

Evidence summary Title:

Interventions to reduce tobacco use and exposure to environmental tobacco smoke: Evidence and implications for public health

Review Quality Rating: 10 (strong)

Review on which this evidence summary is based:

Hopkins, D.P., Briss, P.A., Richard, C.J., Husten, C.G., Carande-Kulis, V.G., et al. (2001). **Reviews of evidence regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke.** *American Journal of Preventive Medicine*, 20 (2S), 16–66.

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This is an evidence summary written to condense the work of the authors of this systematic review, referenced above. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

Review content summary

This systematic review of 54 studies aimed to determine the effectiveness of interventions in: 1) reducing environmental tobacco smoke (ETS) exposure; 2) reducing tobacco use initiation; and 3) increasing tobacco use cessation. Participants studied were: general population including tobacco product users, people at risk for tobacco product use, and people exposed or at risk of exposure to ETS. To be included, studies were: either single component interventions (using only one activity) or multicomponent interventions (using more than one activity together), and intended to achieve tobacco use prevention and control in the general population. Interventions described in this review included: smoking bans and restrictions (54 studies), community education (3 studies), legislation leading to increased unit price for tobacco products (8 studies), mass media campaigns (12 studies); changes to the health care system as a whole (8 studies), interventions to increase patient use of effective tobacco use treatments (17 studies), and interventions to increase health care provider delivery of effective treatments and therapies to their patients (25 studies). Outcomes measured include: rates of tobacco use cessation, and change in exposure to ETS. Authors report that increased unit price for tobacco products; mass media campaigns; smoking bans; and health provider reminder systems all resulted in reduced exposure to tobacco smoke and reduced tobacco use.

Comments on this review's methodology

This is a methodologically strong series of systematic reviews. A focused clinical question was clearly identified. Appropriate inclusion criteria were used to guide the search. A comprehensive search was employed using health and other relevant databases; reviewing reference lists of primary studies; and contacting key informants. The search was limited by language (English). Primary studies were assessed for methodological quality using the following quality criteria: research design, sample selection, intervention integrity, data collection tools, follow-up rate, data analysis, control for bias, and adequate sample size. The methods were described in sufficient detail so as to allow replication and two reviewers were involved in quality appraisal. Any discrepancies in appraisal results were rectified by discussion. The results of this review were transparent. Results were clearly presented in graphical form so as to allow for comparisons across studies. Heterogeneity was not assessed. Appropriate analytical methods (fixed effects, random effects) were not employed to enable the synthesis of study results. While the authors state that study quality was used in summarizing results across studies, it is unclear how this was conducted.

Why this issue is of interest to public health

Smoking costs the Canadian economy approximately 9.5 billion dollars per year as a result of treating tobacco-related illnesses and in lost productivity of workers who become ill or die as a result of tobacco use¹. Furthermore, 45,000 Canadians die each year as a result of smoking². Preventing exposure to, use of tobacco products, as well as the promotion of tobacco cessation are major priorities from the federal to local level, within multiple sectors and fields. Tobacco use is associated with causing multiple cancers, heart disease, stroke, chronic obstructive pulmonary disease, and complications of pregnancy¹. Exposure to environmental tobacco smoke causes lung cancer and heart disease in adults, and middle ear infections, asthma exacerbations, and lower respiratory infections in children and infants¹. Effective strategies for all populations and circumstances must be identified and incorporated into current and future policies and programs.

Evidence and implications

Evidence points are in order of the strength of evidence

What's the evidence?	Implications for practice and policy:
1. Smoking bans and restrictions 1.1. Smoking bans and restrictions are effective in reducing exposure to environmental tobacco smoke. Median reduction	1. Smoking bans and restrictions 1.1. As much as possible and feasible, smoking bans should be implemented in multiple settings, public places,

<p>in environmental measures of ETS components was 72% (ranged from 44-97%)</p> <p>1.2. Smoking bans were more effective than restrictions in the workplace for reducing ETS exposure.</p> <p>1.3. Smoking bans resulted in greater cessation rates and reduced consumption as compared to smoking restrictions.</p> <p>1.4. While smoking bans are effective in reducing ETS, the evidence is inconclusive on the effect of smoking bans and restrictions on smoking prevalence.</p>	<p>workplace, etc, as opposed to smoking restrictions in order to reduce exposure to ETS.</p> <p>1.2. Workplace programs should strive for smoking bans as opposed to restrictions to promote cessation and quantity consumed.</p> <p>1.3. Generally smoking bans should be used for all spaces as a way to promote smoking cessation and reduce consumption</p> <p>1.4. At this time smoking bans and restrictions should not be used to target smoking prevalence</p> <p>1.5. High quality research including program evaluations should be conducted to determine the effectiveness of smoking bans on the prevalence of tobacco use.</p>
<p>2. Increased unit price for tobacco products</p> <p>2.1. Increasing the unit price for tobacco through legislated product excise tax at the national or provincial level, decreases tobacco use by adolescents, young adults, and adults. A 10% increase in price can produce a 3.7% reduction in smoking prevalence, and a 2.3% reduction in quantity consumed, among adolescents and young adults. Increasing price also has a greater impact on tobacco use among blacks and males as opposed to whites, young adults and females.</p>	<p>2. Increased unit price for tobacco products</p> <p>2.1. Smoking cessation advocates should lobby governments to increase the unit price of tobacco via taxation</p> <p>2.2. Smoking cessation advocates should lobby relevant organizations to reduce the costs associated with cessation therapies.</p> <p>2.3. Implemented interventions and strategies must be evaluated regularly and over time, to ensure ongoing effectiveness.</p>
<p>3. Mass Media Campaigns</p> <p>3.1. Mass media campaigns, implemented for at least two years in conjunction with other interventions (i.e. contests, school-based education, community education programs, excise tax increases) are effective in reducing smoking prevalence and consumption, and increasing smoking cessation. Greatest impact occurs among younger adolescents.</p>	<p>3. Mass media campaigns</p> <p>3.1. Programs aimed at reducing smoking prevalence and consumption and increasing smoking cessation should involve mass media campaigns and be implemented over several years (minimum two years), with regular 'booster' sessions provided.</p> <p>3.2. These campaigns should be focused and tailored specifically at high risk populations (i.e., young adolescents)</p>
<p>4. Telephone Interventions</p> <p>4.1. Telephone support interventions in conjunction with other interventions (i.e., patient education, counselling, nicotine-replacement therapy), are effective in increasing tobacco use cessation for at least one year among adults.</p>	<p>4. Telephone interventions</p> <p>4.1. Public health units and/or community partners should ensure that telephone support is available</p> <p>4.2. Public health units and/or community partners should ensure that staff who respond to those calls have the required knowledge, skill, and other resources to provide adequate support</p> <p>4.3. High quality research and program evaluations are required that assess the long term sustained effectiveness of interventions to promote smoking cessation and whether or not addition "booster" interventions are required</p>
<p>5. Contests</p> <p>5.1. There is insufficient evidence at this time to determine the effectiveness of cessation contests. There is some limited evidence indicating that cessation contests can produce promising results.</p>	<p>5. Contests</p> <p>5.1. Public health decision makers should be cautious about the use of contests to promote smoking cessation and determine whether, given the lack of evidence, such strategies represent an effective use of limited resources</p> <p>5.2. Any program involving contests should be evaluated using rigorous methods</p> <p>5.3. Additional high quality research is required to determine the effectiveness of contests to promote smoking cessation.</p>
<p>6. Reminders</p> <p>6.1. Health care provider reminder systems are not effective in increasing frequency of delivery of advice to patients to quit smoking.</p>	<p>6. Reminders</p> <p>6.1. Systems to remind health care professionals to advise patients to quit smoking should not be implemented on their own.</p>
<p>7. Cost Benefit or Cost-effectiveness Information</p> <p>7.1. No cost related information was included in the review</p>	<p>6. Cost Benefit or Cost-effectiveness Information</p> <p>7.1. Future research should assess cost benefit or cost-effectiveness of the interventions</p>

General Implications

On the basis of the evidence of effectiveness, nine interventions are either strongly recommended or recommended to:

- reduce exposure to ETS
 - smoking bans and restrictions
- reduce tobacco-use initiation
 - increasing the unit price for tobacco products
 - multi-component mass media campaigns
- increase cessation
 - increasing the unit price for tobacco products
 - multi-component mass media campaigns
 - provider reminder systems
 - a combined provider reminder plus provider education with or without patient education program multi-component interventions including telephone support for persons who want to stop using tobacco

Legend: CI – Confidence Interval; OR – Odds Ratio; RR – Relative Risk

**For definitions see the [healthevidence.org glossary](http://www.healthevidence.org/glossary.aspx) <http://www.healthevidence.org/glossary.aspx>

References used to outline issue

1. Canadian Council for Tobacco Control. (n.d.) Do Tobacco Taxes Cover the Health Care Costs Associated with Smoking? Retrieved October 8, 2002 from: <http://www.cctc.ca/cctcweb.nsf>
2. Makomaski Illing, E. M., & Kaiserman, M. J. (1999). Mortality Attributable to Tobacco Use in Canada and its Regions, 1994 and 1996. [Electronic version] *Chronic Diseases in Canada*, 20 (3), 111-117.

Other quality reviews on this topic

- Ebbert, J.O., Montori, V., Vickers, K.S., Erwin, P.C., Dale, L.C., Stead, L.F. (2007). Interventions for smokeless tobacco use cessation. *Cochrane Database of Systematic Reviews*, Issue 4. Art. No.: CD004306. DOI: 10.1002/14651858.CD004306.pub3.
- Cahill, K., & Perera, R. (2008). Competitions and incentives for smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD004307. DOI: 10.1002/14651858.CD004307.pub3.
- Hopkins, D. P., Briss, P. A., Richard, C. J., Husten, C. G., Carande-Kulis, V. G., et al. (2001). Reviews of Evidence Regarding Interventions to Reduce Tobacco Use and Exposure to Environmental Tobacco Smoke. *Am J Prev Med*, 20 (2S), 16–66.
- Lancaster, T., & Stead, L. F. (2005). Self-help interventions for smoking cessation. *The Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD001118. DOI: 10.1002/14651858.CD001118.pub2.
- Murphy-Hoefer, R., Griffith, R., Pederson, L. L., Crossett, L., Iyer, S. R., & Hiller, M. D. (2005). A review of interventions to reduce tobacco use in colleges and universities. *American Journal of Preventive Medicine*, 28, 188-200.
- Park, E. W., Schultz, J. K., Tudiver, F., Campbell, T., & Becker L. (2004). Enhancing partner support to improve smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD002928. DOI: 10.1002/14651858.CD002928.pub2.
- Park, E. W., Tudiver, F., Schultz, J. K., & Campbell, T. (2004). Does Enhancing Partner Support and Interaction Improve Smoking Cessation? A Meta-Analysis. *Annals of Family Medicine*, 2 (2), 170-174.
- Rice, V. H., & Stead, L. F. (2004). Nursing interventions for smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 1. Art. No.: CD001188. DOI: 10.1002/14651858.CD001188.pub3.
- Stead, L. F., & Lancaster, T. (2005). Group behaviour therapy programmes for smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 2. Art. No.: CD001007. DOI: 10.1002/14651858.CD001007.pub2.
- Ussher, M., Taylor, A., Faulkner, G.(2008). Exercise interventions for smoking cessation. *Cochrane Database of Systematic Reviews*, Issue 4. Art. No.: CD002295. DOI: 10.1002/14651858.CD002295.pub3.

Related links

- The Community Guide: Task Force on Community Preventive Services, Centers for Disease Control and Prevention (US) <http://www.thecommunityguide.org>

Suggested citation

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