Practical tools for adolescent alcohol and drug abuse prevention in primary care: A multi-site RCT of universal computer-facilitated Screening and Brief Intervention

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Funding Sources

National Institute on Alcohol Abuse and Alcoholism (NIAAA) awards:

- R01AA021904
- R34AA023026

Other support provided by:

- Grant 1R01DA018848 from the National Institute on Drug Abuse
- Grants #T71NC0009 (SKH) from the Maternal and Child Health Bureau, HRSA, USDHHS
Special thanks to...

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Continuing Medical Education Commercial Disclosure

I, Sion Kim Harris, have no commercial relationships to disclose.
Primary care providers (PCPs) can play an important role in adolescent substance use (SU) screening, prevention, and intervention\(^1\)

AAP recommends all adolescents receive SU screening and brief counseling annually

Key implementation barriers: lack of time and training

\(^1\) AAP Committee on Substance Use and Prevention. Pediatrics. 2016;138(1):e20161210
Study Aim

- Developed a computer-facilitated Screening and Brief Intervention (cSBI) system
- Conduct an initial randomized controlled trial of cSBI compared to usual care (UC) among 12- to 18-year-old primary care patients, testing:
  - **Feasibility/acceptability**: receipt of, and satisfaction with, provider counseling about alcohol and drug use
  - **Efficacy**: alcohol and drug use during 12 months
cSBI System for Primary Care

Computerized system includes:

- Self-administered screener (CRAFFT)
- Personalized feedback about score and risk-level
- Brief interactive psychoeducational pages illustrating health risks of substance use to prime patient
- Provider Report with screen results, ‘talking points’ to prompt 2-3 minute provider/teen discussion; and recommended follow-up plan
Multi-site patient-randomized controlled trial conducted 2015-2017

- Patients within each practice randomized by computer to cSBI or UC (2:1 ratio)

- Setting: 5 large pediatric practices in the Boston area
Recruited and trained 54 providers (MD, NP)
Consecutively recruited English-speaking 12- to 18-year-olds presenting for annual check-up
IRB approval, with waiver of parental consent
  Informed assent for 12- to 17-year-olds; consent for 18-year-olds
  Up to $70 in merchandise gift cards for study completion
Study Flow Diagram

Participant Assent/Consent

Screening and Baseline Assessment

Randomized

cSBI

UC

cSBI: Feedback and Education (~4 minutes)

3-, 6-, 9-, 12-mo follow-ups online

Post-visit questionnaire while still in clinic

PCP Report

3-, 6-, 9-, 12-mo follow-ups online

Post-visit questionnaire while still in clinic

Participants are randomized to receive cSBI or UC.

Participants complete a post-visit questionnaire while still in clinic.

3-, 6-, 9-, 12-mo follow-ups online are conducted.

PCP Report generated.
Measures

Feasibility/Acceptability:

- Adolescent post-visit report of receipt of provider counseling; ratings of counseling quality

Alcohol and drug use:

- **Baseline**: Timeline Follow-Back (TLFB) calendar interview administered by trained RA
- **Follow-ups**: Computer self-administered TLFB through secure online questionnaire
Your brain grows and develops in critically important new ways until your mid-20’s.

While your brain is developing, it is more sensitive to the harmful effects of using ALCOHOL, MARIJUANA, TOBACCO, and other drugs.

The Prefrontal Cortex is important for problem-solving, planning, self-control, attention.

Alcohol and drugs can cause poorer planning, self-control, and decision-making.
Data Analysis

Time to first post-visit alcohol or drug use:

- Cox Proportional Hazards modeling, adjusting for cluster sampling design (SUDAAN™ software)
- Stratified analysis by past-12-month use of substance (any/none) reported at baseline
- Models controlled for any baseline variables that differed between groups
Sample Flow Diagram

Eligible & Invited
1062

Baseline
869 (82%)

cSBI
626

Randomized
624 (99%)

Immediate Post-Visit
499 (80%)

12-Mo Follow-up
185 (76%)

UC
243

243 (100%)
## Group Comparison at Baseline

<table>
<thead>
<tr>
<th></th>
<th>Usual Care (n=243)</th>
<th>cSBI (n=626)</th>
<th>p&lt;0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean ± SD years)</td>
<td>15.1 ± 1.8</td>
<td>14.7 ± 1.9</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>51%</td>
<td>51%</td>
<td></td>
</tr>
<tr>
<td>White non-Hispanic</td>
<td>42%</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>Parent college graduate</td>
<td>63%</td>
<td>65%</td>
<td></td>
</tr>
<tr>
<td>Past-12-month alcohol use</td>
<td>25%</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td>Past-12-month cannabis use</td>
<td>14%</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Past-12-month other drug use</td>
<td>1%</td>
<td>1%</td>
<td></td>
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</tbody>
</table>
Results: Feasibility/Acceptability

- 90% of the group counseled about alc/drugs
- 79% of the group gave advice rated Excellent/Very Good
- 63% of the group were very likely to follow advice

* p<.01

Legend:
- UC
- cSBI
Intervention Effects among those with past-12-month use at baseline visit
Time to First Alcohol Use After Visit (N=192)

Group: Past-12-month Alcohol Use at Baseline

Adjusted Hazard Ratio
0.66 (95%CI: 0.45, 0.95), p = .03

* Adjusted for patient’s age
Time to First Cannabis Use After Visit (N=106)

Group: Past-12-month Cannabis Use at Baseline

Adjusted Hazard Ratio*

0.57 (95%CI: 0.34, 0.95), p = .03

* Adjusted for patient’s age
Prevention Effects among those with *no* past-12-month use at baseline visit
Time to First Alcohol Use After Visit (N=676)

Group: No Past-12-month Alcohol Use at Baseline

Adjusted Hazard Ratio: 0.85 (95%CI: 0.56, 1.30), p = .43

* Adjusted for patient’s age
Time to First Cannabis Use After Visit (N=763)

Group: **No** Past-12-month Cannabis Use at Baseline

Adjusted Hazard Ratio

0.75 (95% CI: 0.43, 1.30), p = .32

* Adjusted for patient’s age
<table>
<thead>
<tr>
<th>Effect</th>
<th>Patient receipt of alc/drug counseling</th>
<th>Patient ratings of counseling quality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image" alt="Green Up Arrow" /></td>
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<tr>
<td></td>
<td>Time to first use post-visit among baseline users</td>
<td>Time to first use post-visit among baseline non-users</td>
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<td><img src="image" alt="Green Up Arrow" /></td>
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"Baseline users" and "baseline non-users" refer to different groups of patients as indicated.
Study Strengths/Limitations

- **Strengths**
  - RCT design
  - Five sites

- **Limitations**
  - All sites in Boston
  - Self-report
  - Unable to examine use of other drugs
  - Effect may be underestimated due to possible contamination of control condition
Our study demonstrates that the cSBI system was feasible and acceptable for implementation in busy pediatric practices.

cSBI shows promise for delaying post-visit alcohol and cannabis use among adolescent patients with prior use.

A larger national multi-site trial is needed.