842.0	—
Criminal justice: alcohol-related crimes	2,160.0	2,160.0	1,631.4	478.6	—
Criminal justice: violent and property crimes	5,998.8	5,998.8	5,998.8	2,117.6	—
Criminal justice: private legal	228.1	—	228.1	72.8	—
Motor vehicle crashes	13,461.9	—	13,461.9	1,490.2	—
Fire losses	2,914.3	2,142.0	2,914.3	527.5	—
Fetal alcohol syndrome (special education)	374.1	374.1	157.9	61.1	374.1

Note: Cost to government and costs for binge, underage, and drinking while pregnant are all subsets of total costs. Binge drinking, underage drinking, and drinking while pregnant are not mutually exclusive and may overlap.

## Economic Burden

- In 2010, unhealthy alcohol use cost the United States \$249 billion
- **Three-quarters of the total cost of unhealthy alcohol use is related to binge drinking**
- Underage drinking cost \$24.3 billion
- Drinking while pregnant cost \$2.2 billion
- Unhealthy alcohol use cost the state of Massachusetts \$5.6 billion

# AUD direct medical costs account for 58% of all hospital-based substance use disorder care

U.S. direct hospital costs for SUD care, 2017

Encounter type and SUD diagnosis type	Total	Substance							
		Alcohol	Cannabis	Hallucinogen	Inhalant	Opioid	Sedative	Stimulant	Other
<b>ED</b>									
Principal	1985 (1893 to 2077)	2082 (1982 to 2183)	1781 (1675 to 1886)	1677 (1493 to 1862)	1317 (1187 to 1446)	1736 (1642 to 1830)	1815 (1704 to 1926)	2058 (1944 to 2171)	1860 (1746 to 1975)
Secondary	740 (632 to 848)	773 (628 to 918)	491 (375 to 606)	419 (36 to 803)	NS	509 (328 to 690)	620 (316 to 923)	385 (276 to 494)	483 (330 to 637)
<b>Inpatient</b>									
Principal	9693 (9361 to 10025)	9806 (9353 to 10259)	8014 (7484 to 8545)	9204 (8709 to 9699)	NC	9068 (8678 to 9458)	8381 (8111 to 8652)	9690 (9336 to 10045)	5704 (5476 to 5931)
Secondary	NS	NS	165 (36 to 294)	NS	NS	NS	374 (46 to 703)	504 (294 to 713)	NS
<b>Total SUD cost, millions (2017), \$*</b>	<b>13 170</b>	<b>7593</b>	740	53	4	2212	371	1447	750

Peterson. Assessment of annual cost of substance use disorder in US hospitals. JAMA Netw Open. 2021;4(3)  
 Sacks. 2010 National and State Costs of Excessive Alcohol Consumption. Am H Preventive Med. 2015

## BABY BOOMER GENERATION

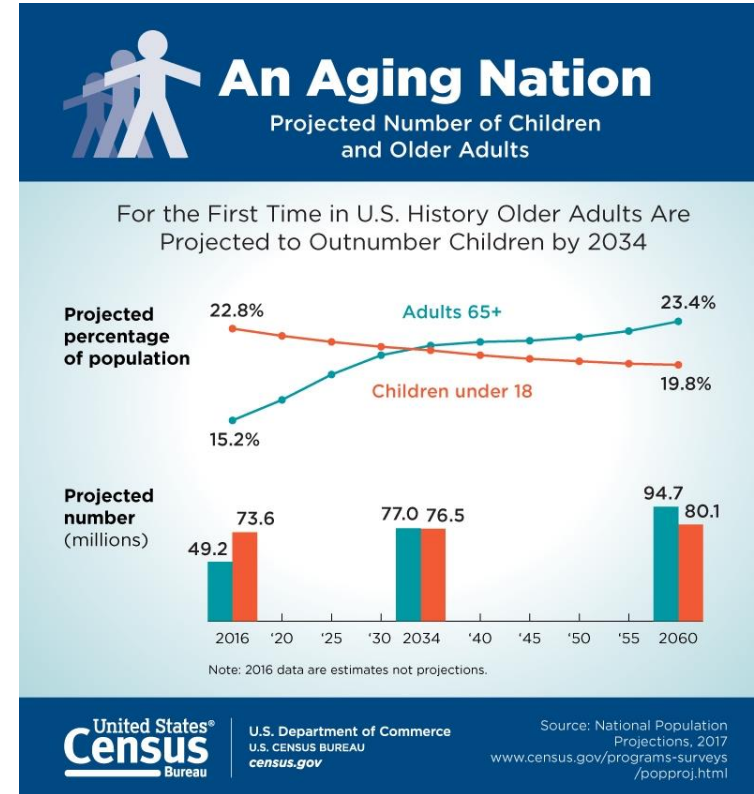
Years Born: 1944 to 1964

Current Ages: 54 to 74, first turned age 70 in 2017

# A generational public health concern

Han et al. Binge Drinking Among Older Adults in the United States, 2015-2017. J Am Geriatrics Society 2019. 2015-17 U.S. National Survey on Drug Use and Health, n= 10,927 adults

**10.6% past month prevalence of excessive alcohol consumption (binge/heavy episodic drinking)**



The New York Times

## *One in 10 Older Adults Binge Drinks, Study Says*

A new study looked at the prevalence of heavy drinking among adults 65 and older, who are especially vulnerable to its effects.

# DOES SHE HAVE A DSM-5 AUD?

She now states over the last 6 months her drinking **spans the entire day**. In the morning she experiences **“some shakes”** and nausea which goes away after her first drink. She has **“undeniable urges”** to drink and has been **unable to stop or reduce her drinking**. Her daughter won't **let her babysit** because of her drinking. She admits that she was intoxicated when she presented to the ED after her fall. And she reports, worsening **anxiety and depression** over the last two months.

**Control**  
Can't **Cut down**  
**Compulsion**  
**Craving**  
**Role failure(s)**  
**Relationship issues**  
Meaningful activities ignored  
**Risk of bodily harm**  
**Physical/physiological Consequence**  
Tolerance  
Withdrawal

**9 criteria met =  
SEVERE AUD**



# Key points

- Alcohol use disorders are preventable and treatable disease, earlier interventions lead to healthier outcomes
- Use non-stigmatizing, patient-centered language in every patient care encounter
- Alcohol use care should be accessible, timely, equitable, patient-focused, and trauma-informed
- Unhealthy alcohol use represents a spectrum, from risky/hazardous to harmful use and substance use disorder
- Every patient should be screened for unhealthy alcohol use, numerous validated screening tools exist (U.S Preventive Services Task Force (USPSTF) Recommendation Statements 2018)
- Use DSM-5<sup>®</sup> criteria to diagnose an alcohol use disorder, to identify patients who would benefit from FDA-approved pharmacotherapy, and to monitor treatment efficacy and effectiveness

# OUTLINE

- Define Unhealthy Alcohol Use (UAU)
- Prevalence of alcohol use disorders
- Explore a Cascade approach to alcohol use disorder (AUD)
- Pharmacotherapy

Adult prevalence AUD

- **7.8%** (95% CI, 7.6-8%), sample included 214,505 individuals

Proportion of adults with AUD who utilized health care in the past 12-months

- **81.4%** (95% CI 80.7-82.1%), majority of individuals w/ AUD utilized health care

Proportion with AUD screened about their alcohol use

- **69.9%** (95% CI 68.8-70.8%)

Proportion with AUD who received a BI about treatment for unhealthy alcohol use

- **11.6%** (95% CI 11-12.2%) patients reported they received a BI (Brief Intervention)

Proportion with AUD who were referred to treatment

- **5.1%** (95% CI 5.4-6.35)

Proportion with AUD who received treatment

- **5.8%** (95% CI 5.4-6.3%)

# Unhealthy alcohol use in primary care

## Age and gender trends

NSDUH 5-year period cross-sectional population survey

9,663 individuals  $\geq 65$  years old who reported past-year alcohol use and a past-year healthcare encounter

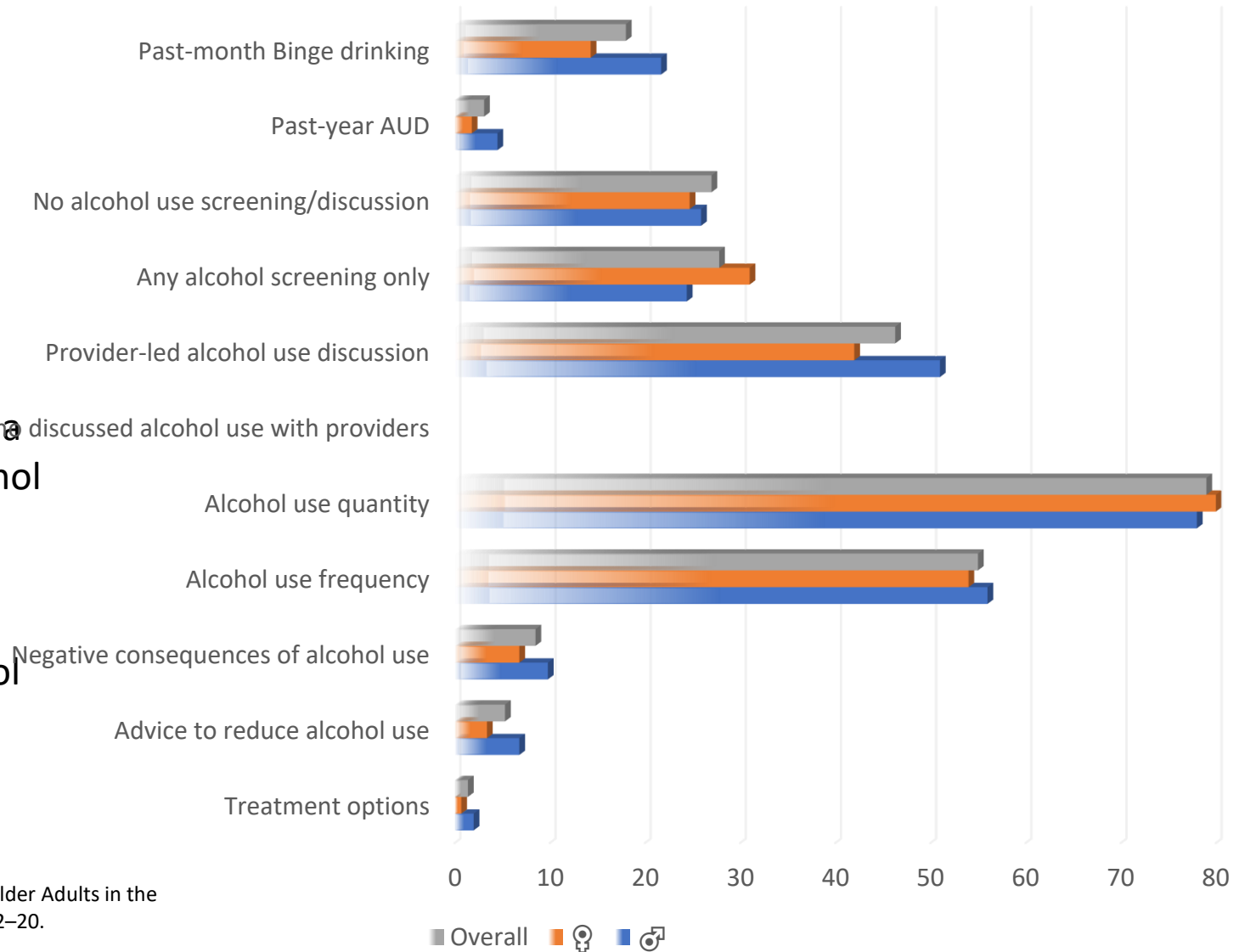
54% of U.S. older adults who drank alcohol and had a healthcare visit in the past year did not discuss alcohol use with their provider

- 59% ♀

Over a quarter of U.S. older adults who drank alcohol and had a healthcare visit in the past year did not undergo alcohol use screening

- 42% ♀ had a provider discussion (51% ♂)

## PREVALENCE (%)



# Alcohol use disorder treatment gap

Trends in first-time treatment admissions for older adults with alcohol use disorder: Availability of medical and specialty clinical services in hospital, residential, and outpatient facilities. AS Huhn. Drug and Alcohol Dependence, Volume 205, 1 December 2019. Short Communication

## Background

- Alcohol use disorder (AUD) is a growing problem among older adults. The aim of this study was to quantify trends in first-time treatment admissions for older adults with AUD in the U.S. and examine the medical and specialty clinical services offered by treatment facility type.

## Methods

- Patient level data were collected from the Treatment Episode Data Set for Admissions between 2004–2017. Joinpoint regression was used to identify unique trends in first-time treatment admissions for older adults with AUD. Provider level data were collected from the National Survey of Substance Abuse Treatment Services (N-SSATS) for the most recent year, 2017. N-SSATS data were grouped by facility type (inpatient/hospital, residential, and outpatient treatment) to examine differences in medications and clinical services.

## Results

- Among all persons seeking first-time treatment for AUD with alcohol as their primary drug of choice ( $n = 3,606,948$ ), there was a significant increase in the proportion of older adults seeking treatment from 2004 to 2017 ( $p\text{-trend} < 0.001$ ), with an average annual percent change of 6.8% (95% confidence intervals: 6.2%–7.4%). The **majority of older adults with AUD sought treatment in outpatient and residential facilities**, which compared to hospital-based facilities had **lower odds of offering supervised detoxification, acamprosate, naltrexone, psychiatric medications, or mental health services** (all  $p\text{-values} < 0.001$ ). Fewer than 25% of hospital-based and 20% of residential or outpatient facilities offered specialty services for older adults.

## Conclusions

- U.S. substance abuse treatment providers are not compensating for the changing nature of admissions by older adults, and are not providing state of the art services for this population

# OUTLINE

- Define Unhealthy Alcohol Use (UAU)
- Prevalence of alcohol use disorders
- Explore a Cascade approach to alcohol use disorder (AUD)
- **Pharmacotherapy**

# Select FDA-approved medications for moderate to severe alcohol use disorder

Acamprosate and Naltrexone (PO, depot)



# Pharmacotherapy selection considerations

1. Does the patient have a stated preference for a specific medication? Are there specific side effects that the patient wishes to avoid?
2. Does the patient have a stated **goal of abstinence from drinking or reduced drinking**?
  - Acamprosate for abstinence
  - Naltrexone for abstinence and reduced drinking
3. Assess the patient's motivation and stage of change
4. Does the patient have co-occurring physical or psychiatric conditions that would influence medication tolerability or potential side effects?
  - Naltrexone treated patients must abstain from opioids before treatment initiation
  - Naltrexone is not recommended with acute hepatitis or hepatic failure
  - If a patient has renal impairment, use acamprosate cautiously or avoid use (depending on renal function)



# FDA approved pharmacotherapy for alcohol use disorders

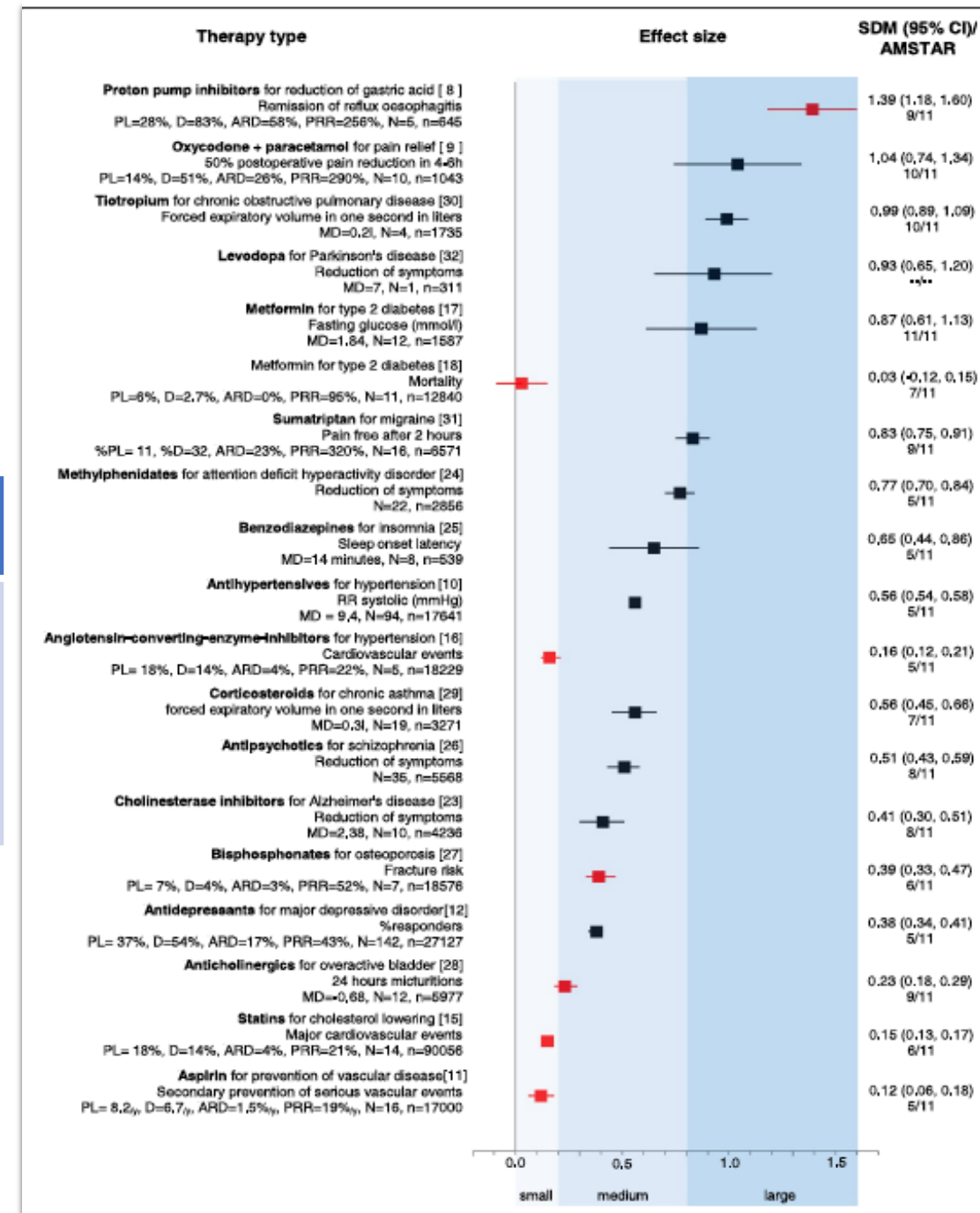
Drug	Mechanism of Action	Dose	Data	Contraindications	Monitoring
<b>Naltrexone (first-line therapy)</b>	Mu-opioid receptor blockade, to suppress the reward pathway and reduce craving. Opioid antagonist/decreases reinforcing effect of EtOH	50-100 mg/day PO or 380 mg/monthly IM	Decreased risk or recurrence in first 3 months by 36%; 25% decrease in heavy drinking days as compared to placebo	<ul style="list-style-type: none"> <li>• Current opioid use</li> <li>• Liver failure</li> <li>• Pregnancy category C</li> </ul>	Consider LFTs Patients should carry a wallet card indicating use of naltrexone
<b>Acamprosate (first-line therapy)</b>	Modulation of glutamate neurotransmission to reduce craving. Unclear: GABA receptor agonist, NMDA modulator, glutamate inhibitor	666 mg TID; 333 mg TID if CrCl 30-50 ml/min	Increased abstinence at 6 months by 36% as compared to placebo; no effect seen in other trials	<ul style="list-style-type: none"> <li>• Severe renal impairment (CrCl &lt; 30 ml/min)</li> <li>• Pregnancy category C</li> </ul>	Renal function
<b>Disulfiram</b>	Aversive, aldehyde dehydrogenase inhibitor causes accumulation of aldehyde  Causes unpleasant withdrawal-like reaction when alcohol is consumed	250 mg/day x 1-2 weeks, followed by maintenance dose 100-500 mg/day	Decreased alcohol consumption and heavy drinking days, increased time to first drink, and increased number of abstinence days - superior to effect of naltrexone and acamprosate - but effect only seen when taken under supervision	<ul style="list-style-type: none"> <li>• Concurrent alcohol use or use of Flagyl</li> <li>• CAD</li> <li>• Severe myocardial disease</li> <li>• Rubber/thiuram hypersensitivity</li> <li>• Psychosis Pregnancy category C</li> </ul>	LFTs
<b>Topiramate (not FDA approved)</b>	Enhances GABA activity to suppress dopamine release during a drinking episode to reduce pleasure from drinking and craving	Up-titrate from 50 mg/day to 150 mg BID	Decreased heavy drinking days (between 8-27%), decreased number of drinks per drinking day, and increased number of abstinent days by 25%. Not significantly different from effect of naltrexone	Known teratogenic effects in pregnancy	Bicarbonate
<b>Gabapentin (not FDA approved)</b>	Indirect GABA modulation via selective blockade at voltage-gated calcium-channel	1200 -1800 mg/day, usually in TID dosing	19% decrease in heavy drinking, 14% increase in abstinence; greatest effect in those with more alcohol withdrawal NNT for abstinence of 2.7 compared with placebo	Caution in patients with co-occurring opioid use disorder given higher rates of gabapentin misuse when used synergistically with opioids	Renal function

# Benefits of AUD pharmacotherapy comparable to other chronic disease focused medications

<10% of patients with AUD receive treatment  
>70% of patients with HTN receive treatment

Naltrexone	Acamprosate	Aspirin	Metformin	Antibiotics	Antihypertensives
12: reduced heavy drinking	12: return to any drinking	50: prevention of cardiovascular disease	14: mortality benefit over 10 years	16: symptom reduction of acute otitis media	67: stroke preventions
20: complete abstinence	9: reduced drinking				125: death prevention

Leucht, S., Hefner, B., Gartlehner, G., & Davis, J. (2015). How effective are common medications: a perspective based on meta-analyses of major drugs. *BMC Medicine*, 13. Fairbanks, Jeremiah et al. "Evidence-Based Pharmacotherapies for Alcohol Use Disorder: Clinical Pearls." *Mayo Clinic proceedings* vol. 95,9 (2020): 1964-1977.



# Efficacy of acamprosate, 1,998mg daily

Outcome	# of studies; # of subjects	Risk of bias; design	Summary effect size (95% CI)	NNT	Strength of evidence grade
Return to any drinking	16; 4,847	Medium; RCTs	RD: -0.09 (-0.14 to -0.04)	12	Moderate
Return to heavy drinking	7; 2,496	Low; RCTs	RD: -0.01 (-0.04 to 0.03)	NA	Moderate
Drinking days	13; 4,485	Medium; RCTs	WMD: -8.8 (-12.8 to -4.8)	NA	Moderate
Heavy drinking days	1; 100	Medium; RCT	WMD: -2.6 (-11.4 to 6.2)	NA	Insufficient
Drinks per drinking days	1; 116	Low; RCT	WMD: 0.40 (-1.81 to 2.61)	NA	Insufficient

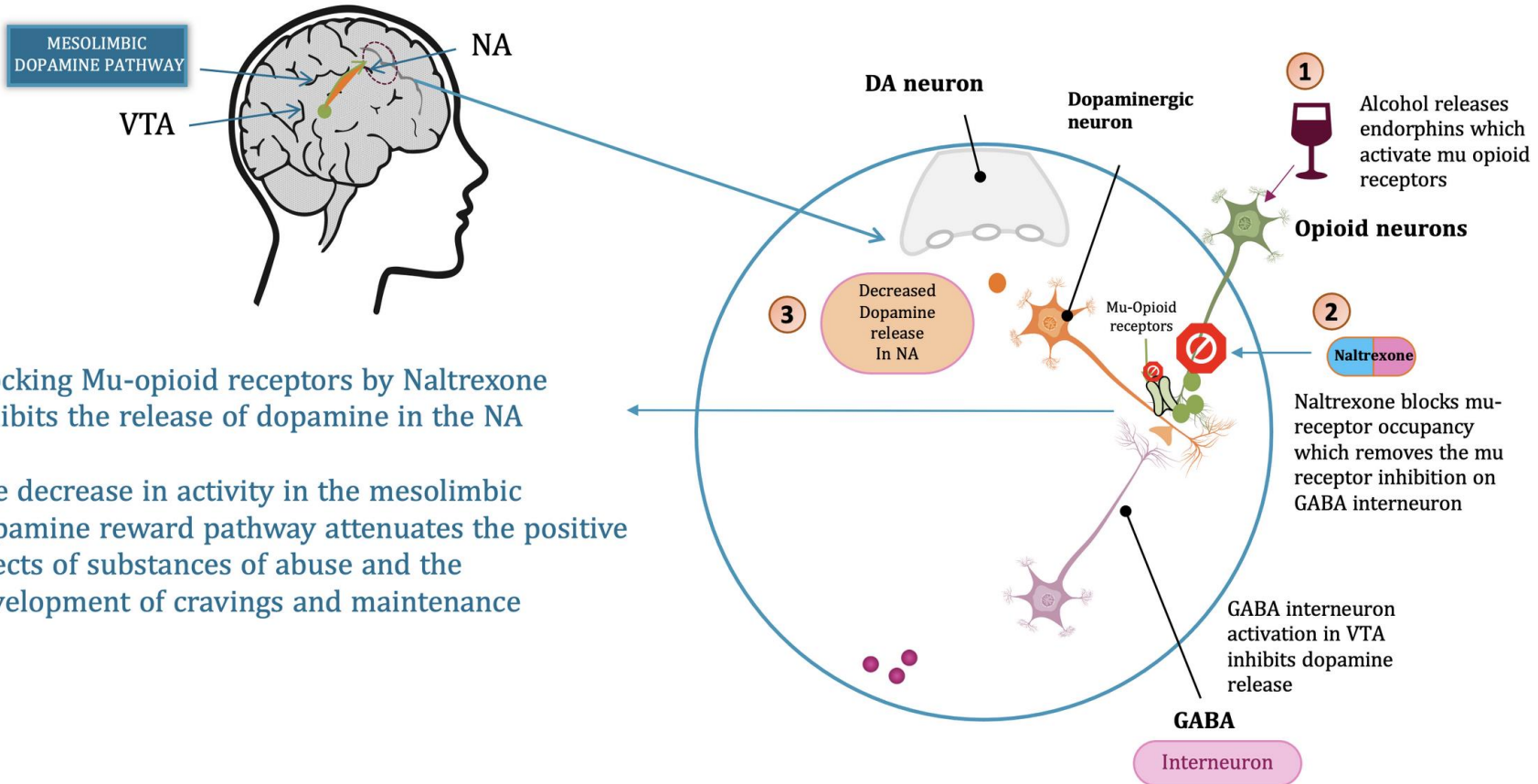
**2006 COMBINE trial (largest in the U.S.) found acamprosate had no effect on any drinking outcomes**

Jonas DE, Amick HR, Feltner C, et al. Pharmacotherapy for Adults With Alcohol Use Disorders in Outpatient Settings: A Systematic Review and Meta-analysis. *JAMA*. 2014;311(18):1889-1900.

Anton. COMBINE Study Research Group. Combined pharmacotherapies and behavioral interventions for alcohol dependence: the COMBINE study: a randomized controlled trial. *JAMA*. 2006;295(17):2003-17.

# Naltrexone may be more effective for moderate and severe alcohol use disorders

## Neurobiology of Alcohol Addiction - Role of Naltrexone

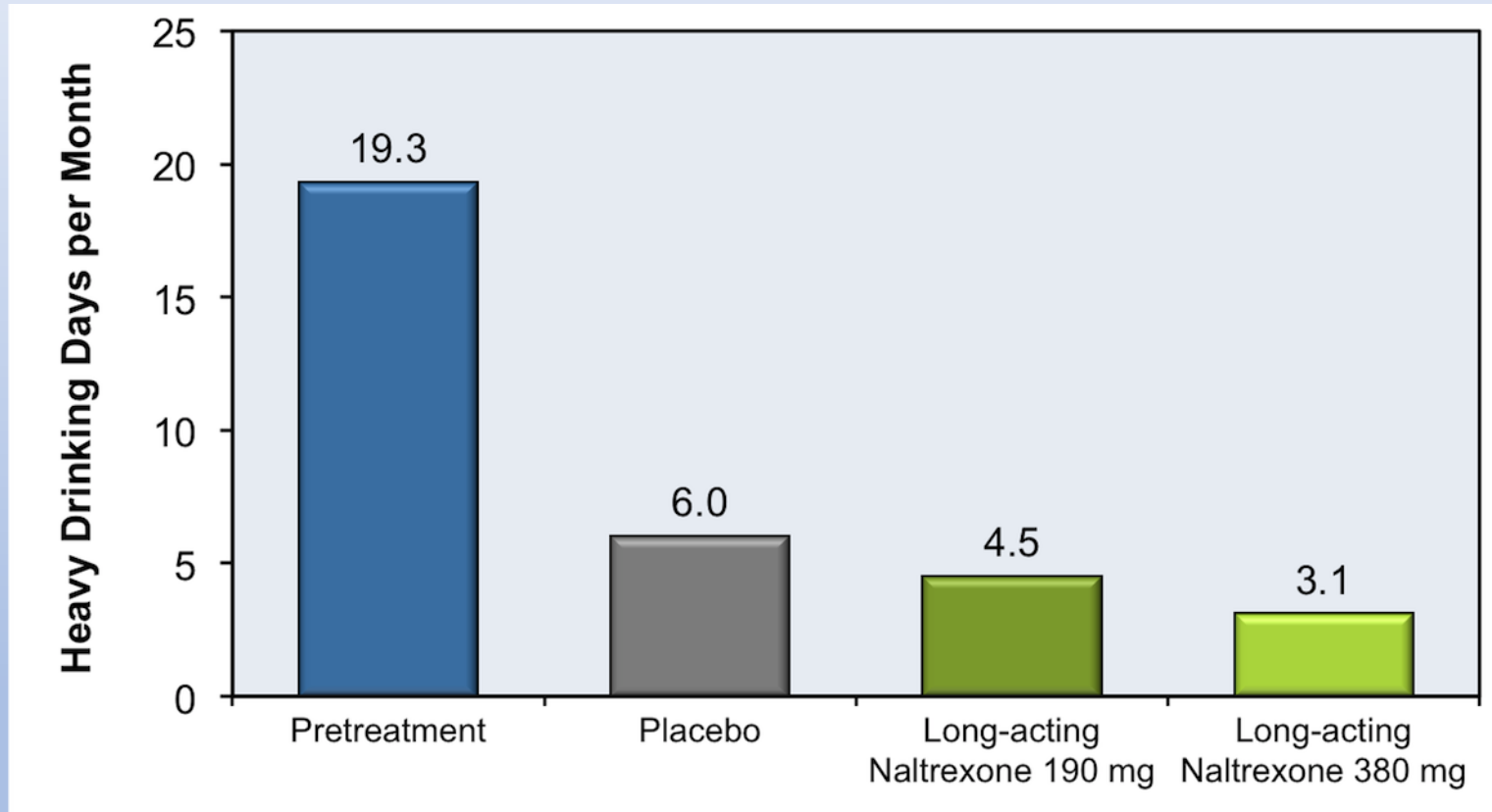


- Blocking Mu-opioid receptors by Naltrexone inhibits the release of dopamine in the NA
- The decrease in activity in the mesolimbic dopamine reward pathway attenuates the positive effects of substances of abuse and the development of cravings and maintenance

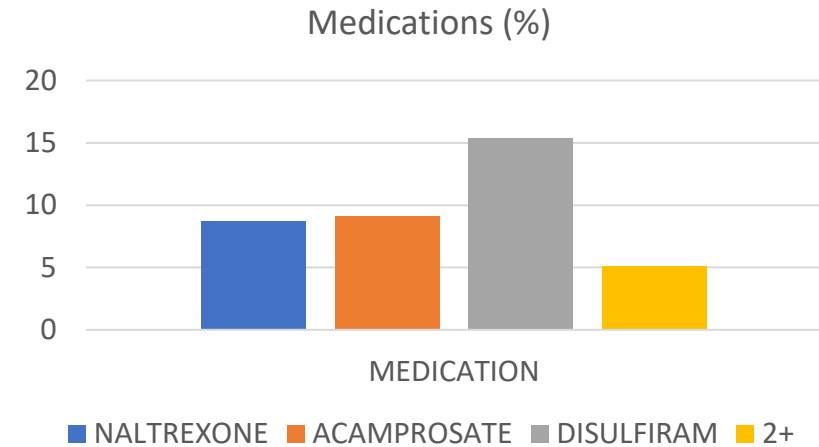
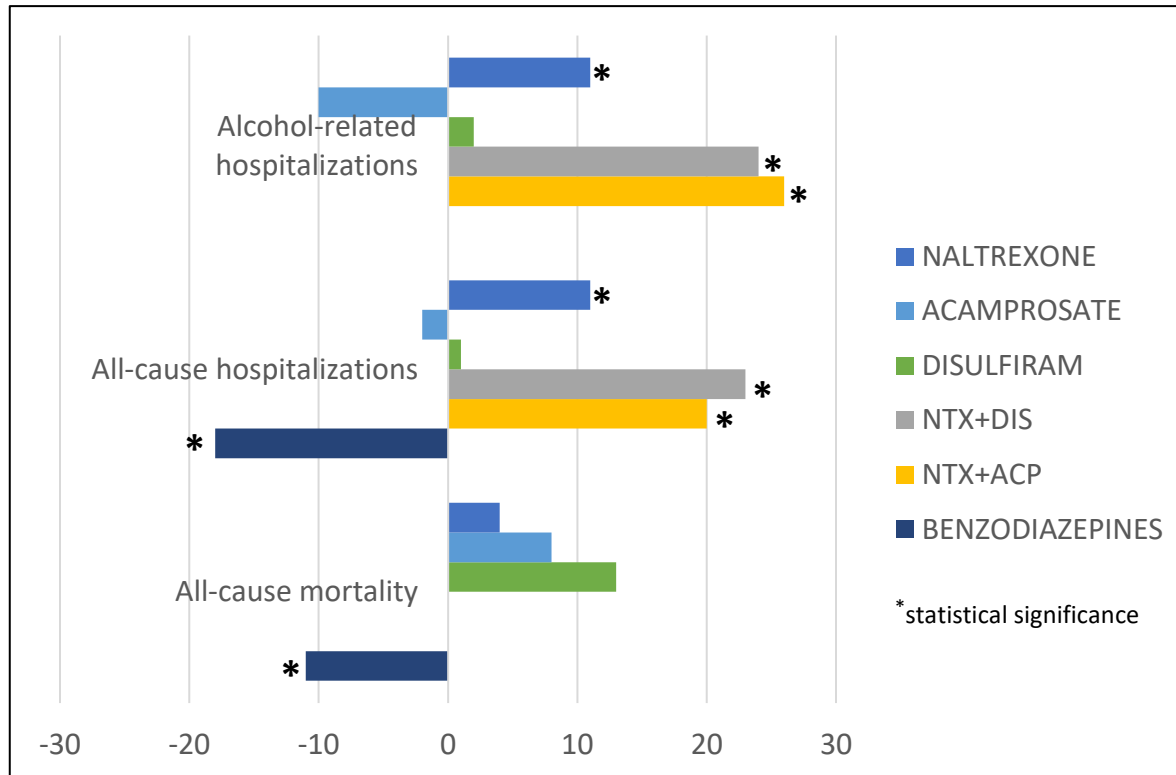
# Efficacy of oral naltrexone, 50mg daily

Outcome	# of studies; # of subjects	Risk of bias; design	Summary effect size (95% CI)	NNT	Strength of evidence grade
Return to any drinking	16; 2,347	Medium; RCTs	RD: -0.05 (-0.10 to -0.00)	20	Moderate
Return to heavy drinking	19; 2,875	Medium; RCTs	RD: -0.09 (-0.13 to -0.04)	12	Moderate
Drinking days	15; 1,992	Medium; RCTs	WMD: -5.4 (-7.5 to -3.2)	NA	Moderate
Heavy drinking days	6; 521	Medium; RCTs	WMD: -4.1 (-7.6 to -0.61)	NA	Moderate
Drinks per drinking days	9; 1,018	Medium; RCTs	WMD: -0.49 (-0.92 to -0.06)	NA	Low

# Efficacy of Long-Acting Naltrexone on Median Heavy Drinking Days per Month



# Naltrexone lowers hospital admissions in AUD



Source of diagnosis  
 Inpatient 41.6% (52,284)  
 Outpatient 56.2% (70,540)

Heikkinen. Real-world effectiveness of pharmacological treatments of alcohol use disorders in a Swedish nation-wide cohort of 125 556 patients. *Addiction* 2021;116:1990-98

During the follow-up period, 42,678 (34%) of patients used benzodiazepines and related drugs, associated with a 18% higher risk of AUD hospitalization ( $p < 0.001$ ) and a 11% higher risk of death ( $p = 0.0034$ )

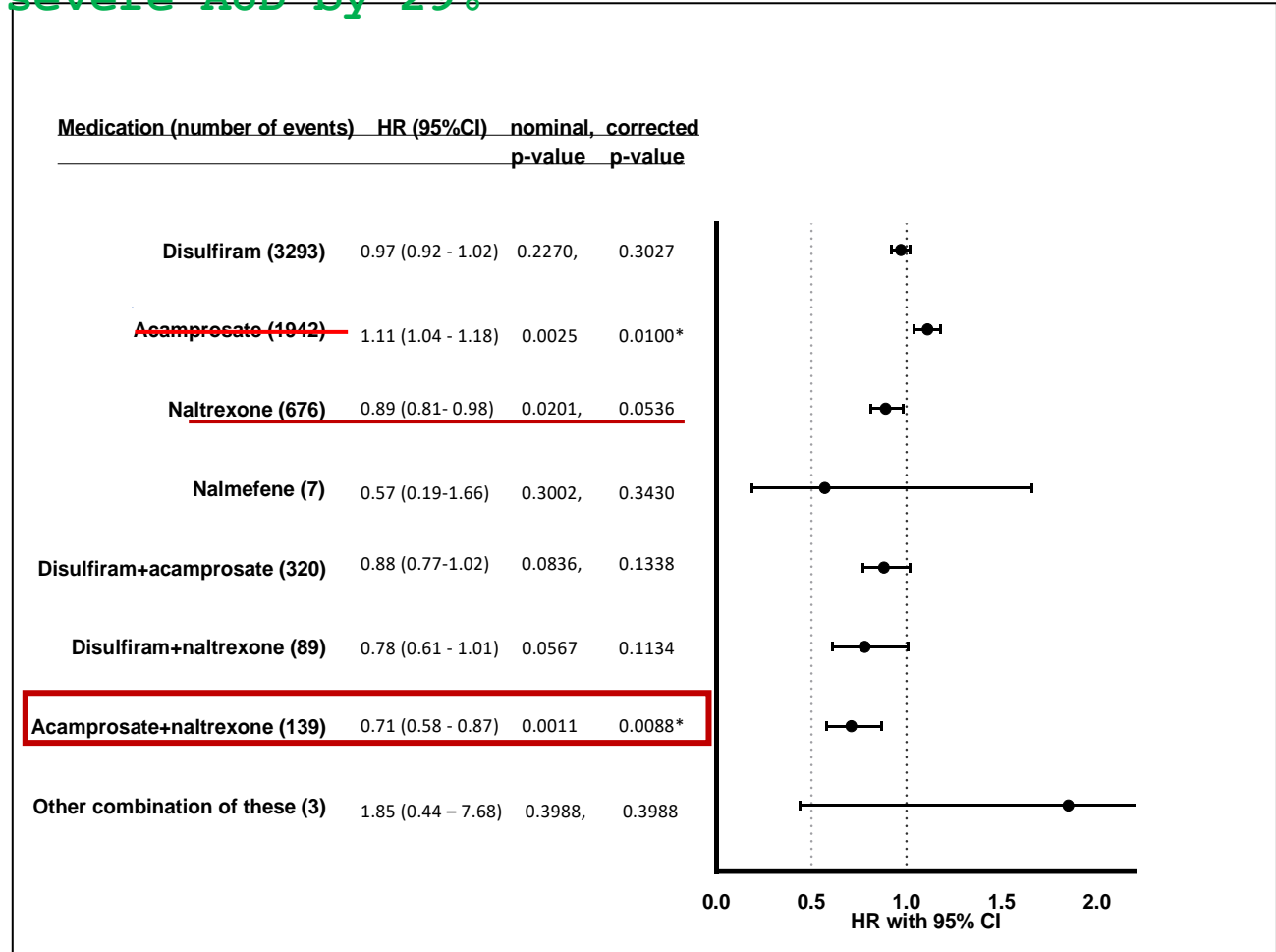
# Naltrexone lowers hospital admissions in AUD

Duration of medication use (days)	HR (95%CI)	p-value	N of events
<b>Disulfiram</b>			
≤30	1.01 (0.97–1.06)	0.6453	2010
31 – 180	1.05 (0.99–1.10)	0.0927	1677
>180	1.08 (0.93–1.25)	0.318	174
<b>Acamprosate</b>			
≤30	1.23 (1.16–1.30)	<0.0001	1309
31 – 180	1.20 (1.12–1.29)	<0.0001	805
>180	1.05 (0.86–1.28)	0.6459	98
<b>Naltrexone</b>			
≤30	0.82 (0.76–0.89)	<0.0001	610
31 – 180	0.75 (0.65–0.87)	0.0002	168
>180	0.43 (0.19–0.96)	0.0389	6

**Longer durations of naltrexone treatment associated with 52% lower risk of AUD hospitalization (duration >6 months compared to <30 days)**

Heikkinen. Real-world effectiveness of pharmacological treatments of alcohol use disorders in a Swedish nation-wide cohort of 125 556 patients. *Addiction* 2021;116:1990-98

**Combination pharmacotherapy (naltrexone and acamprosate) reduced hospitalizations in severe AUD by 29%**





# Clinical scenario

Our 63-year-old female, now diagnosed with a severe alcohol use disorder with a high-intensity drinking pattern.

You used SBIRT, specifically personalized normalized feedback to emphasize the impact of alcohol and negative health consequences to the patient

<https://www.mass.gov/info-details/screening-brief-intervention-and-referral-to-treatment-sbirt>

She acknowledged that she had lost control of her alcohol use and its negative impact on the quality of her life and inter-personal relationships

She articulated a goal of alcohol abstinence, and agreed to treatment including pharmacotherapy

# Clinical scenario

You started oral naltrexone 50mg daily for one week and discussed with the patient the favorable pharmacokinetic profile of depot extended-release naltrexone

You started a SSRI to target her depression and anxiety symptomatology

You recommended a referral to a behavioral health counselor, who specialized in alcohol use disorders

You recommended SMART Recovery <https://www.smartrecovery.org/>

During a follow-up visit, patient was interested in depot extended-release naltrexone. She received a 380mg gluteal intramuscular injection.

# Clinical scenario (3-month follow-up)

Patient treated with depot extended-release naltrexone for the past two months

Her anxiety and depression were significantly improved on a SSRI, and she was satisfied with her experiences with her behavioral health counselor

She has been attending virtual SMART Recovery meetings weekly

She reported improved relationships with her daughter, now caring for her grandchildren

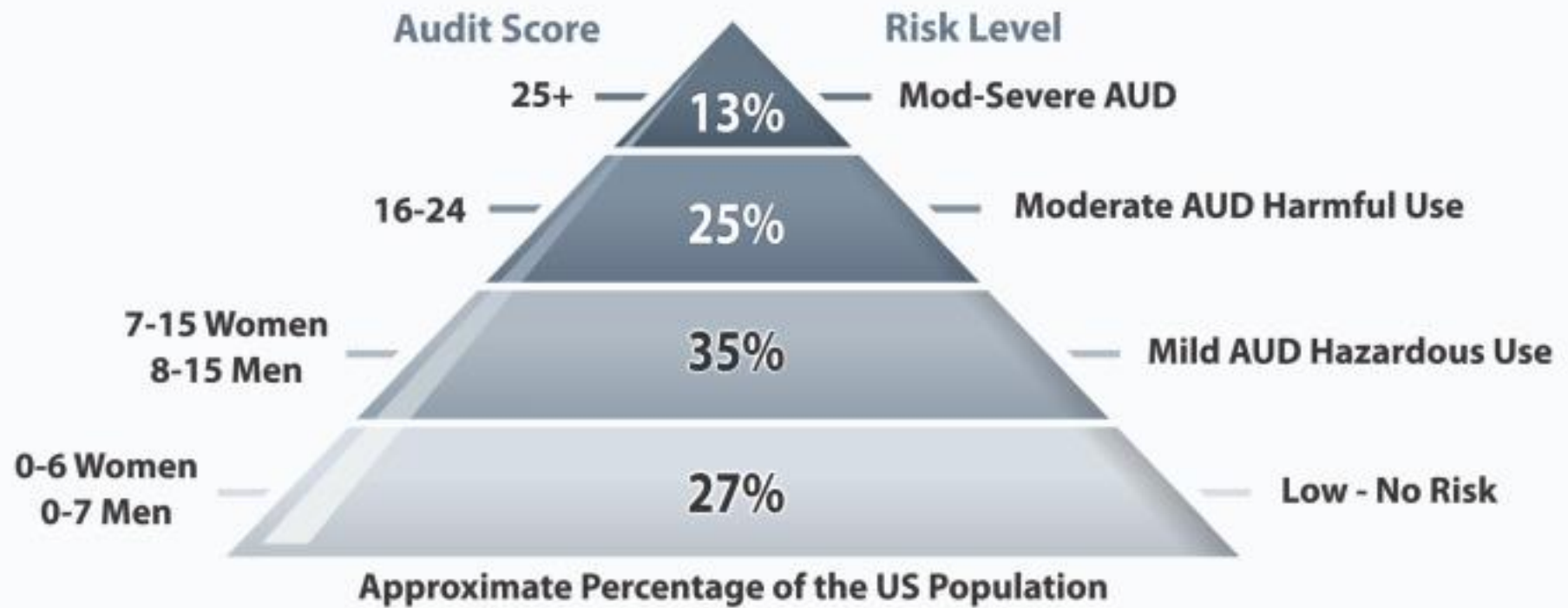
She reported no alcohol use in the last three months

# Key points

- Unhealthy alcohol use, including alcohol use disorders, is a public health crisis
- Alcohol-related mortality and morbidity are increasing, exacerbated during the COVID-19 pandemic
- Alcohol use disorders are chronic medical illnesses, with early age of onset, and treatment is vastly underutilized  
75% initiated substances prior to age 18, 98% prior to age 25
- Harmful and hazardous alcohol use are significant risk factors for AUD, and need to be identified and addressed
- Discussions with patients regarding their understanding of the negative health consequences of AUD, motivation and stage of change is essential to treatment
- Naltrexone (PO and depot) may be more effective for moderate and severe alcohol use disorders
- AUD pharmacotherapy is more effective in combination with peer group therapy (AA, SMART Recovery), connection with individuals with lived experiences (Recovery coach/peer support specialists) and longitudinal behavioral/mental health counseling

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Your Score

# Screening in Medical Settings

## SISQ (Single-Item Screening Question) for unhealthy drug use

1. “How many times in the past year have you used an illegal drug or a prescription drug for a non-medical reason?”

If 1+, cascades to remaining 9 questions of DAST-10

# Screening in Medical Settings

**SISQ → DAST-10**

Scoring:

At risk: 1-2

Moderate: 3-5

Severe: 6+

2. Do you use more than 1 drug at a time?
3. Are you always able to stop using drugs when you want to?
4. Have you had blackouts as a result of drug use?
5. Do you ever feel bad or guilty about your drug use?
6. Does your spouse (parent/guardian) ever complain about your involvement with drugs?
7. Have you neglected your family because of your use of drugs?
8. Have you engaged in illegal activities in order to obtain drugs?
9. Have you ever experienced withdrawal symptom (felt sick) when you stopped taking drugs?
10. Have you had medical problems as a result of your drug use?



# Screening in Medical Settings

- $\geq 4$ ,  $\geq 3$  suggest hazardous drinking

- $\geq 8$  high risk for AUD (92% specificity)

## AUDIT-C (Alcohol Use Disorder Identification Test - Consumption)

Questions	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4x per month	2-3x per month	$\geq 4x/week$
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7-9	$\geq 10$
3. How often do you have $\geq 6$ on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily