Some Medical Inpatients With Unhealthy Alcohol Use May Benefit From Brief Intervention


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Support from the National Institute on Alcohol Abuse and Alcoholism (R01 AA 12617)
Professional organizations recommend screening and brief intervention (BI) for all adults with unhealthy alcohol use (UAU).

Large federal efforts are underway to implement screening of all patients, with BI (including referral) for those with UAU.

But, the best evidence for the efficacy of BI is limited to those with nondependent use in primary care settings (Kaner et al. 2007).
The evidence for efficacy of BI...

- Is mixed in emergency department and hospital settings (Daeppen et al. 2007; Emmen et al. 2004), and
- Suggests small or no benefit in studies that minimize exclusion criteria (Beich et al. 2007; Saitz et al. 2007).

The efficacy of BI may also be moderated by patient characteristics (e.g., sociodemographics, severity, comorbidity, readiness to change).
Objective

- To assess moderators of brief intervention efficacy in medical inpatients with unhealthy alcohol use who are identified by screening
  - To identify subgroups of inpatients who may benefit from brief intervention
Methods

- Secondary analysis of a randomized controlled trial in general medical inpatients that found no significant effect of BI on...
  - Consumption
  - Consequences
  - Readiness to change
  - Physical or mental health-related quality of life
  - Healthcare utilization
  - Receipt of treatment for those with dependence

RCT Study Design

Screen for Risky Drinking

Informed Consent

Baseline Assessment

Randomization: Stratified by AUDIT > 12

Usual Care

Intervention

3 Month Interview

12 Month Interview
Eligibility

- Current risky drinking amounts
  - >14/>4 drinks per week/occasion for men <=65; else >11/>3
- 18 years or older
- Medicine inpatients
- Able to be interviewed
- Provide 2 contact persons
- Speak English or Spanish
- Mini-Mental State Examination (MMSE) score ≥21

Note: Readiness to change was NOT an entry criterion.
Intervention

- Motivational interviewing, ≤30 minutes
- Feedback based on consumption, AUDIT score, readiness, Short Inventory of Problems, and alcohol-related medical diagnoses
- Change plan, mailed
- Discussion with hospital staff
- Review of audiotapes with research psychologist

AUDIT=Alcohol Use Disorders Identification Test
Outcomes

- Receipt of alcohol treatment at 3 months (dependent subjects only)
- Consumption (30-day) at 3 and 12 months
- Changes from enrollment to 3 and 12 months in…
  - alcohol problems
  - readiness to change
  - physical and mental health-related quality of life
  - healthcare utilization (emergency department, hospital)
Analyses

- Logistic and linear regression, intention to treat, stratified by alcohol dependence
  - Pre-specified subgroup analyses
    - testing interaction terms (between subject characteristics and intervention)
    - analyses stratified by factors of interest
    - Adjusted for potential confounders, when possible
Analyses (cont.)

- Adjusted for baseline imbalances when possible
  - Of 80 comparisons (40 per stratum) of baseline characteristics, 6 were $p<0.05$
    - Among subjects *without dependence*, controls had lower mental health-related quality of life.
    - Among subjects *with dependence*, controls were less likely to be male, have received recent alcohol treatment, to have an alcohol-attributable medical diagnosis, a family history of alcoholism, or to have substantial depressive symptoms.
Results

- Of 341 subjects enrolled, 172 were randomized to intervention, 169 to the control group; 77% had dependence.

- Over 12 months, 11 died; 90% (308) of all enrolled subjects completed a follow-up.

  - Subjects who completed any follow-up were generally similar to those lost to follow-up.
Receipt of Alcohol Treatment

Dependent Subjects at 3 months
N=209

- 52% of intervention vs. 39% of control subjects received alcohol treatment by 3 months.
  - AOR, 1.6; 95% CI, 0.9-2.8; P=0.08
## Receipt of Alcohol Treatment Dependent Subjects at 3 months

<table>
<thead>
<tr>
<th>Stratification</th>
<th>Unadjusted ORs (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Men (n=145)</td>
<td>1.2 (0.6-2.4)</td>
</tr>
<tr>
<td>Women (n=64)</td>
<td>4.0 (1.3-11.8)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;44 (n=93)</td>
<td>3.3 (1.4-7.7)</td>
</tr>
<tr>
<td>≥44 (n=116)</td>
<td>1.0 (0.5-2.0)</td>
</tr>
<tr>
<td><strong>Cognitive Function</strong></td>
<td></td>
</tr>
<tr>
<td>Higher (MMSE ≥27) (n=108)</td>
<td>2.1 (0.7-5.8)</td>
</tr>
<tr>
<td>Lower (MMSE &lt;27) (n=101)</td>
<td>0.74 (0.3-2.2)</td>
</tr>
</tbody>
</table>
## Receipt of Alcohol Treatment

Dependent Subjects at 3 months

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<thead>
<tr>
<th>Stratification</th>
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<tr>
<td><strong>Sex and Age</strong></td>
<td></td>
</tr>
<tr>
<td>Men &lt;44 (n=58)</td>
<td>3.2 (1.1-9.3)</td>
</tr>
<tr>
<td>Men ≥44 (n=87)</td>
<td>0.6 (0.3-1.5)</td>
</tr>
<tr>
<td>Women &lt;44 (n=35)</td>
<td>4.4 (0.9-21.2)</td>
</tr>
<tr>
<td>Women ≥44 (n=29)</td>
<td>3.7 (0.8-17.4)</td>
</tr>
</tbody>
</table>
Receipt of Alcohol Treatment Dependent Subjects at 3 months

- Brief intervention effects were not moderated by:
  - Mental health-related quality of life
  - Homelessness
  - Heroin or cocaine use
  - Readiness to change
## Receipt of Alcohol Treatment
### Dependent Subjects at 3 months

<table>
<thead>
<tr>
<th>Stratification</th>
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<tbody>
<tr>
<td><strong>Sex and Alcohol Attributable Medical Diagnosis</strong></td>
<td></td>
</tr>
<tr>
<td>Men with a diagnosis (n=82)</td>
<td>1.1 (0.5-2.7)</td>
</tr>
<tr>
<td>Men without a diagnosis (n=63)</td>
<td>1.1 (0.4-3.1)</td>
</tr>
<tr>
<td>Women with a diagnosis (n=29)</td>
<td>35.7 (3.5-368.8)</td>
</tr>
<tr>
<td>Women without a diagnosis (n=35)</td>
<td>0.7 (0.1-3.3)</td>
</tr>
<tr>
<td><strong>Sex and Cognitive Function (CF)</strong></td>
<td></td>
</tr>
<tr>
<td>Men with higher CF (n=76)</td>
<td>1.5 (0.6-3.7)</td>
</tr>
<tr>
<td>Men with lower CF (n=69)</td>
<td>1.0 (0.4-2.6)</td>
</tr>
<tr>
<td>Women with higher CF (n=32)</td>
<td>6.7 (1.3-34.0)</td>
</tr>
<tr>
<td>Women with lower CF (n=32)</td>
<td>2.4 (0.6-10.8)</td>
</tr>
</tbody>
</table>
## Changes in Alcohol Consumption

**Among subjects without dependence:**

<table>
<thead>
<tr>
<th>Adjusted Mean Changes in...</th>
<th>3 Months*</th>
<th>12 Months*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Interv</td>
</tr>
<tr>
<td><strong># drinks/day</strong></td>
<td>1.5</td>
<td>-0.6</td>
</tr>
<tr>
<td><strong># heavy drinking episodes</strong></td>
<td>1.0</td>
<td>-0.9</td>
</tr>
<tr>
<td><strong># days abstinent episodes</strong></td>
<td>-0.3</td>
<td>-0.3</td>
</tr>
</tbody>
</table>

*No significant group differences. Adjusted for sex, alcohol treatment in the 3 months before enrollment, family history of alcoholism, any drug use, alcohol problem score, and alcohol-attributable medical diagnoses.*
Among subjects with dependence:

<table>
<thead>
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<th>Adjusted Mean Changes in...</th>
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<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Interv</td>
</tr>
<tr>
<td># drinks/day</td>
<td>-3.4</td>
<td>-2.2</td>
</tr>
<tr>
<td># heavy drinking episodes</td>
<td>-6.3</td>
<td>-3.0</td>
</tr>
<tr>
<td># days abstinent episodes</td>
<td>5.9</td>
<td>2.5</td>
</tr>
</tbody>
</table>

*No significant group differences. Adjusted for sex, alcohol treatment in the 3 months before enrollment, family history of alcoholism, any drug use, alcohol problem score, and alcohol-attributable medical diagnoses.
Brief intervention effects on drinking (any measure) at 12 months were not moderated by:

- Sex
- Age
- Race
- Mental health-related quality of life
- Homelessness
- Alcohol-attributable medical diagnosis
- Cognitive functioning
- Readiness to change
## Changes in Consumption (cont.)

### Moderators

<table>
<thead>
<tr>
<th>Unadjusted analyses</th>
<th>Control</th>
<th>Interv</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean change in drinks/day (past 30 days) in subjects who:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Used heroin/cocaine (n=8)</td>
<td>+0.3</td>
<td>-8.5</td>
<td>0.10</td>
</tr>
<tr>
<td>- Did not use heroin/cocaine (n=56)</td>
<td>+0.6</td>
<td>-0.1</td>
<td>0.31</td>
</tr>
<tr>
<td><strong>Mean change in abstinent days (past 30 days) in subjects who:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Were ready to change (n=14)</td>
<td>-3.8</td>
<td>+4.3</td>
<td>0.02</td>
</tr>
<tr>
<td>- Were less ready to change (n=50)</td>
<td>+0.8</td>
<td>-1.8</td>
<td>0.38</td>
</tr>
</tbody>
</table>
Changes in Other Outcomes

Stratified analyses (dependence, no dependence)

- No effects on readiness, mental health or emergency department visits (3 or 12 months)

- 3 effects at 3 months (among many tested)
  - **Anticipated direction**: Among non-dependent, smaller increases in problems (SIP score) \( (p=0.05) \)
    - Intervention +0.7
    - Control +3.8

  - **“Wrong” direction**: Among dependent, smaller improvements in physical health-related quality of life and more days hospitalized
    - Physical component summary score \( (p=0.04) \)
      - Intervention +0.4
      - Control +3.3
    - Days hospitalized \( (p=0.05) \)
      - Intervention +9.0
      - Control +3.2

Values are unadjusted mean changes
Changes in Other Outcomes

Among dependent, and nondependent subjects, there were no significant differences by randomized group at 3 or 12 months on:

- Alcohol problems
- Readiness to change
- Physical health-related quality of life
- Mental health-related quality of life
- Hospitalization
- Emergency department visits
Limitations

- Secondary data analysis
  - Subgroup analyses
    - Small sample sizes
    - Inability to adjust for baseline imbalances
    - Multiple comparisons
    - Exploratory, hypothesis generating
Conclusions

- In medical inpatients, brief intervention may increase receipt of treatment among alcohol dependent women, younger men, and patients with higher cognitive functioning
  - Having an alcohol-attributable medical diagnosis may moderate the effect of BI (among women)

- But in this setting, brief intervention’s effects on consumption and other outcomes are uncertain.
  - Few convincing moderators of these associations
Implications

- The target of screening—unhealthy alcohol use—is often not amenable to single, brief intervention.

- Research should begin to address when, for whom, and under what circumstances BI is or is not effective, and for what outcomes.

- Clinical implementation efforts should consider these complexities as dissemination of screening and brief intervention programs proceeds.
Staff and Co-Investigators

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THANK YOU