ALCOHOL USE DISORDER
WITHDRAWAL MANAGEMENT AND LONG TERM TREATMENT

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Prevalence of 12-Month Alcohol Use, High-Risk Drinking, and *DSM-IV* Alcohol Use Disorder in the United States, 2001-2002 to 2012-2013

**Alcoholism is on the rise**

Rate of alcohol use disorder (alcoholism) among U.S. adults age 18 and older

![Graph showing increase in alcohol use disorder](source: Grant et. al., 2017)

The COST of Excessive Alcohol Use

A Drain on the American Economy

Healthcare $28 billion

Workplace Productivity $179 billion

Collisions $13 billion

Criminal Justice $25 billion

$249 billion loss

www.cdc.gov/alcohol

https://www.cdc.gov/alcohol/onlinemedia/infographics/cost-excessive-alcohol-use.html
7 in 10 adults always drink at low-risk levels or do not drink at all.

37% always drink at low-risk levels.

28% drink at heavy or at-risk levels.

35% don’t drink at all.

3 in 10 adults drink at levels that put them at risk for alcoholism, liver disease, and other problems.

*Although the minimum legal drinking age in the U.S. is 21, this survey included people aged 18 or older.
DSM-5

- Uses 11 criteria (excluding “legal problems”)
- 2 – 3 positive criteria = mild disease
- 4 – 5 positive criteria = moderate disease
- 6 or more criteria = severe disease
- Modifiers: early remission (3-12 months), sustained remission (>12 months), “controlled environment” (restricted access)
DSM-5 CRITERIA

• Alcohol is often taken in larger amounts over longer periods than was intended

• There is a persistent desire or unsuccessful efforts to cut down or control alcohol use

• A great deal of time is spent in activities attempting to obtain alcohol, use alcohol or recovering from its effects

• Craving for alcohol

• Recurrent use resulting in failure to fulfill obligations
DSM-5 CRITERIA (CONT'D)

• Continued use despite persistent or recurrent interpersonal problems resulting from or exacerbated by alcohol use

• Important activities given up because of alcohol use

• Recurrent use in situations in which it is physically hazardous

• Use is continued despite having physical or psychological problems either worsened or likely due to alcohol use

• Tolerance

• Withdrawals
Natural History of Alcohol Dependence

Mid-20s to early 40s: 1st major alcohol-related life problem emerges

Early to mid-20s: Difficulties with alcohol use escalate

Early: Drinking behavior similar to peers

Established dependency: Exacerbations and remissions

Long-term abstinence:
- Without formal treatment or self-help groups: 20% chance long-term abstinence
- With treatment: 50% to 66% maintain abstinence ≥1 year

WHAT DOES ETIONH DO?
CNS AND NEUROTRANSMITTER ACTIONS OF ETHOH

• Indirectly increases dopamine levels, resulting in pleasurable effects of acute alcohol use. Chronic use increases dopamine receptors

• Stimulates endogenous opiate-like compounds (beta-endorphins) which produce pleasurable effects of alcohol by disinhibition of dopamine neurons

• GABA inhibition increased in acute EtOH use

• Inhibits the effects of glutamate, the major excitatory neurotransmitter in the brain
MAJOR ALCOHOL METABOLIC PATHWAY (~90%)
METABOLISM RATE (ZERO ORDER KINETICS)

• 80% adult population will metabolize at 0.015 g/dl/hour; for moderate to heavy drinkers this will increase to 0.017-0.020 g/dl/hr

• What are the differences in metabolism between men and women?
  - Women are smaller than men
  - Gastric ADH lower in women
  - Fluctuations in hormonal levels during menstrual cycle may affect rate of metabolism
  - Women have a lower total body water content than men of comparable size
IS THERE A PROBLEM?

- **Alcohol Dependence Scale** – 25 items – copyrighted

- **Alcohol Use Disorders Identification Test (AUDIT)** - 10 item screening questionnaire copyrighted by WHO and it’s FREE
  - Each item worth 4 points with the usual cutoff greater than or equal to 8
  - Identifies problem drinking – sensitivity 57-95% and specificity 78-96%
  - Abuse and dependence – sensitivity 61-96% and specificity 85-96%
  - May miss past problems
1 Standard Drink = 0.6 fluid oz. of 100% alcohol

**Beer**
- 12 oz.
- 5% alcohol

**Wine**
- 5 oz.
- 12% alcohol

**Liquor**
- 1.5 oz.
- 80 proof

**Equivalency**
- 12 oz. Beer
- 8 oz. Malt Liquor
- 5 oz. Wine
- 1 oz. Liquor

Alcohol percentage and container volume will determine number of standard drinks.

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https://gordiecenter.studenthealth.virginia.edu/alcohol-drugs
**POSSIBLE BEHAVIORS WITH ALCOHOL INGESTION IN A NON-DEPENDENT PERSON**

<table>
<thead>
<tr>
<th>BAC (g/dL)</th>
<th># OF DRINKS</th>
<th>BEHAVIORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01 – 0.05</td>
<td>1 – 2</td>
<td>Euphoria and perceived reduction in anxiety</td>
</tr>
<tr>
<td>0.06 – 0.10</td>
<td>3 – 5</td>
<td>Impaired judgment and motor coordination</td>
</tr>
<tr>
<td>0.20 – 0.25</td>
<td>10 – 13</td>
<td>Sedation</td>
</tr>
<tr>
<td>0.30 – 0.40</td>
<td>---</td>
<td>Memory impairment with possible LOC</td>
</tr>
<tr>
<td>0.40 – 0.60</td>
<td>---</td>
<td>Depressed respiration, coma, death</td>
</tr>
</tbody>
</table>
## AUDIT-C

*Please circle the answer that is correct for you.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. How often do you have a drink containing alcohol?</strong></td>
<td></td>
</tr>
<tr>
<td>Never (0)</td>
<td></td>
</tr>
<tr>
<td>Monthly or less (1)</td>
<td></td>
</tr>
<tr>
<td>Two to four times a month (2)</td>
<td></td>
</tr>
<tr>
<td>Two to three times per week (3)</td>
<td></td>
</tr>
<tr>
<td>Four or more times a week (4)</td>
<td></td>
</tr>
<tr>
<td><strong>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</strong></td>
<td></td>
</tr>
<tr>
<td>1 or 2 (0)</td>
<td></td>
</tr>
<tr>
<td>3 or 4 (1)</td>
<td></td>
</tr>
<tr>
<td>5 or 6 (2)</td>
<td></td>
</tr>
<tr>
<td>7 to 9 (3)</td>
<td></td>
</tr>
<tr>
<td>10 or more (4)</td>
<td></td>
</tr>
<tr>
<td><strong>3. How often do you have six or more drinks on one occasion?</strong></td>
<td></td>
</tr>
<tr>
<td>Never (0)</td>
<td></td>
</tr>
<tr>
<td>Less than Monthly (1)</td>
<td></td>
</tr>
<tr>
<td>Monthly (2)</td>
<td></td>
</tr>
<tr>
<td>Two to three times per week (3)</td>
<td></td>
</tr>
<tr>
<td>Four or more times a week (4)</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td></td>
</tr>
<tr>
<td>Add the number for each question to get your total score.</td>
<td></td>
</tr>
</tbody>
</table>

Maximum score is 12. A score of $\geq 4$ identifies 86% of men who report drinking above recommended levels or meets criteria for alcohol use disorders. A score of $> 2$ identifies 84% of women who report hazardous drinking or alcohol use disorders.
CAGE Questionnaire

Have you ever felt you should **Cut down** on your drinking?

Have people **Annoyed** you by criticising your drinking?

Ever felt bad or **Guilty** about your drinking?

Ever had an **Eye opener** to steady nerves in the morning?

Yes to ≥ 2 is quite good at detecting alcohol abuse and dependence
WHAT DO I DO NOW?
DOES MY PATIENT FIRST NEED DETOX?

• Treatment should be individualized

• Detox implies separating the patient from the toxic effect of the drug. In order to do this safely it may require pharmacological assistance.

• GOAL: prevent harmful sequela e

  • Who and where
ALCOHOL WITHDRAWAL: DSM-5 CRITERIA

A. Cessation of (or reduction in) alcohol use that has been heavy and prolonged

B. Two (or more) of the following developing within several hours to days following A.
   • Autonomic instability
   • Increased hand tremor
   • Insomnia
   • N/V
   • Transient visual, tactile or auditory hallucinations
   • Psychomotor agitation
   • Grand mal seizures
C. Symptoms in criterion B cause significant distress or impairment in important areas of functioning

D. Symptoms are not due to a general medical condition and are not accounted for by another mental disorder
OK, IS THIS PATIENT SAFE FOR DETOX OUTPATIENT?
WHAT MEDICATIONS CAN I USE?

OUTPATIENT

• Gabapentin – 300 mg QID on days 1-3 then 300 mg TID on day 4, 300 mg BID on day 5 and 300 mg qhs on day 6
• Carbamazepine – 200 mg QID on day 1 and 2, then 200 mg TID day 3 and 4, then BID day 5 and qd day 6

INPATIENT

• Benzodiazepines or phenobarbital work best for moderate to severe withdrawal. Show protective benefit against seizures.
• Thiamine administration may prevent Wernike-Korsakoff’s in patients at high risk.
Clinical Institute Withdrawal Assessment of Alcohol Scale (CIWA-Ar)
<table>
<thead>
<tr>
<th>Treatment modality</th>
<th>Examples and resources</th>
<th>Appropriate patients</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual help meetings</td>
<td>Alcoholics Anonymous (<a href="http://www.aa.org">http://www.aa.org</a>)</td>
<td>Patients at any stage of readiness, including ongoing substance use</td>
<td>Usually based on a 12-step model of recovery; peer-led groups that support all stages of recovery; free and available in most communities</td>
</tr>
<tr>
<td>Medically supervised withdrawal</td>
<td>American Society of Addiction Medicine Physician Finder (<a href="http://community.asam.org/search/default.asp?m=basic">http://community.asam.org/search/default.asp?m=basic</a>)</td>
<td></td>
<td>A precursor to drug treatment that addresses the acute effects of stopping drug use; inpatient treatment is appropriate for patients at risk of severe withdrawal or with significant comorbid medical and psychiatric conditions; length of treatment is generally days to weeks; patients transition to mutual help meetings or outpatient or residential treatment</td>
</tr>
<tr>
<td>Outpatient treatment</td>
<td>American Society of Addiction Medicine Physician Finder (<a href="http://community.asam.org/search/default.asp?m=basic">http://community.asam.org/search/default.asp?m=basic</a>)</td>
<td></td>
<td>Services can include group and individual counseling in a variety of modalities, as well as pharmacotherapy; variable intensity and duration of services; some providers have dual diagnosis services; patients can continue to work and participate in family and social life</td>
</tr>
<tr>
<td>Residential treatment</td>
<td>Therapeutic community model, short-term residential treatment, 12-step residential treatment, intensive inpatient treatment</td>
<td>Patients who need a stable and safe living environment; patients generally have more severe addiction and more comorbidities than those in an outpatient setting, and may be at high risk of relapse, mental health crisis, or behavioral problems</td>
<td>24-hour-per-day care and a stable living environment; longer treatment periods of weeks to months; treatment is more highly structured than outpatient treatment; intensive inpatient treatment provides medically managed care in a general medical or psychiatric hospital</td>
</tr>
</tbody>
</table>

SAMHSA = Substance Abuse and Mental Health Services Administration.
Information from reference 39.
TREATMENT FOLLOWING DETOX

• The goal is to enhance function, optimize motivation, restructure life without alcohol and prevent relapse.

• What does the FDA approve?
  • Disulfiram
  • Naltrexone
  • Acamprosate

• Other non-FDA approved options?
  • Gabapentin
  • SSRIs
DISULFIRAM

• Inhibits aldehyde dehydrogenase – with alcohol intake the patient will experience N/V, headache and flushing

• Effective therapy – typically dose around 250 mg qday

• LFT’s must be monitored weekly for first 4 wks, then biweekly for 4 wks and then monthly
  – Has been associated with idiosyncratic acute liver failure.

• Network therapy
NALTREXONE

• Comes in both oral and injectable form

• Reduces reward from alcohol by blocking opioid receptors

• Oral dose is 50 mg qday

• Injectable dose is given q28 days

• Patients should carry a Naltrexone card
ACAMPROSATE

- Mechanism of action not completely understood

- Usual dose is 666 mg TID
WHAT ELSE?
NON-PHARMACOLOGIC TREATMENT

• 12 step meetings
• Intensive outpatient programs
• Residential treatment centers
• CBT
• SMART recovery, LifeRing, Women for Sobriety, Secular groups