ALCOHOL WITHDRAWAL

- General Background
- Pathophysiology

PRIMARY OBJECTIVES

- Implement a proactive management strategy for providing care to patients at risk for and/or experiencing alcohol withdrawal
  - Ensure optimal treatment to improve patient safety
  - Reduce clinical practices that are not cost effective and put patients in withdrawal at increased risk

GENERAL BACKGROUND

- In the US, alcohol withdrawal syndrome (AWS) is present in ~ 15% – 20% of hospitalized inpatients
  - Severity can range from mild to life-threatening
  - Issue is complex in terms of both recognition and management
  - Complications include arrhythmias, seizures, delirium tremens, need for mechanical ventilation, prolonged hospital stays, and death

PATHOPHYSIOLOGY

- Normal brain functioning depends on a balance of neurochemicals through both inhibitory and excitatory neurotransmitter activity
  - Major INHIBITORY neurotransmitter
    - Gamma-aminobutyric acid (GABA)
  - Major EXCITATORY neurotransmitter
    - N-methyl-D-aspartate (NMDA)

PATHOPHYSIOLOGY

- ACUTE alcohol ingestion – Alcohol results in
  - Inhibition of N-methyl-D-aspartate (NMDA) receptors
    - Reduction of excitatory glutaminergic transmission
  - Agonism of gamma-aminobutyric acid type-A ($GABA_A$) receptors

PATHOPHYSIOLOGY

- With PROLONGED EXPOSURE to alcohol, adaptive neurochemical changes occur in an attempt to maintain balance
  - NMDA receptors are up-regulated
  - $GABA_A$ receptors are down-regulated

- Tolerance to alcohol develops

PATHOPHYSIOLOGY

- In individuals tolerant to alcohol, abstinence from alcohol results in an imbalance between GABA and NMDA receptor stimulation
  - Enhanced NMDA receptor function
  - Reduced GABA-ergic transmission

- This leads to many of the signs and symptoms of alcohol withdrawal

PATHOPHYSIOLOGY

- Other possible contributors to symptom presentation in AWS
  - Dysregulation of the dopaminergic system
  - Increased noradrenergic neurotransmission
    - Overdrive of the sympathetic nervous system
  - Desensitization of α_2-adrenoreceptors

ASSESSMENT TOOLS

CIWA-Ar: Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised

- Assessment tool for monitoring alcohol withdrawal symptoms
- Originally designed for use as a tool in alcohol withdrawal research
- Validated in mild-to-moderate withdrawal
- Often burdensome to assess
  - May take up to 15 minutes
- Does not incorporate vital sign assessment

CIWA-Ar: Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised

- Nausea and Vomiting (0 – 7)
- Tremor (0 – 7)
- Paroxysmal Sweats (0 – 7)
- Anxiety (0 – 7)
- Agitation (0 – 7)
- Tactile Disturbances (0 – 7)
- Auditory Disturbances (0 – 7)
- Visual Disturbances (0 – 7)
- Headache, Fullness in head (0 – 7)
- Orientation and Clouding of Sensorium (0 – 4)

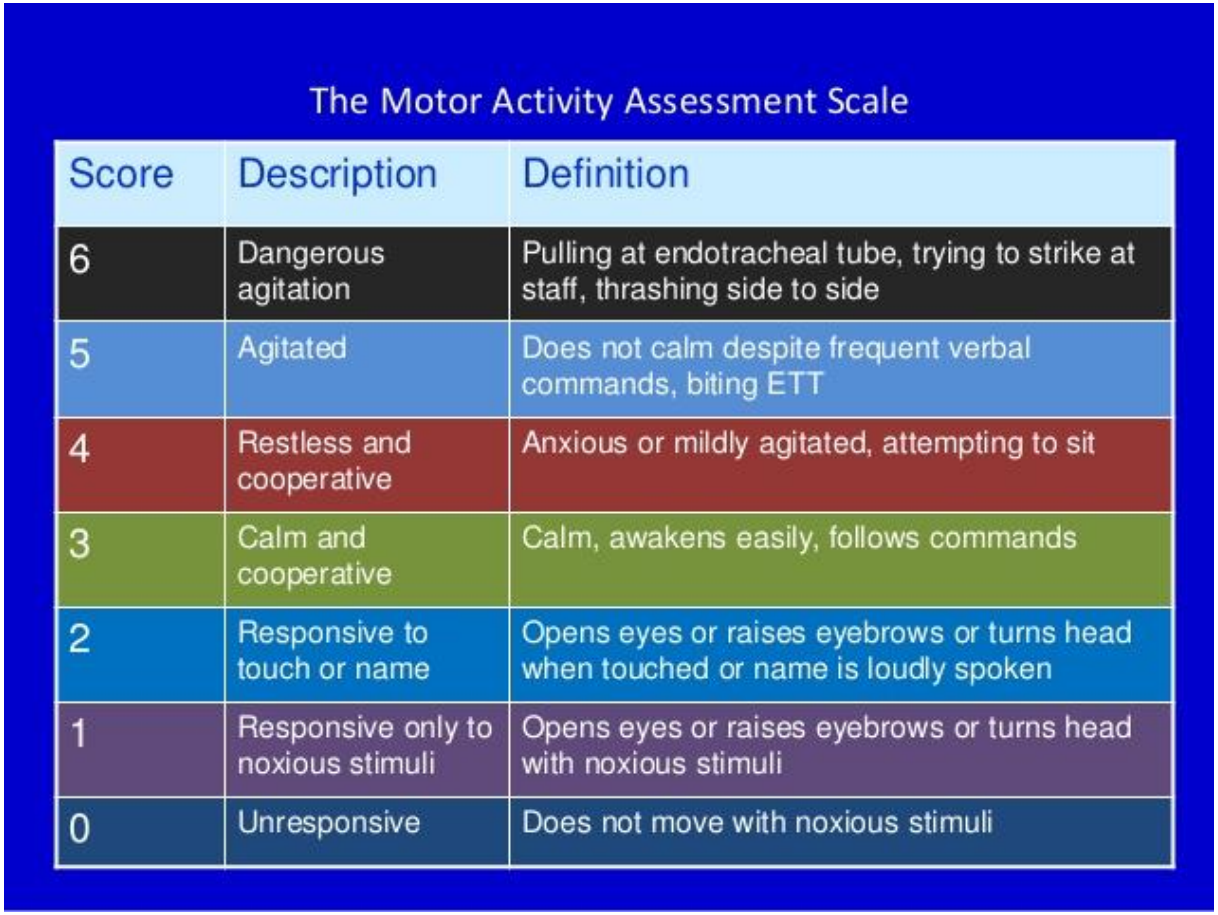
CIWA-Ar: Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised

- Maximum score = 67

CIWA-Ar Score Interpretation

CIWA-Ar Score	Alcohol Withdrawal Severity
0 – 9	Very Mild Withdrawal
10 – 15	Mild Withdrawal
16 – 20	Modest Withdrawal
21 - 67	Severe Withdrawal

The Motor Actvity Assessment Scale



The Motor Activity Assessment Scale

Score	Description	Definition
6	Dangerous agitation	Pulling at endotracheal tube, trying to strike at staff, thrashing side to side
5	Agitated	Does not calm despite frequent verbal commands, biting ETT
4	Restless and cooperative	Anxious or mildly agitated, attempting to sit
3	Calm and cooperative	Calm, awakens easily, follows commands
2	Responsive to touch or name	Opens eyes or raises eyebrows or turns head when touched or name is loudly spoken
1	Responsive only to noxious stimuli	Opens eyes or raises eyebrows or turns head with noxious stimuli
0	Unresponsive	Does not move with noxious stimuli

Alcohol Withdrawal Management Nursing Assessment Schedule

CIWA-Ar Score	Assessment and obtain/document (1) vital signs, (2) CIWA-Ar score, (3) MAAS score, and (4) Pulse Ox every hour for 4 hours then if stable:
CIWA-Ar score < 10 (very mild)	Every 4 hours
CIWA-Ar score 10-14 (mild)	Every 4 hours
CIWA-Ar score 15-20 (moderate)	Every 2 hours
CIWA-Ar score of > 20 (severe)	Every 1 hour

Alcohol Withdrawal Management Treatment medication Dose Guideline

Severity of Withdrawal	Treatment Medications
CIWA-Ar score 10-14	2 mg po q1 h prn 2 mg IV q1h prn if not able to take po
CIWA-Ar score 15-20	3 mg po q1h prn 3 mg IV q1h prn if not able to take po *consider phenobarbital IV over 5 min
CIWA-Ar score > 20	4 mg po q1h prn 4 mg IV q1h prn if not able to take po *proceed to phenobarb 130 IV over 5 min

*Initiate benzodiazepine loading dose for patients with previous history or seizure or initial CIWA-Ar score > 14 or s/sx not responding to lower lorazepam dosing scale
*If the patient receives > 10 mg lorazepam in 1 hour, consider phenobarbital

Fixed-Schedule Benzodiazepine

- For patients with no history of alcohol withdrawal, use symptom-triggered PRN LORazepam orders only
- Initiate fixed-schedule benzodiazepine orders ONLY for patients with any of the following conditions:
  - previous history of alcohol withdrawal.
  - persistent CIWA-Ar score > 20 and not trending downward after 2 doses of LORazepam.
  - LORazepam requirement of > 20 mg in 24 hours.
  - anticipated ongoing severe withdrawal state for the next 72 hours.
- Start fixed-schedule dosing benzodiazepine orders IN ADDTION TO symptom-triggered (PRN) LORazepam; MUST continue symptom-triggered LORazepam.
- Choose EITHER LORazepam OR Diazepam.

Lorazepam vs Diazepam

- DiazePAM offers rapid onset and longer half-life; preferred for rapid titration in severe cases of alcohol withdrawal.
- LORazepam preferred over diazePAM for patients with:
  - age > 65 years
  - hepatic dysfunction (INR > 1.6)
  - renal dysfunction (SCr > 2 mg/dL or CrCl < 30 mL/min)
  - history of COPD

* Choose IV or po

Alcohol Withdrawal Management Adjunctive Treatment Medications

- **Phenobarbital**
  - persistent CIWA-Ar score > 20,
  - signs/symptoms requiring > 10 mg lorazepam in 1 hour,
  - signs/symptoms inadequately controlled on scheduled AND PRN LORazepam or diazePAM
  - 130 mg IV prn once. Give over 5 min
  - Can add 130 mg IV q8h prn CIWA-Ar score > 20

- **Haloperidol (HALDOL)**
  - Use caution in patients with seizure history due to risk of lowering seizure threshold
  - NOT TO EXCEED 15 mg in 24 hours
    - 2 mg IV Q 2 hrs PRN severe confusion, agitation, and/or hallucinations
    - 1 mg IV Q 4 hrs PRN severe confusion, agitation, and/or hallucinations in patients > 65 years of age

Vitamin Supplementation—THIAMINE

- Banana Bag: can change MV and thiamine to po if possible

- For patients with active signs/symptoms of Wernicke's encephalopathy (mental confusion or confabulation, ataxia, and/or ophthalmoplegia or nystagmus)
  - Thiamine (vitamin B1) IV piggyback
    - 500 mg IVPB over 30 minutes Q 8 hrs for 3 days (9 doses)
  - Thiamine (vitamin B1) PO tablet
    - 100 mg TID

- For all other patients
- Thiamine (vitamin B1) IV piggyback
    - 200 mg IVPB over 30 minutes Q 8 hrs for 3 days (9 doses)
  - Thiamine (vitamin B1) PO tablet
    - 100 mg TID

Pearls

- Hypoglycemic patients given IV glucose, IV thiamine must be given to avoid risk of preciptating WE
- Mag is a cofactor for thiamine-dependent enzyme
  - Replace in confirmed hypomagnesaemia when giving thiamine
- Seizure prophylaxis

Dexmedetomindine (Precedex)

- **Adjunctive PRECEDEX should be reserved for patients with persistent severe alcohol withdrawal symptoms despite adequate treatment with appropriate benzodiazepine dosing and trial of phenobarbital**
- **PRECEDEX is NOT appropriate for monotherapy of alcohol withdrawal. If PRECEDEX is started, scheduled benzodiazepine dosing is REQUIRED for all patients**
- **Avoid in hypovolemia, shock, severe ventricular dysfunction, advanced heart block, HR<50, SBP<90, MAP<60 and ARDS**
- **If PRECEDEX is initiated, the order must be re-evaluated after 24 hours and reordered by the provider if continued therapy is indicated**