

REVIEW

Tobacco Packaging and Mass Media Campaigns: Research Needs for Articles 11 and 12 of the WHO Framework Convention on Tobacco Control

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ABSTRACT

Introduction: Communicating the health risks of smoking remains a primary objective of tobacco-control policy. Articles 11 and 12 of the World Health Organization's Framework Convention on Tobacco Control establish standards for two important forms of communication: packaging regulations (Article 11), and mass media campaigns (Article 12).

Methods: A narrative review approach was used to identify existing evidence in the areas of package labeling regulations (including health warnings, constituent and emission messages, and prohibitions on misleading information) and communication activities (including mass media campaigns and news media coverage). When available, recent reviews of the literature were used, updated with more recent high-quality studies from published literature.

Results: Implementation of Articles 11 and 12 share several important research priorities: (a) identify existing consumer information needs and gaps, (b) research on the message source to identify effective types of content for health warnings and media campaigns, (c) research on how messages are processed and the extent to which the content and form of messages need to be tailored to different cultural and geographic groups, as well as subgroups within countries, and (d) research to identify the most cost-effective mix and best practices for sustaining health communications over time.

Conclusion: A unifying theme of effective health communication through tobacco packaging and mass media campaigns is the need to provide salient, timely, and engaging reminders of the consequences of tobacco use in ways that motivate and support tobacco users trying to quit and make tobacco use less appealing for those at risk of taking it up.

INTRODUCTION

Communicating the health risks of smoking and promoting smoking cessation remains a primary objective of tobacco-control policy and programs. The World Health Organization's Framework Convention on Tobacco Control (WHO FCTC) includes two articles dedicated to health communication (WHO, 2003). Article 11 includes recommendations for large pictorial health warnings and encourages more effective forms of disclosure for product constituents and emissions. Article 11 also recognizes the importance of the package as a promotional vehicle for tobacco companies and requires the removal of potentially misleading packaging information, including the terms "light" and "mild." Article 11 advises parties to consider broader restrictions on other descriptors and promotional elements of pack design (WHO, 2008).

The objectives of Article 12 guidelines are to identify key measures needed to successfully educate, communicate with, and train people on the health, social, economic, and

environmental consequences of tobacco production and consumption, and exposure to tobacco smoke and to guide Parties in establishing a sustainable infrastructure to support these measures (WHO, 2010). The guidelines recognize that individuals have a fundamental right to accurate information about the risks of tobacco use. An ultimate objective of warning the public of the dangers of tobacco is to change social norms about tobacco use, leading people to quit or avoid tobacco use and to increase support for other tobacco-control measures. Many tobacco users worldwide are poorly informed about the full extent of the risks of tobacco use to themselves and others (Hammond et al., 2006; Siahpush, McNeill, Hammond, & Fong, 2006; WHO, 2011) and hold inaccurate beliefs about the addictive nature of tobacco use, likelihood of quitting, the nature of disease-specific risks, and the content of cigarettes and other tobacco products. Mass media campaign strategies with potential for high population reach can do much to redress these misconceptions, provide timely motivation for individual behavior change, increase the likelihood of tobacco

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policy advancement, and increase social norms that reduce tobacco use.

As with other FCTC guidelines, Articles 11 and 12 draw on the best available evidence, practices, and experience. The current paper will provide a brief history of regulation and policy related to Articles 11 and 12, a summary of evidence on the effectiveness of these measures, as well a list of evidence gaps and needs.

METHODS

Given the scope of the topic addressed in this paper and the evolving nature of the field, this paper used a narrative review approach. Narrative reviews summarize comprehensive areas with a diversity of research designs using the reviewer's own experience, along with existing theories and models (Collins & Fauser, 2005). Where they were available, we summarized the findings of the most recently available reviews and supplemented these with the findings of recently published high quality studies. Articles were identified using electronic searches of databases such as MEDLINE and Web of Science, as well as relevant "gray literature," including unpublished research commissioned by governments and information related to the FCTC Article 11. Additional searches using reference lists of key articles, including recently published reviews, were also conducted. The current review was limited to articles that were available for review prior to July 2011.

RESULTS

Article 11

Health Warning Labels

Existing evidence on health warnings. To date, more than 40 countries have implemented pictorial warnings on cigarette packages (Hammond, 2011). Large health warnings on the "front" and "back" of tobacco packages are a prominent source of health information (Hammond et al., 2006). Findings from a wide range of countries indicate that considerable proportions of smokers and nonsmokers report awareness and knowledge of package health warnings (Brown, Diener, Ahmed, & Hammond, 2005; Environics Research Group, 2005; European Commission, 2009; Shanahan & Elliott, 2009). However, the effectiveness of health warnings depends upon their size and position. Larger warnings are more noticeable and perceived as more effective (Hammond, 2011). Larger warnings also allow for more content, including additional text, larger images, and cessation information such as telephone quitline numbers.

Cigarette warning labels can have a significant impact on smokers' understanding of the risks of tobacco use. Research has shown that large text-based warnings—such as the warning implemented in European Union (EU) member states in 2003—increase perceptions of risk among both smokers and nonsmokers, and many smokers report being motivated to quit as a result of large text warnings (Borland & Hill, 1997; Borland, Yong et al., 2009; Fong et al., 2008; Hammond et al., 2006; Portillo & Antofianzas, 2002; Tandemar Research Inc., 1996).

Pictorial health warnings are more effective than text-only warnings. Experimental research on cigarette pack warnings indicates that pictorial warnings are more likely to be rated as effective, both as a deterrent for new smokers and a means to increase cessation among current smokers (O'Hegarty et al., 2006). In addition, extensive focus group testing and market research demonstrates that health warnings with pictures are rated by smokers and nonsmokers as more effective, and associated with greater impact and recall for health risks than text-only warnings (BRC Marketing & Social Research, 2004; Clemenger, 2004; Corporate Research Associates, 2005; Environics Research Group, 2000; Elliott & Shanahan Research, 2003; Les Études De Marche Createc, 2006).

Findings from population-based surveys comparing text and pictorial warnings are consistent with both the experimental and the premarket studies: Graphic warnings are more likely to be noticed and read by smokers and are associated both with stronger beliefs about the health risks of smoking and with increased motivation to quit smoking (Hammond, 2011). Pictorial warnings are also critically important in communicating health information to populations with lower literacy rates (CRÉATEC + Market Studies, 2003; Malouff, Gabrilowitz, & Schutte, 1992; Millar, 1996; Thrasher et al., 2010). This is particularly important considering that, in many countries, smokers have lower levels of education than the general population and smoking becomes concentrated in lower education groups as the tobacco-control environment is strengthened.

Although no precise estimates are available to estimate the impact of health warnings on the prevalence of smoking, significant proportions of smokers report that large comprehensive warnings reduce consumption levels, increase cessation behavior, and support former smokers in remaining abstinent (Hammond, 2011). Cohort studies conducted in Canada and Australia have also found that reading and thinking about health warnings predicts future cessation behavior (Borland, Yong et al., 2009). Health warnings have also been associated with increases in the use of cessation services. Research conducted in the United Kingdom, the Netherlands, Australia, Brazil, and New Zealand indicates substantial increases in the use of national telephone "helplines" for smoking cessation after the contact information was included in package health warnings (Cavalcante, 2003; Miller, Hill, Quester, & Hiller, 2009; U.K. Department of Health, 2006; Willemsen, Simons, & Zeeman, 2002; Wilson, Li, Hoek, Edwards, & Peace, 2010). In addition to helping current smokers to quit, large picture warnings reduce the appeal of smoking and appear to discourage smoking initiation among youth (Environics Research Group, 2007; Moodie, Mackintosh, & Hammond, 2009; White, Webster, & Wakefield, 2008). Overall, evidence to date suggests that health warnings can promote cessation behavior and help to reduce smoking uptake and that larger pictorial warnings are most effective in doing so.

Research opportunities.

1. One of the main challenges confronting regulators is the need to periodically update health warnings. Health warnings are not a "static" intervention and, like most other health communications, must be revised or updated to maintain their effectiveness over time. Evidence to date suggests that changing health warnings with new messages increases

- their impact (Borland, Wilson et al., 2009); to date, however, changes in content have typically been accompanied by additional changes to the size or format of warnings. There is a need for research to guide how warnings should be revised over time, including the most appropriate rotation period (i.e., how *often* warnings should be updated), and whether a “set” of warnings should be implemented all at once or staggered over a time. For example, Mexico implemented 8 pictorial health warnings in September 2010 and regulations required 2 new warnings to be implemented every 3 months. Research is also needed to identify the ideal number of warnings within each rotation period, with respect to maximizing engagement and impact. For example, Canada requires that 16 warnings appear on packages, whereas other countries require as few as one or two pictorial warnings.
2. The rotation and updating of health warnings highlights the importance of message content. Although several countries have commissioned premarket studies to test message content, there is a need for more systematic research to examine the most effective message themes. Research to date suggests that graphic fear-arousing depictions of health effects are more effective; however, there is a need to examine the effectiveness of this approach relative to other “themes” or executional styles, including the use of testimonials or narratives, the use of symbols and images, and less graphic depictions of human suffering or loss. In particular, research should examine ways of integrating supportive cessation-oriented messages, which are typically rated as much less salient and effective than graphic images with emotional content (Hammond, 2011). There is also a need to examine ways of enhancing the effectiveness of cessation-oriented message, including whether text should be “gain” or “loss” framed. More generally, research should also examine the format, amount, and placement of text within pictorial warnings to assist regulators with the general design of warnings. Currently, pictorial warnings differ with respect to the amount of accompanying text: Some include only a short warning statement, while others include more elaborate explanations of health effects combined with quitting information.
 3. To date, Canada is the only country to require “supplemental” health messages on the inside of packages. As of June 2012, the existing interior messages have been expanded and one of eight warning messages is required as an insert or on the inside panel of packages (Health Canada, 2010). These messages provide additional health information, as well as advice on cessation and sources of support. Using inserts or “onserts” (messages fixed to the outside of packs) provides regulators with additional opportunities to communicate with smokers, but has been largely unstudied (Hammond, Fong, McDonald, Cameron, & Brown, 2003).
 4. There is currently very little evidence on health warnings for other tobacco products, including smokeless tobacco, “fine cut” or “loose” tobacco, water pipes, and bidis (e.g., Callery, Hammond, O’Connor, & Fong, 2011; Nakkash & Khalil, 2010; Oswal, Raute, Pednekar, & Gupta, 2011). These products may require unique content in terms of health effects and may also present challenges in terms of different forms of packaging. In the case of water pipes, warnings could be placed on the water pipe itself or on the tobacco or “hagar”. Smokeless tobacco products are often sold in nonstandardized packaging, with a wide range of shapes, which can make it difficult to identify a “front” and “back” or primary surface area. Research examining how pack shape and size interact with the effectiveness and legibility of health warnings is also important for conventional cigarette packs with irregular shapes and tall, narrow cigarette packs—occasionally referred to as “lipstick” packs—which alter the dimensions and surface area of warnings that are typically developed for the “standard” cigarette size.
 5. Given that many countries use health warnings developed in other jurisdictions, there is a need to examine cultural or geographic differences in the effectiveness of health warnings, as well as whether effectiveness differs among subpopulations within a country. There is a general expectation both within the research and regulatory community that pictorial health warnings need to be targeted at subpopulations to be effective. However, the limited evidence collected to date suggests that the same warnings are effective across a range of sociodemographic groups and may help to reduce rather than exacerbate disparities (Hammond, 2011). Research from low- and middle-income countries should be considered a priority within this area.
 6. Research should also explore the interaction between health warnings and pack branding. Evidence suggests that health warnings can reduce the general appeal of packages (e.g., Germain, Wakefield & Durkin, 2010); however, this topic warrants greater attention given the planned implementation of “plain packaging” regulations in Australia.
 7. Future research should also consider how “preimplementation” and “postimplementation” research can be integrated or aligned to a greater extent. “Preimplementation” research, which can include focus groups, experimental studies, and other forms of premarket testing, is better suited for testing specific design elements, including new message content. In contrast, “postimplementation”, which typically includes population-based surveys, is more appropriate for evaluating the general impact of a new set of warnings although some information can be collected on the performance of individual warnings. Research designs that help to establish the predictive validity of preimplementation testing with regard to population-based effectiveness would be particularly informative.
 8. Finally, the impact of warnings may be enhanced through linkages to other media campaigns and tobacco-control policies (Brennan, Durkin, Cotter, Harper, & Wakefield, 2011). Research is required to examine opportunities to leverage the potential public health benefit.
- Disclosure of Product Constituents and Emissions on Packs*
Article 11 states that, in addition to the “main” health warnings, tobacco products shall “contain information on relevant constituents and emissions of tobacco products as defined by national authorities” (WHO, 2003). Cigarette smoke contains approximately 4,000 chemicals, including more than 60 carcinogens (Hoffmann & Hoffmann, 2004). Communicating this information to consumers in a meaningful way has proven to be a significant challenge.
- Currently, a number of jurisdictions require tar, nicotine, and carbon monoxide emissions to be printed on packages. These numbers are derived from smoking machines (using

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either the ISO or the Federal Trade Commission smoking regimens) and represent neither the amount of chemicals present in the tobacco itself nor the amounts actually ingested by human smokers. The current scientific consensus is that emission numbers do not accurately reflect meaningful differences in risk between conventional cigarette brands (U.S. Department of Health and Human Services, 2001; WHO Study Group on Tobacco Product Regulation, 2004). However, when these numbers are communicated to consumers via packaging, many consumers interpret lower tar and nicotine numbers as a reduction in exposure and risk (Chapman, Wilson, & Wakefield, 1986; Cohen, 1996; Devlin, Eadie, & Angus, 2003; Gori, 1990; Health Canada, 2003b; O'Connor, Kozlowski, Borland, Hammond, & McNeill, 2006; Pollay & Dewhirst, 2001). Indeed, recent studies suggest that smokers even in the most affluent and educated countries continue to hold false beliefs about emission numbers (Bansal-Travers, Hammond, Smith, & Cummings, 2011; Hammond & Parkinson, 2009). Alternative approaches to communicating the basic ISO tar and nicotine amounts, such as adding a set of higher numbers from more intensive smoking regimens, have proven equally misleading and confusing to consumers (Health Canada, 2003b).

Based on the scientific consensus that tar and other emission numbers are misleading, the Elaborated Guidelines for Article 11 recommend that "Parties should prohibit the display of figures for emission yields, such as tar, nicotine and carbon monoxide, on packaging and labeling, including when used as part of a brand name or trademark" (WHO, 2008). A growing number of countries have removed emission information from packages and replaced it with descriptive information about toxic constituents and their effects on health, most recently Canada (Health Canada, 2010). Preliminary research suggests that this information is more meaningful to consumers and less likely to result in misperceptions about the relative risk of different cigarette brands (Health Canada, 2003a). Research commissioned by Health Canada also suggests that messages on specific toxic constituents with an explanation of their health effect were rated as most effective (Health Canada, 2007).

Research opportunities.

1. In contrast to the evidence that quantitative information is misleading, there is relatively little research indicating whether alternative approaches to communicating emission and constituent information are effective.
2. There is an immediate need for evidence on nonnumeric or "descriptive" emission statements. For example, it remains unclear whether consumers would be best served by a long list of toxic chemicals, a subset of the most hazardous chemicals, or perhaps the most recognizable toxicants, such as arsenic and benzene, using graphics or symbols, or by using these statements in combination with particular warning label content, such as disease outcomes with which they are associated.
3. Research should also examine the most effective way of communicating the addictive constituents from tobacco products and whether it is possible to design these messages to increase awareness of the highly addictive nature of tobacco products, without undermining self-efficacy for quitting among current users.
4. Given that pictures and symbols are known to increase the effectiveness of the health warnings that appear on the

front and back of packs, there is a need to examine whether descriptive emission statements could be enhanced by using graphics or symbols.

Prohibition on Misleading Packaging Information

Article 11 of the FCTC requires that misleading information on packages is prohibited. Article 11 states that

...tobacco product packaging and labelling [shall] not promote a tobacco product by any means that are false, misleading, deceptive or likely to create an erroneous impression including any term, descriptor, trademark, figurative or any other sign that directly or indirectly creates the false impression that a particular tobacco product is less harmful than other tobacco products. (WHO, 2008, p. 9)

To date, more than 50 countries have banned words such as "light," "mild," and "low tar" from packages based on evidence that these terms are inherently misleading to consumers, many of whom incorrectly perceive these products to be less harmful and easier to quit (e.g., U.S. Department of Health and Human Services, 2001). However, banning a small number of descriptors such as "light" and "mild" is insufficient to significantly reduce false beliefs about the risks of different cigarette brands (Borland et al., 2008; Hammond, Arnott, Dockrell, Lee, & McNeill, 2009; Mutti et al., 2011; Yong et al., 2011). One potential explanation for these findings is the wide range of other descriptors that remain in use, including words such as "smooth". In response, the list of prohibited terms has been expanded in countries such as Malaysia and Thailand, to include terms such as "cool," "extra," "special," "smooth," "premium," and "natural." The persistence of false beliefs may also be due to other promotional aspects of the pack, including brand imagery and color. Different shades of the same color and the proportion of white space on the package are commonly used to manipulate perceptions of a product's strength and potential risk (Hammond, 2011; Wakefield, Morley, Horan, & Cummings, 2002).

The Elaborated Guidelines for Article 11 also include recommendations regarding "plain packaging": "Parties should consider adopting measures to restrict or prohibit the use of logos, colors, brand images or promotional information on packaging other than brand names and product names displayed in a standard color and font style (plain packaging)" (WHO, 2008). A growing number of studies indicate that removing color and brand imagery reduces false beliefs about the relative risk of cigarette brands (e.g., Hammond, 2011; Hammond, Doxey, Daniel, & Bansal-Travers, 2011). Plain packaging may also enhance the effectiveness of health warnings by increasing their noticeability, recall, and believability (e.g., Beede & Lawson, 1992; Goldberg et al., 1995; Munafò, Roberts, Bauld, & Leonards, 2011). Removing color and brand imagery from packs makes products less attractive and engaging, and reduces general appeal, particularly among youth and younger adults (e.g., Doxey & Hammond, 2011; Germain, Wakefield & Durkin, 2010; Hammond, Doxey, Daniel, & Bansal-Travers, 2011). Plain packaging may be particularly damaging to "premium" cigarette brands given that packaging plays a fundamental role in distinguishing these brands from lower cost "value" or "discount" brands (Thrasher, Rousu, et al., 2011).

Australia is the first country to propose plain packaging regulations, which will be implemented from December 2012.

The Australian regulations will prohibit colors, logos, and other brand imagery from packs. Instead, packs will display the brand name in a regulated font style and size, printed against a dark olive brown color (Parliament of the Commonwealth of Australia, 2011). The pack size and shape will also be standardized, as will the appearance and color of cigarette sticks themselves. Health warnings and tax stamps will remain on packages as required by the government.

Research opportunities.

1. The implementation of plain packaging regulations in Australia in 2012 represents a unique opportunity to evaluate the impact of pack branding and imagery. In particular, research should examine the impact of plain packaging on brand loyalty and brand switching, the salience of health warnings, false beliefs about health risks, product appeal among young people, and social norms.
2. Research is also required to monitor how the tobacco industry responds to the regulations, including new packaging innovations that are not restricted under the existing regulations. For example, companies may make greater use of unique brand descriptors and develop new brand lines or “families” that have more explicit references to appealing lifestyles or imagery. Brands such as “Vogue” and “Silk Cut” are examples of brand family names that convey desirable brand associations independent of color or imagery. Studies should also examine the influence of descriptors on plain packaging as they are likely to become even more important in the absence of imagery. Research should also monitor other marketing and pricing strategies, including changes in the overall price mix, restrictions in the range of “premium” and “discount” prices, and changes in special price offerings.
3. Independent of plain packaging, there is a need to examine consumer perceptions of brand descriptors that remain legal in most jurisdictions, including descriptors such as “slim” and flavor descriptors that have been shown to appeal to youth and are effective in targeting subgroups such as young women.
4. Studies on the impact of pack shape would help to supplement the existing evidence base. Anecdotal evidence suggests that “slim” packs, including so-called “lipstick” packs are becoming increasingly common, as are special edition packs with irregular shapes and openings.
5. Finally, research should examine the extent to which references to product design, such as the filtration properties of cigarettes, mislead consumers. Additional research is required to examine whether factual statements about a product’s design or constituents may prove deceptive to consumers when presented on packaging, particularly without additional context.

Article 12

The objectives of Article 12 guidelines are to identify key measures needed to successfully educate, communicate with, and train people on the health, social, economic, and environmental consequences of tobacco production and consumption and exposure to tobacco smoke, and to guide Parties in establishing a sustainable infrastructure to support these measures (WHO, 2010).

The guidelines also describe a set of guiding principles for implementation, the substance of which falls into six sections (WHO, 2010, 2011):

1. *Providing an infrastructure to raise public awareness:* The guidelines emphasize the need for a tobacco control focal point within the national government to instigate, coordinate, and facilitate delivery of tobacco education, communication, and training programs and to monitor and evaluate such programs.
2. *Running effective education, communication, and training programs:* The guidelines emphasize that education, communication, and training are most effective when incorporated into a comprehensive tobacco-control program and that they require a sustainable approach to maintain effectiveness.
3. *Involving civil society:* The guidelines encourage active involvement of civil society in planning, developing, implementing, monitoring, and evaluating such programs. Governments are encouraged to identify and involve key community tobacco-control leadership and consider providing direct financial or other support to tobacco-control programs undertaken by civil society.
4. *Ensuring wide access to information on the tobacco industry:* The guidelines reference the obligation under Article 5.3 to ensure education, communication, and training policies, and programs are free from tobacco industry influence.
5. *Strengthening international cooperation:* The guidelines recognize the importance of sharing information and best practices between countries and the importance of collaborating to raise global public awareness of tobacco control.
6. *Monitoring of implementation and revision of the guidelines:* The guidelines emphasize the need for Parties to monitor, evaluate, and revise their communication, education, and training measures to facilitate comparisons, observe trends, and provide clear goals for implementation. Evaluation ought to include determination of need, formulation of objectives, and identification of resources required before initiating awareness-raising programs. Ten annexes are appended to Article 12 guidelines that provide practical ideas for implementation.

Paid Mass Media Campaigns

Antitobacco mass media campaigns have the potential to influence individual behaviors, social norms, and tobacco-control policies, each of which can affect population-wide tobacco use (Hopkins et al., 2001; Hornik, 2002). There is strong evidence across a wide variety of study designs that, within the context of comprehensive tobacco-control programs, mass media campaigns reduce youth smoking, promote adult quitting, and reduce adult smoking prevalence (Durkin, Brennan, & Wakefield, 2012; National Cancer Institute, 2008a; U.S. Department of Health and Human Services, 2012). Media campaigns can perform optimally when there is less competition from tobacco marketing to weaken smokers’ resolve to quit, such as price discounting and promotion of attractive tobacco imagery (Wakefield, Loken, & Hornik, 2010). Therefore, implementation of comprehensive restrictions on the marketing of tobacco (Article 13) will provide a context where mass media campaigns can garner greater attention and quitting activity. There are a number of campaign-specific factors important for campaign success,

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including ensuring sufficient campaign reach, intensity and duration, and the use of effective messages (Durkin et al., 2012; National Cancer Institute, 2008a).

It is important to consider the campaign reach and intensity that can most efficiently achieve population changes given the potential costs associated with campaigns. Gross rating points (GRPs), an advertising industry measure of the average population reach and frequency of media campaigns, have been used to study this issue. A recent review of antismoking mass media campaigns that attended to this question (Durkin et al., 2012) concluded that an average of at least 1,200 GRPs per quarter (1,200 GRPs per quarter translates into 100% of people in a media market viewing an ad 12 times over the 3-month period [once per week], or 50% of people viewing an ad 24 times over that same period [twice per week]) for a total of 4,800 GRPs per year are needed to produce a detectable reduction in adult smoking prevalence, with some evidence that higher levels of GRPs of around 2,000 per quarter could lead to proportionally greater reductions, but this has proven difficult to quantify and may vary for different types of campaign messages. Studies also suggest that around 300 teenage-targeted GRPs per quarter may be the minimum for detecting effects on smoking uptake among youth, with effects increasing linearly until potentially beginning to diminish above 1,250 GRPs per quarter (Emery et al., 2005; Farrelly, Davis, Haviland, Messeri, & Heaton, 2005; Terry-McElrath et al., 2007).

Another important consideration in determining optimal campaign investment is the durability of campaign effects, or the extent to which effects dissipate after the campaign broadcast ends. The broader consumer advertising literature demonstrates that media campaigns influence purchasing behavior while they are on air, but that this effect diminishes rapidly once broadcasting ends (Tellis, 2004). Although we know from several studies of youth and adult smoking that the beneficial effects of tobacco-control advertising may last up to, but not beyond, two months after broadcasting ends (Borland & Balmford, 2003; Sly et al., 2005; Wakefield, Durkin, et al., 2008; Wakefield, Spittal, Yong, Durkin, & Borland 2011), it is unclear to what extent campaign durability varies by the level of campaign investment, the type of message broadcast, and/or the “newness” of such messages.

Ensuring the vast majority of smokers in the population are exposed to antismoking messages is strongly linked to campaign success in changing population smoking behavior (Durkin et al., 2012), and television still provides the most efficient method of doing so in most countries (Nelson et al., 2008). Televised messages receive higher advertising response ratings than radio messages, are more likely to be recalled than messages on other channels (e.g., radio and outdoor), and are more likely to be associated with reduced smoking initiation and behavior in adolescents than messages from other channels (U.S. Department of Health and Human Services, 2012). Televised ads are more likely to be recalled by adult smokers than radio ads and are more likely to be associated with calls to telephone quitlines (Durkin et al., 2012). The lesser impact of most nontelevised messages may be due to the inherent differences in the channel of delivery, to their lower population reach, or to differences in the effectiveness of the types of messages typically broadcast on these channels (Durkin & Wakefield, 2010).

Our changing media environment poses challenges to achieving adequate exposure to planned media messages; as

more channels emerge, the clutter of competing messages increases, and consumers gain greater control over the messages to which they allow themselves to be exposed. Most new digital technologies (online banner advertising; short messaging service; handheld device applications) require people to “opt-in” to advertising by purposively clicking on, opening, or downloading an application. As this exposure is chosen and not incidental, the population reach of this advertising is more limited than traditional free-to-air forms of advertising (Wakefield et al., 2010). Online advertising can be a helpful adjunct to other advertising channels for recruiting smokers into online cessation programs (Graham, Milner, Saul, & Pfaff, 2008; McCausland et al., 2011), although when used in isolation it may attract a relatively small subgroup of smokers already motivated to quit (McCausland et al., 2011).

Research among adolescents (National Cancer Institute, 2008a) indicates that ad characteristics are more important than demographic characteristics in determining responses to tobacco-control ads, and those ads that perform well do so among many population groups. In adult smokers, recent population studies and reviews indicate no consistent relationship between campaign effectiveness and gender or age (Bala, Strzeszynski, & Cahill, 2008; Durkin et al., 2012). They also find generally comparable effects across different socioeconomic (SES) groups for widely broadcast campaigns, and lower effectiveness among lower SES smokers of campaigns that have limited reach and frequency (Durkin et al., 2012; Niederdeppe, Kuang, Crock, & Skelton, 2008). The costs of making different antismoking messages for different age, gender, race/ethnicity, nationality, or SES groups needs to be weighed carefully against the importance of preserving sufficient funds for maximizing campaign exposure to the bulk of the population (Durkin et al., 2012).

There is good evidence from experimental and population studies that ads that elicit strong negative emotions (e.g., fear, guilt, disgust, and anger) through personal testimonials or graphic imagery of the health effects of smoking, or through detailing the tobacco industry’s deceptive practices, can increase attention, generate greater recall and appeal, and affect adolescents’ smoking related beliefs and intentions to smoke (National Cancer Institute, 2008a; U.S. Department of Health and Human Services, 2012). In contrast, ads featuring the cosmetic and short-term effects of smoking, addiction, and athletic performance have been found to be less effective among youth (U.S. Department of Health and Human Services, 2012). Youth smoking prevention campaign messages produced by the tobacco industry are poorly appraised by youth and have either no or adverse effects on youth smoking intentions or behavior (U.S. Department of Health and Human Services, 2012).

In adults, experimental and population studies have shown that campaigns that emphasize reasons to quit by eliciting negative emotions and describing the serious health consequences of smoking, or “why-to-quit” messages, were rated more highly on perceived effectiveness (Durkin et al., 2012; National Cancer Institute, 2008a), were more likely to be rated as memorable and to be recalled (National Cancer Institute, 2008a), and were more likely to lead to quitting behavior (Durkin et al., 2012). A review of secondhand smoke campaigns also found that features of messages that perform best tend to echo those of campaign messages more directly aimed at increasing motivation to quit (Kosir & Gutierrez, 2010). There are mixed findings for campaigns that emphasize

how to quit (Durkin et al., 2012), with some showing positive effects (Vallone, Duke, Cullen, McCausland, & Allen, 2011) and others showing no effects (Niederdeppe, Fiore, Baker, & Smith, 2008; Vallone et al., 2010) on quitting behavior. Reviews also indicate that “why-to-quit” messages may work well across population subgroups and may also contribute to reductions in SES disparities, while “how-to-quit” or “keep-trying-to-quit” messages may actually increase SES disparities in smoking (Durkin et al., 2012; Niederdeppe, 2011).

News Media Coverage of Tobacco Issues

It is possible that nations unable or unwilling to invest in the costs of paid media campaigns may need to rely more heavily on news media coverage about tobacco-control issues (National Cancer Institute, 2008c). This important, but understudied, avenue for public education and communication has been described as being one of the key drivers of the declining secular trend for tobacco use in high-income countries in periods of limited policy and program action (Chapman, 2007). The news media serve as an important source of health information for the general public (Brodie, Hamel, Altman, Blendon, & Benson, 2003; Entwistle, 1995), and news coverage of celebrity illness can lead to marked changes in population health behaviors (Chapman, McLeod, Wakefield, & Holding, 2005; Cram, 2003). Since policy makers pay particular attention to front-page news and editorial items, this form of media also has the potential to influence tobacco policy development (Chapman, 2007; Otten, 1992; Smith & Wakefield, 2005).

News coverage can encompass new research results from scientific studies, as well as news items, editorials and other commentary from experts, community organizations and the public on tobacco policies and programs. By defining certain events and issues as newsworthy, journalists and news editors give more salience to some issues and leave others in relative obscurity. In addition, by framing issues in specific ways, the media can play an important role in influencing not only *what* issues are presented to mass audiences but also *how* these are perceived and what importance the public attaches to them (Entman, 1993; McCombs & Shaw, 1972). The amount and nature of coverage can be shaped by public relations efforts of tobacco companies, as well as public health agencies and tobacco-control advocates, who may generate newsworthy data, reports, and events, and/or who may be approached for comment on particular issues (Malone, Boyd & Bero, 2000; Menashe & Siegel, 1998; National Cancer Institute, 2008c). Studies suggest that concerted media advocacy can shape the volume and framing of news coverage on tobacco issues (Chapman & Dominello, 2001; Stillman, Cronin, Evans, & Ulasevich, 2001; Wakefield, Brennan, Durkin, McLeod, & Smith, 2012), and there exist texts on the use of media advocacy to advance public health goals including those of tobacco control (Chapman, 2007; Wallack & Dorfman, 2001).

There is a small but growing body of population-based studies suggesting that news coverage on particular health issues can influence contingent health-related attitudes and behaviors, including youth binge drinking (Yanovitzky & Stryker, 2001), adolescent marijuana use (Stryker, 2003), consumption of trans-fats (Niederdeppe & Frosch, 2009), and reduced youth (Niederdeppe, Farrelly, & Wenter, 2007; Smith et al., 2008) and adult smoking (Laugesen & Meads, 1991; Pierce & Gilpin, 2001). The pathways by which this occurs not only entail

direct provision of new information to news media consumers but also set the agenda for discussion within families, work-mates and other social groups, with such discussion leading to changes in social norms for tobacco use (Yanovitzky & Stryker, 2001). In addition, news coverage can influence the likelihood of passage of tobacco policies (Asbridge, 2004; Niederdeppe, Farrelly, Thomas, Wenter, & Weitzenkamp, 2007).

Research opportunities.

The primary research opportunities include bigger picture issues pertaining to paid media campaign investment strategy, studies to better understand how media messages are processed by their audiences, studies of different message sources and target audiences, and studies of different media channels.

Media investment strategy: The big picture

1. What level of paid media campaign investment (GRPs), and over what duration, is needed to reliably detect effects on changing tobacco-use behavior for adults and for youth? At what levels do increasing GRPs begin to yield diminishing returns on tobacco-use behaviors? Can the minimum and maximum levels be better established? Do these vary by the nature of the campaign message? For example, given high-emotion campaigns appear to achieve high recall at lower GRP levels (Biener, Wakefield, Shiner, & Siegel, 2008), might these types of campaigns require lower levels of investment to influence behavior? Are higher levels of campaign exposure required in jurisdictions with more media clutter? Also, are higher or lower levels of campaign exposure required in jurisdictions that have not previously aired media campaigns, and more generally, does the strength of the tobacco-control environment influence possible effects? Can low- and middle-income countries be adequately resourced with sufficiently strong research designs to answer these questions?
2. How durable are the effects of paid mass media campaigns? In other words, how long do behavioral effects last once broadcasting ends? These kinds of questions can inform decisions about how long there should be between campaign flights, to what extent the same ads can be repeatedly broadcast, and whether some kinds of ads, such as personal testimonials, might take longer to build recognition, but have greater durability once this is achieved.
3. Careful adaptation and recycling of media campaign messages already used successfully elsewhere can minimize the substantial cost and time involved in campaign development, as long as these messages pretest well with one's local population (Cotter, Hung, Perez, Dunlop, & Bishop, 2011; Cotter et al., 2010). Are there some types of messages that are consistently able to be adapted more easily? What is the experience of jurisdictions who have broadcast adapted antitobacco ads to their populations? What are the political and other barriers to pursuing such a strategy in whole or part?
4. Does a greater volume of (and differently framed) news media on tobacco issues influence tobacco-related attitudes and behaviors, or tobacco policy implementation and compliance?
5. How do different sociocultural and political environments influence the likelihood of getting tobacco-control issues on

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the news media agenda? How does the volume and framing of news coverage relate to tobacco control and tobacco industry advocacy efforts in different countries?

6. Can the timing, extent, and nature of paid mass media campaigns and/or tobacco-related news media complement or even enhance the behavioral impact of other high population-reach tobacco-control policies, such as pictorial health warnings on tobacco packs (Brennan et al., 2011), tobacco tax increases, and smoke-free laws (Alday et al., 2010; Chang et al., 2011; Thrasher, Huang, et al., 2011)? In particular, could the addition of mass media campaigns in the presence of such policies produce greater effects on tobacco use than each would do in isolation? Can well-timed mass media campaigns, even if not explicitly associated with the policy, assist policy-prompted quit attempts to be more successful?
7. Given the wide population reach of paid mass media campaigns and the fact that they often occur in the presence of other tobacco-control policies, how can researchers and campaign funders create evaluation opportunities that exploit the potential for stronger evaluation designs that include baseline precampaign assessments and use of no-exposure or low-exposure comparison regions?

Understanding message processing

1. While some research already addresses this issue (Davis, Nonnemaker, Farrelly, & Niederdeppe, 2010; National Cancer Institute, 2008b; U.S. Department of Health and Human Services, 2012), which premarket advertising response measures, or efficient combinations of them (recall; perceived argument strength; perceived effectiveness; emotional response), best predict tobacco-use behavior change once campaigns are implemented? Such research could assist in refining key advertising response measures to be used in the pretesting of ads, especially because the content for which there is the strongest evidence (strong, graphic content, and emotionally evocative testimonials) is also an approach with which advertising firms have the least experience. Similarly, how can message-testing studies assist in predicting population response to news media stories, so that tobacco-control policy advocates can better frame arguments in a way that promotes understanding of concepts?
2. Can neural (fMRI) (Langleben et al., 2009; Lieberman, 2010) and other nonconscious (heart rate, skin conductance, and small facial muscle responses; Kang, Cappella, Strasser, & Lerman, 2009) responses to advertising messages predict tobacco-use behavior change better than self-reported responses? If so, should they be used alone or as a complement to self-reported advertising response measures? How reliable are these measures across populations?
3. Emotional engagement appears to beneficially improve ad responses to prevention and cessation messages (Durkin et al., 2012; National Cancer Institute, 2008b), but does this also apply to less-commonly used messages about the social, economic, and environmental consequences of tobacco production and consumption, and the health impacts of tobacco production?
4. Most research to date has been based on ads featuring high levels of negative emotion (fear, disgust, and anger). Could ads that elicit high levels of positive emotion (hope, inspiration, and pride) fare equally well? Could a combination of negative and positive emotions be particularly effective? Could this vary according to the number of years that populations have been exposed to tobacco-control mass media campaigns?
5. Since research suggests that emotional engagement and self-referencing (applying the message to oneself; Dunlop, Wakefield, & Kashima, 2010) are key processes through which ads exert beneficial effects, what message features can increase the likelihood of these processes occurring? While health effects messages and narrative testimonials most often elicit such processes, what features of tobacco industry deception, “how-to-quit,” social normative, and other messages could perhaps also elicit these processes?
6. To what extent, and under what circumstances, do tobacco users purposively avoid negative emotional campaign messages or actively discount them? And does this matter, given that avoidance of emotive graphic health warnings on cigarette packs actually predicts subsequent quit attempts (Borland, Yong et al., 2009)?
7. What is the importance of stylistic features in ads—elements such as production quality, message sensation value (Strasser et al., 2009), argument strength (Zhao, Strasser, Cappella, Lerman, & Fishbein, 2011), and smoking cues (Lee, Cappella, Lerman, & Strasser, 2011) for message processing among adult tobacco users? For example, is production quality more important for ads featuring damaged bodily organs or simulations of disease, but less important for real-life testimonials? What are the relative roles of argument strength and high emotion in antitobacco advertising? Is high argument strength necessary, but not sufficient?
8. Interpersonal discussion is a key pathway through which media campaigns can indirectly exert effects on smokers, by increasing quitting intentions and behaviors and also increasing the secondary diffusion of campaign messages to others, particularly when these discussions are constructive in tone and contain some talk about quitting (Dunlop, Wakefield, & Kashima, 2008; Durkin & Wakefield, 2006; Durkin & Wakefield, 2008; Southwell & Yzer, 2007; van den Putte, Yzer, Southwell, de Bruijn, & Willemsen, 2011). What types of media campaign messages prompt more talk about tobacco issues, more constructive talk, and more quitting-related talk? And how could such ad-generated discussion be influenced to lead people closer to quitting?
9. Is there differential success between mass media campaigns that do and do not contain accompanying explicit promotion of help-to-quit services (quitlines or Web sites) in terms of population quitting? Promotion of a source of help for quitting may be important for increasing self-efficacy in the presence of media campaign messages that generate negative emotions (Witte & Allen, 2000). On the other hand, unaided cessation is the most common method by which smokers quit successfully, and some suggest that widespread promotion of formal quit smoking services may lead smokers to discount their own ability to quit unaided (Chapman & MacKenzie, 2010).

Message source and target audience

1. Given that reductions in adult smoking rather than youth smoking will most rapidly result in decline in the global

tobacco-related disease burden, what is the most efficient mix of paid media campaign investment for most rapidly reducing adult tobacco use? As suggested in the review by the National Cancer Institute (National Cancer Institute, 2008b), do mass media campaigns aimed at prompting adults to quit also reduce youth smoking uptake, thereby conferring a two-for-one benefit? And do some campaigns aimed at youth prompt quitting in adults?

2. Are there types of paid media messages that are more or less effective in prompting quit attempts and cessation among lower SES groups and those with lower literacy levels (Durkin, Biener & Wakefield, 2009)? Since there is some indication that “how-to-quit” media campaigns may be less effective with low SES smokers (Niederdepppe, 2011), what is the impact of pharmaceutical company quit smoking medication messages on lower SES groups?
3. Given past research indicating that tobacco company youth smoking prevention media campaigns are ineffective or harmful to youth (National Cancer Institute, 2008b), what is the impact of tobacco industry-sponsored quit smoking messages on adult smokers? Also, to what extent do tobacco industry youth prevention and quit-smoking messages influence public support for tobacco companies and industry advocated positions on effective tobacco-control policies?

Media channels.

1. Although television provides the greatest population reach for media campaign messages in most jurisdictions, under what circumstances, and in which countries, could radio messages provide either primary or important adjunctive population reach (e.g., Thrasher, Huang, et al., 2011)?
2. What types of media messages are most appropriate for different media channels? Can high levels of negative emotion be elicited as effectively by radio (Durkin & Wakefield, 2010) or online ads as they are by television ads? Are personal testimonial narratives, which rely on engagement between viewer and audience, better on television, than on radio, or online? Are “help-to-quit” messages better suited for online channels (Graham et al., 2008; McCausland et al., 2011)?
3. How can the population reach and effects of online advertising be maximized? What is the impact of different types of online advertising/engagement options (banner, search engine optimization, and social networking sites) and placement on different types of Web sites (life improvement such as job search/dating sites vs. topical smoking-relevant content such as online news about tobacco issues) on quitting motivation and/or enrolment in online smoking cessation services?
4. How should the potential interactions between broadcast media campaigns and newer technologies featuring cessation services be exploited, such as Web site downloads and interactive games, cell phone applications, and expert systems (Abrams, Graham, Levy, Mabry, & Orleans, 2010; Abrams & Maibach, 2008)?
5. Given the diminishing role of newspapers in news coverage, what channels of news media provide a representative and practical method for monitoring tobacco-related news coverage in different countries? What is the role of online news and social media (Facebook, Twitter, blogs, etc)?

Table 1. Summary of Key Research Needs for Articles 11 and 12

Article 11

1. To better understand the most effective types of message content, including the combination of messages across a “set” of multiple warnings
2. To examine ways of integrating cessation information with health warnings and ways in which packages can be used to promote effective forms of smoking cessation
3. To understand potential differences among population subgroups and across different cultures

Article 12

1. To examine the interplay between the extent of paid mass media campaign exposure, the type of mass media messages, and behavioral outcomes in population-based studies
2. To understand the combined influences (i.e., if they are complementary or even synergistic) of paid media campaigns, news media on tobacco issues and tobacco-control policies (such as packaging, smoke-free laws, and tax increases)

DISCUSSION

Important gaps in consumer awareness of the risks of tobacco use remain even in the most educated countries, and tobacco users in many parts of the world lack even basic knowledge about the risks of tobacco use. A unifying theme of effective health communication through packaging and use of mass media is the need to go beyond conveying basic information about the health effects of tobacco use; such communication should also serve to provide salient, timely, and engaging reminders of the consequences of tobacco use in ways that motivate and support tobacco users trying to quit and make tobacco use less appealing for those at risk of taking it up. A unifying theme of both strategies is their extremely high penetration to current and potential tobacco users within populations, which increases the likelihood of them being able to contribute towards driving reductions in population-wide tobacco use. Paid mass media campaigns give greater control over the extent and content of intended message exposure, but news media coverage can play an important adjunctive role.

Articles 11 and 12 of the FCTC establish basic standards for communicating with smokers through packaging and mass media campaigns. Research evidence was critical to informing the content of these articles when they were drafted and will be critical to ensuring their effective implementation moving forward. Table 1 includes a summary of key research recommendations for address current evidence gaps.

Research can help to evaluate consumer information needs and gaps, and the extent to which these needs can be met by different communications. Research is particularly important for identifying the most effective forms of content and themes for communication campaigns, both within the context of package health warnings and other media channels.

Given that much of the evidence base underlying Articles 11 and 12 derives from high-income, Western countries, there is a need for evidence on the extent to which consumer needs differ across social and political contexts, including regions with different social norms and patterns of tobacco use. The need for evidence in low- and middle-income countries is particularly important to ensure that scarce resources dedicated to Articles

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11 and 12 have maximum impact and sustainability. It seems likely to be the case that there may be more similarities than differences in the ways in which audiences respond to message types across countries (Wakefield, Bayly, et al., 2011), and, if so, much greater sharing of pack imagery and mass media campaign messages could occur across jurisdictions with relatively minor adaptation.

Articles 11 and 12 also demonstrate the extent to which tobacco-control policies in different domains work in a complementary fashion: Comprehensive packaging regulations have unique reach and convey basic health messages that can be communicated in more elaborate and engaging ways through many of the mass media channels included under Article 12. Ideally, communication activities under Article 11 and 12 should be coordinated and integrated in ways that enhance impact and provide the public with a coordinated communication campaign. Articles 11 and 12 effectively seek to capture a greater “share of voice” from a communication environment on tobacco issues that in many countries is still dominated by the tobacco industry. In marketing, “share of advertising voice” is the percent of a sponsor’s advertising of a product or concept, out of all advertising pertaining to that product or concept (Kotler, 2003, p. 608). Article 13, concerned with restricting tobacco marketing and messaging practices far broader than packaging (see Nagler & Viswanath (2013), this issue), has a complementary role to play here in explicitly reducing the tobacco industry’s share of voice. This paper underlines the fact that eliminating or countering misleading tobacco industry messages and replacing them with messages that widely and effectively communicate the real harms of tobacco use, as outlined in Articles 11 and 12, are key elements of an effective comprehensive tobacco control program.

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None declared.

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