Assessment and Treatment of Alcohol Withdrawal

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ASAM Annual Conference 2025

Learning Objectives

- Define Alcohol Withdrawal Syndrome (AWS) and describe symptoms.
- Examine the neurobiological mechanisms underlying AWS.
- Recognize the clinical signs, symptoms, and risk factors for AWS.
- Determine the appropriateness of outpatient or hospital management for a given patient with AWS.
- Create a comprehensive treatment plan and patient-centered goals for individuals with alcohol use disorder.

Disclosures

- No disclosures

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What is PCSS-MAUD?

- Aims to increase healthcare professionals' capacity to identify, prevent, and treat alcohol use disorder

- Provides free training, education, and consultative services
  - Live webinars and case-based discussions
  - Mini videos
  - Online modules
  - Digital resources (e.g., infographics, factsheets, toolkits)
  - Enduring trainings
  - Mentoring
  - Consultative services

Case discussion – Ms. L

- 49-year-old college professor
- During her annual exam, screens positive on the NIAAA SASQ
- Admits she wants to stop drinking
- Reports drinking 3+ glasses of wine daily
- Last drink was around 11 pm last night
- Hasn't gone more than 24 hours without drinking in nearly six months
- No tobacco or other substances
- No prior hospitalizations / severe withdrawal symptoms
- No history of liver, kidney, or cardiac disease (aside from HTN)
- Depression?

How would you manage Ms. L's risk of withdrawal?

- Can Ms. L safely withdraw at home, or does she need hospital care? What factors help us decide?
- What medications might be appropriate for managing Ms. L's withdrawal symptoms, and how would you determine the appropriate dosing and frequency?
- What support and treatment options would help Ms. L manage her drinking long-term?

Alcohol withdrawal syndrome

- **Alcohol withdrawal syndrome (AWS)** can occur after an individual suddenly stops or significantly reduces their alcohol consumption
- **More than 50%** of individuals with a history of AUD exhibit symptoms of AWS
- Most hospitalized patients have only mild withdrawal, resolving within 2-7 days of last drink:
  - Mild anxiety
  - Tremors
  - Agitation
  - Nervousness
  - Irritability
  - Insomnia
  - GI symptoms

Cleveland Clinic. Alcohol withdrawal. January 25, 2024. Accessed October 29, 2024. https://my.clevelandclinic.org/health/diseases/alcohol-withdrawal

Who is at risk for alcohol withdrawal?

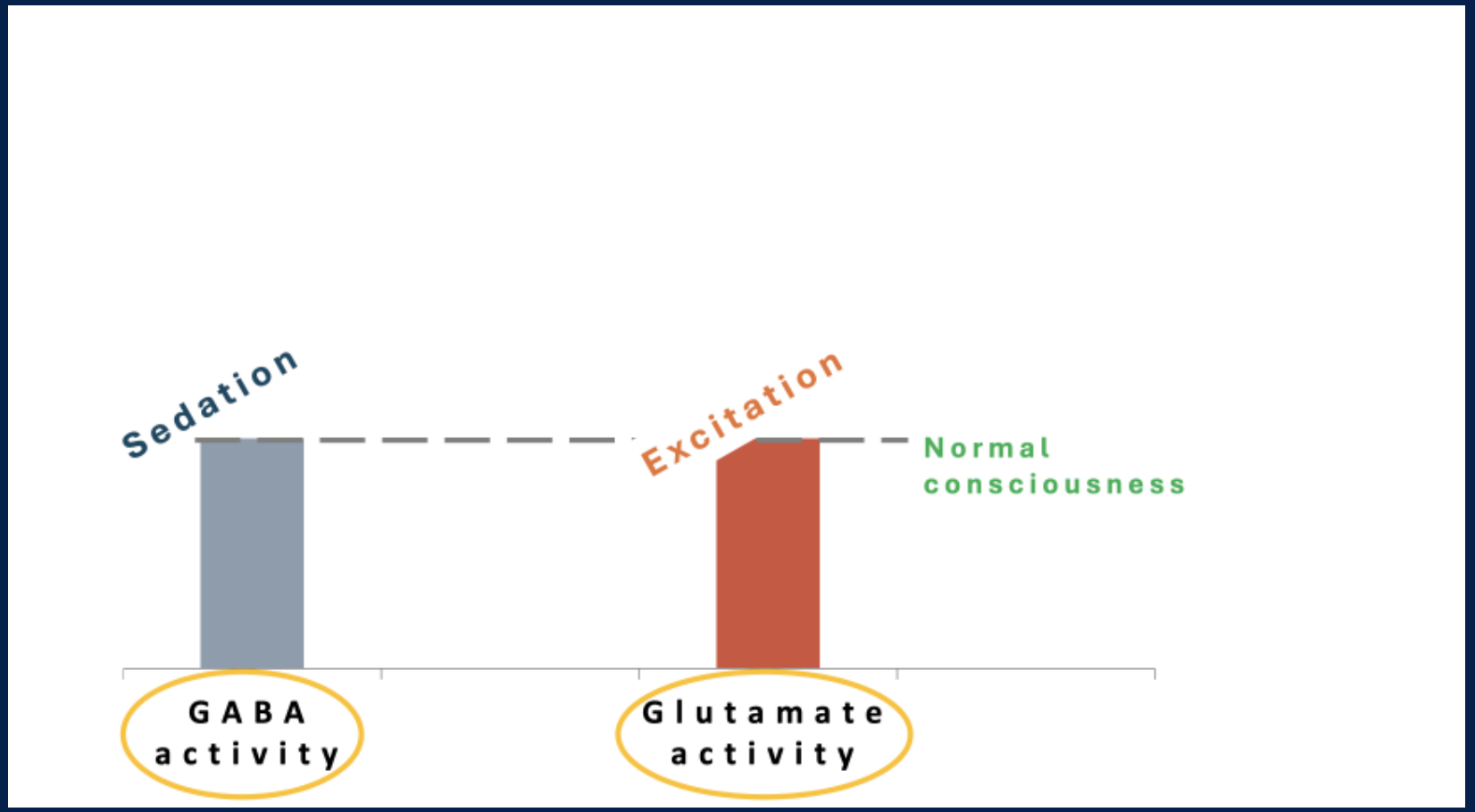
- Alcohol consumption of 4+ drinks daily for > 4 weeks
- Pattern of binge drinking (4+ drinks in 1 sitting) > 3 times a week
- Prior symptoms of alcohol withdrawal → *"Have you ever gotten the shakes when you stop drinking?"*
- Prediction of Alcohol Withdrawal Severity Scale **(PAWSS)**
  - Prior episodes of withdrawal?
  - Prior withdrawal seizures?
  - Prior delirium tremens or "DTs"?
  - Prior engagement in rehab or alcoholics anonymous?
  - Black-outs?
  - Combine alcohol with other downers?
  - Use of other drugs?

+4 = LR 174 !

Wood E, Albarqouni L, Tkachuk S, et al. Will this hospitalized patient develop severe alcohol withdrawal syndrome?: The rational clinical examination systematic review. *JAMA*. 2018;320(8):825-833. doi:10.1001/jama.2018.10574

Maldonado JR, Sher Y, Ashouri JF, et al. The "Prediction of Alcohol Withdrawal Severity Scale" (PAWSS): Systematic literature review and pilot study of a new scale for the prediction of complicated alcohol withdrawal syndrome. *Alcohol*. 2014;48(4):375-390. doi:10.1016/j.alcohol.2014.01.004

Simplified neurobiology of alcohol intoxication and withdrawal



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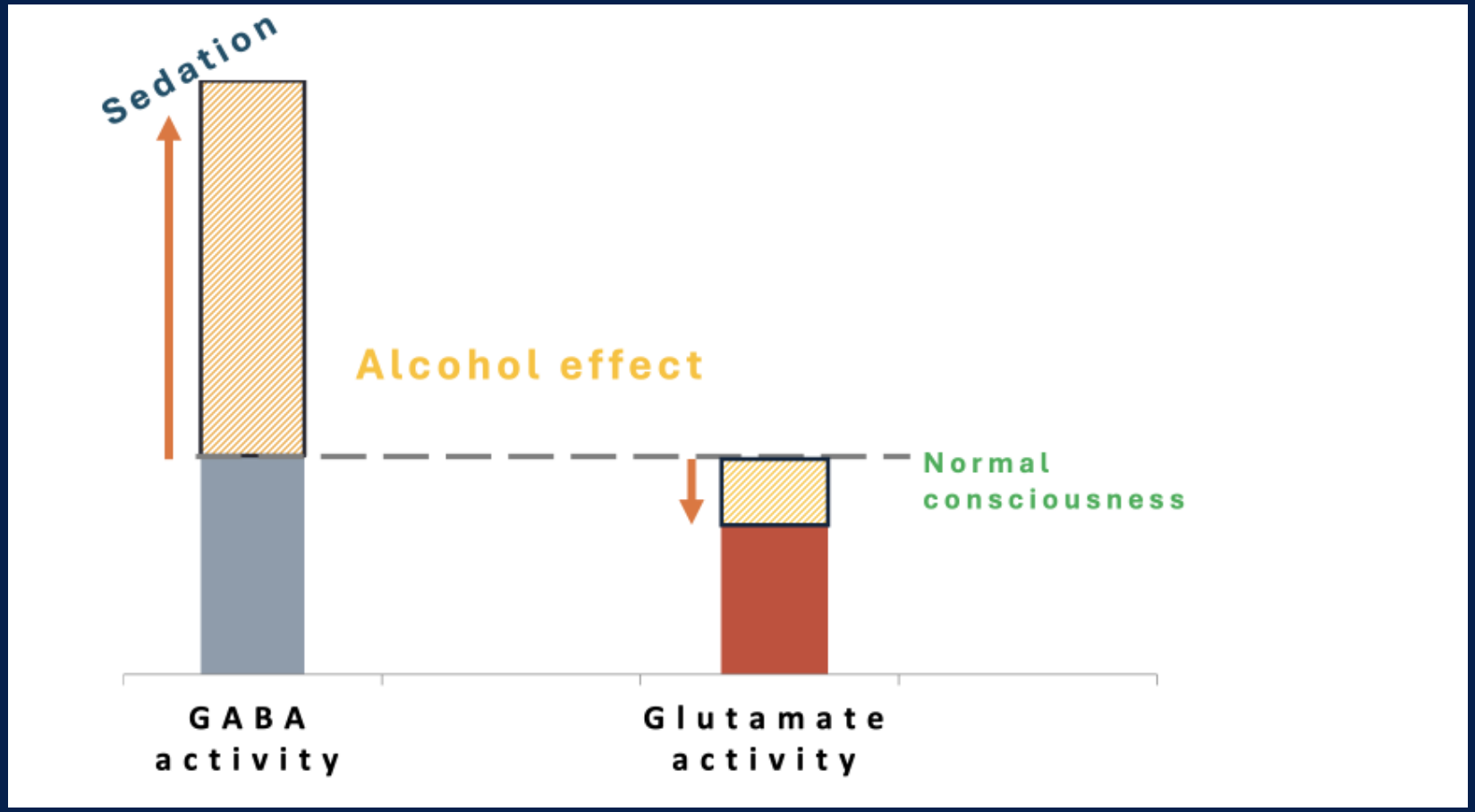

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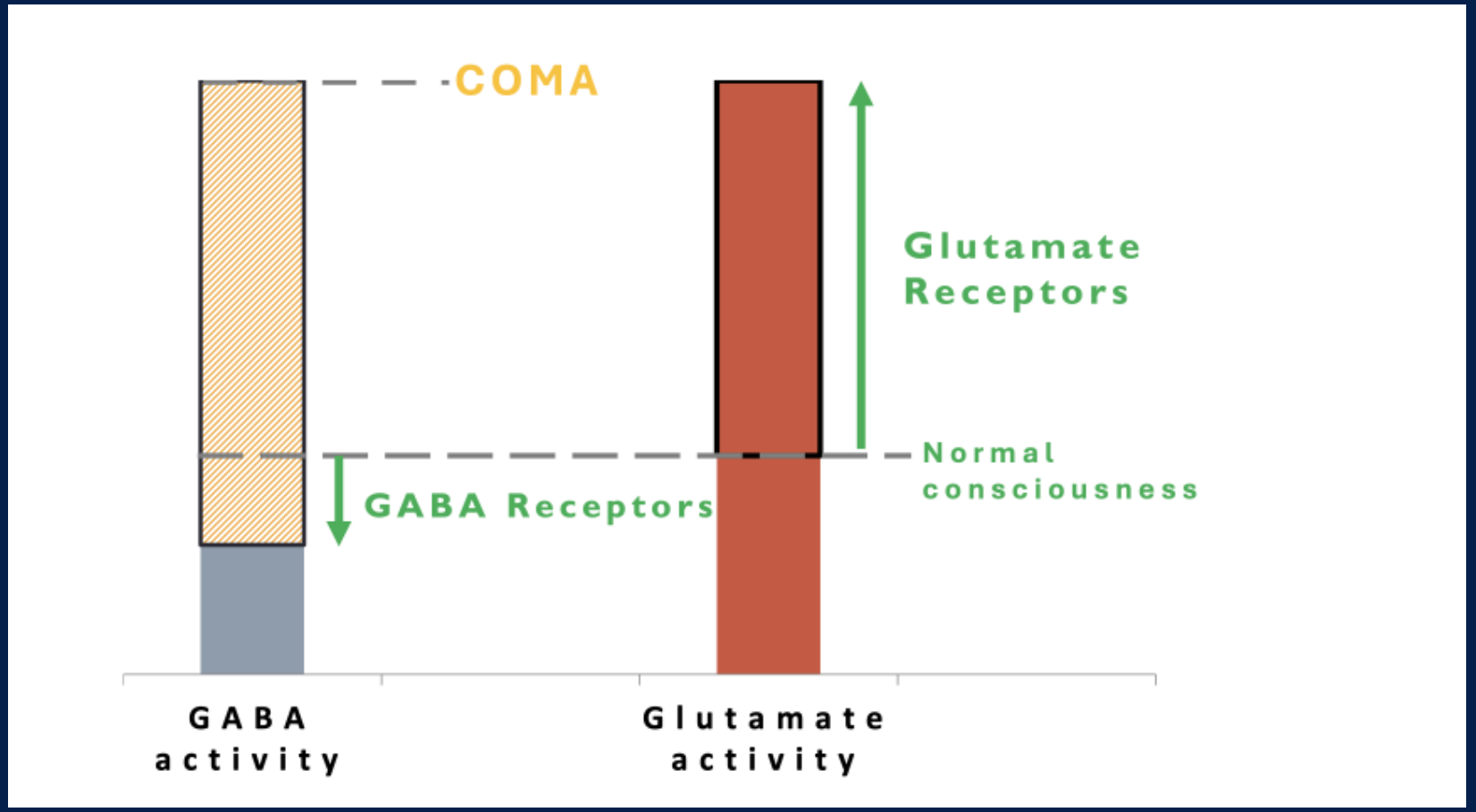

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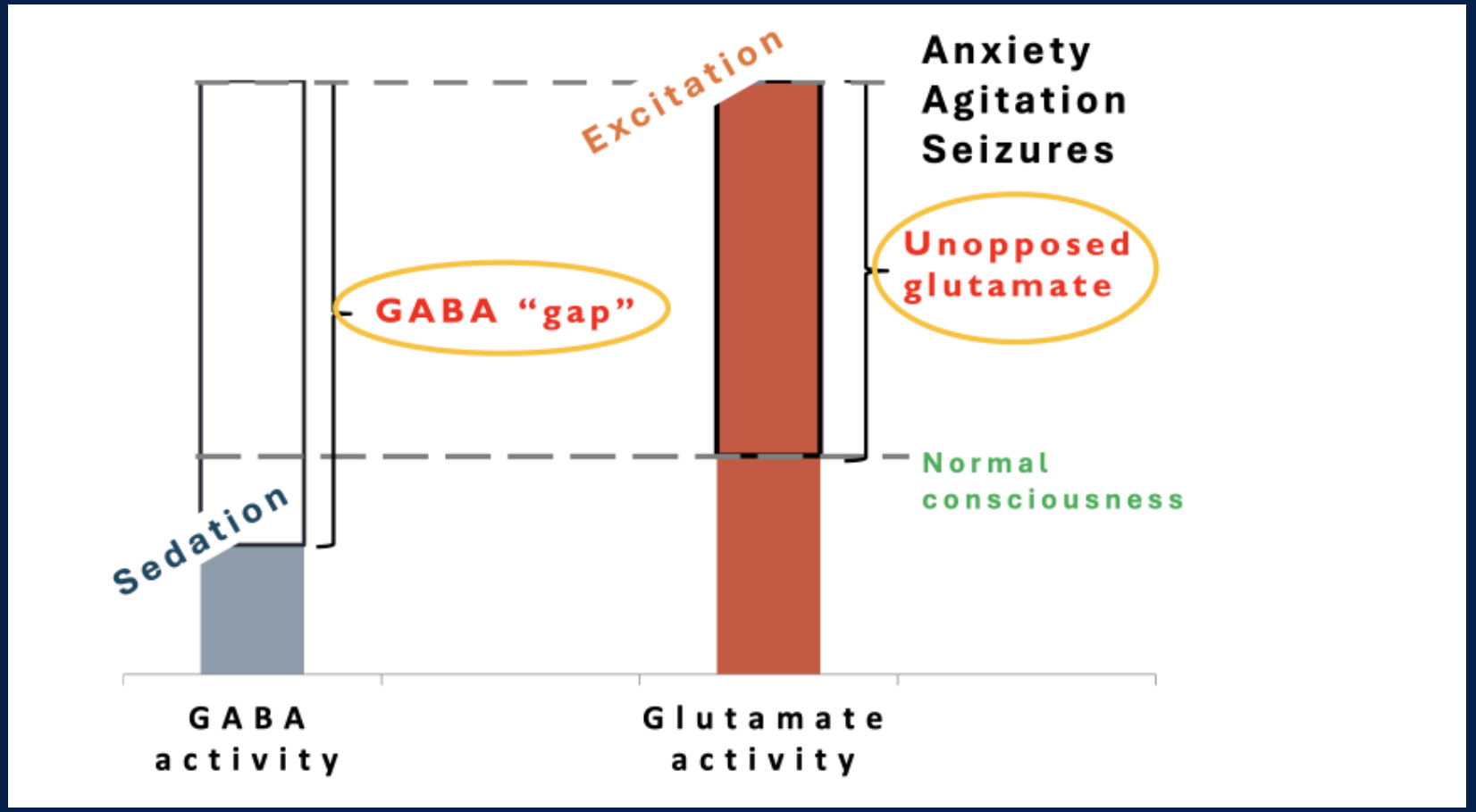

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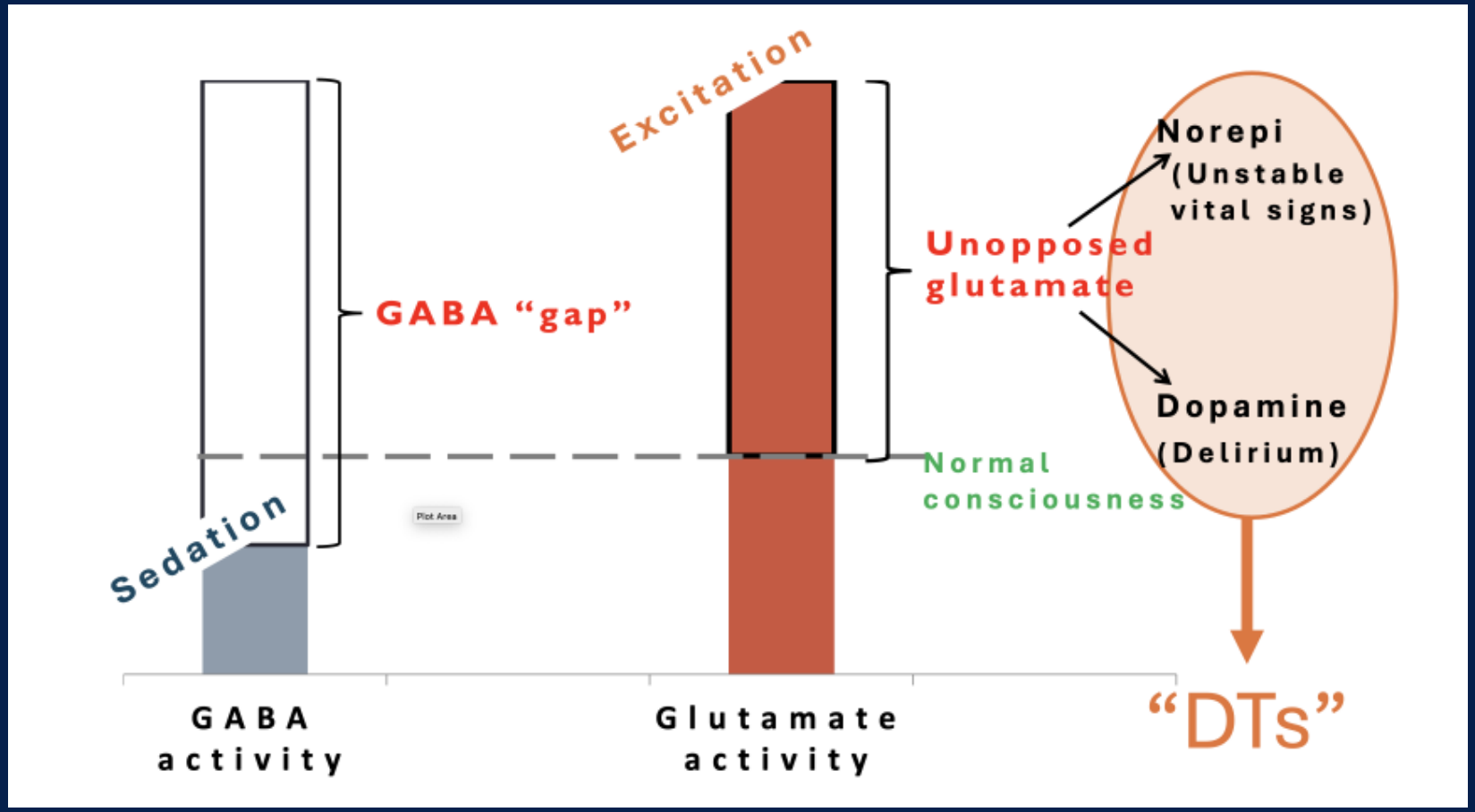

Alcohol withdrawal symptoms

Hyperexcitation: ↓GABA, ↑Glutamate

"GABA gap" symptoms

MINOR WITHDRAWAL	SEIZURE	HALLUCINATIONS	DELIRIUM TREMENS
6 – 36 *hrs from last drink*	6 – 48hrs (early as 2hrs)	12 – 48 hrs	48 – 96hrs
		↓ Dopamine	↓ Norepinephrine
Normal mental status	Generalized tonic clonic	Normal mental status	Disorientation, Agitation
Tremor	Usually singular	Vital signs normal.	Hallucinations
Mild anxiety	May be series of Sz over short period of time	Usually visual.	↑Autonomic activity tachycardia febrile, diaphoresis hypertension
Headache	If recurrent seizures think other cause, and get CT / LP.	Can be auditory, or tactile	Resp Acidosis → ↑pH → Resp Alkalosis
Diaphoresis	Treat with Benzos	Resolves in <48hrs, before DTs start	Lasts 5 – 7 days
Palpitation	If untreated, 1/3 → DT		5% Mortality
Anorexia			
GI upset			
Insomina			

Predicting AWS Risk Profile

- Most powerful predictor = history → prior withdrawal experience
- But what if history is unavailable? → need objective clues next

EXAM FINDINGS	LABORATORY DATA	COMORBIDITIES

Fight-or-flight signs
• Cardiac: tachycardia, hypertension
• Neuro: agitation, hyper-alertness
• General: tremor, diaphoresis
	Evidence of organ toxicity
	• liver toxicity: ↑ AST:ALT ratio
	• bone marrow suppression: ↑ MCV, pancytopenia
	• malnutrition – drinking, not eating
	  • ↓ BUN
	  • ↓ Na, ↓ K, ↓ Mg, ↓ phos
	  • ↑ AG d/t alcoholic ketosis
		Things that ignite stress response
		• Sepsis: twice as likely & double the mortality)
		• Trauma: esp. burns & long bone fractures
		• hepatitis
		• pancreatitis

Assessment of alcohol withdrawal severity

- Differentiating between low vs. high risk profiles
- Identifying patients suitable for outpatient management vs. hospitalization
- Indicators for hospitalization
  - Severe withdrawal (e.g., seizures, delirium tremens)
  - Lack of social support or safe housing
  - Underlying health complications (e.g., chronic organ failure that could be exacerbated)

Benefits of outpatient management

- Patients' preference to be home
- Stigma reduction
- More cost-effective than hospital-based treatment
- Decrease burden on the hospital system

Assessment to determine treatment setting

Clinical Institute Withdrawal Assessment for Alcohol – revised (CIWA-Ar) scale

Clinical Institute Withdrawal Assessment for Alcohol revised	
Symptoms	**Range of scores**
Nausea or vomiting	0 (no nausea, no vomiting) –7 (constant nausea and/or vomiting)
Tremor	0 (no tremor) – 7 (severe tremors, even with arms not extended)
Paroxysmal sweats	0 (no sweat visible) – 7 (drenching sweats)
Anxiety	0 (no anxiety, at ease) – 7 (acute panic states)
Agitation	0 (normal activity) – 7 (constantly trashes about)
Tactile disturbances	0 (none) – 7 (continuous hallucinations)
Auditory disturbances	0 (not present) – 7 (continuous hallucinations)
Visual disturbances	0 (not present) – 7 (continuous hallucinations)
Headache	0 (not present) – 7 (extremely severe)
Orientation/clouding of sensorium	0 (orientated, can do serial additions) – 4 (Disorientated for place and/or person)

Sullivan JT, Sykora K, Schneiderman J, Naranjo CA, Sellers EM. Assessment of alcohol withdrawal: the revised clinical institute withdrawal assessment for alcohol scale (CIWA-Ar). *Addiction*. 1989;84(11), 1353–1357. https://doi.org/10.1111/j.1360-0443.1989.tb00737.x

Prediction of Alcohol Withdrawal Severity Scale (PAWSS)

Maldonado et al, 2015

Part A: Threshold Criteria:

("Y" or "N", no point)

Have you consumed any amount of alcohol (i.e., been drinking) within the last 30 days? OR did the patient have a "+" BAL on admission? _____

IF the answer to either is YES, proceed with test:

Part B: Based on patient interview:

(1 point each)

1. Have you been recently intoxicated/drunk, within the last 30 days? _____
2. Have you ever undergone alcohol use disorder rehabilitation treatment or treatment for alcoholism? (i.e., in-patient or out-patient treatment programs or AA attendance) _____
3. Have you ever experienced any previous episodes of alcohol withdrawal, regardless of severity? _____
4. Have you ever experienced blackouts? _____
5. Have you ever experienced alcohol withdrawal seizures? _____
6. Have you ever experienced delirium tremens or DT's? _____
7. Have you combined alcohol with other "downers" like benzodiazepines or barbiturates, during the last 90 days? _____
8. Have you combined alcohol with any other substance of abuse, during the last 90 days? _____

Part C: Based on clinical evidence:

(1 point each)

9. Was the patient's blood alcohol level (BAL) on presentation ≥ 200? _____
10. Is there evidence of increased autonomic activity? (e.g., HR > 120 bpm, tremor, sweating, agitation, nausea) _____

Total Score: _____

Notes: Maximum score = 10. This instrument is intended as a SCREENING TOOL. The greater the number of positive findings, the higher the risk for the development of AWS.
A score of ≥ 4 suggests HIGH RISK for moderate to severe (complicated) AWS; prophylaxis and/or treatment may be indicated.

Maldonado JR, Sher Y, Ashouri JF, Hills-Evans K, Swendsen H, Lolak S, Miller AC. The "prediction of alcohol withdrawal severity scale" (PAWSS): Systematic literature review and pilot study of a new scale for the prediction of complicated alcohol withdrawal syndrome. *Alcohol*. 2014;48(4), 375–390. https://doi.org/10.1016/j.alcohol.2014.01.004

Outpatient management of alcohol withdrawal

- Medications for ambulatory management
  - Diazepam, Chlordiazepoxide, and Gabapentin
- Protocol
  - A 4-day taper regimen based on severity
- Ensure regular follow-ups
  - Return to ED for worsening symptoms or failure to improve

Outpatient treatment options

Outpatient	
Benzodiazepine fixed dose	Day 1- diazepam 10 mg four times daily Day 2 - diazepam 10 mg three times daily Day 3 - diazepam 10 mg two times daily Day 4 - diazepam 10 mg one time daily Additional PRN doses provided as well
Gabapentin fixed dose	Day 1 - gabapentin 300 mg every 6 h Day 2 - gabapentin 300 mg every 8 h[a] Day 3 - gabapentin 300 mg every 12 h Day 4 - gabapentin 300 mg daily Additional PRN dose available as well

Cohen SM, Alexander RS, Holt SR. The spectrum of alcohol use: Epidemiology, diagnosis, and treatment. *Medical Clinics of North America.* 2022;106(1), 43–60. https://doi.org/10.1016/j.mcna.2021.08.003

Outpatient management: Benzodiazepines v. gabapentin

- Safety in preventing severe withdrawal
- Sedation level
- Attenuation of the "kindling" phenomenon
- Risk level of the patient
- Severity of current withdrawal symptoms

Benefits of inpatient management

- May be necessary to ensure patient safety
  - More regular monitoring
  - Management of potentially life-threatening symptoms
  - Prevent deadly outcomes

Inpatient treatment options

Inpatient	Benzodiazepine symptom triggered	Diazepam 10 mg q2-4 hours PRN CIWA >10 • if the history of complicated withdrawal add diazepam 10 mg q6 hours until using minimal PRNs then decrease to 5 mg q6hrs then stop
	Phenobarbital front loading	10 mg/kg[b] ideal body weight IV/IM followed by up to 5–7 d oral taper (example taper 65 mg BID x2d then 32 mg BID x2d) • can get additional doses of 130–260 mg IV/IM PRN for continued symptoms

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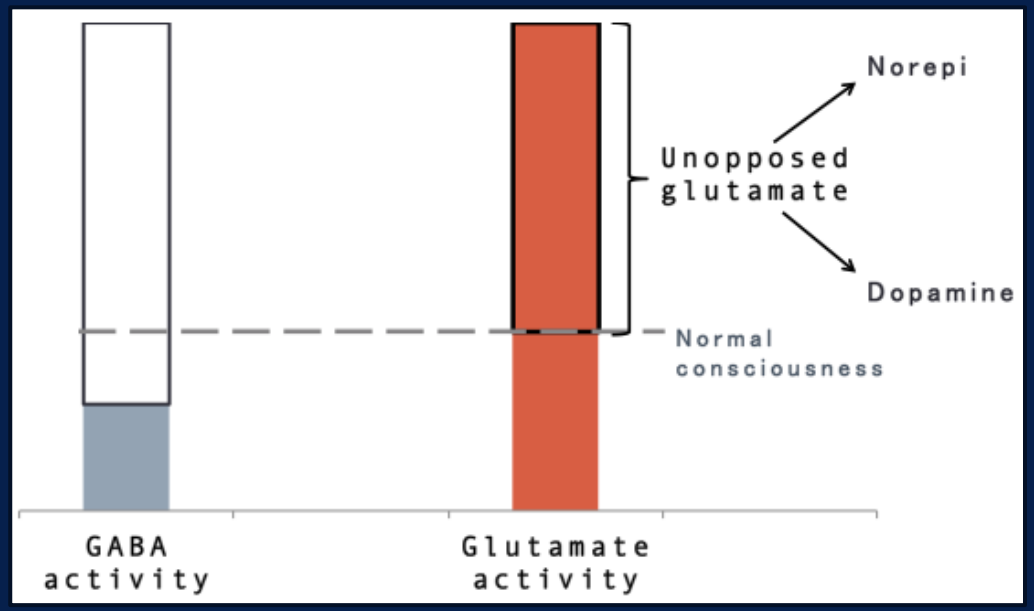
Treat based on risk



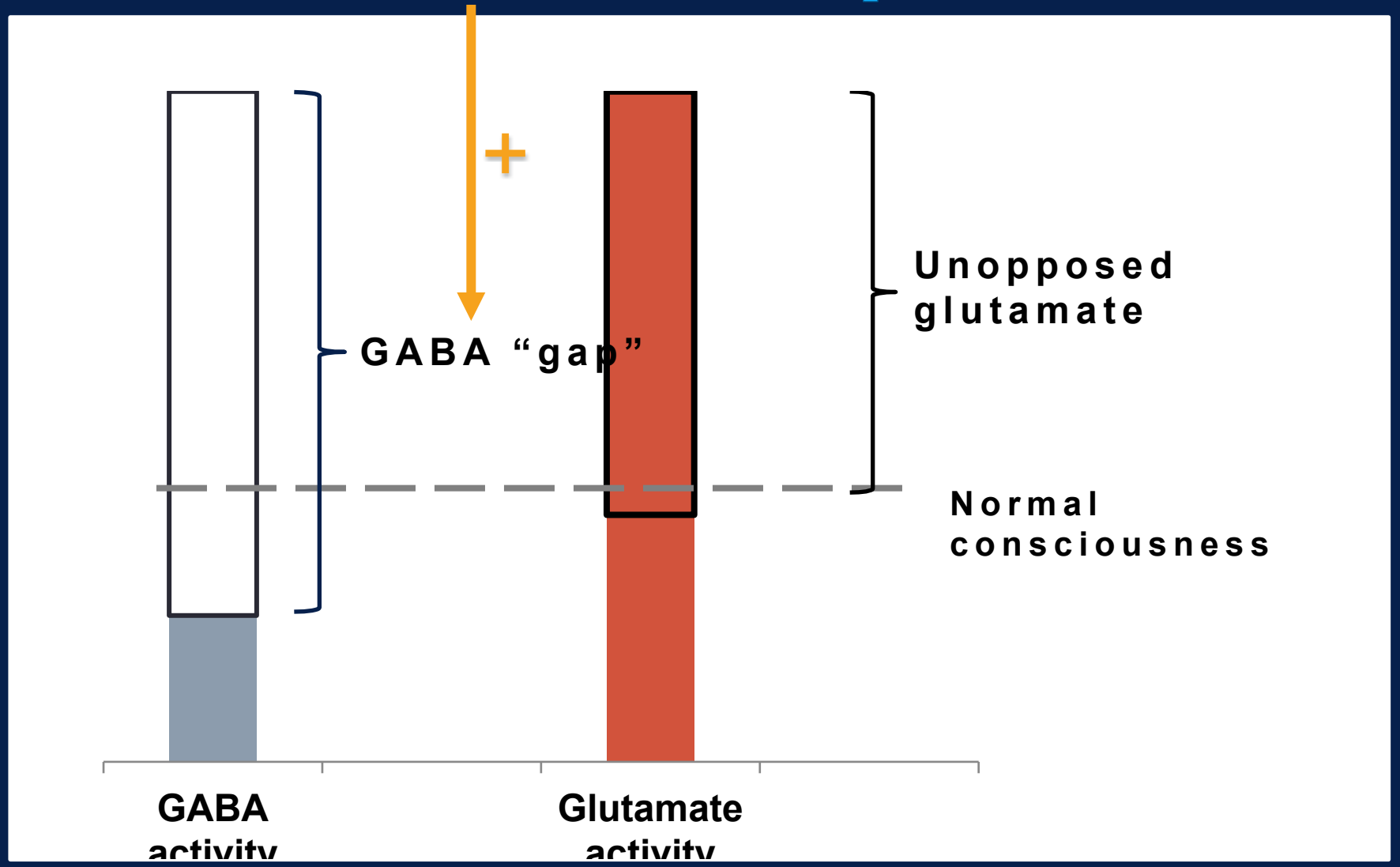
LOW-risk

GABA-monotherapy likely adequate

HIGH-risk

GABA-monotherapy may be inadequate; consider glutamate inhibition

Benzodiazepines



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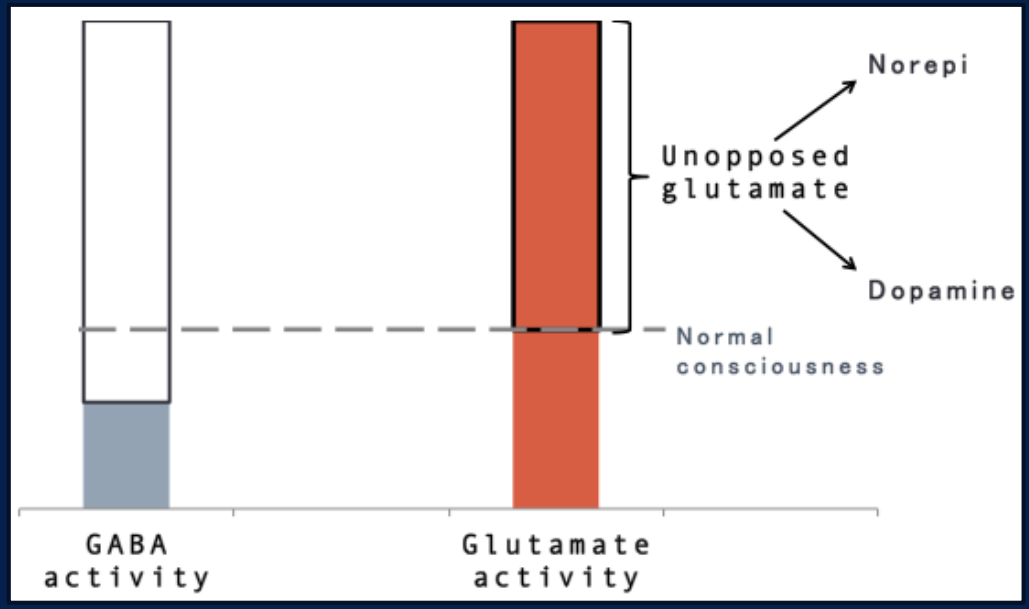

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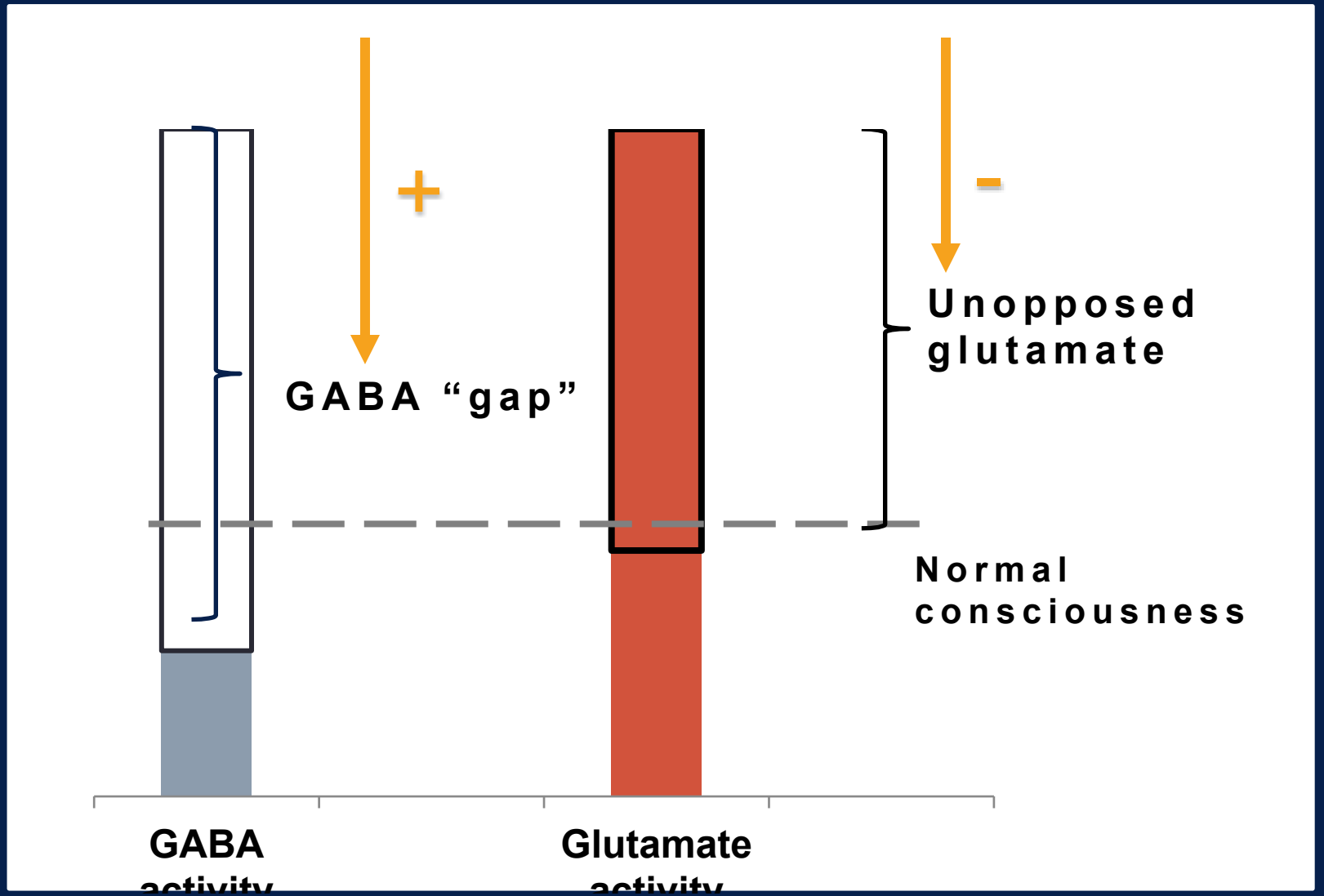
Phenobarbital



Phenobarbital

- Works reliably at low doses
- Does not cause delirium
- Growing literature

Phenobarbital approach

- **Loading dose** – DAY 1
  - 15mg/kg – high risk
  - 10mg/kg – low risk
- **Maintenance dose** – DAY 2-3
  - 1mg/kg BID or TID

Phenobarbital approach

- 130mg IV Q 15 min until calm
- Caution in severe liver disease
- Toxicity occurs at 30mg/kg (> 2 g)

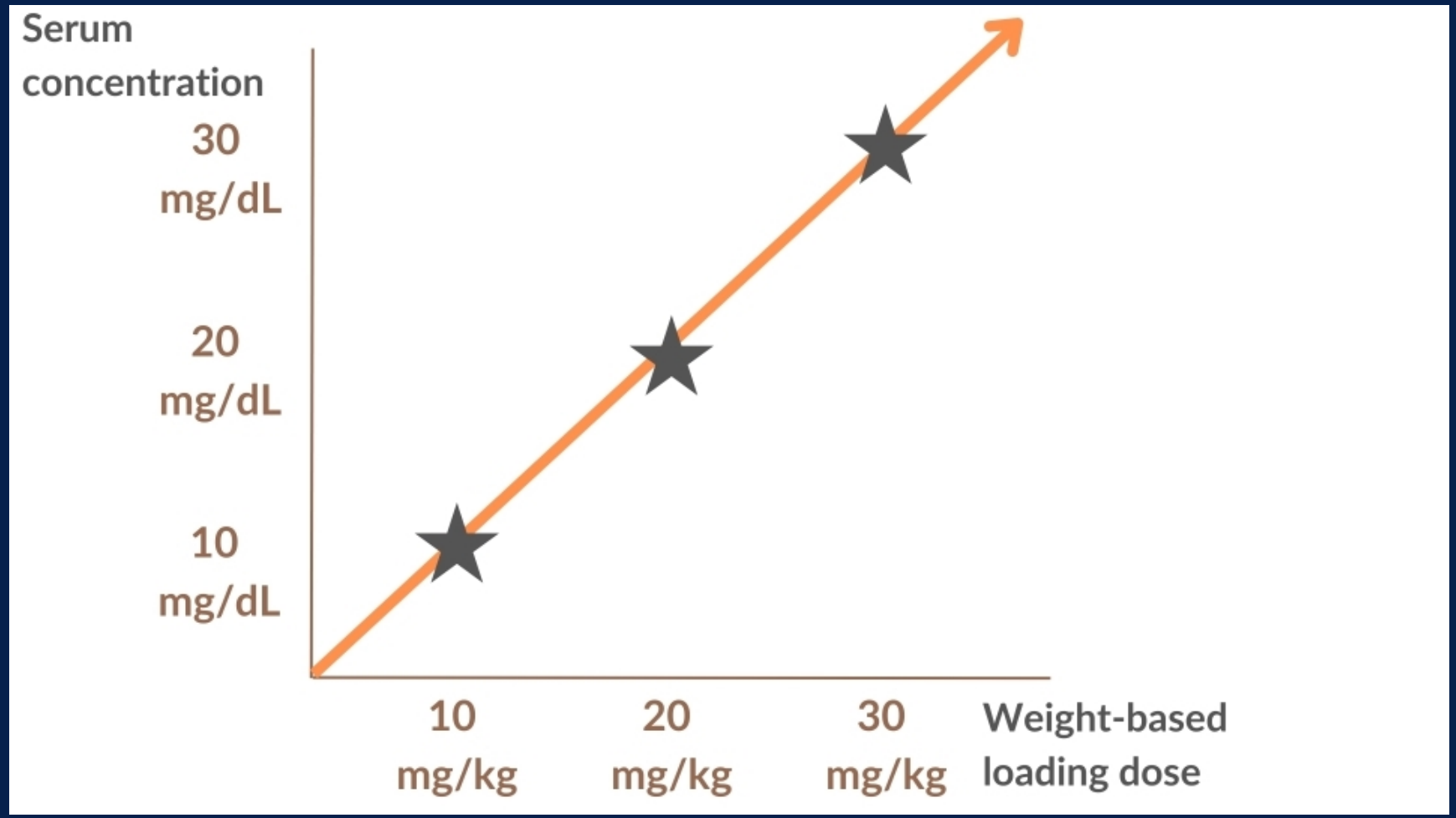
Therapeutic level?

"The salt in the soup"

Phenobarbital levels

- AWS serum levels: 15 - 25 mg/dL
- Epilepsy serum levels: 20s – 30s mg/DL
- Toxic serum levels: > 40 mg/dL

Linear pharmacokinetics



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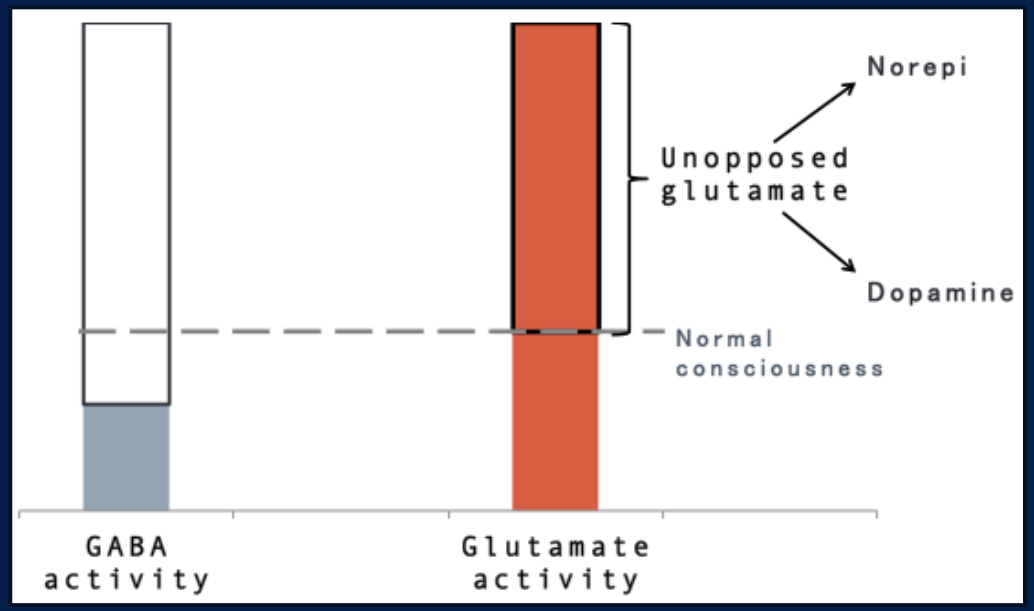

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Electrolyte and vitamin management

- Alcohol Withdrawal Complications: Electrolyte imbalances and vitamin deficiencies impact outcomes.
- Electrolytes: Monitor and replete; refeeding syndrome risk.
- Vitamin B1 Deficiency: Can cause Wernicke's and Korsakoff; prevent with treatment.
- Thiamine: Administer 100 mg IV daily; 200-500 mg for Wernicke's.

Case discussion – Ms. L

- 49-year-old college professor
- During her annual exam, screens positive on the NIAAA SASQ
- Admits she wants to stop drinking
- Reports drinking 3+ glasses of wine daily
- Last drink was around 11 pm last night
- Hasn't gone more than 24 hours without drinking in nearly six months
- No tobacco or other substances
- No prior hospitalizations / severe withdrawal symptoms
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- Depression?

How would you manage Ms. L's risk of withdrawal?

- Can Ms. L safely withdraw at home, or does she need hospital care? What factors help us decide?
- What medications might be appropriate for managing Ms. L's withdrawal symptoms, and how would you determine the appropriate dosing and frequency?
- What support and treatment options would help Ms. L manage her drinking long-term?

Treatment plan and patient-centered goals

- Treatment should be person-centered
- The goal doesn't have to be abstinence
- Alcohol and risk reduction = treatment
  - Improved health
  - Enhanced quality of life
  - Decreased mortality risk
- Address underlying reasons for drinking
  - Trauma
  - Mental health
  - Physical health
  - Life stressors

Reducing risks and harms

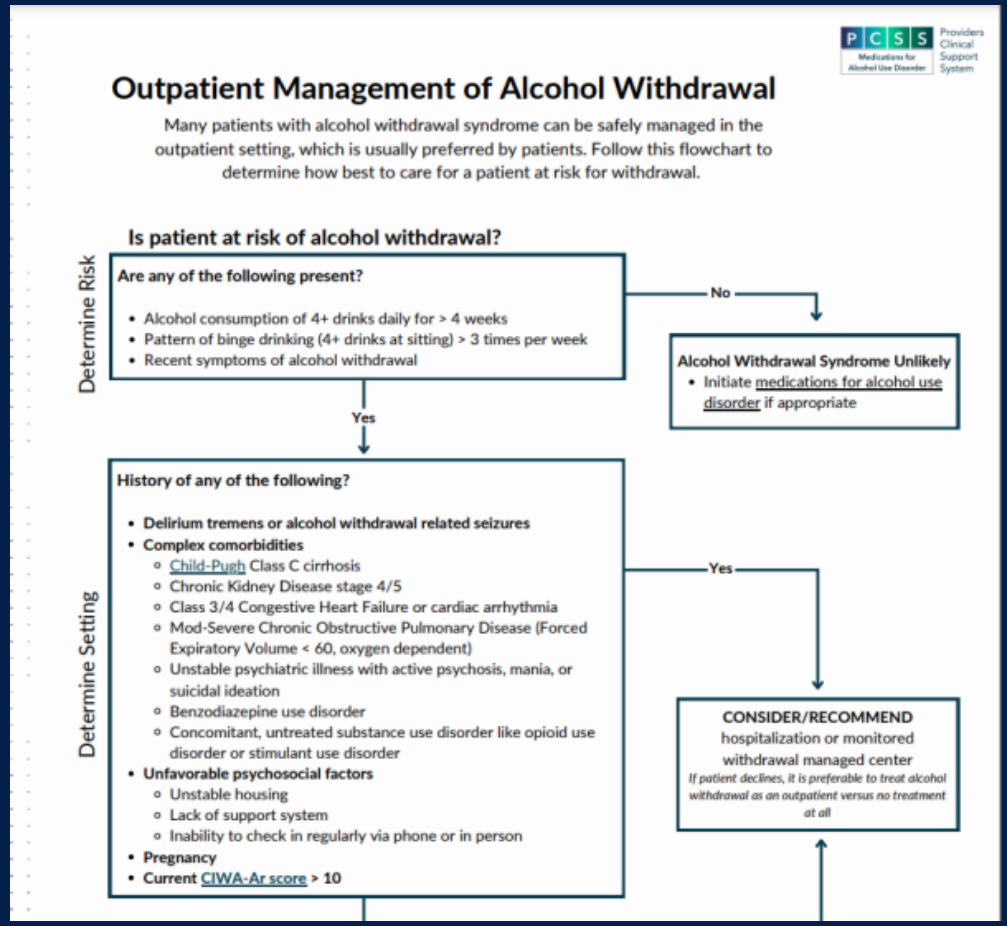
- Offer a range of alternatives to help individuals reduce the harms associated with alcohol use
  - Stay Hydrated
  - Plan Your Transportation Ahead of Time
  - Drink in a Safe Space
  - Try to Eat Before Consuming Alcohol
  - Plan Your Drinks Ahead of Time

Most importantly

- Withdrawal management (sometimes called detox) is not treatment!
- Alcohol withdrawal is an acute complication of a chronic medical condition
- Treating the acute complication does not treat the underlying condition

Resources

- Online module: Assessment and Management of Alcohol Withdrawal
- Infographic: Outpatient Management of Alcohol Withdrawal
- Enduring Training: Who is at Risk of Alcohol Withdrawal? Management in Ambulatory Care



PCSS Providers Clinical Support System
Medications for Alcohol Use Disorder

Outpatient Management of Alcohol Withdrawal

Many patients with alcohol withdrawal syndrome can be safely managed in the outpatient setting, which is usually preferred by patients. Follow this flowchart to determine how best to care for a patient at risk for withdrawal.

Determine Risk

Is patient at risk of alcohol withdrawal?

Are any of the following present?

- Alcohol consumption of 4+ drinks daily for > 4 weeks
- Pattern of binge drinking (4+ drinks at sitting) > 3 times per week
- Recent symptoms of alcohol withdrawal

No →

Alcohol Withdrawal Syndrome Unlikely

- Initiate medications for alcohol use disorder if appropriate

Yes ↓

Determine Setting

History of any of the following?

- **Delirium tremens or alcohol withdrawal related seizures**
- **Complex comorbidities**
  - Child-Pugh Class C cirrhosis
  - Chronic Kidney Disease stage 4/5
  - Class 3/4 Congestive Heart Failure or cardiac arrhythmia
  - Mod-Severe Chronic Obstructive Pulmonary Disease (Forced Expiratory Volume < 60, oxygen dependent)
  - Unstable psychiatric illness with active psychosis, mania, or suicidal ideation
  - Benzodiazepine use disorder
  - Concomitant, untreated substance use disorder like opioid use disorder or stimulant use disorder
- **Unfavorable psychosocial factors**
  - Unstable housing
  - Lack of support system
  - Inability to check in regularly via phone or in person
- **Pregnancy**
- **Current CIWA-Ar score > 10**

Yes →

CONSIDER/RECOMMEND
hospitalization or monitored withdrawal managed center
If patient declines, it is preferable to treat alcohol withdrawal as an outpatient versus no treatment at all

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PCSS Providers Clinical Support System
Medications for Alcohol Use Disorder

Q and A

Wrap-up

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Please complete this survey:
https://ttc-gpra.org/P?s=994830