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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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
Study Design

- 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

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

Post-visit questionnaire while still in clinic

PCP Report

cSBI: Feedback and Education (~4 minutes)

PCP Report

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL
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%)

UC: 243
- 12-Mo Follow-up: 185 (76%)
## Group Comparison at Baseline

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

*p<0.05*
Results: Feasibility/Acceptability

- Counseled about alc/drugs: 72% (UC) vs. 90% (cSBI), p<.01
- Advice Excellent/Very Good: 70% (UC) vs. 79% (cSBI)
- Very likely to follow advice: 53% (UC) vs. 63% (cSBI)

* p<.01
Intervention Effects among those with past-12-month use at baseline visit
Adjusted Hazard Ratio

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

Time to First Alcohol Use After Visit (N=192)

Group: Past-12-month Alcohol Use at Baseline

* 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>
<th>Time to first use post-visit among baseline users</th>
<th>Time to first use post-visit among baseline non-users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime</td>
<td>[Green Up Arrow]</td>
<td>[Green Up Arrow]</td>
<td>[Green Up Arrow]</td>
<td></td>
</tr>
</tbody>
</table>
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.
Provider Feedback

• 93% (50/54) completed debriefing questionnaire
• 88% rated cSBA very/moderately useful for their practice
• 80% reported increased confidence in discussing substance use with adolescents
• 62% would recommend cSBA to other practices

➢ “The most useful aspects of the cSBA system were having the risk assessment ready for me with any ‘at risk’ findings highlighted.”
➢ “A valuable talking point was to remind patients that their brains are still developing into their mid-20s and substance use can permanently affect neurological development.”
Consists of two parts:

1. Patient risk level, substance use, and positive CRAFFT Items

2. Brief Counseling points: “The 5 R’s”
Clinician Brief Counseling: “The 5 R’s”

1. Review: Screening results
2. Recommend: Not to use
3. Riding/Driving: Risk counseling
4. Response: Elicit self-motivational statements
5. Reinforce: Self-efficacy
### Screen Brief Advice

**Given:** 8/8/2015

#### BriefAdvice

<table>
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<th>1. Review: Screening results</th>
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<td>3. Riding/Driving: Risk counseling</td>
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<td>4. Response: Elicit self-motivational statements</td>
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<tr>
<td>5. Reinforce: Self-efficacy</td>
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</table>

1. “Thank you for your honest answers.” Review their use and consider assessing further.

   "If it’s okay with you, could I ask a few more questions about that?" "How much do you usually use?"; "When did you last use?"

**Discuss CRAFFT items:**

**RIDE:** "I see that you’ve ridden in a car with someone who had been using alcohol or drugs. Can you tell me more about that? (How many times? When did this last occur, Who was driving?)"

"Can you tell me more about how..."

- "...you use alcohol or drugs by yourself, ALONE?"
Alcohol Use Rates during Follow-up

Among those with prior use at baseline (N=192)

Adjusted Relative Risk Ratios (95%CI)

- 3 months: 0.68 (0.50-0.92)
- 6 months: 0.92 (0.76-1.11)
- 9 months: 0.90 (0.78-1.03)
- 12 months: 0.93 (0.81-1.07)
Cannabis Use Rates during Follow-up

Among those with prior use at baseline (N=106)

<table>
<thead>
<tr>
<th>Time</th>
<th>TAU</th>
<th>cSBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>60.0</td>
<td>41.7</td>
</tr>
<tr>
<td>6 months</td>
<td>84.0</td>
<td>60.0</td>
</tr>
<tr>
<td>9 months</td>
<td>91.7</td>
<td>76.0</td>
</tr>
<tr>
<td>12 months</td>
<td>100.0</td>
<td>75.5</td>
</tr>
</tbody>
</table>

Adjusted Relative Risk Ratios (95%CI):
- 3 months: 0.69 (0.45-1.07)
- 6 months: 0.72 (0.54-0.94)
- 9 months: 0.83 (0.68-1.01)
- 12 months: N/A
Alcohol Use Rates during Follow-up

Among those with no use at baseline (N=676)

<table>
<thead>
<tr>
<th></th>
<th>3 months</th>
<th>6 months</th>
<th>9 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAU</td>
<td>6.0</td>
<td>10.0</td>
<td>15.7</td>
<td>21.1</td>
</tr>
<tr>
<td>cSBA</td>
<td>2.2</td>
<td>8.6</td>
<td>12.5</td>
<td>16.5</td>
</tr>
</tbody>
</table>

Adjusted Relative Risk Ratios (95%CI)
- 3 months: TAU 0.42 (0.17-1.03), cSBA 1.00 (0.56-1.79)
- 6 months: TAU 0.93 (0.56-1.51), cSBA 0.89 (0.58-1.37)
Cannabis Use Rates during Follow-up

Among those with **no use** at baseline (N=763)

<table>
<thead>
<tr>
<th>Percent of group</th>
<th>TAU</th>
<th>cSBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>2.7</td>
<td>0.4</td>
</tr>
<tr>
<td>6 months</td>
<td>7.0</td>
<td>2.4</td>
</tr>
<tr>
<td>9 months</td>
<td>8.5</td>
<td>4.8</td>
</tr>
<tr>
<td>12 months</td>
<td>10.3</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Adjusted Relative Risk Ratios (95%CI)

<table>
<thead>
<tr>
<th></th>
<th>TAU</th>
<th>cSBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>0.17</td>
<td>0.40</td>
</tr>
<tr>
<td>(0.03-0.81)</td>
<td>(0.18-0.86)</td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td>0.40</td>
<td>0.65</td>
</tr>
<tr>
<td>(0.34-1.24)</td>
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<td></td>
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<tr>
<td>9 months</td>
<td>0.65</td>
<td>0.73</td>
</tr>
<tr>
<td>(0.40-1.34)</td>
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<td></td>
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<tr>
<td>12 months</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>(0.40-1.34)</td>
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