TITLE: Smoking Cessation Interventions for Youth: Clinical Evidence and Guidelines

DATE: 06 February 2012

RESEARCH QUESTIONS

1. What is the clinical evidence regarding non-pharmacologic smoking cessation interventions for youth?

2. What are the evidence-based guidelines regarding non-pharmacologic smoking cessation interventions for youth?

KEY MESSAGE

Evidence suggests that non-pharmacologic smoking cessation interventions for youth can be effective for promoting smoking cessation behaviours.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2012, Issue 1), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2007 and January 23, 2012. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

One systematic review, nine randomized controlled studies, two non-randomized studies, and one evidence-based guideline regarding non-pharmacologic smoking cessation interventions for youth was identified. Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One systematic review\(^1\) assessed the long term effectiveness of behavioural interventions targeting cigarette use among children and youth and found that the evidence for effectiveness of community-based and multi-sectorial interventions were stronger than that for school-based interventions.

Eight randomized controlled trials and three non-randomized studies described non-pharmacologic smoking cessation interventions for youth and are summarized in Table 1.

<table>
<thead>
<tr>
<th>Author, study type</th>
<th>Study design, population, size</th>
<th>Intervention and comparators</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horn 2011, RCT(^2)</td>
<td>Virginia high school teenagers 14-19 years who smoked &gt;1 cigarette in previous 30 days N=233</td>
<td>Not on Tobacco teen cessation program Not on Tobacco + physical activity Brief intervention</td>
<td>The Not on Tobacco + physical activity group had significantly higher cessation rates compared with other groups</td>
</tr>
<tr>
<td>Audrain-McGovern 2011, RCT(^3)</td>
<td>Adolescents N=355</td>
<td>5 sessions of motivational interviewing (MI) 5 sessions of structured brief advice (SBA)</td>
<td>Adolescents who received MI were 60% less likely to try and quit smoking than those who received SBA Adolescent who received MI showed a greater reduction in cigarettes smoked per day than those who received SBA No statistically significant difference in smoking abstinence between MI and SBA groups</td>
</tr>
<tr>
<td>Flynn 2010, RCT(^4)</td>
<td>Grade 4-12 public school students N=19 966 surveyed pre-intervention N=23 246 surveyed post-intervention</td>
<td>Four simultaneous mass media campaigns based on behavioural theory disseminated through television and radio programming</td>
<td>No significant impacts on smoking behaviours</td>
</tr>
<tr>
<td>Peterson 2009, RCT(^5)</td>
<td>Washington state senior high school smokers N=2151</td>
<td>Personalized telephone counseling to deliver motivational interviewing and cognitive behavioural skills training</td>
<td>21.8% achieved 6-month smoking abstinence with intervention vs 17.7% in control group</td>
</tr>
</tbody>
</table>
### Table 1: Randomized controlled trials and non-randomized studies of non-pharmacologic smoking cessation interventions for youth.

<table>
<thead>
<tr>
<th>Author, study type</th>
<th>Study design, population, size</th>
<th>Intervention and comparators</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prokhorov 2008, RCT&lt;sup&gt;6&lt;/sup&gt;</td>
<td>Minority, inner-city high schools  N=1160 (1098 nonsmokers, 62 smokers)</td>
<td>A Smoking Prevention Interactive Experience (ASPIRE) – computer-based smoking prevention and cessation curriculum  Standard care – National Cancer Institute’s Clearing the Air self-help booklet</td>
<td>- There was a nonsignificant trend towards improved smoking cessation with ASPIRE  - Not enough smokers were recruited to draw strong conclusions with respect to cessation</td>
</tr>
<tr>
<td>Pbert 2008, RCT&lt;sup&gt;7&lt;/sup&gt;</td>
<td>Pediatric primary care clinic patients 13-17 years  N=2711</td>
<td>Brief counseling by pediatric provider followed by 1 visit and 4 telephone calls by 21-25 year old peer counselors  Usual care</td>
<td>- Smokers who received intervention were more likely to report cessation at 6-month follow-up, but not 12-month follow-up</td>
</tr>
<tr>
<td>Campbell 2008, RCT&lt;sup&gt;8&lt;/sup&gt;</td>
<td>England and Wales students 12-13 years  N=10 730</td>
<td>A Stop Smoking In School Trial (ASSIST) program – training influential students to act as peer supporters outside the classroom to encourage peers not to smoke  Usual smoking education</td>
<td>- The odds of being a smoker in the ASSIST program compared with usual smoking education was 0.78</td>
</tr>
<tr>
<td>Helstrom 2007, RCT&lt;sup&gt;9&lt;/sup&gt;</td>
<td>Adjudicated adolescents  N=81</td>
<td>Motivational enhancement therapy (MET)  Education control</td>
<td>- Smoking behavior decreased in both groups, with 10% achieving 1-month smoking abstinence at 6-months follow-up  - MET was effective for some adolescent smokers but contraindicated for those who have concomitant problems with alcohol use</td>
</tr>
<tr>
<td>Woodruff 2007, RCT&lt;sup&gt;10&lt;/sup&gt;</td>
<td>High school adolescent smokers  N=136</td>
<td>Internet-based, virtual reality world combined with motivational interviewing conducted in real-time by a smoking cessation counselor  Control</td>
<td>- Participants in the program were significantly more likely than controls to report (immediately post-intervention): smoking fewer days the past week, smoking fewer cigarettes the past week, or abstained from smoking during the past week  - Significantly more people quit in the program group than control group at one year follow-up</td>
</tr>
</tbody>
</table>
Table 1: Randomized controlled trials and non-randomized studies of non-pharmacologic smoking cessation interventions for youth.

<table>
<thead>
<tr>
<th>Author, study type</th>
<th>Study design, population, size</th>
<th>Intervention and comparators</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erol 2008, NRS\textsuperscript{11}</td>
<td>High school adolescent smokers N=60</td>
<td>Motivational interviewing (MI)</td>
<td>- 18.3% quit smoking at 3 months; 33.3% at 6 months</td>
</tr>
<tr>
<td>Patten 2008, NRS\textsuperscript{12}</td>
<td>Adolescent smokers N=69</td>
<td>Brief office intervention (BOI) – 4 weekly individual sessions with a research counselor encompassing motivational interviewing and cognitive-behavioural techniques</td>
<td>- Percentage of adolescents who made improvement on readiness to quit from baseline treatment session was statistically significant for each of the 3 subsequent sessions</td>
</tr>
</tbody>
</table>

NRS=non-randomized study; RCT=randomized controlled trial

Non-pharmacologic smoking cessation interventions for youth appear to be moderately effective in promoting smoking cessation behaviours when delivered directly to the target population. Conversely, one study\textsuperscript{4} looking at the results of a mass media smoking cessation campaign found no significant impacts on smoking behaviours. No study had follow-up data beyond one year; therefore the impact of these interventions on long-term smoking cessation behaviours is unclear. Additional information regarding specific smoking intervention programs can be found in the appendix.

One evidence-based guideline\textsuperscript{13} was identified that provides guidance on mass media and point-of-sales interventions to prevent the uptake of smoking by youth under 18 years of age. The guideline recommends that mass media interventions should run for 3-5 years, be integrated with a national communications strategy to tackle tobacco use, and be developed in partnership with national, regional, local government and non-governmental organizations, media professionals, healthcare professionals, public relations agencies, local anti-tobacco activists, and youth.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses

   Structured abstract available from: http://www.crd.york.ac.uk/crdweb/ShowRecord.asp?AccessionNumber=12008105968&UserID=0

Randomized Controlled Trials

   PubMed: PM21930544

   PubMed: PM21690120

   PubMed: PM20537841

   PubMed: PM19822836

   PubMed: PM19023839

1. Smoking Cessation for Youth


Non-Randomized Studies


Guidelines and Recommendations


PREPARED BY:
Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
www.cadth.ca
APPENDIX – FURTHER INFORMATION:

Systematic Reviews and Meta-analyses – Quantitative Studies


Randomized Controlled Trials - Evaluation of Specific Programs


Non-Randomized Studies – Evaluation of Specific Programs


Review Articles


Additional References
