Alcohol Withdrawal in the AMU

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AWS: The Scale of the Problem

Alcohol Associated Hospital Attendance

- **Alcohol harm reduction project, Nov 2003:**
  - 41% of attendees tested positive for alcohol
  - 70% of all attendances from midnight to 5am were alcohol related

- **Scottish Emergency Department Alcohol Audit:** 10 days in 2005
  - 21,214 patients: 2,228 alcohol related (11%).
  - 44% admitted.

- **Ward et al, 2009**
  - Survey of SAM members: 104 acute sites in UK
  - ‘poor utilisation of guidelines, variable drug regimens’
Pathophysiology of Alcohol Withdrawal

ACUTE ALCOHOL EXPOSURE

CHRONIC ALCOHOL EXPOSURE

ACUTE ALCOHOL WITHDRAWAL

INHIBITION

GABA (GABA$_A$)

EXCITATION

Adrenergic Glutaminergic (NDMA)
The Course of Alcohol Withdrawal

- **Seizures**
  - Severe withdrawal
  - Vomiting
  - Extreme agitation
  - Disorientation
  - Confusion
  - Paranoia
  - Hyperventilation
  - Delirium tremens

- **Mild withdrawal**
  - Anxiety
  - Agitation
  - Tremor
  - Nausea
  - Tachycardia
  - Hypertension
  - Disturbed sleep
  - Raised temperature

- Mortality: up to 40% from infections, fever, fluid loss if untreated; less than 1% with adequate treatment.
Benzodiazepines: the mainstay of AWS treatment

- NICE Pathway: Assisted Alcohol Withdrawal, June 2013
  - ‘Use a benzodiazepine as the preferred medication’
- No clear difference between benzodiazepines
Optimal Treatment of Alcohol Withdrawal

- Benzodiazepines better than placebo (RR 0.14: 0.04, 0.69) and anti-psychotics (RR 0.24: 0.07, 0.88) for protecting against alcohol withdrawal seizures.
- Anticonvulsants similar to benzodiazepines for control of delerium and prevention of seizures.
How to Treat: Fixed Dose Treatment (FDT) or Symptom-Triggered Treatment (STT)?

- Most studies in context of specific alcohol detoxification treatment centres.
- Reduced duration and dose of benzodiazepine.
- No difference in Treatment Success.

- Williams et al, 2001:
  - 18 scales found: CIWA-Ar most commonly used
  - wide variation in symptoms
Symptom-triggered Treatment

CIWA-Ar:

<10 on 3 occasions: stop

>10 and falling: 20mg diazepam; score 2 hrly

>10 and rising: 20 mg diazepam; score hrly

Average of 5 minutes to complete
Case

- 54 year old female
- ½-¾ bottle of whisky per day; known chronic liver disease
- Presented with ‘shakiness’
- Bili 27; AST 1558; ALT 429; GGT 1124; Amylase 65; PTr 1.2; CRP 35; pyrexial
- No CIWA / Pabrinex in ED; commenced in AMU
- Given paracetamol for pyrexia
- Agitated ++ 36 hours after admission
Alcohol Withdrawal Case Study

“I will punch your f***ing faces, bitches”

Staff Nurse bitten on the right arm by patient

Hour since Admission

HALOPERIDOL
Concerns about CIWA-Ar in General Hospitals

- Differing Versions of CIWA-Ar.
- Derived from Alcohol detoxification centres.
- Perceived as time-consuming in acute wards.
- Inconsistent timing of scores and variable prescription.
- Used inappropriately in over 50% of patients in the general hospital setting notably in liver disease patients (Hecksel et al, 2008).
- Only 27% of acute hospitals in the UK used symptom-triggered treatment of AWS (Ward et al, 2009).
Glasgow Modified Alcohol Withdrawal Score (GMAWS)

<table>
<thead>
<tr>
<th>Tremor</th>
<th>0) No tremor</th>
<th>1) On movement</th>
<th>2) At rest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweating</td>
<td>0) No sweat visible</td>
<td>1) Moist</td>
<td>2) Drenching sweats</td>
</tr>
<tr>
<td>Hallucination</td>
<td>0) Not present</td>
<td>1) Dissuadable</td>
<td>2) Not dissuadable</td>
</tr>
<tr>
<td>Orientation</td>
<td>0) Orientated</td>
<td>1) Vague, detached</td>
<td>2) Disorientated, no contact</td>
</tr>
<tr>
<td>Agitation</td>
<td>0) Calm</td>
<td>1) Anxious</td>
<td>2) Panicky</td>
</tr>
</tbody>
</table>

**Score:** (Do not use scoring tool if patient intoxicated; must be at least 8 hours since last drink.)

- **0:** Repeat Score in 2 hours (Discontinue after scoring on 4 consecutive occasions, except if less than 48hrs after last drink)
- **1 – 3:** Give 10mg Diazepam: Repeat Score in 2 hours
- **4 – 8:** Give 20mg Diazepam: Repeat Score in 1 hour
- **9 - 10:** Give 20mg Diazepam: Repeat Score in 1 hour; discuss with medical staff

- Preferred by nursing staff in acute medical units compared with CIWA-Ar (McPherson et al, 2012).
## Variables in CIWA-Ar and GMAWS

<table>
<thead>
<tr>
<th>CIWA</th>
<th>GMAWS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tremor</strong></td>
<td><strong>Tremor</strong></td>
</tr>
<tr>
<td>0,1,4,7</td>
<td>0 - 2</td>
</tr>
<tr>
<td><strong>Nausea and Vomiting</strong></td>
<td><strong>Sweating</strong></td>
</tr>
<tr>
<td>0,1,4,7</td>
<td>0 - 2</td>
</tr>
<tr>
<td><strong>Paroxysmal Sweats</strong></td>
<td><strong>Sweating</strong></td>
</tr>
<tr>
<td>0,1,4,7</td>
<td>0 - 2</td>
</tr>
<tr>
<td><strong>Anxiety</strong></td>
<td></td>
</tr>
<tr>
<td>0,1,4,7</td>
<td></td>
</tr>
<tr>
<td><strong>Agitation</strong></td>
<td><strong>Agitation</strong></td>
</tr>
<tr>
<td>0,1,4,7</td>
<td>0 - 2</td>
</tr>
<tr>
<td><strong>Tactile Disturbances</strong></td>
<td></td>
</tr>
<tr>
<td>0 - 7</td>
<td></td>
</tr>
<tr>
<td><strong>Auditory Disturbances</strong></td>
<td><strong>Hallucination</strong></td>
</tr>
<tr>
<td>0 - 7</td>
<td>0 - 2</td>
</tr>
<tr>
<td><strong>Visual Disturbances</strong></td>
<td></td>
</tr>
<tr>
<td>0 - 7</td>
<td></td>
</tr>
<tr>
<td><strong>Orientation and Clouding of Sensorium</strong></td>
<td><strong>Orientation</strong></td>
</tr>
<tr>
<td>0 - 4</td>
<td>0 - 2</td>
</tr>
<tr>
<td><strong>Headache, Fullness in Head</strong></td>
<td></td>
</tr>
<tr>
<td>0 - 7</td>
<td></td>
</tr>
</tbody>
</table>
Dose of Diazepam per Symptom-triggered Regimen

- Benzodiazepines used:
  - 80% with GMAWS
  - 67.5% with CIWA-Ar

1st 24 Hours

- Benzodiazepines used:
  - 80% with GMAWS
  - 67.5% with CIWA-Ar
Risk Stratified Management of AWS

**HIGH RISK OF SEVERE WITHDRAWAL**
Any 2 of the following:
- Presents with or previous withdrawal seizures
- Previous severely agitated withdrawal
- High screening score (FAST>12)
- High initial symptom score (GMAWS>9)

**FDT REGIMEN:**
- Initial 24 hours: **20mg Diazepam 6 hourly**
- **IF** no additional symptom triggered treatment, **then REDUCE** by 20mg per day in divided doses
- • Haloperidol for breakthrough symptoms; Adequate Nurse Supervision.
Number of Violent and Aggressive Incidents related to Alcohol:
ECMS at GRI (February – April)

Note: IR1 forms Feb/March 2008; Datix thereafter
Thiamine Treatment in AWS

• NICE Guidelines (CG100)
  – ‘Thiamine should be given in doses towards the upper end of the BNF range’.
  – Prophylactic parenteral thiamine followed by oral thiamine if they are malnourished OR have decompensated liver disease AND they attend the ED OR are admitted with acute illness or injury.
  – Parenteral thiamine for a minimum of 5 days if Wernicke’s.

• SIGN Guidelines (74)
  – ‘Pabrinex’ treatment ‘according to BNF’ for ‘several days’ if signs of Wernicke’s.
  – Patients ‘detoxifying’ should receive one pair of Pabrinex ampules daily for 3 days.
Thiamine in AWS: derived from ‘Alcohol – can the NHS afford it?’, 2001

Assess the risk or Wernicke’s Encephalopathy

Does the patient have any of the following signs/ symptoms?
- Confusion/ agitation
- Ataxia
- Opthalmoplegia
- Nystagmus
- Decreased consciousness
- Hypothermia/ hypotension

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If YES to any of these signs/symptoms:

Overt/ incipient Wernicke’s encephalopathy

Pabrinex IV, 2 pairs of vials three times daily for three days.

N.B. Check for and correct hypomagnesaemia

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If NO to all these signs/symptoms:

Risk of Wernicke’s Encephalopathy

Pabrinex IV/IM, 1 pair of vials once daily for three days.
(Or until confusion resolves – whichever is longer.)

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If YES to Risk of Wernicke’s Encephalopathy:

Low risk of Wernicke’s Encephalopathy

Thiamine, oral 100mg three times daily

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If NO to Risk of Wernicke’s Encephalopathy:

2 or more of the following:
- MUST Score > 2
- Malnourished
- Weight loss/ poor diet
- Diarrhoea
- Vomiting
It is not just straightforward AWS...

Alcohol Misuse in Acute Medical Admissions

- 850 admissions to the Victoria Infirmary, 2002/3
- 18.6% Michigan Alcohol Screening Test (MAST) positive (♂ 24.8%; ♀ 12.2%)
- Ethanol detectable in 13%; more common if MAST positive (36% cf 20%; p=0.0051). Relative to MAST, blood ethanol had a sensitivity of 36%, a specificity of 92%.
Detection of Alcohol Use Disorders

- **AUDIT**: the ‘gold standard’ for detection of alcohol misuse and dependency
- 10 question test

<table>
<thead>
<tr>
<th>Questions</th>
<th>Scoring system</th>
<th>Your score</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you have a drink containing alcohol?</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>How many units of alcohol do you drink on a typical day when you are drinking?</td>
<td>1 - 2</td>
<td>3 - 4</td>
</tr>
<tr>
<td>How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?</td>
<td>Never, less than monthly, monthly, weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>How often during the last year have you found that you were not able to stop drinking once you had started?</td>
<td>Never, less than monthly, monthly, weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>How often during the last year have you failed to do what was normally expected from you because of your drinking?</td>
<td>Never, less than monthly, monthly, weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?</td>
<td>Never, less than monthly, monthly, weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>How often during the last year have you had a feeling of guilt or remorse after drinking?</td>
<td>Never, less than monthly, monthly, weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>How often during the last year have you been unable to remember what happened the night before because you had been drinking?</td>
<td>Never, less than monthly, monthly, weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>Have you or somebody else been injured as a result of your drinking?</td>
<td>No</td>
<td>Yes, but not in the last year</td>
</tr>
<tr>
<td>Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?</td>
<td>No</td>
<td>Yes, but not in the last year</td>
</tr>
</tbody>
</table>
# Rapid Screening

## PAT

1. Do you drink alcohol?  
   - Yes – go to 2.  
   - No

2. What is the most you drink in any one day?  
   (Pub measures shown in brackets)

<table>
<thead>
<tr>
<th>Alcohol Type</th>
<th>Measure 1</th>
<th>Measure 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beer/lager/cider</td>
<td>Pints (2)</td>
<td>Cans (1.5)</td>
</tr>
<tr>
<td>Strong beer/lager/cider</td>
<td>Pints (5)</td>
<td>Cans (4)</td>
</tr>
<tr>
<td>Wine</td>
<td>Glasses (1.5)</td>
<td>Bottles (9)</td>
</tr>
<tr>
<td>Fortified wine</td>
<td>Glasses (1)</td>
<td>Bottles (12)</td>
</tr>
<tr>
<td>Spirits</td>
<td>Singles (1)</td>
<td>Bottles (30)</td>
</tr>
</tbody>
</table>

**Total _____**

3. If this is more than 8 units per day for a man and 6 units per day for a woman, does this happen:  
   - once a week or more = PAT +ve  
   - or, if less frequent:  
     - at least once a month = PAT +ve  
     - less than once a month = PAT –ve (trumped by 4)

4. Do you feel your current attendance is related to alcohol?  
   - Yes = PAT +ve  
   - No = PAT –ve

## AUDIT-C

### Questions

<table>
<thead>
<tr>
<th>Questions</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you have a drink containing alcohol?</td>
<td>Never</td>
<td>Monthly or less</td>
<td>2-4 times per month</td>
<td>2-3 times per week</td>
<td>4+ times per week</td>
</tr>
<tr>
<td>How many units of alcohol do you drink on a typical day when you are drinking?</td>
<td>1-2</td>
<td>3-4</td>
<td>5-6</td>
<td>7-9</td>
<td>10+</td>
</tr>
<tr>
<td>How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
</tbody>
</table>
FAST Detection of Patients at Risk

- Recommended by SIGN Guideline (74)
- **FAST**: an abbreviated version AUDIT (Hodgson et al, 2002).
- FAST Score relative to CAGE positivity:
  - AUROC: 0.831 (0.784, 0.871)
  - FAST>8: CAGE positive

For the following questions please circle the answer which best applies.

1. **drink = 1/2 pint of beer or 1 glass of wine or 1 single spirits**
   - **MEN**: How often do you have EIGHT or more drinks on one occasion?
   - **WOMEN**: How often do you have SIX or more drinks on one occasion?
   - 0 Never 1 Less than monthly 2 Monthly 3 Weekly 4 Daily or almost daily

2. How often during the last year have you been unable to remember what happened the night before because you had been drinking?
   - 0 Never 1 Less than monthly 2 Monthly 3 Weekly 4 Daily or almost daily

3. How often during the last year have you failed to do what was normally expected of you because of drinking?
   - 0 Never 1 Less than monthly 2 Monthly 3 Weekly 4 Daily or almost daily

4. In the last year has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?
   - 0 No 1 Yes, on one occasion 2 Yes, on more than one occasion 3 4
FAST Scores Relative to CAGE Positivity and AWS Treatment

- 305 unselected acute medical admissions to WIG and GRI with hazardous drinking (FAST ≥3).

<table>
<thead>
<tr>
<th></th>
<th>FIRST 24 Hours &gt;40mg Diazepam</th>
<th>HOSPITAL STAY &gt;100mg Diazepam</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAST&lt;9</td>
<td>23%</td>
<td>8%</td>
</tr>
<tr>
<td>FAST≥9</td>
<td>51%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>p=0.007 (14.5, 41.5)</td>
<td>p=0.002 (13.4, 32.6)</td>
</tr>
</tbody>
</table>
AWS Complicating other Acute Medical Presentations

● Differential Diagnosis:
  – Intoxication: alcohol / other drugs
  – Encephalopathy: Wernicke’s or Hepatic
  – Acute confusional state
  – Subdural Haemorrhage

● EXCEPTIONAL PATIENT GROUPS:
  – Elderly patients
  – Patients with evidence of liver disease (especially jaundice, encephalopathy)
  – Patients with other co-morbidity (i.e. COPD, pneumonia, cerebrovascular disease, head injury, reduced GCS)
  – Consider oral STT Lorazepam: 1-2 mg
Metabolism of Benzodiazepines

Chlordiazepoxide

Diazepam

HEPATIC OXIDATION

Desmethyldiazepam

Diazepam lipophilic, therefore rapid CNS distribution but variable peripheral distribution.

Oxazepam

HEPATIC GLUCURONIDATION

Lorazepam

Inactive Metabolites

Short-acting benzodiazepines recommended for ALD patients with AWS.
# Features of Patients Treated for AWS and Admission FAST Scores

<table>
<thead>
<tr>
<th>Presenting Features/Primary Diagnoses</th>
<th>Primary Alcohol related Presentation (n=153)</th>
<th>Known Liver Disease or Liver Presentation (n=53)</th>
<th>Other Acute Medical Presentation (n=106)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWS: 87 (57%)</td>
<td>Decompensated ALD: 22 (42%)</td>
<td>Overdose: 27 (25%)</td>
<td></td>
</tr>
<tr>
<td>Seizures: 60 (39%)</td>
<td>AWS: 11 (21%)</td>
<td>Chest pain: 19 (18%)</td>
<td></td>
</tr>
<tr>
<td>Collapse: 4 (3%)</td>
<td>Alcoholic Hepatitis: 9 (17%)</td>
<td>Sepsis: 11 (10%)</td>
<td></td>
</tr>
<tr>
<td>Vomiting: 2 (1%)</td>
<td>GI Bleed: 5 (9%) (3 variceal)</td>
<td>Abdominal: 10 (9%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Misc: 6 (11%) (HCC; overdose; trauma; seizures x3)</td>
<td>GI Bleed: 8 (8%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Breathless: 6 (6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Misc: 25 (24%)</td>
<td></td>
</tr>
</tbody>
</table>
## Treatment Given for AWS

<table>
<thead>
<tr>
<th></th>
<th>Primary Alcohol related Presentation</th>
<th>Known Liver Disease or Liver Presentation</th>
<th>Other Acute Medical Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STT: FDT ratio</strong></td>
<td>1.22</td>
<td>3.08 (p=0.018)</td>
<td>4.82 (p&lt;0.0001)</td>
</tr>
<tr>
<td><strong>Not Requiring BZD</strong></td>
<td>16 (10%)</td>
<td>14 (26%) (p=0.008)</td>
<td>35 (33%) (p&lt;0.0001)</td>
</tr>
<tr>
<td><strong>Median BZD use (mg diazepam equivalent)</strong></td>
<td>130 (105, 160)</td>
<td>70 (48, 111) (p=0.003)</td>
<td>40 (30, 80) (p=0.0001)</td>
</tr>
<tr>
<td><strong>Lorazepam Use</strong></td>
<td>5% (p=0.1)</td>
<td>13%</td>
<td>3% (p=0.04)</td>
</tr>
<tr>
<td>‘Breakthrough’ Parenteral Treatment</td>
<td>4.6%</td>
<td>5.6%</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

* Total prescription during hospitalisation
Management of AWS: clinical practice

- AWS is a common problem in General Hospital patients.
- AWS may complicate acute medical patients admitted for other reasons.
- Routine screening for alcohol misuse/dependency identifies patients at risk of AWS.
- Benzodiazepines are the mainstay of AWS treatment.
- Stratification of risk of AWS allows targeted use of STT and FDT regimens.
- Simpler STT scores such as GMAAWS are effective in General Hospitals.
- ALD patients with AWS can be managed using short-acting benzodiazepines such as lorazepam in a STT fashion.