

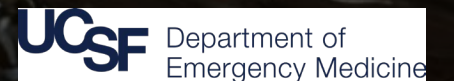
Optimizing ED Management of Alcohol Withdrawal: Pearls and Pitfalls

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CALIFORNIA POISON CONTROL CENTER – SF DIVISION





Disclosures

None



HR 134
BP 161/112
T 37.4
RR 21






Diaphoretic
Tremulous
Restless
Hallucinations




EtOH 51
Lactate 4.4
Bicarb 15
Anion Gap 22





Quantity	Ethanol status	Neuronal effect		Clinical effect
	Naïve-sober	 Baseline inhibition	 Baseline excitation	Baseline normal

 = GABA receptor with α_1 subunit

 = GABA receptor with α_4 subunit

 = NMDA receptor

 = Ethanol

Alcohol Withdrawal Syndrome



- Clinical diagnosis

CIWA?

<p>Tactile disturbances Ask, 'Have you any itching, pins and needles sensations, any burning, any numbness, or do you feel bugs crawling on or under your skin?'</p>	<table border="1"> <thead> <tr> <th>None</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>Very mild itching, pin and needles, burning, or numbness</td> <td>+1</td> </tr> <tr> <td>Mild itching, pin and needles, burning, or numbness</td> <td>+2</td> </tr> <tr> <td>Moderate itching, pin and needles, burning, or numbness</td> <td>+3</td> </tr> </tbody> </table>	None	0	Very mild itching, pin and needles, burning, or numbness	+1	Mild itching, pin and needles, burning, or numbness	+2	Moderate itching, pin and needles, burning, or numbness	+3								
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<p>Headache/fullness in head Ask 'Does your head feel different? Does it feel like there is a band around your head?' Do not rate for dizziness or lightheadedness. Otherwise, rate 'severity.'</p>	<table border="1"> <thead> <tr> <th>Not Present</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>Very mild</td> <td>+1</td> </tr> <tr> <td>Mild</td> <td>+2</td> </tr> <tr> <td>Moderate</td> <td>+3</td> </tr> <tr> <td>Moderately severe</td> <td>+4</td> </tr> <tr> <td>Severe</td> <td>+5</td> </tr> <tr> <td>Very severe</td> <td>+6</td> </tr> <tr> <td>Extremely severe</td> <td>+7</td> </tr> </tbody> </table>	Not Present	0	Very mild	+1	Mild	+2	Moderate	+3	Moderately severe	+4	Severe	+5	Very severe	+6	Extremely severe	+7
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<p>Orientation/clouding of sensorium Ask 'What day is this? Where are you? Who am I?'</p>	<table border="1"> <thead> <tr> <th>Oriented, can do serial additions</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>Can't do serial additions or is uncertain about date</td> <td>+1</td> </tr> <tr> <td>Disoriented for date by no more than 2 calendar days</td> <td>+2</td> </tr> <tr> <td>Disoriented for date by more than 2 calendar days</td> <td>+3</td> </tr> <tr> <td>Disoriented to place or person</td> <td>+4</td> </tr> </tbody> </table>	Oriented, can do serial additions	0	Can't do serial additions or is uncertain about date	+1	Disoriented for date by no more than 2 calendar days	+2	Disoriented for date by more than 2 calendar days	+3	Disoriented to place or person	+4						
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<p>Are you seeing anything that is disturbing to you? Are you seeing things you know are not there?'</p>	<table border="1"> <tbody> <tr> <td>Very mild sensitivity</td> <td>+1</td> </tr> <tr> <td>Mild sensitivity</td> <td>+2</td> </tr> <tr> <td>Moderate sensitivity</td> <td>+3</td> </tr> <tr> <td>Moderately severe hallucinations</td> <td>+4</td> </tr> <tr> <td>Severe hallucinations</td> <td>+5</td> </tr> <tr> <td>Extremely severe hallucinations</td> <td>+6</td> </tr> <tr> <td>Continuous hallucinations</td> <td>+7</td> </tr> </tbody> </table>	Very mild sensitivity	+1	Mild sensitivity	+2	Moderate sensitivity	+3	Moderately severe hallucinations	+4	Severe hallucinations	+5	Extremely severe hallucinations	+6	Continuous hallucinations	+7		
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The ASAM Clinical Practice Guideline on Alcohol Withdrawal Management

→ Recommendation I.6: Alcohol withdrawal severity assessment scales (including the Clinical Instrument Withdrawal Assessment for Alcohol, Revised [CIWA-Ar]) should not be used as a diagnostic tool because scores can be influenced by conditions other than alcohol withdrawal.

Alcohol Withdrawal Syndrome



Cessation or Decrease after chronic or heavy EtOH use



Autonomic hyperactivity

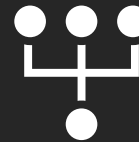
Tremor

Nausea/vomiting

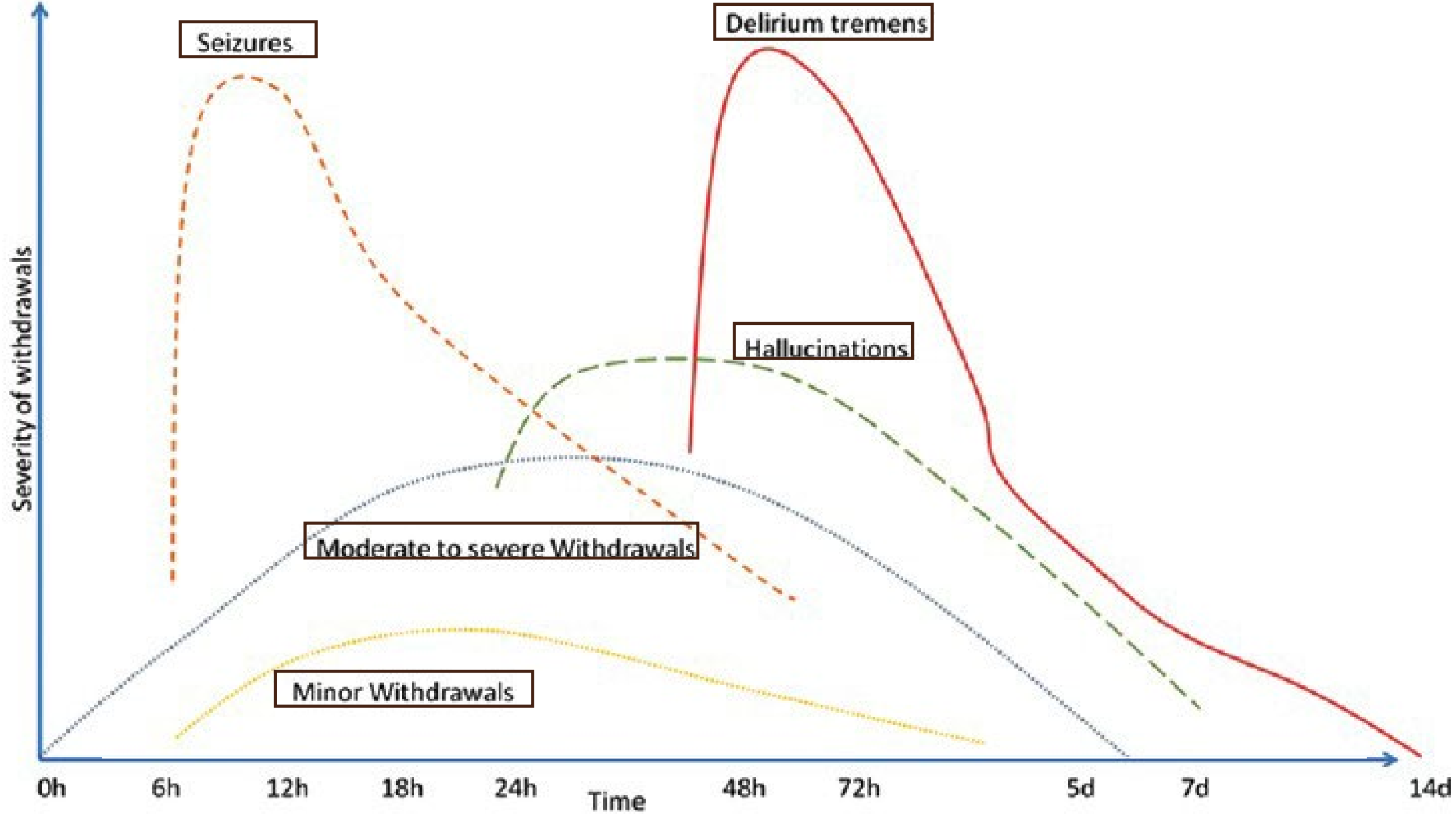
Anxiety or agitation

Hallucinations

Seizures



Not attributable to other causes



Severe Alcohol Withdrawal Syndrome



History of prior severe AWS



Degree of autonomic
hyperactivity



Detectable ethanol

What precipitated the AWS?



- Intercurrent illness?
 - Loss of access to EtOH?
 - Presentation for unrelated concern
-

History & Exam: Peals & Pitfalls



- AWS follows cessation or decrease in EtOH use
- Severe AWS can be predicted by history of similar or elevated EtOH at presentation



- Don't miss intercurrent illness accompanying AWS
 - Not all patients follow the predictable course
 - Don't rely on a scoring system to make the diagnosis
-

Evaluation

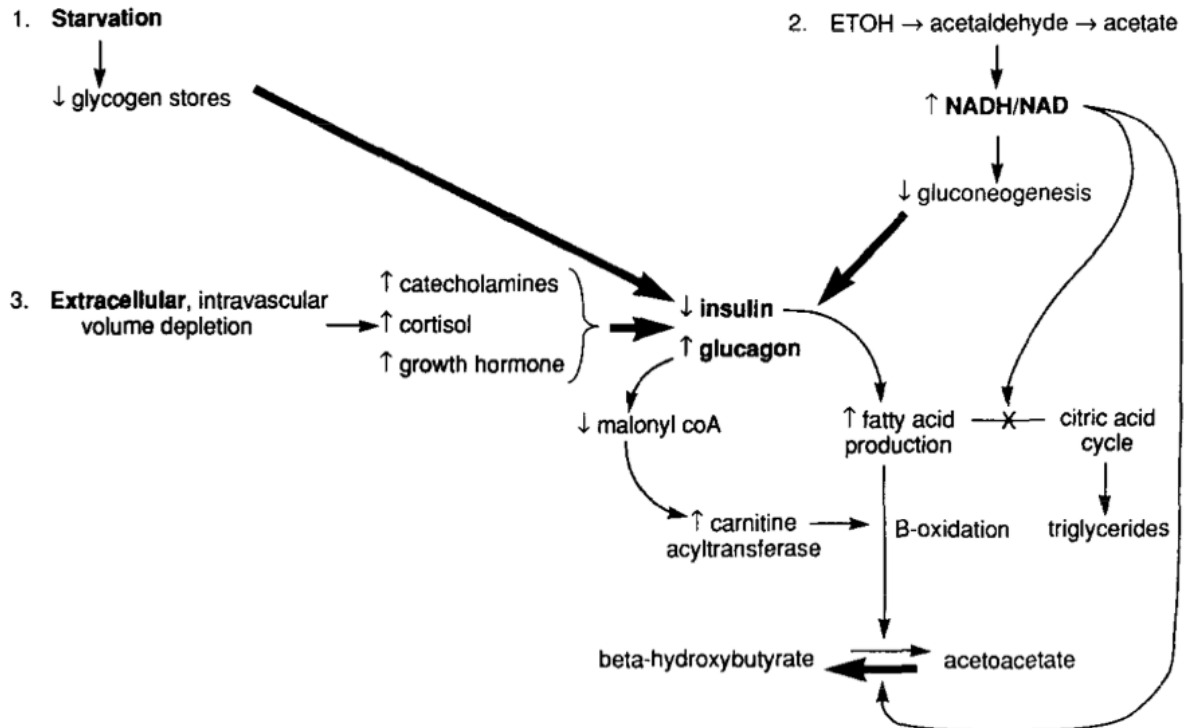


Evaluation

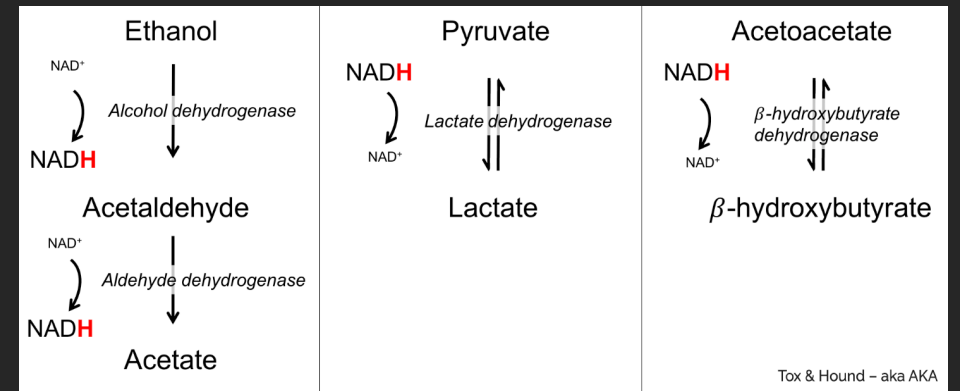
- CBC, CMP, Mg, INR, EtOH
- ECG
- Lipase
- Beta-hydroxybutyrate, lactate
- UA, UDS
- CT H, CXR



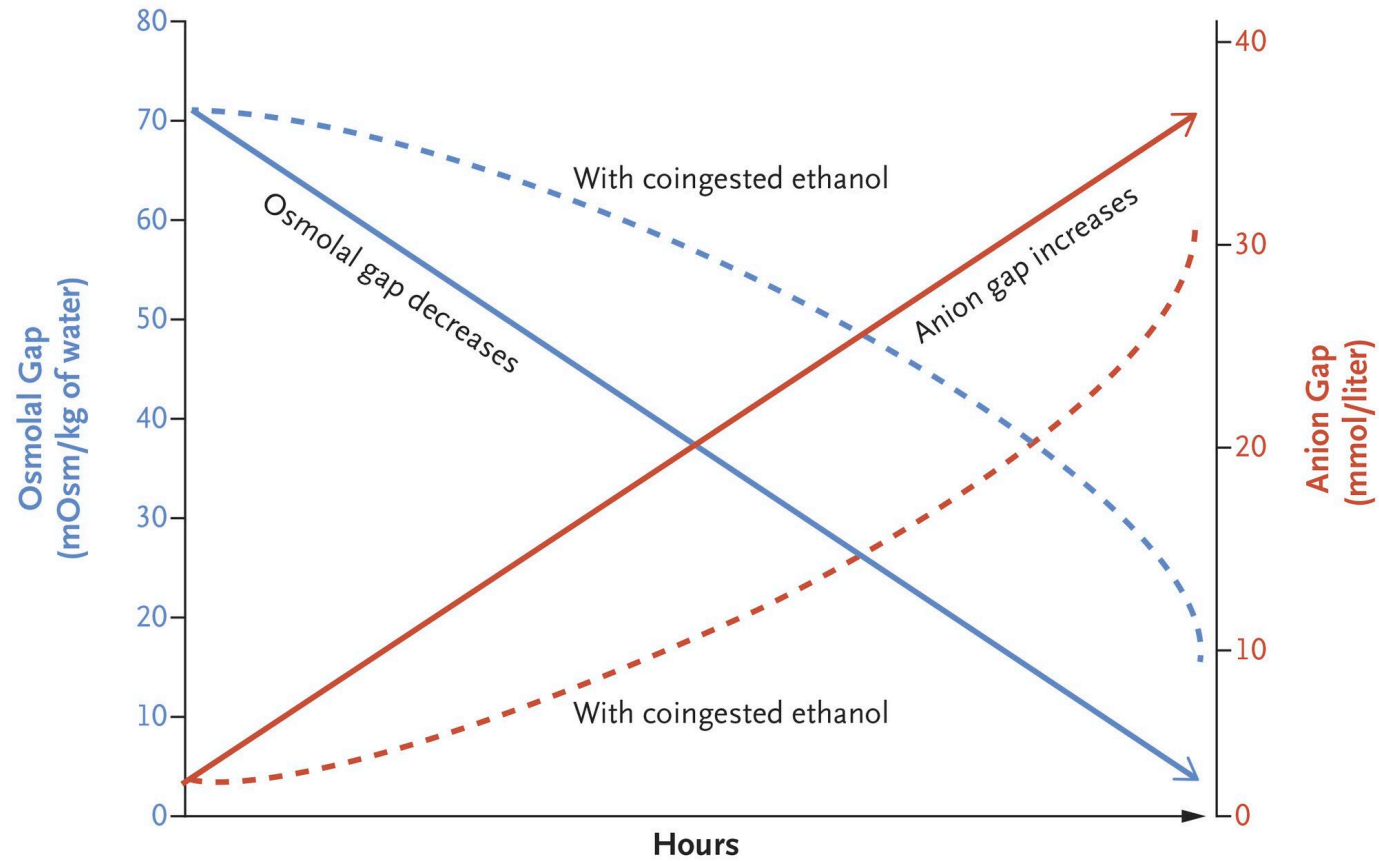
ALCOHOLIC KETOACIDOSIS



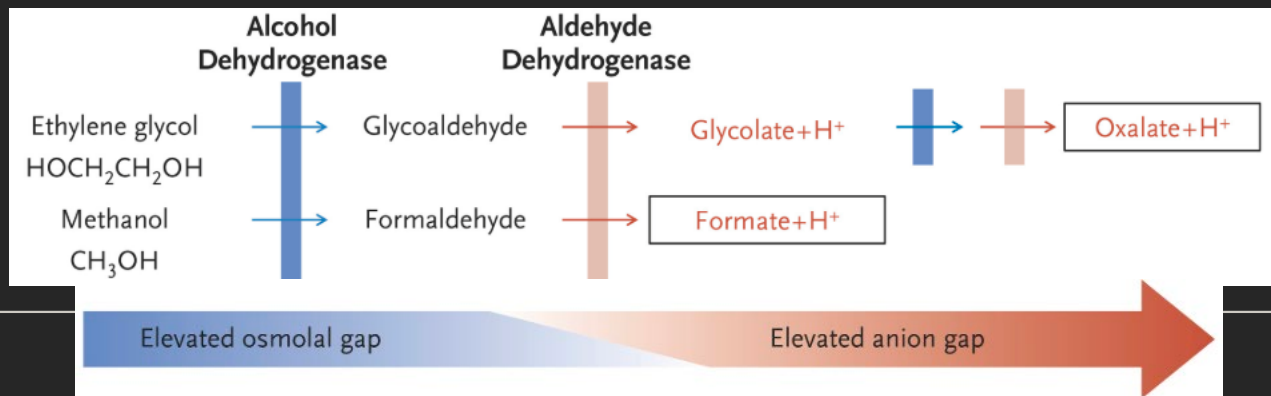
B-HB? Lactate!?



B Time Course of Changes in the Osmolal and Anion Gaps



N Engl J Med 2018;378:270-280



Treatment of Metabolic Derangements



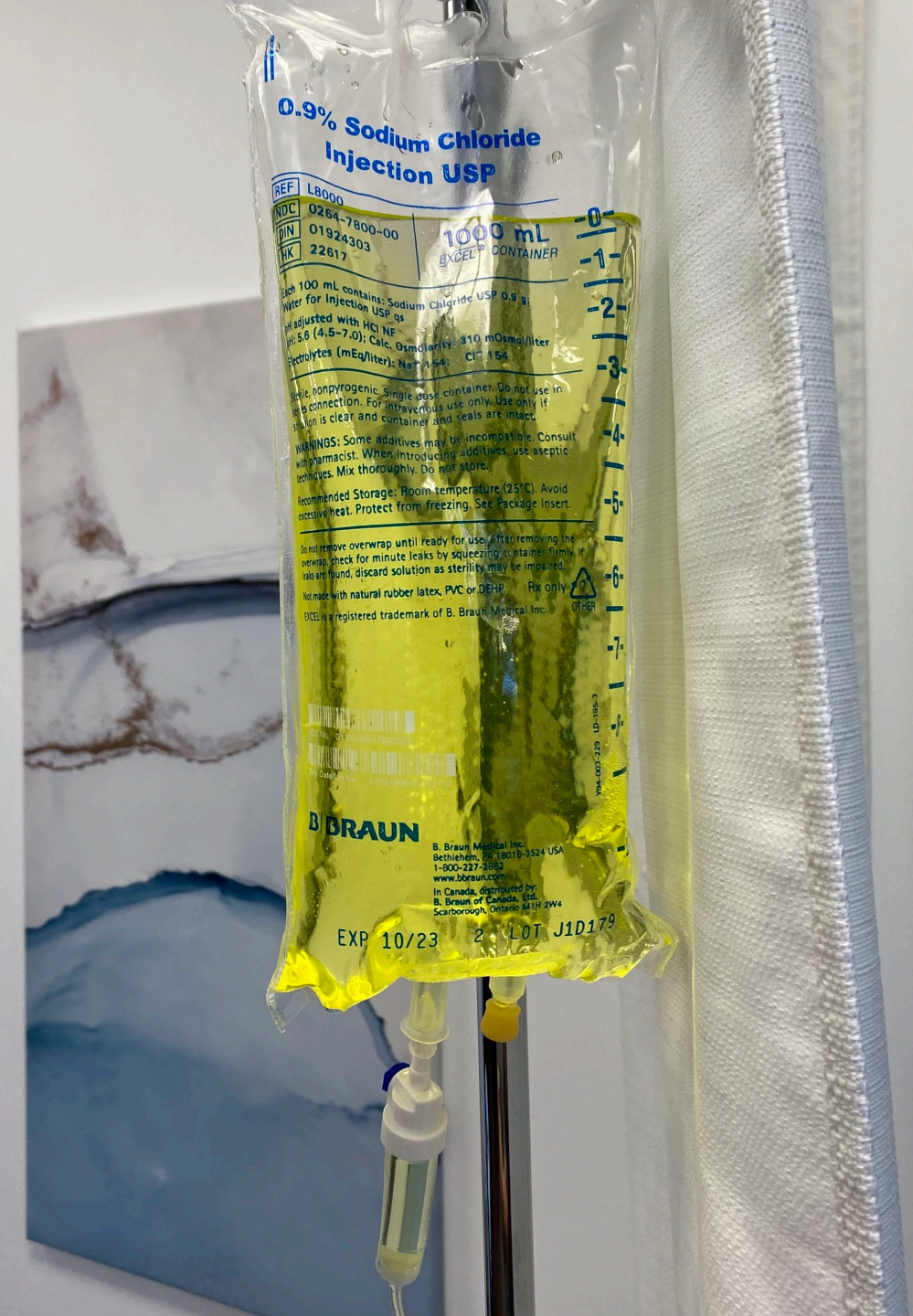
IVF



PO or IV calories (e.g.,
1L D5W + 200 ml/hr)



Thiamine 100 mg IV



Treatment of Metabolic Derangements



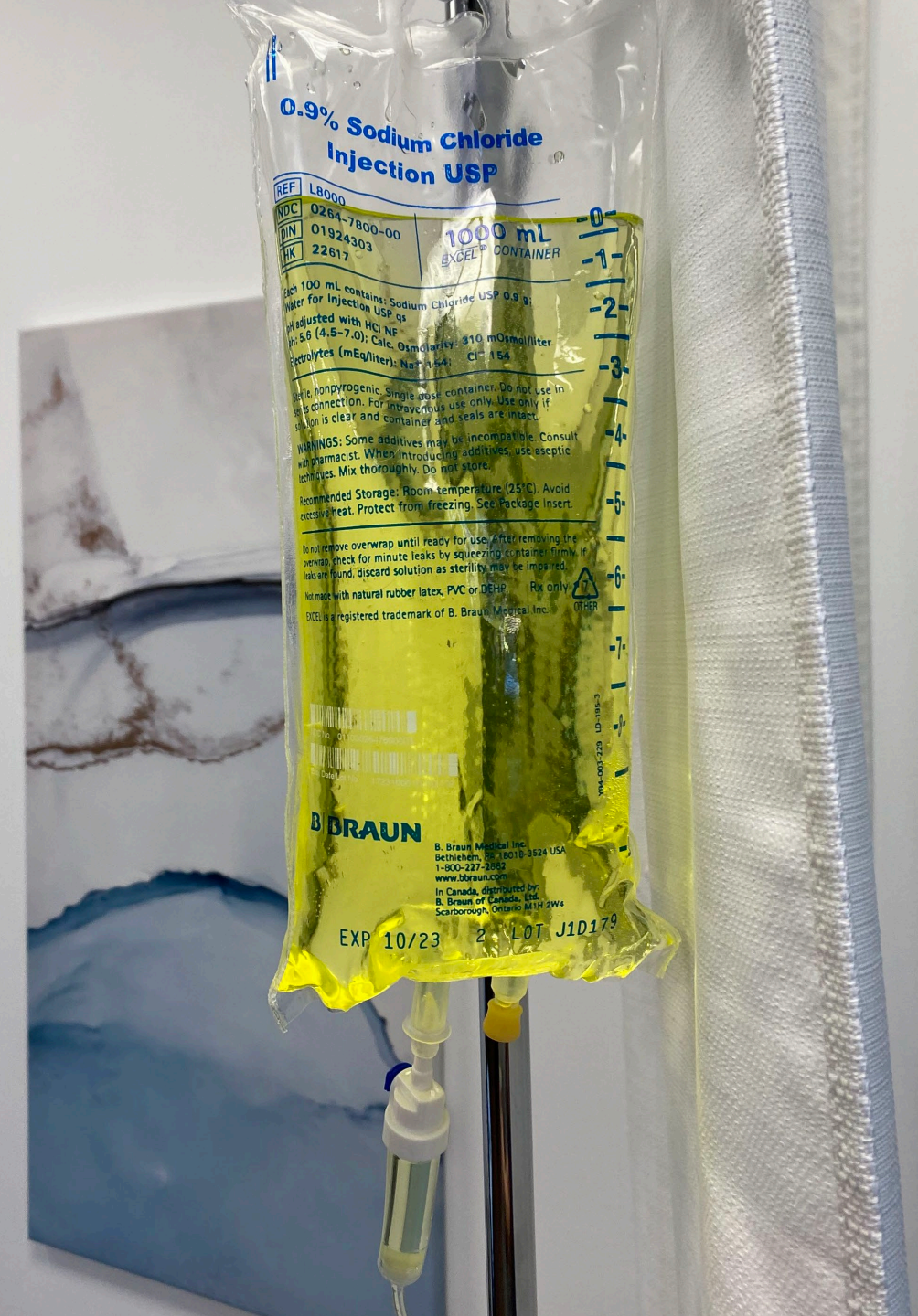
Mythbusting the Banana Bag

Unpeeling the Evidence for the Banana Bag: Evidence-Based Recommendations for the Management of Alcohol-Associated Vitamin and Electrolyte Deficiencies in the ICU



Treatment of Metabolic Derangements

- Saline (or dextrose in water solution) - 1L
- Thiamine - 100 mg
- Folic acid - 1 mg
- Low-dose Multivitamin - 1 ampule
- Magnesium sulfate - 3 g



Wernicke Encephalopathy



1. Dietary deficiencies
2. Oculomotor abnormalities
3. Cerebellar dysfunction
4. Confusion or memory impairment



Evaluation & Metabolic Derangements Peals & Pitfalls



- EtOH use is associated with AKA and hyperlactemia
- Most admitted AWS patients benefit from IVF, calories, thiamine, and magnesium



- Don't miss Wernicke encephalopathy
 - It's probably not a toxic alcohol
-





Treatment



Abstinent



Loss of inhibition



Uncontrolled excitation



= GABA receptor with α_1 subunit

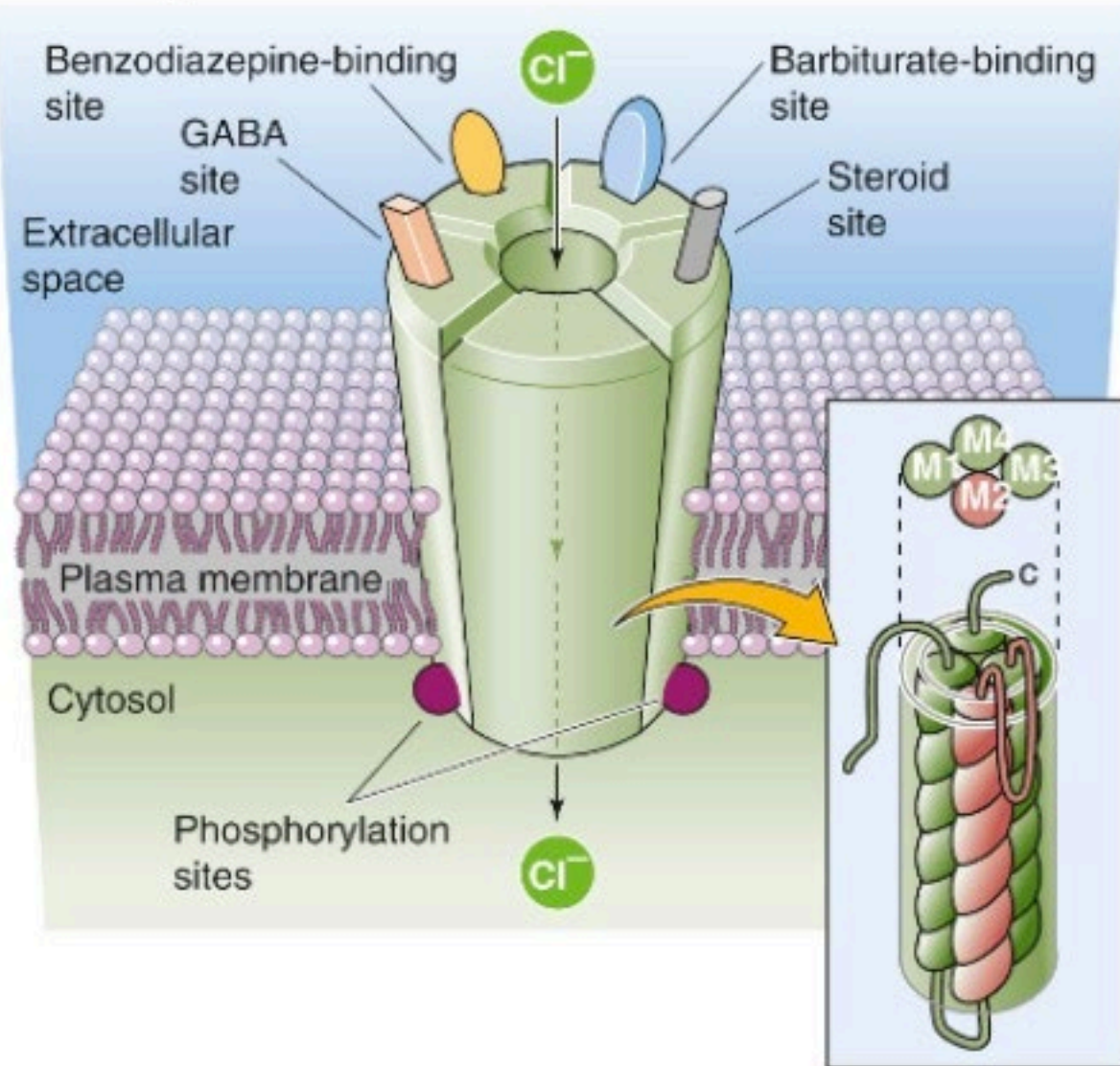


= GABA receptor with α_4 subunit



= NMDA receptor

E GABA_A RECEPTOR CHANNEL



Treatment of the Acute Alcohol Withdrawal State: A Comparison of Four Drugs

Incidence of Delirium Tremens and Convulsions

Amer. J. Psychiat. 125: 12, June 1969

DISTURBANCE	DRUG GROUP					TOTAL (N = 537)
	CHLORDIA- ZEPOXIDE (N = 103)	CHLORPRO- MAZINE (N = 98)	HYDROXYZINE (N = 103)	THIAMINE (N = 103)	PLACEBO (N = 130)	
Delirium tremens	1	4	2	4	7	18
Convulsions	1	9	6	7	8	31
Delirium tremens and convulsions	0	3	2	0	1	6
Total (percent in parentheses)	2 (2)	16 (16)	10 (10)	11 (11)	16 (12)	55 (10)



Treatment

- Diazepam (starting dose 10 mg IV)
- Lorazepam (starting dose 2 mg IV)
- Midazolam (starting dose 5 mg IM)

Re-dosing

- Goal: sleepy but breathing

RASS (Richmond Agitation Sedation Scale)		
4	Combative	Overtly combative, violent, immediate danger to staff
3	Very agitated	Pulls or removes tubes or catheters; aggressive
2	Agitated	Frequent non-purposeful mvmt, fights ventilator
1	Restless	Anxious but movements not aggressive or vigorous
0	Alert and calm	
-1	Drowsy	Sustained awakening to voice (≥ 10 sec)
-2	Light sedation	Briefly awakens with eye contact to voice (<10 sec)
-3	Moderate sedation	Movement or eye opening to voice but no eye contact
-4	Deep sedation	No response to voice but movement or eye opening to physical stimulation
-5	Cannot be aroused	No response to voice or physical stimulation



Phenobarbital

- GABA_A agonist

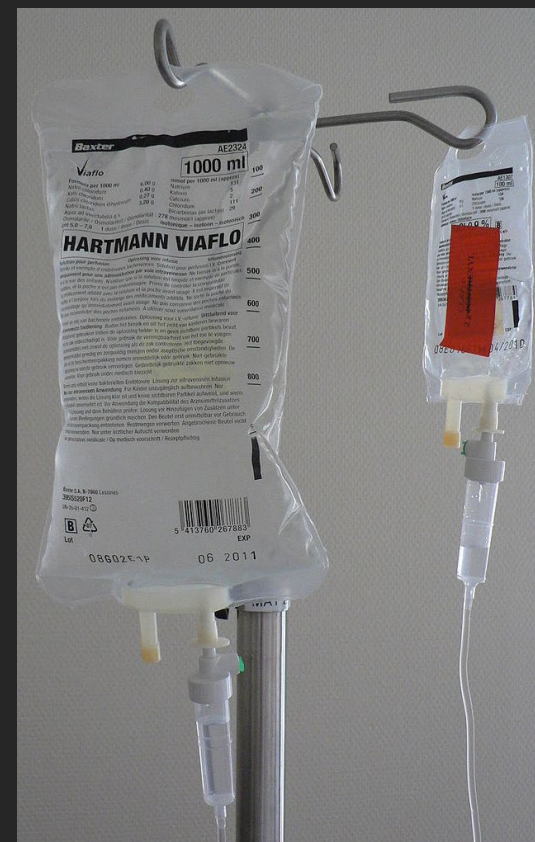
Binds at non-BZD site

Opens Cl⁻ channel more effectively

May have efficacy in BZD-resistant AWS



Phenobarbital



SAEM GRACE: Phenobarbital for alcohol withdrawal management in the emergency department: A systematic review of direct evidence

- “evidence that exists generally suggests that [phenobarbital] is a reasonable and appropriate approach [to treat AWS].”

Guidelines for Reasonable and Appropriate Care in the Emergency Department (GRACE-4): Alcohol use disorder and cannabinoid hyperemesis syndrome management in the emergency department

- “In adult ED patients (over the age of 18) with moderate to severe alcohol withdrawal who are being admitted to hospital, we suggest using phenobarbital in addition to benzodiazepines compared to using benzodiazepines alone.”
-



Phenobarbital

- Anti-NMDA?

Only at [PHB] > 170 ug/mL (therapeutic 10-40 ug/mL)

Figure 4-5 Benzodiazepines and Their Phenobarbital Withdrawal Equivalents

<https://www.ncbi.nlm.nih.gov/books/NBK64116/>

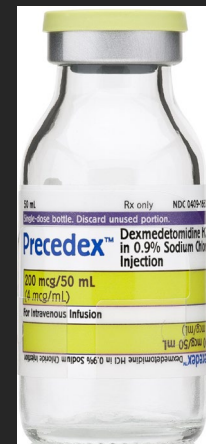
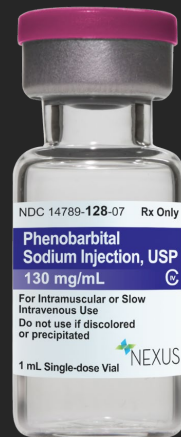
Generic name	Trade name	Therapeutic dose range (mg/day)	Dose equal to 30mg of phenobarbital for withdrawal (mg)**	Phenobarbital conversion constant
Benzodiazepines				
alprazolam	Xanax	0.75-6	1	30
chlordiazepoxide	Librium	15-100	25	1.2
diazepam	Valium	4-40	10	3
lorazepam	Ativan	1-16	2	15

260 mg PHB ~ 87 mg diazepam ~ 17 mg lorazepam





Adjuncts





Treatment: Peals & Pitfalls



- GABA_A medications are cornerstone
- PHB might reduce need for ICU admission or intubation vs BZD



- Don't be afraid of large doses
- Don't rely on non-GABA medications

Thank you!
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