

Reducing Tobacco Use and Secondhand Smoke Exposure: Mass-Reach Health Communication Interventions

Task Force Finding and Rationale Statement

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Task Force Finding and Rationale Statement

Intervention Definition

Mass-reach health communication interventions target large audiences through television and radio broadcasts, print media (e.g., newspaper), out-of-home placements (e.g., billboards, movie theaters, point-of-sale), and digital media to change knowledge, beliefs, attitudes, and behaviors affecting tobacco use. Intervention messages are typically developed through formative testing and aim to reduce initiation of tobacco use among young people, increase quit efforts by tobacco users of all ages, and inform individual and public attitudes on tobacco use and secondhand smoke. Pictorial warning labels on tobacco packages, an additional channel for the dissemination of health information to tobacco users, were not considered in this review.

Task Force Finding (April 2013)

The Community Preventive Services Task Force recommends mass-reach health communication interventions based on strong evidence of effectiveness in 1) decreasing the prevalence of tobacco use; 2) increasing cessation and use of available services such as quitlines; and 3) decreasing initiation of tobacco use among young people. Evidence was considered strong based on findings from studies in which television was the primary media channel. Economic evidence shows mass-reach health communication interventions are cost-effective, and savings from averted healthcare costs exceed intervention costs.

Rationale

Basis of Finding

The Task Force recommendation is based on strong evidence of effectiveness from a Community Guide systematic review published in 2001 (Hopkins et al., 27 studies, search period 1980-2000) combined with more recent evidence (70 studies, search period 2000-July 2012). The Task Force finding is based on results from 64 of the 70 studies from the updated search that evaluated interventions using television as the only or primary media channel. Evidence is considered strong based on number of studies, magnitude of effect estimates, and consistency of effects for a range of important tobacco use outcomes (Table).

Effectiveness of Mass-Reach Health Communication Interventions in Reducing Tobacco Use

Outcome	2001 Task Force Review (1980-2000)	2001 Task Force Review (1980-2000)	2012 Update Review (2000-July 2012)	2012 Update Review (2000-July 2012)
	Number of Studies	Median Effect Estimate* and Summary of Study Results	Number of Studies	Median Effect Estimate* and Summary of Study Results
Tobacco use prevalence among adults	7	<p><u>From 7 studies</u> -3.4 percentage points (Range: -7 to 0.2 pct pts)</p>	8	<p><u>From 4 studies</u> -5.0 percentage points (Range: -5.2 to -1.9 pct pts)</p> <p><u>From 4 studies</u> Exposure to anti-tobacco media interventions significantly associated with decreases in prevalence</p>
Tobacco use prevalence among young people	12	<p><u>From 6 studies</u> -6 percentage points (Range: -11 to 0.02 pct pts)</p> <p><u>From 4 studies</u> Odds ratio: 0.60 (median) (Range: 0.49 to 0.74)</p> <p><u>From 2 studies</u> No effect</p>	13	<p><u>From 11 studies</u> -3.4 percentage points (IQI: -4.7 to -1.6 pct pts)</p> <p><u>From 2 studies</u> Higher exposure to or appeal of anti-tobacco media messages was associated with lower prevalence or appeal of tobacco use</p>
Cessation of tobacco use	5	<p><u>From 5 studies</u> +2.2 percentage points (Range: -2 to 35 pct. pts.)</p>	17	<p><u>From 12 studies</u> +3.5 percentage points (IQI: 2.0 to 5.0 pct pts)</p> <p><u>From 5 studies</u> Exposure to anti-tobacco media interventions was associated with increase in successful cessation</p>

Outcome	2001 Task Force Review (1980-2000)	2001 Task Force Review (1980-2000)	2012 Update Review (2000-July 2012)	2012 Update Review (2000-July 2012)
	Number of Studies	Median Effect Estimate* and Summary of Study Results	Number of Studies	Median Effect Estimate* and Summary of Study Results
Use of cessation services	1	<u>From 1 study</u> 392% increase in calls to quitline	28	<u>From 11 studies</u> 132% (IQI: 39% to 378%) increase in calls to quitlines <u>From 17 studies</u> Interventions effective in increasing use of cessation services, especially quitlines
Tobacco use initiation	Not specifically examined	Finding based on evidence of effectiveness in reducing the prevalence of tobacco use among young people	7	<u>From 7 studies</u> Interventions effective in reducing or delaying initiation of tobacco use among young people

*Median difference in tobacco use outcome in the included studies

Pct pts = Absolute percentage point difference

% = Relative percent difference

IQI=Interquartile interval

Applicability and Generalizability Issues

Studies from the updated search period evaluated applicability of mass-reach health communication interventions to different settings, populations, and intervention options in the United States. Interventions were conducted in the U.S. (44 studies), Australia (13 studies), Canada (2 studies), Israel (1 study), New Zealand (2 studies), Switzerland (1 study), Taiwan (1 study), the Netherlands (3 studies), and the United Kingdom (3 studies). Studies evaluated national interventions (23 studies), state or regional interventions (42 studies), and city or local interventions (5 studies). Interventions were implemented alone (17 studies), with other components (21 studies), or as part of a comprehensive tobacco control program (27 studies). Eight studies examined interventions from multiple US states and did not specify if they were implemented alone or with other components. Mass-reach health communication interventions were shown to be effective across these various settings.

Mass-reach health communication interventions were effective in reducing tobacco use among adults (49 studies) and young people (21 studies). Several studies provided demographic information, and study participants were more likely

to be female (median: 53.8%; 37 studies), white (median: 71.3%, 22 studies), and have a high school education or less (median: 51.2%; 18 studies).

Thirteen studies examined effectiveness of these interventions among populations with a high prevalence of tobacco use or limited access to cessation services. Four of the studies targeted specific populations (Arabic speaking, Latino, Spanish speaking, or Maori tobacco users) and all found the interventions to be effective. In nine studies, interventions aimed at a general audience were also effective in reducing tobacco use across populations stratified by race or ethnicity, education attainment, or socioeconomic status, with several studies reporting more favorable results for groups with lower education attainment and socioeconomic status.

Forty-two studies evaluated one or more specific intervention characteristics. Intervention intensity¹ was positively associated with intervention effectiveness (22 studies). Television advertisements with high emotional content (e.g., personal testimonials or graphic images of the negative health consequences of tobacco use) were more effective than other approaches (8 studies). Messages tagged with quitline contact information increased calls to the quitline (23 studies).

Data Quality Issues

Study designs included group randomized controlled trials (2 studies), controlled before-after designs (25 studies), and time-series or before-after evaluations (43 studies). Common limitations across this body of evidence included incomplete reporting of statistical analyses, low participation or response rates, and incomplete control for other concurrent tobacco control efforts. Descriptions of the interventions or study populations were often limited, which could be a function of restricted publication space.

Other Benefits and Harms

Mass-reach health communication interventions have the potential to inform individual and public knowledge, belief, attitudes, and intentions regarding tobacco use and secondhand smoke. They may also influence tobacco control policies and create a more favorable environment for reducing tobacco use. Although described in the broader literature, these important outcomes were not fully evaluated in the studies included in this review. No harms associated with these interventions were identified in the included studies or in broader literature.

Economic Evidence

Sixteen studies were included in the economic review. For purposes of this review, cost per additional quit was converted to cost per quality-adjusted life year (QALY) saved, based on results from a 2006 study (Solberg et al.) that estimated savings of 1.16 QALYs for every additional quit. Estimates of cost-effectiveness were assessed in comparison to a conservative threshold of \$50,000 per QALY saved. All monetary values from studies are reported in 2011 U.S. dollars.

Three studies reported average cost measures for television and/or radio messaging, two of which measured the cost of media campaigns tagged with a quitline number and total calls to the quitline (no control). The median cost per call to the quitlines was \$415 (range: \$88 to \$2,036) and was calculated from five estimates presented in the two studies. Purchase of evening television ad buys (versus daytime) and low call volume contributed to the higher costs per call.

Ten studies provided 14 estimates of cost-effectiveness. Four estimates from three studies found the median cost per QALY saved was \$577 (range of values: \$97 to \$1,622). An additional four estimates from three studies found the median cost per life year saved (LYS) was \$213 (range of values: \$128 to \$718). Four studies focused on costs of the

media campaign and the resulting increase in quitline calls. The median cost per additional caller to the quitline was \$260 (range of values: \$24 to \$399).

Three studies with cost-benefit comparisons found that benefits of mass-reach health communication interventions exceeded costs. The benefit-to-cost ratio ranged from 7:1 to 74:1; net savings ranged from \$272 million to \$6.75 billion. In each of the three studies, intervention costs came from actual campaigns and savings were modeled to estimate averted healthcare costs that would result from anticipated smoking cessation or reduced initiation of smoking.

In summary, evidence indicates that mass reach health communication interventions are cost-effective and that economic benefits from averted healthcare costs exceed intervention costs.

Considerations for Implementation

Mass-reach health communication interventions have been integral to tobacco control efforts, and several national and international organizations host extensive resource centers to provide implementation guidance and video libraries. In the U.S., campaigns are most often implemented with other tobacco control efforts or as part of a comprehensive tobacco control program. Evidence indicates these interventions can be effective when implemented alone; however, these studies generally evaluated nation-wide campaigns with substantial resources to broadcast messages on television with high intensity.

While television remains an important and efficient channel to reach large audiences, the field of mass-reach health communications is rapidly changing, and newer digital media formats are increasingly important intervention options. Internet-enabled digital formats have potential to reduce intervention costs but also have limitations including population reach since necessary technology is not yet ubiquitous. Thus far, available evidence has focused on using these new media formats to support quit attempts and few studies have examined their effectiveness in achieving broader goals such as informing individual and public knowledge, attitudes, and behaviors regarding tobacco use, and reducing the initiation of tobacco use among young people.

Disseminating messages tagged with cessation service information, such as quitline numbers, substantially increased use of these services. However, interventions concentrating on promoting these services may emphasize "how to quit" messages and provide narrowly focused information to tobacco users who are prepared to quit. Evidence from this review suggests it may be more important and efficient to broadcast highly emotional "why to quit" messages on the harms of tobacco use that are tagged with cessation service information to reach both tobacco users and the broader population.

Young people are an important target population for tobacco prevention efforts, and many of the included studies examined media interventions specifically designed for, and focused on, reducing tobacco use initiation among this group. Evidence from the U.S. and Australia, however, indicates that young people also respond favorably to messages aimed at the broader adult population by reducing initiation, increasing quit attempts, and successfully quitting.

Studies included in this review found that messages using personal testimonials or graphic images of harms caused by tobacco use were very effective at generating emotional responses from viewers. Interventions disseminating these messages to the general population using television effectively reach a wide audience and influence tobacco use-related attitudes and behaviors in more people, including young people and population groups with high tobacco use prevalence.

Evidence indicates that mass reach health communication interventions are effective across population groups with varied racial, ethnic, educational, and socioeconomic backgrounds, and should be an important component of efforts to reduce disparities in tobacco use and tobacco-related diseases. Efforts to narrow campaigns for specific groups through message content, language, and broadcast times, should be carefully considered as evidence indicates that broad campaigns maximizing population reach are also effective.

Evidence Gaps

Many studies from the updated search period evaluated the impact of specific intervention characteristics, but several questions remain for future research. Although a number of studies examined impact of incremental changes in intervention intensity, few evaluated thresholds for effectiveness or reported intensity as ratings points. For program planners to strategically allocate limited funds, more information is needed to determine the threshold of effectiveness for intervention intensity, duration of intervention, message placements, and frequency of new message introduction to maintain audience engagement that will lead to behavior change. More studies reporting detailed intervention costs are also needed.

Current evidence is dominated by interventions that used television as the only or primary media channel. As populations change their media consumption habits, more information will be needed about newer content delivery formats and media channels, especially digital media. The rate at which digital media formats change, however, can make timely evaluation difficult.

Similarly, as almost all included studies evaluated interventions designed to reduce cigarette use, more information is needed about interventions that reduce the use of other tobacco products, such as cigars and cigarillos and smokeless tobacco that are gaining popularity in the U.S.

¹Intensity equals to Reach X Frequency, and is generally measured in gross ratings points (GRP) or target audience ratings points (TARP). 100 GRPs could mean 100% audience reached 1 time and 100 TARPs could mean 100% targeted audience reached 1 time. Alternatively, it could mean 50% of audience reached 2 times.

The data presented here are preliminary and are subject to change as the systematic review goes through the scientific peer review process.

References

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Disclaimer

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Document last updated June 3, 2013