Validation of a computer self-administered Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) in primary care patients

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Research Support

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No relevant financial relationships to disclose
SBIRT for alcohol and drugs

Screening and Assessment

Low Risk
- Education, Monitoring

Moderate Risk
- Brief Intervention

High Risk or Dependence
- Referral, Treatment

STOP
More Optimal Workflow

Self-administered prior to the medical visit

ACASI ASSIST

- Low Risk: Education, Monitoring
- Moderate Risk: Brief Intervention
- High Risk or Dependence: Referral, Treatment
Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)

- Developed by WHO working group
- Validated:
  - In medical populations
  - Multiple languages
- Provides specific and clinically relevant information about use and level of risk
- Administered face-to-face, 5-15 minutes
During the past three months, how often has your use of **cocaine** *(coke, crack, etc.)* led to health, social, legal, or financial problems?

A) Never

B) Once or Twice

C) Monthly

D) Weekly

E) Daily or Almost Daily
Validation study: ACASI compared to interviewer ASSIST

Initial Consent → ACASI ASSIST → Feasibility
- Time
- Assistance
- Preference

Interviewer ASSIST → Demographics
- Health literacy

2nd Consent → Saliva Test

EXIT
Substances included in the ASSIST

<table>
<thead>
<tr>
<th>WHO ASSIST</th>
<th>Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>Prescription stimulants</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Prescription opioids</td>
</tr>
<tr>
<td>Cannabis</td>
<td></td>
</tr>
<tr>
<td>Methamphetamine</td>
<td></td>
</tr>
<tr>
<td>Inhalants</td>
<td></td>
</tr>
<tr>
<td>Sedatives or sleeping pills</td>
<td></td>
</tr>
<tr>
<td>Hallucinogens</td>
<td></td>
</tr>
<tr>
<td>Heroin</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

Prescription Drugs
ASSIST Scores

- **Global Score**: Sum of all responses (range 0-498)

- **Substance Specific Involvement Scores (SSIS)** (range 0-39)
  - Low risk: 0-3 (alcohol 0-10)
  - Moderate risk: 4-26 (alcohol 11-26)
  - High risk: 27+

- Summary scores for Illicit Drugs and Rx Drugs
  = Sum of SSIS for all substances in that class
1. Examine results for an order effect
   Is there a difference in ACASI ASSIST responses for those who took it before versus after the interviewer ASSIST?

2. Concordance of risk level
   Is there agreement in classifying substance use as low versus moderate-high risk?

3. Correlation of ASSIST scores
   How similar are the global and substance specific risk scores?

4. Analysis of differences (Bland-Altman approach)
   What are the limits of agreement for the global score?
Study Site and Recruitment

- Adult primary care clinic
- Urban safety net hospital
- Consecutively recruited from waiting area

Eligibility Criteria:
- Age 21-65
- Current clinic patient
- Fluent in English
- No disability preventing computer use
Participants Recruitment

Approached: $N = 2796$

Screened: $N = 2556$

Eligible: $N = 764$

Enrolled: $N = 399$

Completed interview: $N = 393$

Completed saliva test: $N = 331$

240 refused screening

1785 were excluded
  Language (53%)
  Age (23%)
  Not a patient (13%)
  Other (11%)

365 declined
  No time (71%)
  Refused (29%)

6 missing data

62 refused saliva test
### Characteristics of the 393 participants

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td><strong>Mean = 47, SD = 12</strong></td>
<td><strong>Range = 19-65</strong></td>
</tr>
<tr>
<td><strong>Sex (%)</strong></td>
<td><strong>Male</strong></td>
<td><strong>Female</strong></td>
</tr>
<tr>
<td></td>
<td><strong>52</strong></td>
<td><strong>48</strong></td>
</tr>
<tr>
<td><strong>Race/Ethnicity (%)</strong></td>
<td><strong>Black/African American</strong></td>
<td><strong>Hispanic</strong></td>
</tr>
<tr>
<td></td>
<td><strong>45</strong></td>
<td><strong>29</strong></td>
</tr>
<tr>
<td></td>
<td><strong>White/Caucasian</strong></td>
<td><strong>Other</strong></td>
</tr>
<tr>
<td></td>
<td><strong>15</strong></td>
<td><strong>11</strong></td>
</tr>
<tr>
<td><strong>Country of Birth (%)</strong></td>
<td><strong>United States</strong></td>
<td><strong>Outside of United States</strong></td>
</tr>
<tr>
<td></td>
<td><strong>67</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>
Education and Health Literacy

Highest Level of Education
- Less than high school: 28%
- High school diploma/GED: 18%
- College degree: 54%

Health Literacy Level
- 6th grade or below: 8%
- 7th to 8th grade: 32%
- High school or higher: 60%
Prevalence of substance use, interviewer ASSIST

<table>
<thead>
<tr>
<th>Substance</th>
<th>Lifetime use</th>
<th>Current use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Tobacco</td>
<td>254 (65)</td>
<td>135 (34)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>337 (86)</td>
<td>210 (53)</td>
</tr>
<tr>
<td>Any Drug</td>
<td>250 (64)</td>
<td>96 (24)</td>
</tr>
<tr>
<td>Illicit</td>
<td>240 (61)</td>
<td>82 (21)</td>
</tr>
<tr>
<td>Prescription</td>
<td>105 (27)</td>
<td>32 (8)</td>
</tr>
</tbody>
</table>
Examine ACASI ASSIST scores for order effect

<table>
<thead>
<tr>
<th>Score on ACASI ASSIST</th>
<th>Computer first N=191 Mean (SD)</th>
<th>Interviewer first N=202 Mean (SD)</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global score</td>
<td>34.92 (37.41)</td>
<td>32.51 (35.01)</td>
<td>0.761</td>
</tr>
<tr>
<td>Tobacco score</td>
<td>6.25 (9.08)</td>
<td>6.82 (9.52)</td>
<td>0.523</td>
</tr>
<tr>
<td>Alcohol score</td>
<td>5.99 (8.38)</td>
<td>6.12 (8.16)</td>
<td>0.742</td>
</tr>
<tr>
<td>Illicit drugs score</td>
<td>7.88 (15.08)</td>
<td>5.89 (11.59)</td>
<td>0.801</td>
</tr>
<tr>
<td>Rx drugs score</td>
<td>0.91 (4.24)</td>
<td>0.76 (5.59)</td>
<td>0.194</td>
</tr>
</tbody>
</table>

* Mann-Whitney U test
### Concordance of risk level: ACASI vs. Interviewer ASSIST

<table>
<thead>
<tr>
<th>Substance Use Variable</th>
<th>Individuals in risk category N (%)</th>
<th>Concordant risk level N (%)</th>
<th>Higher on ACASI N</th>
<th>Lower on ACASI N</th>
<th>P-value (McNemar)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tobacco</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low risk</td>
<td>242 (62)</td>
<td>238 (61)</td>
<td>11</td>
<td>15</td>
<td>.557</td>
</tr>
<tr>
<td>Mod OR high risk</td>
<td>151 (38)</td>
<td>155 (39)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Alcohol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low risk</td>
<td>319 (81)</td>
<td>323 (82)</td>
<td>18</td>
<td>14</td>
<td>.597</td>
</tr>
<tr>
<td>Mod OR high risk</td>
<td>74 (19)</td>
<td>70 (18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Illicit Drugs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low risk</td>
<td>271 (69)</td>
<td>284 (69)</td>
<td>21</td>
<td>8</td>
<td>.024</td>
</tr>
<tr>
<td>Mod OR high risk</td>
<td>122 (31)</td>
<td>109 (28)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prescription Drugs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low risk</td>
<td>367 (93)</td>
<td>358 (91)</td>
<td>10</td>
<td>10</td>
<td>.136</td>
</tr>
<tr>
<td>Mod OR high risk</td>
<td>26 (7)</td>
<td>35 (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Correlation of risk scores: ACASI vs. Interviewer ASSIST

<table>
<thead>
<tr>
<th>Substance Use Variable</th>
<th>ACASI</th>
<th>Interviewer</th>
<th>ICC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean score ± SD</td>
<td>Mean score ± SD</td>
<td></td>
</tr>
<tr>
<td>Global ASSIST score</td>
<td>32 ± 33</td>
<td>31 ± 33</td>
<td>.937</td>
</tr>
<tr>
<td>Tobacco</td>
<td>7 ± 9</td>
<td>7 ± 10</td>
<td>.927</td>
</tr>
<tr>
<td>Alcohol</td>
<td>6 ± 8</td>
<td>6 ± 8</td>
<td>.912</td>
</tr>
<tr>
<td>Illicit Drugs</td>
<td>7 ± 13</td>
<td>6 ± 13</td>
<td>.854</td>
</tr>
<tr>
<td>Prescription Drugs</td>
<td>3 ± 9</td>
<td>2 ± 6</td>
<td>.676</td>
</tr>
</tbody>
</table>
Limits of agreement: Bland and Altman analysis

Mean global score

Differences in global score, with 95% limits of agreement
Oral fluid test results compared to ACASI and IA ASSIST

Participated in Saliva Test  
N=331

Positive for drug(s)  
N=19

- Both  
N=12
- ACASI only  
N=2
- IA only  
N=0
- Neither  
N=5

Negative for drug(s)  
N=312
Time required to complete ASSIST (minutes)

<table>
<thead>
<tr>
<th></th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACASI</td>
<td>3.7</td>
</tr>
<tr>
<td>Interviewer</td>
<td>4.4</td>
</tr>
</tbody>
</table>
Required assistance

- Computer-related
- Comprehension/reading

IA ASSIST: 12.7%
ACASI ASSIST: 5.3%
85% either preferred the computer or had no preference.
Limitations

- Single site
- Compared only to interviewer ASSIST
- Tested in research context, with assurance of confidentiality
- Low prevalence of some drug classes
Conclusions

• ACASI ASSIST appears to be a valid alternative to the traditional interviewer-administered ASSIST
• Good feasibility and acceptability for primary care patients
• ACASI approach had more reporting of illicit drug use
Next steps

• Validation of ACASI ASSIST against additional reference standard measures
• Evaluate streamlined approach to screening
• Implementation in primary care, integrated with electronic health record (EHR)
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• Rubina Khan
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• Study participants

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Questions?

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Demonstration video:
http://www.youtube.com/watch?v=u34D772V3h8&feature=youtu.be