Recommendations Regarding Interventions to Reduce Tobacco Use and Exposure to Environmental Tobacco Smoke

Task Force on Community Preventive Services

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Introduction

Tobacco use is the single largest cause of preventable premature death in the United States,[1–3] and exposure to environmental tobacco smoke (ETS) is a preventable cause of significant morbidity and mortality.[4–6] Preventing tobacco use in children and adolescents, reducing tobacco use in adults, and reducing nonsmokers' exposure to ETS are essential public health objectives for communities. This report makes recommendations on the evidence of effectiveness of selected community and health care system interventions in achieving these objectives.

The recommendations in this report represent the work of the independent, nonfederal Task Force on Community Preventive Services (TFCPS). The TFCPS is developing the *Guide to Community Preventive Services* (the *Community Guide*) with the support of the U.S. Department of Health and Human Services (DHHS) in collaboration with public and private partners. The Centers for Disease Control and Prevention (CDC) provides staff support to the TFCPS for development of the *Community Guide*. Although the recommendations presented in this report were developed by the TFCPS and are not the recommendations of CDC or DHHS, they are consistent with and complementary of the recommendations recently put forth by the Public Health Service,[7] DHHS,[8] and CDC.[9]

This report provides recommendations on interventions to reduce tobacco use and ETS exposure. These recommendations present options appropriate for communities and health care systems, as well as state and national programs. The reviews of evidence underlying these recommendations are provided in the accompanying article.[10] The methods of conducting evidence reviews and translating the evidence of effectiveness into recommendations for the *Community Guide* have been published elsewhere.[11]

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Interpreting and Using the Recommendations

Given that tobacco use is the largest preventable cause of premature death in the United States, reducing tobacco use and ETS exposure are important goals to most communities. In selecting and implementing interventions, it is recommended that communities develop and maintain a comprehensive, multifaceted strategy to reduce exposure to ETS, reduce tobacco use initiation, and increase tobacco use cessation. Improvements in each category will contribute to reductions in tobacco-related morbidity and mortality, and success in one area may contribute to improvements in the other areas as well. Increasing tobacco use cessation, for example, will reduce exposure to ETS, and smoking bans, effective in reducing exposure to ETS, may also reduce some tobacco users' daily tobacco consumption and assist others in quitting entirely. Although the TFCPS has provided assessments for individual interventions or intervention combinations, comprehensive community efforts will require the implementation of multiple interventions to address tobacco use and exposure to ETS in diverse settings and populations. The recommendations provided in this report can assist communities in assembling a comprehensive program consisting of interventions with demonstrated evidence of effectiveness.

Choosing interventions that have been shown to work and that are well matched to local needs and capabilities, and then implementing those interventions well, are important steps in establishing a comprehensive community program. In setting priorities for the selection of interventions to meet local objectives, recommendations provided in the *Community*

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Guide and other information, such as the range of observed effect sizes and effectiveness in different target populations and groups, should be considered along with local information such as resource availability, administrative structures, and economic, social, and regulatory environments of available organizations and practitioners. Information regarding applicability (provided for each intervention in Hopkins et al.[10]) can be used to assess the extent to which the intervention might be useful in a particular local setting or population. Although the TFCPS recognizes the importance of implementing interventions tailored to resonate with the target population, the specifics of these efforts, in most cases, were considered outside of the *Community Guide* mandate. Economic information (also provided in Hopkins et al.[10]), although limited, may be useful in identifying (1) resource requirements for interventions, and (2) interventions that meet public health goals more efficiently than other available options for reaching the same goals.

The TFCPS recommendations are based primarily on the evidence of effectiveness of interventions as implemented, evaluated, reported, and published. A TFCPS finding of insufficient evidence does not imply evidence of ineffectiveness of the intervention, but does identify areas of uncertainty and specific continuing research needs. In these instances it should not be inferred that the targeted outcomes are not important in a comprehensive community effort. The evidence of effectiveness of community education efforts to reduce ETS exposure in the home environment, for example, was evaluated as insufficient based on the lack of qualifying studies. The TFCPS assessment nevertheless recognizes the importance of efforts to reduce ETS exposure in the home, the primary source of exposure for infants and children.[12]

A starting point for communities and health care systems is an assessment of current tobacco use prevention and control activities. Current efforts should be compared with recommendations in this report as well as other relevant program recommendations proposed by CDC,[9] the National Cancer Institute (NCI),[13] the Public Health Service (PHS),[7] DHHS,[8,14,15] and the Institute of Medicine.[16,17] In addition to assessing overall progress toward goals, health planners must identify and address the community differences in tobacco use and ETS exposure that contribute to disparities in health. The implementation of effective interventions tailored to settings and populations with higher prevalence rates of tobacco use—such as lower socioeconomic status populations and some racial/ethnic groups[9,15,18]—is important to the success of comprehensive tobacco control efforts.

The review did not examine the evidence of effectiveness of clinical cessation programs or therapies for tobacco dependence (such as pharmacologic treatments), which are not part of the *Community Guide* mandate but were addressed in an extensive, evidence-based review recently updated by the PHS.[7] However, the evidence reviews conducted for the *Community Guide* include several health care system interventions, such as provider reminder systems and patient telephone cessation support, that can help health care providers identify, advise, and/or assist tobacco-using patients in their efforts to quit. The recommendations in the *Community Guide* complement those provided in the PHS *Clinical Practice Guideline*, and both present a range of effective options for increasing and improving patient tobacco use cessation.

Intervention Recommendations

The TFCPS evaluated the evidence of effectiveness of 14 selected interventions, presented here in three sections: (1) strategies to reduce exposure to ETS, (2) strategies to reduce tobacco use initiation, and (3) strategies to increase tobacco use cessation. Evaluations of three additional interventions are still in progress (described in the "Additional Reviews" section below).

Strategies to Reduce Exposure to ETS

This section covers interventions reviewed by the TFCPS, which can directly reduce or eliminate exposure to ETS. Although community efforts to increase cessation and reduce initiation of tobacco use will also eventually reduce ETS exposures, additional interventions are necessary to provide immediate protection for nonsmokers in workplaces, public areas, and home environments. This section includes an evaluation of the effectiveness of smoking bans and restrictions implemented as workplace policies, organization regulations, community ordinances, and state law, and an evaluation of community education efforts to increase voluntary adoption of smoking policies in households.

Smoking bans and restrictions: strongly recommended. Smoking bans and restrictions are policies and regulations that ban or limit the consumption of tobacco products in designated areas. These include private business and employer policies, organization regulations, and government laws and ordinances. Laws and ordinances can establish minimum standards to protect workers in private-sector workplaces, as well as ban or restrict smoking in public areas and workplaces.

Smoking bans and restrictions are strongly recommended on the basis of strong scientific evidence that they reduce exposure to ETS (1) in a wide range of workplace settings and adult populations; (2) when applied at different levels of scale, from individual businesses to entire communities; and (3) whether used alone or as part of a multicomponent community or workplace intervention. A detailed description of the evidence is provided in Hopkins et al.[10]

In addition to evidence of effectiveness in reducing workplace exposure to ETS, several qualifying studies observed a significant reduction in daily consumption of cigarettes by workers subject to a smoking ban or restriction. Some of the qualifying studies that evaluated smoking bans observed increases in tobacco use cessation and/or reductions in tobacco use prevalence in their study populations.

Community education: insufficient evidence. Community education provides information to parents, other occupants, and visitors to the home about the importance of reducing or eliminating ETS to protect nonsmoking adults and children. Education interventions attempt to motivate household members to modify smoking habits to reduce exposure of nonsmokers to indoor ETS (by establishing home policies restricting or banning smoking) if they cannot quit entirely.

The TFCPS review identified only one qualifying study of community-wide education interventions including an ETS component, an insufficient number of studies for assessing the effectiveness of the intervention. Details of the qualifying study are provided in Hopkins et al.[10] A recent review of efforts to reduce children's exposure to ETS reached a similar conclusion.[12]

Strategies to Reduce Tobacco Use Initiation

In this section, the TFCPS reviewed interventions to reduce tobacco use initiation among children, adolescents, and young adults. Most smokers initiate tobacco use during childhood and adolescence, and nicotine addiction begins during the first few years of use.[16] Major risk factors for tobacco use initiation among children and adolescents are perceptions that tobacco use is a common and normative peer and adult behavior, and the availability and accessibility of tobacco products.[14] Although recent studies have identified increases in tobacco use prevalence in populations of young adults such as college students,[19] overall, if adolescents are kept tobacco-free, most will never start using tobacco.[14] This report includes evaluations of two interventions to achieve this goal. Evaluations of three additional interventions are still in progress (described in the "Additional Reviews" section below).

Increasing the unit price for tobacco products: strongly recommended. Interventions to increase the unit price for tobacco products include legislation at the state or national level to raise the product excise tax. Although other factors also affect tobacco product pricing, excise tax increases historically have resulted in equivalent or larger increases in tobacco product price.[20]

Interventions to increase the price of tobacco products are strongly recommended by the TFCPS based on strong evidence of effectiveness in reducing tobacco use prevalence in study populations of adolescents and young adults. A detailed description of the evidence is provided in Hopkins et al.[10] In addition, increasing the price for tobacco products is also effective in (1) reducing population consumption of tobacco products, and (2) increasing tobacco use cessation (described in the "Strategies to Increase Tobacco Use Cessation" section below).

Mass media campaigns: strongly recommended (when combined with other interventions). Campaigns are mass media interventions of an extended duration, using brief, recurring messages to inform and to motivate children and adolescents to remain tobacco-free. Message content is developed through formative research, and message dissemination includes the use of paid broadcast time or print space (as advertisements), donated time and space (as public service announcements), or a combination of paid and donated time and space.

None of the studies identified in this review evaluated the impact of campaigns implemented alone. Therefore, the TFCPS evaluated the evidence of effectiveness of mass media campaigns when implemented with additional interventions, such as tobacco product excise tax increases, school-based education, or other community programs. In most of the evaluated studies, however, the media campaign was the dominant intervention implemented.

Mass media campaigns are strongly recommended by the TFCPS based on strong evidence of effectiveness in reducing tobacco use prevalence among adolescents when implemented in combination with tobacco price increases, school-based education, and/or other community education programs. A detailed description of the evidence is provided in Hopkins et al.[10]

Strategies to Increase Tobacco Use Cessation

The TFCPS evaluated a wide range of interventions to increase cessation among tobacco product users. Efforts to increase cessation include strategies to increase the number of tobacco users who attempt to quit, strategies to increase the frequency of these cessation attempts, strategies to improve the success rate of individual cessation attempts, and strategies to achieve all of these goals.

Increasing the unit price for tobacco products: strongly recommended. Interventions to increase the unit price of tobacco products include state and federal legislation raising the excise tax on these products. Although other factors also affect tobacco product pricing, excise tax increases historically have resulted in equivalent or larger increases in tobacco product prices.[20]

Interventions to increase the price of tobacco products are strongly recommended by the TFCPS based on strong evidence of effectiveness in (1) reducing population consumption of tobacco products, (2) reducing

tobacco use initiation (described in the "Strategies to Reduce Tobacco Use Initiation" section above), and (3) increasing tobacco cessation. Excise tax increases demonstrated evidence of effectiveness in a variety of populations and when implemented at both the national and state levels. A detailed description of the evidence is provided in Hopkins et al.[10]

Mass Media Education

These community-wide interventions provide tobacco product users with cessation information and motivation to quit through the use of broadcast and print media. The TFCPS review of the available evidence distinguished among three types of mass media interventions (campaigns, cessation series, and cessation contests) that differ in the duration, intent, and intensity of the media messages.

Campaigns: strongly recommended (when combined with other interventions). Campaigns are mass media interventions of an extended duration, using brief, recurring messages to inform and to motivate tobacco product users to quit. Message content is developed through formative research, and message dissemination includes the use of paid broadcast time and/or print space (as advertisements), donated time and space (as public service announcements), or a combination of paid and donated time and space.

None of the studies identified in the review evaluated the impact of campaigns when implemented alone. Therefore, the TFCPS evaluation of the evidence of effectiveness concerns mass media campaigns when implemented with additional interventions, such as excise tax increases, and other community education efforts. In several studies, however, the mass media campaign was the dominant intervention implemented.

Multicomponent interventions that include a mass media campaign are strongly recommended by the TFCPS based on strong evidence of effectiveness in (1) reducing population consumption of tobacco products, and (2) increasing cessation among tobacco product users. A detailed description of the evidence is provided in Hopkins et al.[10] The TFCPS recommendation is based primarily on the effectiveness of long-duration, high-intensity campaigns implemented and evaluated in three states (California, Massachusetts, and Oregon) in which use of mass media was coordinated with an excise tax increase and funding for other community- and school-based education programs. These campaigns used messages developed through formative research, and purchased broadcast time and print space.

Cessation series: insufficient evidence. Cessation series are mass media interventions using recurring instructional segments to recruit, inform, and motivate tobacco product users to initiate and to maintain cessation efforts. Cessation series can be coordinated with pre-series broadcast or print promotion, community education such as distribution of self-help cessation materials, and organization of cessation groups in the community. The series can extend for a period of several weeks to several months, and can be delivered as nightly or weekly segments on news or informational broadcasts, which provide expert advice or peer group experiences on a variety of cessation issues (e.g., dealing with the symptoms of withdrawal).

Based on available scientific evidence, the TFCPS found insufficient evidence to assess the effectiveness of cessation series. The available evidence was deemed insufficient on the basis of (1) inadequate comparison populations or groups, and (2) inconsistent results. A detailed description of the evidence is provided in Hopkins et al.[10]

Cessation contests: insufficient evidence. Cessation contests are short-duration, community-wide events using mass media for the promotion, recruitment, and motivation of tobacco product users to commit to quit on a targeted cessation date or during a specified period. The TFCPS evaluation included contests that offered additional incentives for participation and successful cessation, as well as targeted quit events conducted without additional incentives.

The TFCPS review identified only one qualifying study of cessation contests, an insufficient number of studies for assessing the effectiveness of the intervention. Most of the identified studies provided assessments of cessation rates in contest participants without a comparison population or group. The TFCPS conclusion was based on (1) too few studies, and (2) insufficient comparison/control groups. A detailed description of the evidence is provided in Hopkins et al.[10]

Health Care System-Level Interventions

The TFCPS reviewed a variety of interventions appropriate for use by health care providers and systems that were implemented to increase or improve patient tobacco use cessation. The effectiveness of provider counseling to tobacco-using patients and specific clinical therapies (such as nicotine replacement), as documented in the PHS's *Treating Tobacco Use and Dependence: Clinical Practice Guideline*,[7] enabled the TFCPS to expand the criteria for measurements of effectiveness in the evaluation of interventions in this subsection. In addition to measurements of changes in patient tobacco use cessation, the TFCPS considered measurements of changes in provider delivery of advice to quit, and changes in patient use of effective cessation therapies (such as nicotine replacement).

Provider reminders: recommended. Provider reminders involve efforts to identify tobacco product-using patients and to prompt providers to discuss and/or

advise patients on cessation. Techniques by which reminders are delivered include chart stickers, vital sign stamps, medical record flow sheets, and checklists. The content of provider reminders can vary, and provider reminder systems are often combined with other interventions, such as provider education and patient education. These multicomponent interventions are considered separately below.

Based on sufficient scientific evidence of effectiveness in increasing provider delivery of advice to quit, provider reminders are recommended (1) whether used alone or as part of a multicomponent intervention (see "Provider reminder plus provider education, with or without patient education" section below), (2) across a range of intervention characteristics (chart stickers, checklists, and flowcharts), and (3) in a variety of clinical settings and populations. A detailed description of the evidence is provided in Hopkins et al.[10]

Provider education: insufficient evidence. Provider education involves giving information about tobacco and tobacco use cessation to providers to increase their knowledge or change their attitudes. Techniques by which information is delivered include lectures, written materials, videos, and continuing medical education seminars. Provider populations include physicians, nurses, physician assistants, health care students, and other office staff. Provider education efforts are frequently combined with other interventions, such as provider reminders and patient education efforts. These multicomponent interventions are considered separately below.

After a review of the scientific evidence, the TFCPS found insufficient evidence to assess the effectiveness of provider education alone. The TFCPS considered the available evidence insufficient on the basis of (1) inconsistent results in increasing provider advice to quit, and (2) an insufficient number of studies measuring differences in patient cessation. A detailed description of the evidence is provided in Hopkins et al.[10]

Provider reminder plus provider education, with or without patient education: strongly recommended. Multicomponent efforts to increase tobacco use cessation include implementation of provider reminders and efforts to educate providers to identify and to intervene with tobacco-using patients, as well as to provide supplementary educational materials when indicated.

Multicomponent interventions that include a provider reminder system and a provider education program, with or without educational materials for tobacco-using patients, are strongly recommended on the basis of strong evidence that this combination (1) increases provider delivery of advice to quit to tobacco-using patients, and (2) increases patient tobacco use cessation. The TFCPS recommendation reflects the evidence of effectiveness of the most common combination evaluated, as the contribution of the individual components to overall effectiveness of these interventions could not be determined. A detailed description of the evidence is provided in Hopkins et al.[10]

Provider feedback: insufficient evidence. Feedback interventions use assessment of provider performance in delivering tobacco use cessation information or advice to patients to inform and motivate providers. Retrospective assessments are conducted through chart reviews or computerized medical records. Assessment and feedback interventions can also involve other activities, such as provider education, and these combinations are considered in this section.

After a review of the scientific evidence, the TFCPS found insufficient evidence to assess the effectiveness of provider feedback when used alone or in combination with other interventions. The TFCPS considered the evidence insufficient on the basis of (1) the small number of studies (n=3), and (2) an insufficient number of studies providing measurements of changes in provider advice to quit or measurements of changes in patient tobacco use cessation. A detailed description of the evidence is provided in Hopkins et al.[10]

Reducing patient out-of-pocket costs for effective cessation therapies: recommended. This intervention includes efforts to reduce the financial barriers to patient use of cessation therapies that have previously demonstrated evidence of effectiveness. Techniques include providing the services within the health care system, or providing coverage to or reimbursement of patients for expenditures on cessation groups or on nicotine replacement or other pharmacologic therapies.

Reducing patient out-of-pockets costs for effective cessation therapies is recommended by the TFCPS on the basis of sufficient scientific evidence of effectiveness in (1) increasing use of the effective therapy, and (2) increasing the total number of tobacco-using patients who quit. A detailed description of the evidence is provided in Hopkins et al.[10]

Multicomponent patient telephone support: strongly recommended. Patient telephone support interventions provide tobacco-product users with cessation counseling or assistance in attempting to quit and to maintain abstinence. Telephone support can be reactive (tobacco user initiates contact) or proactive (provider initiates contact or user initiates contact with provider-initiated follow-up). Techniques for delivery of telephone support include the use of trained counselors, health care providers, or taped messages in single or multiple sessions. Telephone support sessions usually follow a standardized protocol for providing advice and counseling. The telephone support component is usually combined with other interventions, such as patient educational materials, formal individual or

group cessation counseling, or nicotine replacement therapies.

Multicomponent cessation interventions that include telephone support are strongly recommended by the TFCPS based on a strong body of evidence that this combination intervention (1) increases patient tobacco cessation, and (2) is effective in both clinical settings and when implemented community-wide. It was not possible in this evaluation to determine the effect of the telephone support component alone. The minimum effective combination evaluated by the TFCPS was community-wide, proactive telephone support (proactive follow-up) combined with patient education materials.[21] A detailed description of the evidence is provided in Hopkins et al.[10]

Additional Reviews

The TFCPS is currently reviewing the evidence of effectiveness of three additional interventions. Youth access restrictions include laws that regulate and enforce bans on selling tobacco products to children and adolescents, or allowing these individuals to purchase or consume these products. School-based education includes all efforts to educate and motivate students to remain tobacco-free. Tobacco industry restrictions concern laws that regulate tobacco product content, labeling, promotion, and advertising. Completion and release of the TFCPS evaluations and conclusions are anticipated later this year.

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