Methodist Hospital
Alcohol Withdrawal
Suggested Guidelines

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Rationale for the Suggested
Alcohol Withdrawal Scale and
Guidelines

- CIWA-AR
  - Developed by tested by experts in the treatment of alcohol withdrawal in detoxification units
  - Highly subjective scale
  - Time consuming
- Alcohol Withdrawal Scale and Protocol
  - Hybrid of the UNMC and CU Alcohol Withdrawal Scales and Protocols
- Other established and tested Alcohol Withdrawal Scales
  - Australian Department of Veteran Affairs AWS
  - MINDS (Minnesota Detoxification Scale)
  - SAWS (Short Alcohol Withdrawal Scale) – Australian
  - Windsor Clinic Alcohol Withdrawal Scale – UK

Purpose of the AWGs

- Simplify
  - Simple straight forward approach to treating alcohol withdrawal
- Unify
  - Using the same process, minimizing confusion
- Intensify
  - Treat alcohol withdrawal sooner and more assertively
- Prevent
  - Prevent the onset of alcohol withdrawal and delirium
- Treatment
  - Comprehensive management of the patient in alcohol withdrawal

Time Course of Alcohol Withdrawal
Without Medication

<table>
<thead>
<tr>
<th>AW Symptom Onset</th>
<th>Time to appearance after last drink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor withdrawal symptoms: insomnia, tremulousness, mild anxiety, gastrointestinal upset, headache, diaphoresis, palpitations, anorexia</td>
<td>6 – 12 hours</td>
</tr>
<tr>
<td>Alcoholic hallucinosis: visual, auditory, or tactile hallucinations</td>
<td>12 – 24 hours</td>
</tr>
<tr>
<td>Withdrawal seizures: generalized tonic-clonic seizures</td>
<td>24 – 48 hours</td>
</tr>
<tr>
<td>Alcohol withdrawal delirium (delirium tremens): hallucinations (predominately visual), disorientation, tachycardia, hypertension, low-grade fever, agitation, diaphoresis</td>
<td>48 – 72 hours</td>
</tr>
</tbody>
</table>

Lorazepam
Lorazepam Pharmacology

- Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS, and can produce any level of CNS depression required including sedation, hypnosis, skeletal muscle relaxation, anticonvulsant activity, and coma
- Lorazepam potentiates gamma-aminobutyric acid (GABA)
- Shorter elimination half-life than diazepam BUT it persists longer in the CNS

Lorazepam Metabolism

<table>
<thead>
<tr>
<th>DRUG</th>
<th>FUNCTIONALIZATION</th>
<th>OXIDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam (Nitro)</td>
<td>Diazepam (Valium)</td>
<td>Terazepam (Klonopin)</td>
</tr>
<tr>
<td>Chlordiazepoxide (Chlor)</td>
<td>Diazepam (Valium)</td>
<td>Oxazepam (Serax)</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>Diazepam (Valium)</td>
<td>3-Chloro-phenyldiazepam</td>
</tr>
<tr>
<td>Chloride</td>
<td>Diazepam (Valium)</td>
<td>3-Chloro-phenyldiazepam</td>
</tr>
<tr>
<td>Flurazepam (Dalmane)</td>
<td>Diazepam (Valium)</td>
<td>3-Chloro-phenyldiazepam</td>
</tr>
<tr>
<td>Oxazepam (Serax)</td>
<td>2-aminophenylpropionic acid</td>
<td>3-Chloro-phenyldiazepam</td>
</tr>
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Lorazepam Pharmacokinetics

- Absorption
  - Rapidly absorbed, onset of effect: 20-30 minutes (PO)
  - Bioavailability 90-93% (PO), 85-100% (IM), 100% (IV)
- Distribution
  - Protein Binding
    - 70-90% (can see decreased binding in cirrhosis, chronic alcohol use, and renal insufficiency. Enterohepatic circulation, Brain concentration is approximately equal to the concentration of free drug in the plasma
    - 3 Department Distribution Kinetics 1st distributes rapidly from the central compartment (blood stream) to the shallow peripheral compartment (brain) and then slowly from there to the deeper peripheral compartment (body fat)
- Elimination
  - Half-life: 6-12 hours
  - 5 half-lives to steady state

Benzodiazepines

- Side Effects
  - Sedation, dizziness, ataxia, confusion, amnestic effects
  - Disinhibition
  - Delirium
- Withdrawal
  - Activation: anxiety, tremor, agitation
  - Paresthesias; sensitivity to sound, light, touch
  - Seizures

Alcohol Withdrawal Scale

<table>
<thead>
<tr>
<th>Symptom/Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic BP &lt; 110 mmHg</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Diastolic BP &lt; 90 mmHg</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Temperature &lt; 98.6 F</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Pulse &gt; 100 bpm</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>N/V</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>Agitation</td>
<td>NO</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>Hallucinations</td>
<td>NO</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>Somnolence</td>
<td>NO</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
</tbody>
</table>

* Use higher of the BPs (SBP or DBP) to score this item. ** Use of adjunct Antipsychotic medication recommended

Scoring the AWS

<table>
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<tr>
<th>Symptom/Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic BP &gt; 140 mmHg</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Diastolic BP &gt; 90 mmHg</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Temperature &gt; 100.4 F</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Pulse &gt; 101 bpm</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>N/V</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
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* Use higher of the BPs (SBP or DBP) to score this item. ** Use of adjunct Antipsychotic medication recommended
In the Urgent Care Area

- Initial NOW Dose: Lorazepam 2 mg PO/IM
- Given IF the patient:
  - Is NOT acutely intoxicated, e.g. no nystagmus or cerebellar ataxia
  - Has elevated vital signs (BP >140/90 AND/OR pulse >90bpm)
  - BAL does NOT need to be zero to give lorazepam
  - Is demonstrating signs and symptoms of alcohol withdrawal: tremulousness, diaphoresis, confusion, irritability
  - Has a known history of severe alcohol withdrawal
  - Has a known history of alcohol withdrawal seizures
  - Has a significant drop in Blood Alcohol Level
- NOT given IF the patient:
  - Is acutely intoxicated, e.g. presence of somnolence, nystagmus or cerebellar ataxia

In The ER Area

- Repeat Dose: Lorazepam 2 mg PO/IM – in two hours
  - If patient is still waiting for transfer
  - Previous parameters still apply
- Initiate Alcohol Withdrawal Detoxification Guidelines
  - Consider if patient will be in the ER for a prolonged period of time
- Thiamine 100mg PO/IM/IV X 1
  - PRIOR TO GIVING ANY IV GLUCOSE or Food

On the Unit

- Initiate Alcohol Withdrawal Detoxification Guidelines
  - If not already initiated in ER
- Seizure Precautions
- Vital Signs
  - Baseline
  - Q ___ hour while awake
  - Other VS order

Standing Medications

- Thiamine 100mg IM/IV X 1 (PRIOR TO GIVING ANY IV GLUCOSE or Food), then 100mg PO for 1-4 days
- Folic acid 1mg daily
- Multivitamin/Minerals one daily
- Magnesium Oxide 400mg BID or 1gram IM/IV once (if magnesium levels are <1.5mg/dl)
- Nicotine patch _____ (7mg, 14mg, or 21mg) – daily to prevent nicotine withdrawal/craving
- Any patient specific medications

On the Unit

- PRN Medications
  - Phenergan 25mg PO/IM every 4 hours PRN nausea
  - Antacid 30mg PO every 4 hours PRN GI upset
  - Ibuprofen 600mg PO Q 4 hours PRN headache
  - Clonidine 0.1mg TID PRN for autonomic hyperactivity
  - Other PRNS: Ranitidine, omeprazole, ...

Antipsychotic Medications – adjunct to lorazepam

- For tactile, visual, auditory disturbances / hallucinations, delusions, combativeness, and/or delirium interfering with medical care and safety and is unrelated to persistent elevation in BP, pulse, or persistent w/d tremors, diaphoresis.
- Risperidone 1mg PO every 4 hours PRN
- Haloperidol 2mg IV/IM every 4 hours PRN
  - (when unable to take PO risperidone)
- Please monitor for EPSEs.
- Benzotropine mesylate 1mg PO/IM PRN EPSE
- No Olanzapine – interaction with lorazepam, and much higher lowering of seizure threshold
AWS Based Lorazepam Dosing

- Medication doses are to be HELD if patient is sedated or asleep.
- Do not awaken a patient to perform the AWS or give them medication.
- Use oral lorazepam when the patient is able to take oral medications.
- Lorazepam dose NOT TO EXCEED 24mg in 12 hours without a physician evaluation and order.
- Maximum IV push rate: 2mg per minute
  - This is not a dosing interval

- IF AWS = 0 No medication is given

AWS Based Lorazepam Dosing

- **Mild Alcohol Withdrawal**
  - AWS checked every 6 hours for 24 hours
  - AWS < 5 AND VS <140/90 and pulse <99
  - Lorazepam 1mg PO every 6 hours PRN until patient is asymptomatic
  - Once consecutive assessments are < 5 over 24hours, discontinue AWS and medications

- **Moderate Alcohol Withdrawal**
  - AWS and VS checked every 2 hours
  - AWS < 5 BUT BP 140/90-175/100 AND/OR pulse is 100-110 bpm
  - OR
    - AWS 6-10 AND/OR BP 140/90-175/100 AND/OR pulse is 100-110 bpm
  - Lorazepam 2mg PO/IM/IV every 2 hours
  - Once AWS < 6 OR VS have normalized, shift to Mild Alcohol Withdrawal dosing
  - Taper lorazepam when ready to DC

- **Severe Alcohol Withdrawal**
  - AWS and VS checked every 1 hour
  - AWS >10 AND/OR BP > 200/110 AND/OR Pulse > 120 bpm
  - Lorazepam 2mg PO/IM/IV every 1 hour
  - AWS < 10 AND/OR VS have normalized, then drop to mild or moderate alcohol dosing guidelines as indicated
  - AWS < 5 OR VS have normalized, drop to mild alcohol dosing guidelines
  - Taper lorazepam when ready to DC

Flumazenil

- *REQUIRED* If benzodiazepine is given IM or IV.
- In case of over sedation with benzodiazepine:
  - Flumazenil 0.2 mg IV over 15 seconds then 0.2mg IV over 15 seconds if first dose ineffective after 45 seconds. An additional three doses may be given at 60 second intervals to a maximum total of 1mg. After the first 1mg, repeated doses may be given at 20-minute intervals if needed; For repeat treatment, no more than 1 mg (given as 0.5 mg/min) should be given at any one time and no more than 3 mg should be given in any one hour
  - *Monitor for desired level of consciousness and to prevent triggering alcohol withdrawal seizures

Propylene Glycol Toxicity

- Occurs with excessive use of IV lorazepam
- Symptoms of Propylene Glycol Toxicity
  - Unexplained anion gap, metabolic acidosis, hyperosmolality, hemolysis, cardiac arrhythmias, seizure, clinical deterioration, coma
AWS Guideline Fine Points

- Additional lorazepam doses beyond protocol - may be given as NOW doses on physician electronic, written or verbal order only.
- Multiple NOW orders should not be given simultaneously.
- Set orders for PRN benzodiazepines are not allowed. Except as indicated in the guidelines.
- Pharmacy will no longer honor orders for ranges of benzodiazepine doses.
- Cases in which lorazepam doses vary from the established protocol will be evaluated.
- Consider the judicious use of other PRN medications for specific symptoms not responding to lorazepam (clonidine, antipsychotics).

Sample AWS Order

- Seizure precautions
- AWS and VS to be checked every 1 hour until AWS <10 then every 2 hours until AWS < 6 then every 6 hours. Once consecutive assessments are < 5 over 24 hours, discontinue AWS and taper medication.
- Do not awaken patient for AWS or to give medication.

Sample AW Order

- AWS = 0 = NO lorazepam is given
- Lorazepam 1mg PO every 6 hours PRN AWS < 5 AND VS <140/90 and pulse <99
- Lorazepam 2mg PO/IM/IV every 2 hours PRN AWS < 5 BUT BP 140/90-175/100 AND/OR pulse is 100-110 bpm OR AWS 8-10 AND/OR BP 140/90-175/100 AND/OR pulse is 100-110 bpm
- Lorazepam 2mg PO/IM/IV every 1 hour PRN NWI AWS >10 AND/OR BP > 200/110 AND/OR Pulse > 120 bpm
- Flumazenil on unit

Sample Lorazepam Tapers

A. If patient received <24mg/day
   - Lorazepam 2mg every 6 hours x 24 hours
   - Lorazepam 2mg every 8 hours x 24 hours
   - Lorazepam 1mg every 8 hours x 24 hours, then DC

B. If patient received >24mg/day
   - Lorazepam 2mg every 4 hours x 24 hours
   - Lorazepam 2mg every 6 hours x 24 hours
   - Lorazepam 2mg every 8 hours x 24 hours
   - Lorazepam 1mg every 8 hours, then DC

AW Fine Points

- It is expected that patients will have some brief periods of psychomotor agitation while in alcohol withdrawal. No medication is required for these brief episodes, instead, reassure the patient verbally, decrease environmental stimuli, and use soft restraints when appropriate.
- Goal of medication is to PREVENT the onset of withdrawal and to keep the patient calm or lightly sedated patient, easily aroused but falls back to sleep if left alone.