How can we do better? From: Alcohol Withdrawal to Medications for Alcohol Use Disorder

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Meet “Bob”

Initial Presentation

- 47-year-old man with severe alcohol use disorder (AUD) and hypertension presents to the ED with abdominal pain, vomiting small amounts of blood, headache and bilateral leg pain secondary to his known neuropathy.

    - Drinks 30 beers + 10 nips daily
    - Last drink 2 days prior presentation
    - Reports a fall several days ago
    - He describes seeing flamingos and pigs and hearing high pitch or aching noises.

Day 1: ED Course

0300 — Initial Assessment

1

CIWA: 19 (severe withdrawal)
BP 155/98 mmHg | HR 120 bpm

Ethanol Level : 232
AST 449, ALT 173

0400-0500 — Early Intervention

2

Phenobarbital loading: 260 mg + 420 mg

0600 — Critical Event

3

Hypertensive crisis: BP 210/109 mmHg | HR 120 bpm

Four-extremity tremors with seizure-like activity, brief unresponsiveness

Emergency response: 5L O_2 NC, Ativan 4 mg IV, Phenobarbital 390 mg

0700 — Metabolic Decompensation

4

Lactate: 10.7 mmol/L

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Day 1:
ED Course

5

1100 — Persistent Instability
CIWA: 20
BP 195/93 mmHg | HR 113 bpm
Phenobarbital held — monitoring effect of prior doses

6

1200 — Metabolic Improvement
Lactate: 2.5 mmol/L

7

1400 — Brief Clinical Response
CIWA: 9
BP 182/110 mmHg

8

1500 — Symptom Rebound
CIWA: 22
BP 185/177 mmHg
Intervention: Phenobarbital 260 mg

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Dispo: Admit to MICU

Days 1-2

MICU Course

9 1800 — MICU Admit
CIWA: 22 (severe withdrawal)
Dexmedetomidine & Thiamine 200mg IV TID started

10 Hallucinations overnight

11 0900 — Somnolent
Dexmedetomidine stopped

12 1100 — Addiction Consult
Start acamprosate 666mg TID, connect to recovery coach and chaplain

13 1500 — Transfer to Floor
BP 150/80 mmHg HR 103

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Alcohol Withdrawal & Management

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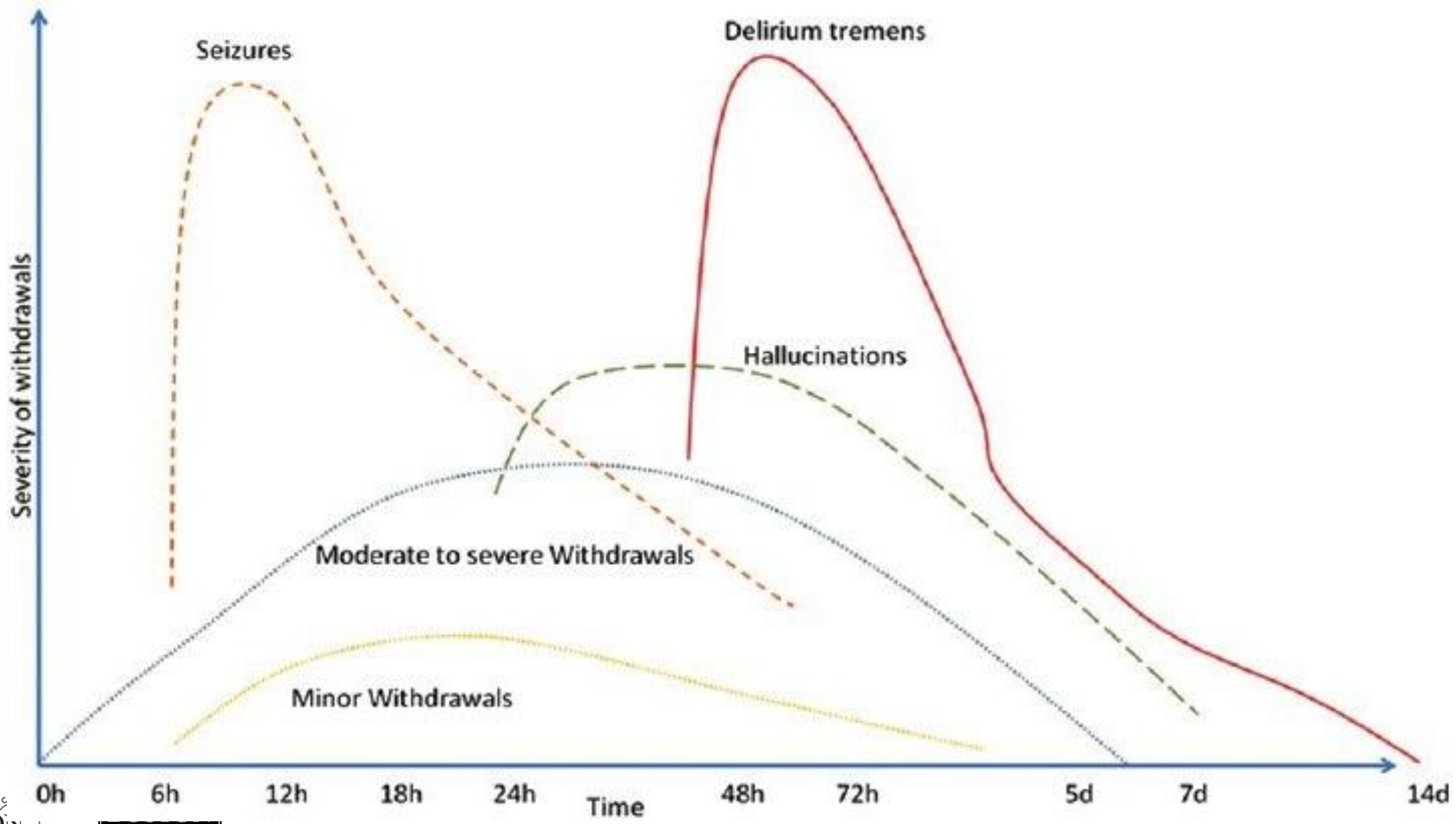
Alcohol Withdrawal Syndrome

1. Cessation of, or reduction in, alcohol use that has been heavy and prolonged
2. **Two or more**, developing within several hours
   - Autonomic hyperactivity (tachycardia, diaphoresis)
   - Tremor
   - Insomnia
   - Nausea or vomiting
   - Transient visual, tactile, or auditory hallucinations or illusions
   - Psychomotor agitation
   - Anxiety
   - Generalized tonic clonic seizure
3. Impaired functioning or distress
4. Signs/symptoms NOT attributable to another medical condition or another DSM V diagnosis
   - Differentiate from anxiety/insomnia

Timeline of alcohol withdrawal



Haber NL, Guidelines for the Treatment of AlcoholProblems. Ch. 5. Sydney, NSW: Ageing DoHa; 2009.

How are you managing alcohol withdrawal in your institution?

How is alcohol withdrawal currently managed?

Medication Usage	ICU receiving IMV	ICU not receiving IMV	Intermediate	General Wards	Overall
Days 1-5, n =	5,183	27,378	48,997	163,713	245,271
Benzodiazepines					
Any Benzodiazepine	96.8	97.0	95.8	90.6	92.5
Phenobarbital	28.2	17.9	12.2	9.6	11.5

Erfle BA, Steel TL, Law AC, Kaufman DA, Hills-Dunlap K, Afshar M, Walkey AJ, Austad KE, Drainoni ML, Bosch NA. Pharmacological Interventions for Alcohol Withdrawal Syndrome Among Hospitalized Adults: A Multicenter Cohort Study. J Gen Intern Med. 2025 Aug 28:10.1007/s11606-025-09817-8. doi: 10.1007/s11606-025-09817-8. PMCID: PMC12683996

How is alcohol withdrawal currently managed?

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Benzodiazepines					
Any Benzodiazepine	96.8	97.0	95.8	90.6	92.5
Lorazepam	89.5	92.4	88.8	78.0	82.0
Chlordiazepoxide	29.7	39.1	36.4	34.1	35.0
Diazepam	22.5	22.2	19.2	16.5	17.8
Midazolam	56.5	5.5	3.3	2.1	3.8

Erfle BA, Steel TL, Law AC, Kaufman DA, Hills-Dunlap K, Afshar M, Walkey AJ, Austad KE, Drainoni ML, Bosch NA. Pharmacological Interventions for Alcohol Withdrawal Syndrome Among Hospitalized Adults: A Multicenter Cohort Study. J Gen Intern Med. 2025 Aug 28:10.1007/s11606-025-09817-8. doi: 10.1007/s11606-025-09817-8. PMCID: PMC12683996

Withdrawal Management Dosing Strategies

Symptom Triggered vs Fixed Dosing

- Less medication
- Shorter treatment duration
- Due to self-reporting component, likely challenging for non-English speaking, cognitively or speech impaired populations
- Scorer bias

Front Loading

- Higher dosages upfront to achieve symptom capture
  - Benzodiazepine: Diazepam 5 to 10 mg IV every 5 to 10 minutes
  - Phenobarbital:15-20mg/kg of ideal body weight

Saitz, R et al JAMA 1994

Benzodiazepines

- Augment GABA
- Most evidence-based treatment
- Reduce incidence of seizures and recurrence
- Prevent incident delirium tremens

Day	Medication	Fixed Schedule	Symptom Triggered Schedule
1	Diazepam	10mg every 6 hours	10mg every 4 hours
2	Diazepam	10mg every 8 hours	10mg every 6 hours
3	Diazepam	10mg every 12 hrs	10mg every 6 hours
4	Diazepam	10mg at bedtime	10mg every 12 hours
5	Diazepam	10mg at bedtime	10mg every 12 hours

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Saitz R, Mayo-Smith MF, Roberts MS, et al JAMA. 1994
Sereny 1965, Kiam 1969, Zilm 1980, Sellers 1983, Naranjo 1983

Tiglao et al 2021
Muncie, Yasinian, Oge, 2013
Cohen, Alexander, Holt 2022

Phenobarbital

- Acts on GABA and glutamate signaling
- Inhibits the NMDA-type glutamate receptors
- Increases the duration of the GABA channel opening
- Increased use by 200% from 2016 to 2020
- Effective and well tolerated alternative to BZDs for treatment of alcohol withdrawal.
- Protocols improve outcomes
- Outcomes vary by setting:
  - ED: As an adjunctive to benzodiazepines, PHB can be benzodiazepine sparing. Rosenson et al 2013
  - ICU: Decreases the need for adjunctive medications- Tidwell et al 2018

Bosch NA, Law AC, Walkey AJ. Phenobarbital for Severe Alcohol Withdrawal Syndrome: A Multicenter Retrospective Cohort Study. *Am J Respir Crit Care Med*. 2022;206(9):1171-1174. doi:10.1164/rccm.202203-0466LE

Wolpaw BJ, Oren H, Quinnan-Hostein L, et al. Hospital-Wide Implementation, Clinical Outcomes, and Safety of Phenobarbital for Alcohol Withdrawal. JAMA Netw Open. 2025;8(8):e2528694. doi:10.1001/jamanetworkopen.2025.28694

Gabapentin

- GABA Analog
- Individuals with very mild withdrawal (CIWA-Ar<10)
- Favorable option if clinician also plans to use for treatment of AUD
- Efficacy in reducing mild alcohol withdrawal symptoms other than seizure and DTs

	Day	**Night**	**As Needed**
Starting	300mg TID	600-1200mg	300mg x1
Titration	600mg TID	600-1200mg	
Taper	600mg TID	600-900mg	

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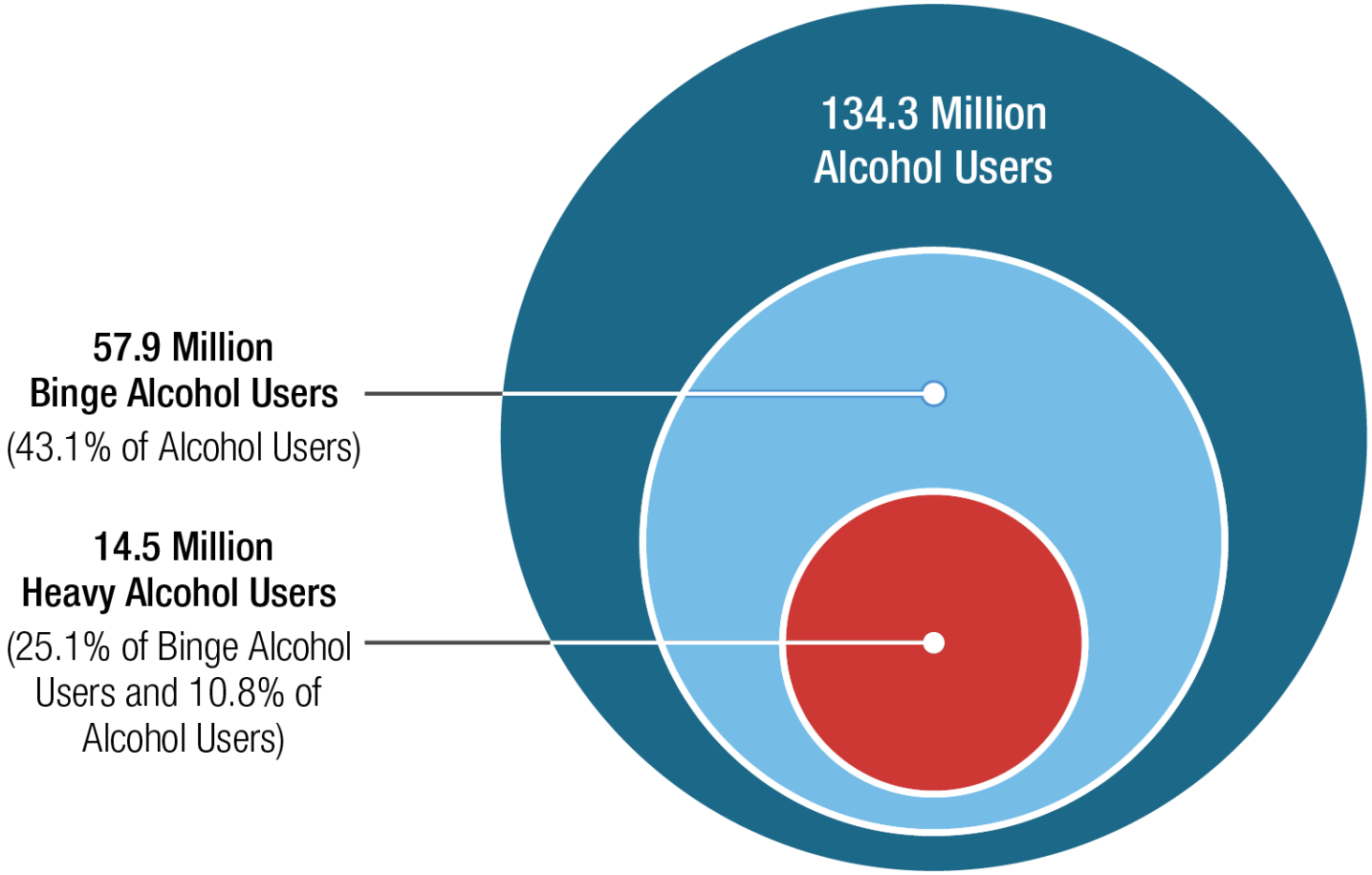
Cohen, Alexander, Holt 2022

Bates et al *Mayo Clin Proc Innov Qual Outcomes.* 2020

Epidemiology

Alcohol Use, Binge Alcohol Use, or Heavy Alcohol Use in the Past Month: Among People Aged 12 or Older; 2024



27.9 million people with AUD

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SAMHSA 2025

A Preventable Cause of Death

178,000 people die annually from an alcohol related death in the United States

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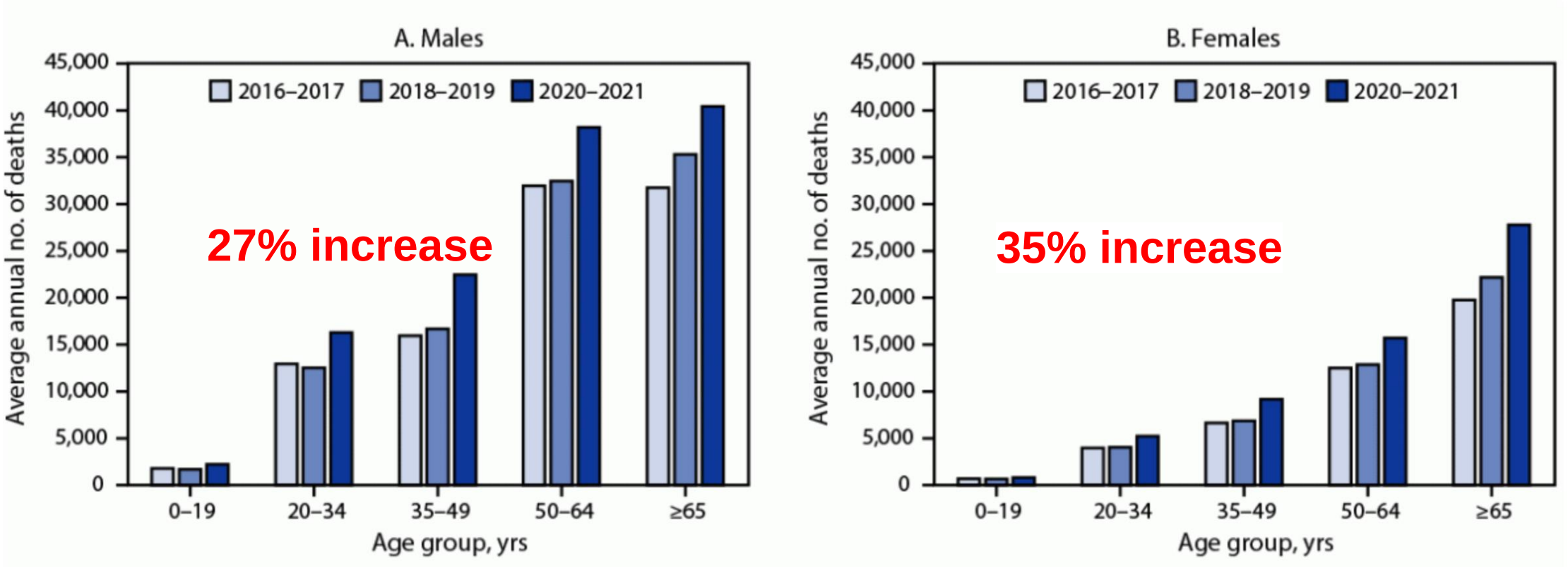
CDC, 2022

2016–2017 to 2020–2021: The average annual number of U.S. deaths from excessive alcohol use increased by more than **40,000 (29%)**

FIGURE. Average annual number of deaths from excessive alcohol use,* by age group and period among males (A) and females (B) — United States, 2016–2021



Esser MB, Sherk A, Liu Y, Naimi TS. Deaths from Excessive Alcohol Use — United States, 2016–2021. MMWR Morb Mortal Wkly Rep 2024;73:154–161

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Dispo: Transfer to Medicine Floor

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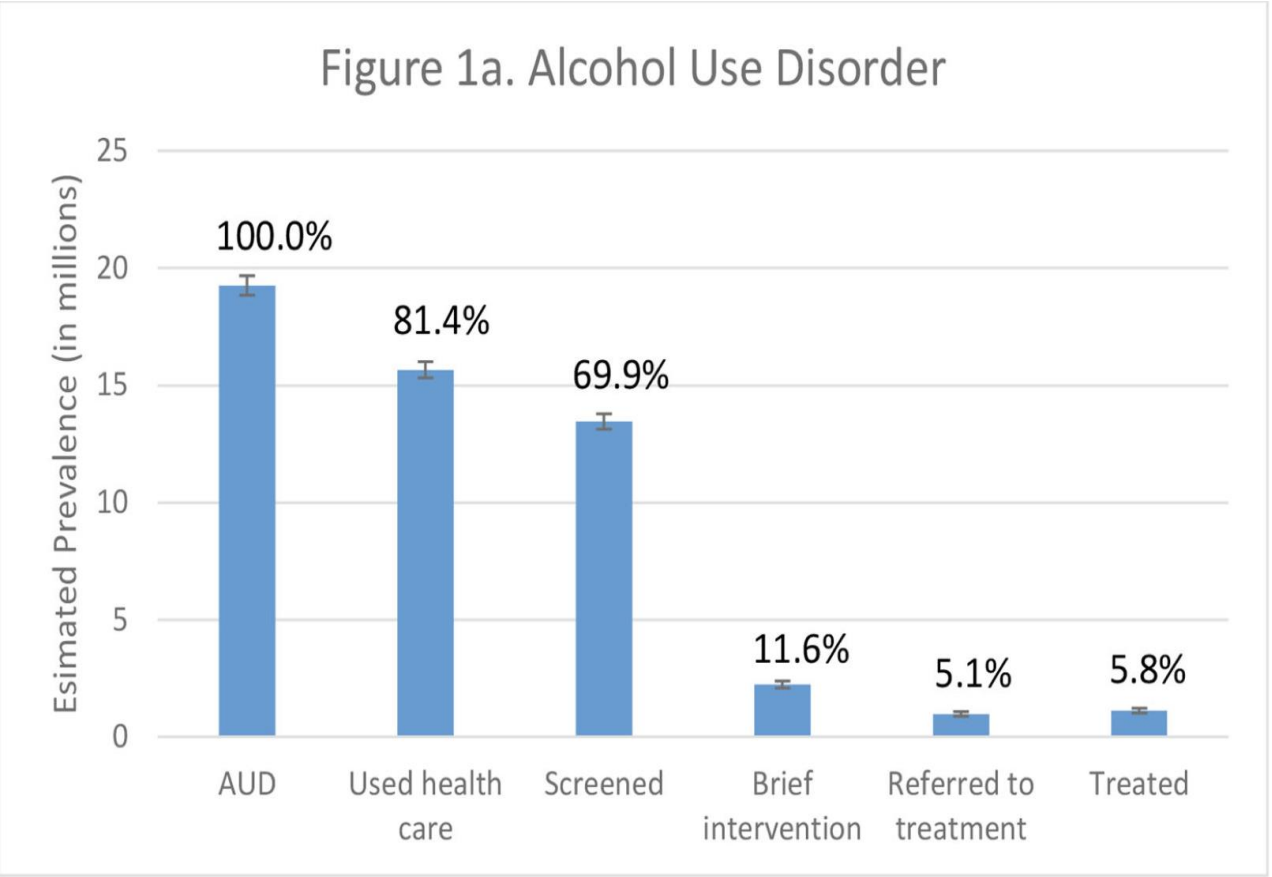
Remainder of Hospital Course (Days 3-5)

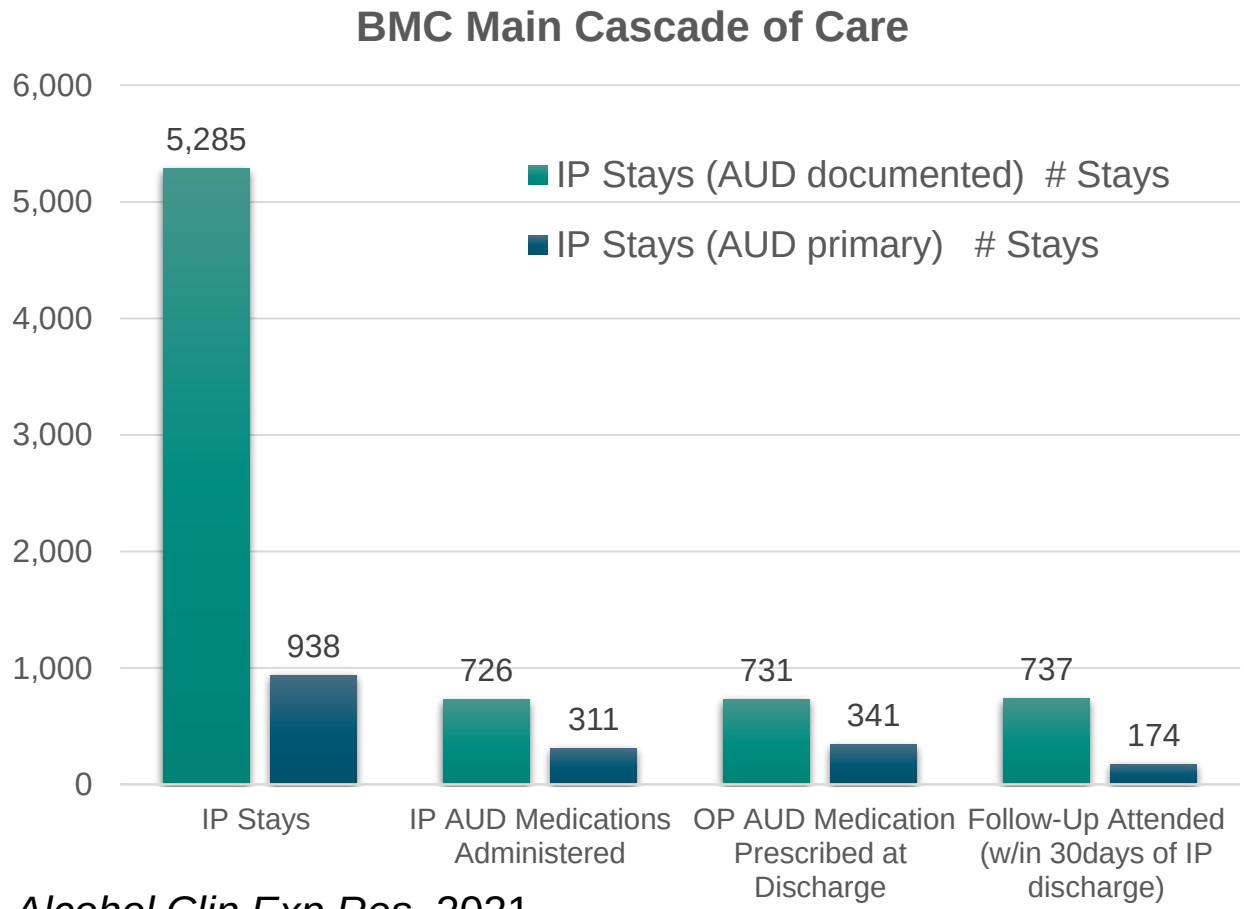
- Started on amlodipine
- PT/OT Clearance: Home without Services
- LFTS down trend: AST 134, ALT 79
- Transitioned to naltrexone on discharge
- PCP follow up scheduled for a week later

Cascade of Care: Inpatient → Outpatient

Cascade of Care for Alcohol Use Disorder

Persons with AUD utilize health care but few receive treatment.





Mintz et al. *Alcohol Clin Exp Res*. 2021

MAUD initiation across hospitals varies

Range: 2% to 43.2%

Bernstein et al, JAMA Netw Open. 2024
Bernstein et al, J Hosp Med. 2025
Nazon M, Lavin P, Pike CW, et al. *Alcohol Alcohol*. 2026

MAUD initiation is associated with an **18%** absolute reduction in 30 day **all-cause mortality** or return to the hospital.

Bernstein et al, JAMA Netw Open. 2024

Naltrexone

Approved for AUD and OUD

- Mu Opioid Receptor Antagonist
- Target dosing: 50mg PO/day or 380mg IM/month
- Side effects: nausea, headache, dizziness, injection site reaction
- Avoid in patients with ongoing opioid use, Child Pugh Class C Cirrhosis
- Reduces Heavy Drinking

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

Disulfiram

Any alcohol can cause reaction

- Inhibits aldehyde hydrogenase
- Target dosing: 250-500mg PO/day
- Side effects: neuropathy, dermatitis
- Avoid if severe myocardial disease, history of psychosis, advanced liver disease
- Abstinence

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

Acamprosate

Dose reduce if CrCl <50mL/min

- GABA and glutamate modulator
- Target dosing:666mg PO TID
- Side effects: diarrhea
- Avoid if CrCl <30 mL/min
- Abstinence

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

Medications for Alcohol Use Disorder-FDA Approved

Medication	Disulfiram	Naltrexone	Acamprosate
Mechanism of Action	inhibit aldehyde dehydrogenase	mu receptor antagonist	GABA and glutamate modulator
Dosing	250-500mg PO daily	50mg PO daily /380mg IM monthly	666mg PO TID
Side Effects	neuropathy, dermatitis	nausea, headache, dizziness, injection site rxn	diarrhea
Contraindications	Advanced liver disease	Opioid use, Child-Pugh Class C cirrhosis	CrCl <30ml/min
Evidence	Supervised abstinence	Reduction in Heavy Drinking	Abstinence

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

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Gabapentin

Beneficial for post acute withdrawal symptoms

- GABA enhancer
- Target dosing:600mg PO TID
- Side effects: dizziness, sedation, cognitive impairment
- Avoid if CrCl <30 mL/min
- Reduces heavy drinking and return to any drinking

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

Topiramate

Consider as off label for Cocaine Use Disorder + Alcohol Use Disorder

- GABA enhancer
- Target dosing: 300mg/day
- Side effects: Paresthesia, anorexia, difficulty concentrating, renal stones, visual problems
- Reduces heavy drinking, drinks/drinking day and drinking days

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

Baclofen

- GABA agonist
- Target dosing: 30-300mg/day
- Side effects: Drowsiness, dizziness
- Reduces return to any drinking

ACG recommendation for compensated alcohol associated liver disease

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

Medications for Alcohol Use Disorder-Off Label

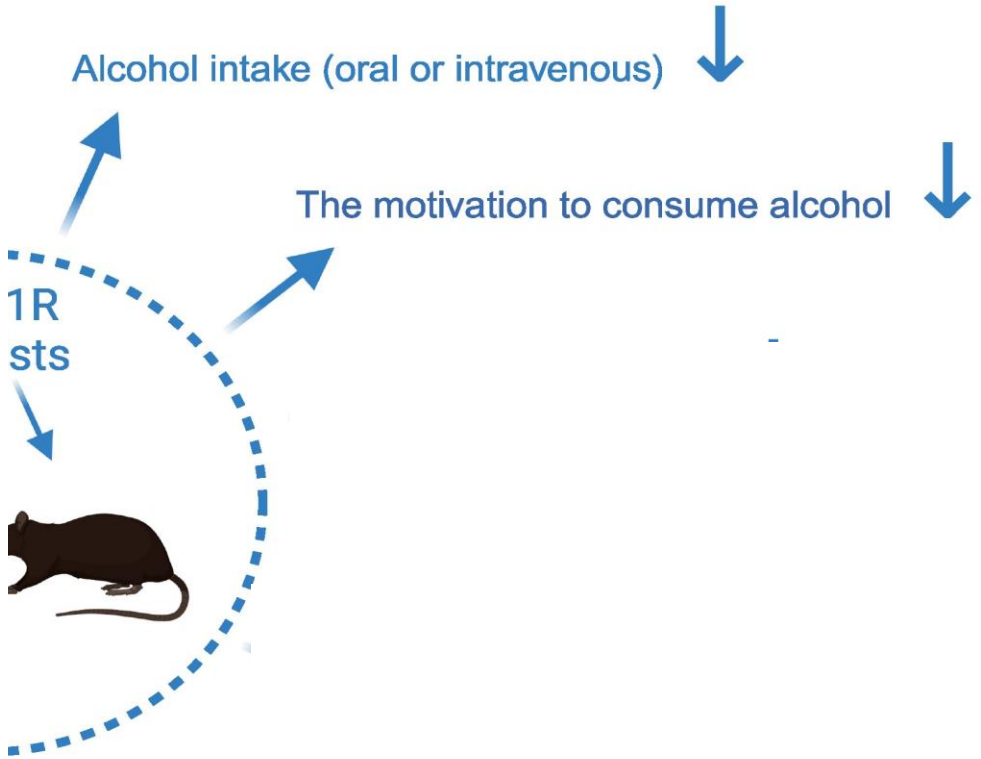
Medication	Topiramate	Gabapentin	Baclofen
Mechanism of Action	Enhancing GABA	Enhancing GABA	GABA agonist
Dosing	300mg/day PO	1800mg/day PO	30-300mg PO daily
Side Effects	Paresthesia, anorexia, difficulty concentrating, renal stones, visual problems	cognitive impairment, dizziness	drowsiness, dizziness
Evidence	Reduction in heavy drinking, drinks/drinking day and drinking days	Reduction in Return to heavy drinking and return to any drinking	Reduction in return to any drinking

SAMHSA TIP 63 (2021)

McPheeters et al Agency for Healthcare Research and Quality (US); 2023

Emerging Therapies: Glucagon-like peptide 1 receptor agonists

Animal Studies



References:Hendershot CS, Bremmer MP, Paladino MB, et al. Once-Weekly Semaglutide in Adults With Alcohol Use Disorder: A Randomized Clinical Trial. JAMA Psychiatry. 2025;82(4):395–405. doi:10.1001/jamapsychiatry.2024.4789

Elisabet Jerlhag, GLP-1 Receptor Agonists: Promising Therapeutic Targets for Alcohol Use Disorder, Endocrinology, Volume 166, Issue 4, April 2025, bqaf028, https://doi.org/10.1210/endocr/bqaf028

Emerging Therapies: Glucagon-like peptide 1 receptor agonists

Clinical Studies

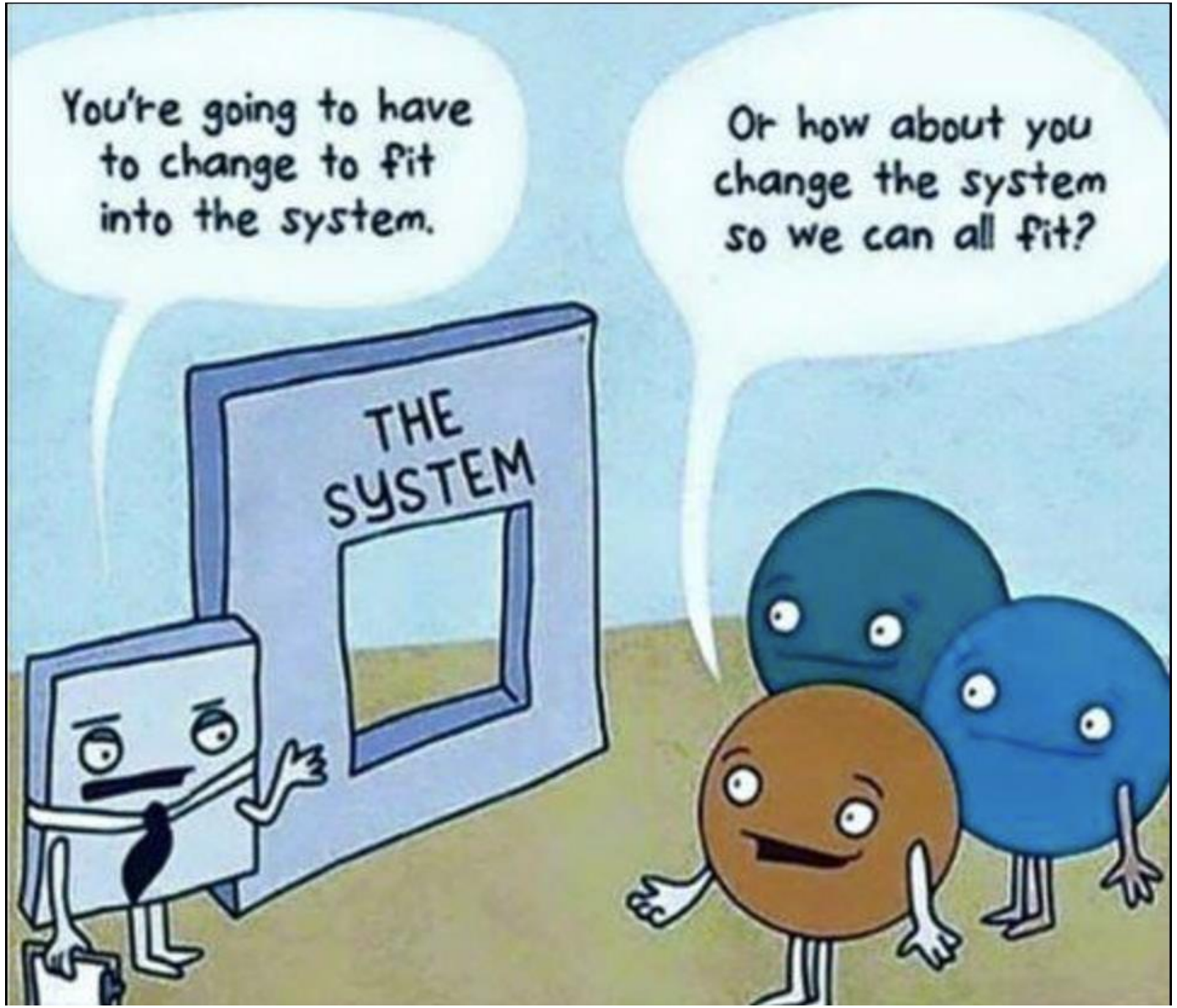
References:Hendershot CS, Bremmer MP, Paladino MB, et al. Once-Weekly Semaglutide in Adults With Alcohol Use Disorder: A Randomized Clinical Trial. JAMA Psychiatry. 2025;82(4):395–405. doi:10.1001/jamapsychiatry.2024.4789

Elisabet Jerlhag, GLP-1 Receptor Agonists: Promising Therapeutic Targets for Alcohol Use Disorder, Endocrinology, Volume 166, Issue 4, April 2025, bqaf028, https://doi.org/10.1210/endocr/bqaf028

Addressing Barriers and Facilitators of AUD goals

- Hospitalization is an actionable moment
- Address social barriers to facilitate AUD goals
- Provide accessible and language-concordant services to decrease barriers to achieving AUD goals

Carson MS, Haro-Ramos AY, López-Solano N, et al. *Ann Med*. 2025;



Credit: Sara Zimmerman

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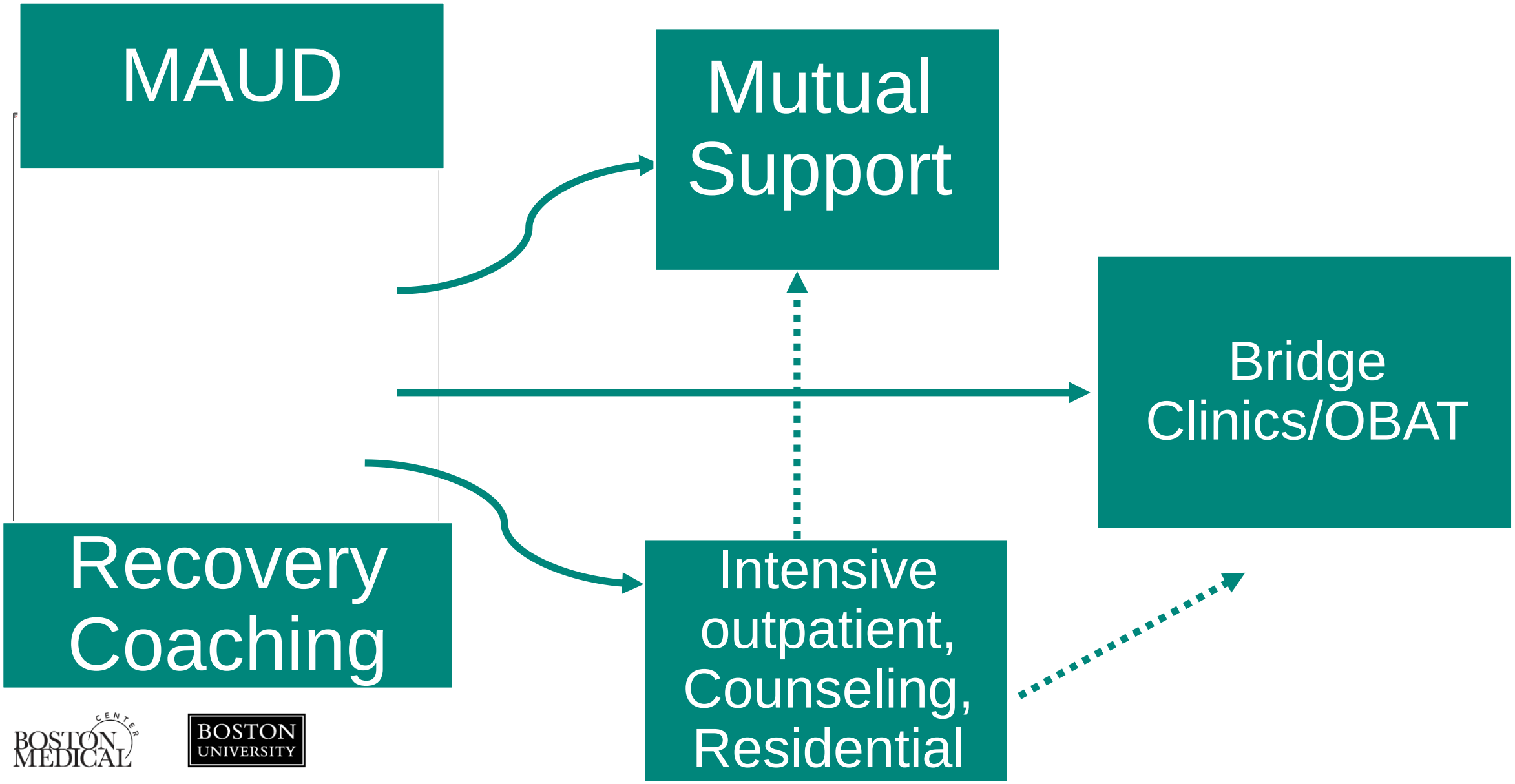
Hall et al *J Subst Abuse Treat*. 2022
Skewes et al *Am J Community Psychol*. 2019

SUD Care Continuum



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Faster Paths to Treatment (Bridge Clinic)

- Outpatient alcohol withdrawal management
- Medications for Alcohol Use Disorder (Naltrexone PO/IM, Acamprosate and Disulfiram)
- HIV, HCV and other STIs Screening
- Referral to higher level of care

Scan for access for full text

Peterkin et al JAM 2025

OBAT SERVICE FOR AUD

ALCOHOL RECOVERY REWARDS PROGRAM

What is it?

A contingency management-based program for patients with alcohol use disorder (AUD)

What is the goal?

Engage patients with AUD in medical care and community supports to promote wellness.

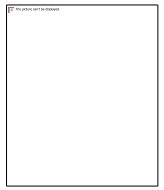
Who is eligible?

Patients who may be eligible must have:

- Diagnosis of alcohol use disorder
- Active alcohol use or alcohol use in the last year
- Enrolled in OBAT or receive primary care in GIM

How it works?

OBAT nurse-care managers will work with patients to develop patient-centered goals for planned weekly engagement activities in alcohol treatment and community supports.



Community Engagement (5 points)

EX: Peer groups (AA, smart recovery); meeting with a recovery coach; local recovery events

OBAT Engagement (5 points)

EX: OBAT visit with a nurse, provider, case manager, etc. or group

Bonuses

EX: OBAT and community supports each week leads to bonuses

Take Home Points

- Alcohol related deaths are preventable
- Hospitalization is a key touch point for people with AUD
- Prescribe a medication for alcohol use disorder

Additional Resources

ASAM Guidelines

British Columbia Center of Substance Use

NSW Withdrawal guidelines

PCSS-MAUD

Ambulatory alcohol withdrawal

Treating alcohol use disorder

AUD Meds

AUD Meds 2.0

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