Integrating Evidence-Based Clinical and Community Strategies to Improve Health

Judith K. Ockene, PhD, MEd, Elizabeth A. Edgerton, MD, MPH, Steven M. Teutsch, MD, MPH, Lucy N. Marion, PhD, RN, FAAN, Therese Miller, DrPH, Janice L. Genevro, PhD, MSW, Carol J. Loveland-Cherry, PhD, RN, FAAN, Jonathan E. Fielding, MD, MPH, MA, MBA, Peter A. Briss, MD, MPH

Abstract: Multiple and diverse preventive strategies in clinical and community settings are necessary to improve health. This paper (1) introduces evidence-based recommendations from the U.S. Preventive Services Task Force sponsored by the Agency for Healthcare Research and Quality and the Community Task Force sponsored by the Centers for Disease Control and Prevention, (2) examines, using a social-ecologic model, the evidence-based strategies for use in clinical and community settings to address preventable health-related problems such as tobacco use and obesity, and (3) advocates for prioritization and integration of clinical and community preventive strategies in the planning of programs and policy development, calling for additional research to develop the strategies and systems needed to integrate them.

(Am J Prev Med 2007;32(3):244-252) © 2007 American Journal of Preventive Medicine

Introduction

D nhealthy lifestyle behaviors and risk factors, poor delivery of clinical and community preventive services, and environments not conducive to health increase the risk of disease and injury and contribute to the leading causes of death (Table 1).^{1,2} (We use the term "clinical" to include primary care in healthcare systems as well as solo practices, and the term "community" to include a range of geopolitical units from small-community interconnected groups to entire countries, continents, and the globe.) Tobacco use, poor diet, and physical inactivity alone contribute to more than a third of the premature deaths in the United States.^{1,2}

Disease and injury are not inevitable. A growing body of evidence-based preventive strategies is available to reduce the preventable burden of disease, that is, the amount of disease that could be averted if preventive and therapeutic services were universally delivered.³ Parts of the burden can be prevented through the delivery of appropriate clinical preventive services, through community-level interventions, and through appropriate treatment (see lower bar on Figure 1). The remainder is unavoidable at present due to the limits of current knowledge and will require additional research.

Clinical, medical, and community interventions have contributed to reducing the burden of illness; the impact of these interventions is illustrated in Figure 1 (see top bar) as what has been prevented. The gap between what is avoidable through these interventions, and what we currently achieve represents the translation gap, that is, the failure to translate effective clinical and community-level services into practice. This information can be used to guide efforts to improve preventive care. The relative balance and prioritization of interventions should be based on a clear understanding of what can be achieved-the preventable burden attributable to each, and their relative value-cost effectiveness along with important qualitative factors to ensure successful implementation. Although Figure 1 portrays the clinical and community interventions as discrete, as we discuss below, they should be viewed as synergistic and integratable.^{4,5}

Two established national expert panels, the U.S. Preventive Services Task Force (USPSTF) and the Community Task Force (CTF) (henceforth Task Forces), specifically recommend evidence-based preventive strategies in clinical and community settings, respectively, in order to reduce the preventable burden of

From the Division of Preventive and Behavioral Medicine, University of Massachusetts Medical School (Ockene), Worcester, Massachusetts; Agency for Healthcare Research and Quality (Edgerton), Rockville, Maryland; Outcomes Research and Management, Merck & Co. Inc. (Teutsch), West Point, Pennsylvania; School of Nursing, Medical College of Georgia (Marion), Augusta, Georgia; Center for Primary Care, Prevention and Clinical Partnerships, Agency for Healthcare Research and Quality (Miller, Genevro), Rockville, Maryland; School of Nursing, University of Michigan (Loveland-Cherry), Ann Arbor, Michigan; Health Services and Pediatrics, UCLA School of Public Health, Department of Health Services (Fielding), Los Angeles, California; Community Guide Branch, Centers for Disease Control and Prevention (Briss), Atlanta, Georgia

Address correspondence and reprint requests to: Judith K. Ockene, PhD, MEd, Division of Preventive and Behavioral Medicine, University of Massachusetts Medical School, 55 Lake Avenue North, Worcester MA 01655. E-mail: Judith.Ockene@umassmed.edu.

Table 1. The leading and actual causes of death, United States, 2000			
Leading cause of death	Rate/100,000	Actual cause of death	n (%)
Heart disease	258.2	Tobacco	435,000 (18.1)
Malignant neoplasm	200.9	Poor diet and physical activity	400,000 (16.6)
Cerebrovascular disease	60.9	Alcohol consumption	85,000 (3.5)
Chronic lower respiratory tract disease	44.3	Microbial agents	75,000 (3.1)
Unintentional injuries	35.6	Toxic agents	55,000 (2.3)
Diabetes mellitus	25.2	Motor vehicle	43,000 (1.8)
Influenza and pneumonia	23.7	Firearms	29,000(1.2)
Alzheimer disease	18.0	Sexual behavior	20,000(0.8)
Nephritis, nephrotic syndrome, and nephrosis	13.5	Illicit drug use	17,000(0.7)
Septicemia	11.3	0	
Other	181.4		
Total	873.1	Total	1,159,000 (48.2)

Source: Mokdad et al.^{1,2}

disease. Their recommendations are made on the basis of rigorous review of research-generated evidence and provide essential information for selecting and prioritizing effective preventive strategies. Members of both Task Forces are nonfederal experts drawn from academia, state and local governments, and the private sector, and both Task Forces work closely with a range of federal and nonfederal experts in science, program, and policy. The USPSTF and CTF are convened and supported by the Agency for Healthcare Research and Quality and the Centers for Disease Control and Prevention, respectively.

This paper provides an overview of the work of the two Task Forces, discusses the complementary nature of their recommendations (Table 2), and notes the importance of prioritizing and integrating clinical and community efforts for achieving optimal disease prevention and control. A social-ecologic framework⁷ (Figure 2) is used to include both perspectives and to organize examples of clinical and community evidence-based interventions. An example (tobacco) is provided where both clinical and community strategies have strong evidentiary support. Another example (obesity) is provided in which the primary chal-



Figure 1. Burden of disease, preventability, and research and translation gaps.

lenge is integration where there are identified gaps in studies and syntheses. This example illustrates opportunities for improvement and research. Finally, some of the resources needed to address challenges to integration are considered.

Evidence-Based Recommendations for Preventive Services

The USPSTF and the CTF use evidence-based methodologies to assess the benefits and harms of preventive interventions. The USPSTF focuses on clinical preventive services primarily delivered at the level of the individual patient in primary care settings, while the CTF focuses on preventive services targeted to communities/populations (Table 2). Many high-burden, high-interest health topics have been considered by both Task Forces including tobacco use, motor vehicle occupant injuries, physical activity, diabetes, and obesity. The USPSTF assesses the evidence for benefits and harms of screening, counseling, and preventive medication, and makes recommendations for services where evidence is sufficient to determine that benefits exceed harms. It also publishes clinical considerations that provide guidance for the delivery of recommended services. Current recommendations and clinical considerations are published annually as The Guide to Clinical Preventive Services. The current clinical guide and other clinical preventive services products can be accessed at

complementary interventions		
Prevention strategy	Task Force	
Clinical	U.S. Preventive Services	
Screening, counseling, preventive medication	Task Force	
Health system change	Task Force on Community	
Community	Preventive Services	
Group education		
Policy change		
Environmental change		

Table 2. Clinical and community guides review of



Figure 2. Social-ecologic framework: levels of influence on behavior. (From the Institute of Medicine, 2002.⁷)

www.preventiveservices.ahrq.gov. The findings of the USPSTF are disseminated in both medical and public health journals.

The CTF assesses the evidence for preventive interventions targeted at the level of a community/population. Interventions include various types of service delivery, improvements in systems, education, policy, and environmental changes. Interventions considered in *The Guide to Community Preventive Services* (henceforth *Community Guide*) can be targeted at healthcare systems including clinicians' offices as well as at schools, worksites, other organizations, or the entire community. The CTF communicates recommendations in the *Community Guide*, journals, and other products that can be accessed at www.thecommunityguide.org.

The recommendations of both Task Forces are regularly used by organizations to support decisions about selecting and funding interventions and related research. The work also is used as a core set of recommendations that can then be tailored for particular audiences. Examples of use include the following: recommendations made by the USPSTF form the core set of clinical preventive services that have been prioritized by the National Commission on Prevention Priorities on the basis of their clinically preventable burden and cost effectiveness (www.prevent.org/ content/view/48/103/). USPSTF recommendations also have been used by the National Committee for Quality Assurance (NCQA) in developing its Health Plan Employer Data and Information Set (HEDIS) measures, and by the National Business Group on Health in developing its Employer's Guide to Health Improvement and Preventive Services (www.businessgrouphealth.org/ services/index.cfm), which provides practical advice to employers about structuring health benefits. Work by

the CTF has been used by Institute of Medicine (IOM) committees to inform national efforts to achieve and maintain high levels of immunization coverage,⁸ and by public health programs (e.g., STEPS to a Healthier US, www.healthierus.gov/steps/) to inform ongoing public health activities. Work of both Task Forces has contributed to the effective state and national efforts to reduce tobacco use,⁹ and is therefore considered fundamental to evidence-based cancer control. The latter has caused an IOM committee addressing strategies to fulfill the potential for cancer early detection and control¹⁰ to call for the U.S. Congress to provide sufficient appropriations to the U.S. Department of Health and Human Services for the USPSTF and the CTF to conduct timely assessments of the benefits, harms, and costs associated with screening tests and other preventive interventions.

Complementary Approaches to Prevention

Although some problems of ill health may be addressed in clinical or community settings, many are likely to benefit from the complementary and coordinated efforts of clinical and community-based interventions to take full advantage of the opportunities for prevention. The IOM has articulated the need to address major health threats and concerns from a multi-level perspective, building partnerships across health systems, communities, academia, business, and the media, in order to effectively improve the health of the population.⁷ It is likely that integration of effective clinical and community services eventually will lead to greater gains than either type of service used by itself.

Social–Ecologic Perspective

Integration of complementary preventive services into a comprehensive approach is consistent with a socialecologic perspective that recognizes that behaviors and health are influenced by multiple levels from the individual to families to larger systems and groups and then to the broadest levels, the population and ecosystem.¹¹ A framework (Figure 2) based on this perspective can serve as a guide or blueprint for intervention strategies needed to address specific clinical and public health challenges. The multiple levels of influence on behavior and health are categorized within this framework¹¹ providing a structure for targeting strategies at the discrete but inter-related levels of influence on health and behavior.¹² A strong evidence base demonstrates that there are effective intervention strategies available to target each level of the ecologic model.^{13,14} When intervention strategies are available at each level of influence, treatment access and support are provided for people at many different points (e.g., schools, clinics, worksites), thereby expanding their reach. In addition, by integrating them and creating a pathway from one level to another, resources can be leveraged

making them more available and better utilized.¹⁵ There are reinforcing effects when a comprehensive coordinated approach is used, enhancing behavior change and influencing health.^{16,17}

Levels of Intervention

Individual-level interventions involve one-to-one interactions between a patient and a provider, often within a clinical environment (clinician's office or clinic). However, clinical services can also extend to most proximal large systems (e.g., the family), and are well suited for addressing the health needs of the individual and the family. Social, family, and community network interventions are oriented to close social groups and primarily target behavior change and social support. These mostly occur in community settings including "Y"s, workplaces, schools, places of worship, and other venues. Interventions include strategies such as educational and skill building programs and workplace competitions. One-to-one interactions also can occur in programs based in the community such as in a workplace health program or tobacco quitlines. Communitylevel interventions that influence living and working conditions include interventions that target specific communities defined by geography, race, ethnicity, gender, illness, or other health conditions. Additionally these interventions target groups and systems that have a common interest including health or service agencies, organizations, workplaces, schools, healthcare or public health practitioners, or policymakers. They include environmental interventions such as water fluoridation, creation of walkable communities, and availability of nutritious foods and recreation facilities in neighborhoods.

The highest stage of community-level interventions generally involves large geographic communities and includes broad changes, especially at the policy level, in sectors such as the environment, criminal justice, healthcare regulation, agriculture, transportation, urban planning, and fiscal policy. At this level there are policy interventions that restrict or support behavior through laws and regulations such as requirements to ensure clean indoor air, ensure patients' access rights to their personal health information, and preclude driving legally with an excessive specific level of blood alcohol.

Interventions targeting the family, social networks, and the community are needed for changing the context in which individuals live, and for supporting behavioral changes that they make at the individual level.

Case Studies

Two examples are used to examine the evidence base and potential synthesis or integration of preventive strategies in clinical and community settings that are implemented at multiple levels of influence in the socialecologic model. In the first specific example, tobacco control, relevant information about effective clinical and community-level strategies is plentiful and interventions have been implemented at multiple levels contributing to improvements in important behavioral and possibly health outcomes. In the second example, obesity prevention and control, there are gaps in evidence regarding what works at each of the levels of influence and in the synthesis and integration of the evidence. This example is presented to highlight the need for additional evidence as well as possibilities that exist for strategic coordination of preventive strategies.

Tobacco Control

Coordinating services on multiple levels. Tobacco use accounted for over 435,000 deaths per year in 2000 (Table 1).^{1,2} The current prevalence of tobacco use among adults in the U.S. is 20.9%,¹⁸ reduced by more than one-half from 42.4% in 1965.¹⁹ Tobacco-cessation efforts demonstrate the importance of incorporating complementary activities at each level of influence in clinical and community settings.

Both the USPSTF and the CTF have considered the issue of reducing tobacco use and have issued recommendations for its prevention and treatment.²⁰ Much of the same evidence was used by the Centers for Disease Control and Prevention for developing their recommendations noted in Best Practices for Comprehensive Tobacco Control Programs²¹ and by the Public Health Service (PHS) noted in Treating Tobacco Use and Dependence: Clinical Practice Guideline.⁹ Recommendations in each of these documents suggest the need for comprehensive tobacco treatment programs that identify smokers, advise them to quit, and provide brief counseling and a full range of treatment services including pharmaceutical aids, more intensive behavioral counseling, and follow-up visits. Optimal success in reducing tobacco-use prevalence has occurred when, in addition to clinical services, community-level interventions such as mass media efforts and legislation raising the price of tobacco products and reducing exposure to environmental tobacco smoke have been used, and quitlines have been made accessible and available.¹⁴ The success of tobacco control intervention has benefited from the dissemination of the evidence-based findings of clinical and community practice to all levels of the social-ecologic model.

Clinical preventive services. In 2003 (www.ahrq.gov/ clinic/uspstf/uspstbac.htm), the USPSTF recommended that:

- Clinicians screen all adults for tobacco use and provide tobacco cessation interventions for those who use tobacco products
- Clinicians screen all pregnant women for tobacco

use and provide augmented pregnancy-tailored counseling to those who smoke

Community preventive services. In 2000/2001,²⁰ the CTF recommended the following:

- Smoking bans and restrictions
- Increasing the unit price for tobacco
- Media campaigns with intervention
- Provider reminder systems
- Provider reminder systems with provider education
- Reducing patient costs for treatment
- Quitter telephone support with interventions

An example of a comprehensive coordinated tobacco treatment and control program is the statewide Massachusetts Tobacco Control Program (MTCP).¹⁶ Recognized by the Centers for Disease Control and Prevention (CDC) and others as a "best practice" program from its inception in 1993 through 2002, MTCP has incorporated clinical and community strategies, combining and connecting activities of clinical settings, the media, community agencies, academic institutions, and local and state policymakers. It included (1) an innovative media campaign to change public opinion and community norms around tobacco use, (2) community mobilization to change local laws and health regulations, and (3) comprehensive tobacco treatment programs based in clinics and community settings modeled after CDC and PHS guidelines to reduce tobacco use.

A comparison of Massachusetts data to data from 40 U.S. states that had not had state programs in place through 1999 (Figure 3)¹⁷ shows a more rapid decline in smoking prevalence in Massachusetts than in comparison states. Although funding for the MTCP program was withdrawn in 2002, a special tobacco treat-



Figure 3. Percentage of adult current smokers, Massachusetts (MA) and U.S., 1990–2005

Trend is statistically significant (p < 0.05) 40 U.S. states that had not had state programs in place through 1999 Source: Massachusetts BRFSS Prepared by: Health Survey Program ment program, QuitWorks,^{22,23} still exists. QuitWorks coordinates clinical and community-based efforts by linking patients, clinicians, and a proactive telephone counseling quitline through the use of forms faxed to the quitline. Funded by the Massachusetts Department of Public Health, it was created in collaboration with all the major health plans in the state. Studies have demonstrated the importance and feasibility of developing pathways or linkages between clinical settings and community-based settings.^{15,24,25}

Although the MTCP did not set out to base its program on the recommendations of the USPSTF and the CTF, it did use a social-ecologic framework to map out the types of services needed (MTCP, unpublished document, 1992), and has contributed to the evidence base illustrating that complementary coordinated efforts are possible and that these efforts have beneficial effects. Other studies and programs also have demonstrated that such coordinated efforts are possible and beneficial, and can work.^{6,26} Studies in progress funded by the Agency for Healthcare Research and Quality (AHRQ) and Robert Wood Johnson Foundation as part of the Prescription for Health program also are exploring the feasibility and effectiveness of linkages between clinical settings and community-based settings.²⁷

While tobacco control has been largely a success story, there are still large gaps in utilization and application of clinical interventions in primary care settings. This is especially true where organizational, community and statewide programs, policies, and resources are not available to support clinicians.⁶

Obesity: Example of Gaps in Evidence and Incomplete Synthesis of Available Evidence for Intervention Recommendations

Obesity, an important contributor to morbidity and mortality in the U.S.,^{1,2} is a result of complex interactions of factors on several levels of influence, including genetic, physiologic, behavioral, cultural, social, and environmental.²⁸ An estimated 30% of American adults aged ≥ 20 years old or older—over 60 million people are currently obese (body mass index [BMI] ≥ 30), compared to 23% in 1994. Sixteen percent of children and adolescents aged 6 to 19—over 9 million—are overweight (BMI for age at or above the 95th percentile) and the percentage of overweight children has tripled during the past decade.^{29,30}

In contrast to the situation with tobacco, the available evidence regarding effective interventions to prevent obesity and promote weight loss in clinical and community settings is incomplete. Programs, services, and guidelines needed to address obesity and weight loss are in an earlier stage of development than programs targeting the multiple levels of influence demonstrated to be effective in reducing tobacco use. Both the USPSTF and the CTF have issued recommendations regarding obesity in adults and children based on evidence of the effectiveness of options for obesity prevention and promotion of weight loss in primary care (USPSTF) and community settings (CTF) and others are in progress.

Clinical preventive services. In 2003,³¹ the USPSTF recommended that clinicians:

- Screen all adult patients for obesity using a patient's BMI (weight in kilograms divided by height in meters squared).
- Offer obese patients—those whose BMI is ≥30 intensive counseling and behavioral interventions to promote sustained weight loss. A high-intensity intervention was defined as one that offers more than one person-to-person (individual or group) session per month for at least the first 3 months of the intervention. There was insufficient evidence to determine whether some settings, persons, or teams were preferable to others in delivering these services.
- Refer obese patients to programs that offer intensive counseling and behavioral interventions for optimal weight loss.

The USPSTF found insufficient evidence to recommend for or against moderate- or low-intensity counseling with behavioral interventions for obese patients, or for screening and counseling overweight adults (BMI 25 to 29) or for routine screening for overweight in children and adolescents as a means to prevent adverse health outcomes.^{32,33} The USPTF also has found insufficient evidence to make recommendations regarding two other related preventive services—routine behavioral counseling in primary care settings to promote a healthy diet^{2,34,35} and to promote physical activity.^{34–37} More research is needed in these areas.³⁸

Community preventive services. The CTF has issued findings based on evidence available through 2001 on interventions in two community settings—schools and worksites—to promote healthy weight. A systematic review of published studies available through 2001 found that interventions in the worksite that combine nutrition and physical activity are effective in helping adult employees lose weight and keep it off in the short term.³⁹ Based on this review, the CTF recommends use of these multicomponent interventions to help employees control overweight and obesity. It determined that there was insufficient evidence to recommend in favor of or against school-based programs for children and adolescents.³⁹

Although specifically relevant work from the *Commu*nity *Guide* is currently limited, additional reviews for promoting healthy nutrition and promoting physical activity are completed or ongoing (Table 3). In addition, the previous obesity reviews are being updated

Table 3. Recommendations relevant to reducing obesity from Guide to Community Preventive Services through March 2006		
Intervention	Finding	
RECOMMENDATIONS TO PROMOTE PHYSICAL ACTIVITY		
Informational approaches to increasing physical activity		
Community-wide campaigns	Recommended (strong evidence)	
"Point-of-decision" prompts	Recommended (sufficient evidence)	
Classroom-based health education focused on information provision	Insufficient evidence to determine effectiveness	
Mass media campaigns	Insufficient evidence to determine effectiveness	
Behavioral and social approaches to increasing physical activity		
Individually adopted health behavior change	Recommended (strong evidence)	
School-based physical education	Recommended (strong evidence)	
Non-family social support	Recommended (strong evidence)	
Health education with TV/video game turnoff component	Insufficient evidence to determine effectiveness	
College-age physical education/health education	Insufficient evidence to determine effectiveness	
Family-based social support	Insufficient evidence to determine effectiveness	
Environmental and policy approaches to increasing physical activity		
Creation and/or enhanced access to places for PA combined with informational outreach activities	Recommended (strong evidence)	
Transportation and infrastructure changes promote nonmotorized transit	Insufficient evidence to determine effectiveness	
Urban planning approaches—zoning and land use—community scale interventions	Recommended (sufficient evidence)	
Urban planning approaches—zoning and land use—street scale interventions	Recommended (sufficient evidence)	
RECOMMENDATIONS TO PROMOTE HEALTHY NUTRITION (www.t	hecommunityguide.org)	
Multicomponent school-based nutrition programs	In progress	
Community approaches to increase fruit and vegetable intake	In progress	
Food and beverage advertising to children	In progress	
Food and beverage availability, price, portion size, and labeling in	In progress	
restaurants	1 0	

with new literature available since 2001 and new reviews have been conducted to include community and healthcare settings.⁴⁰

There are other potentially important interventions to influence healthy diet, nutrition, and physical activity related to agricultural and transportation policies, design of the built environment, and availability of affordable healthy foods. Relevant data that meet CTF criteria are likely to be sparse, but these interventions have the potential to have large effects. The CTF has only begun to address these issues.

Obesity is a major and growing health problem and most communities will not wait for ideal information before taking action. The challenge is to implement programs in the face of the paucity of evidence on which interventions work; at a minimum this will require considering the evidence-based resources that exist and implementing them if they are consistent with community needs and resources, considering additional conceptually reasonable strategies, and acting at multiple levels in the social-ecologic model. More obesity research is needed to investigate interventions at each level of the social-ecologic model and their potential incremental benefits as different combinations are used. This research can be included in future systematic reviews of program effectiveness so that better guidance through evidence-based recommendations can be provided to communities and practitioners.

A Call for Integration of Clinical and Community-Based Strategies

Integration of effective clinical and community-based strategies across the multiple levels of a social-ecologic framework expands the availability of services at the levels of influence that may be most accessible to different individuals, thus making utilization of available services more likely. Increased utilization of services of demonstrated effectiveness such as quitlines also makes it more likely that they will be more cost effective and not disappear because of under-utilization.¹⁵

The tobacco case study demonstrates that effective clinical and community strategies can be developed, identified, and integrated, thereby increasing utilization and effectiveness. Approaches for linking clinical and community services include such things as computer-linked systems where referrals are automatically made from a clinician to a community-based program and vice versa, or a fax referral system that links providers with community-based quitlines and vice versa.^{15,24,25}

Obesity represents a continuing unmet challenge. The AHRQ-sponsored USPSTF and the CDC-sponsored CTF are working together to support integrated approaches to the evidence-based preventive strategies

SIDEBAR

Steps to a Healthier US

The U.S. Department of Health and Human Services initiative, Steps to a HealthierUS,³³ funds 40 communities across the country to implement and evaluate chronic disease prevention projects focused on reducing the burden of diabetes, overweight, obesity, and asthma. Participating communities are working with healthcare providers and community-based organizations to strengthen the linkages between these two sectors. The core of the program is based on the evidence-based recommendations of the Community Task Force.

The Steps to a HealthierUS initiative is being evaluated at the national and local levels. It is anticipated that the information gathered will help guide communities and clinicians in developing and implementing effective interventions and partnerships.

that exist, such as the Steps to a Healthier US initiative (see sidebar).⁴¹ However, there are large gaps in our knowledge of effective strategies for obesity treatment and prevention. Of the effective strategies available, questions remain as to which ones are feasible and cost effective.

In order to facilitate integration of services in all areas of prevention there are key issues to consider. Substantial financial resources and policies are needed to transform existing systems or create entirely new systems that link resources into an efficient network.²⁷ Appropriate training for implementation and maintenance of these systems is also needed. Based on evidence, cost effectiveness, and acceptability and support of consumers, clear priorities for strategies need to be agreed upon across the clinical/community spectrum. Each requirement is a challenge at the clinical and community levels.

Addressing the abovementioned challenges requires leaders who are willing to advocate for creating and integrating effective clinical and community interventions, and for the financial resources and policies needed. Also needed are curricula for health professionals in which the value of a collaborative approach between clinical and community services to address major health problems is strengthened. In health education curricula, the focus has largely been on expertise within the specialty discipline. There is a growing recognition of the need to prepare health professionals to work collaboratively to plan, implement, and evaluate health strategies to target major health issues.⁴²

In addition to the USPSTF and the CTF, there are efforts at the national level to evaluate potential

strategies/interventions to inform decision makers. The National Commission on Prevention Priorities adds important cost-effectiveness and magnitude-ofimpact information to the evidence-based clinical services recommendations to guide decision makers in setting priorities for policy-level actions. The ranking of clinical preventive services combined with information about their utilization in the population can be used to establish priorities to drive active translation efforts. A similar initiative that compares the value of the population-based preventive services-that is, the cost effectiveness of interventions from the societal, individual, and healthcare system perspectives-could help policymakers determine the appropriate mix of clinical and population-based support for improving the health of the population. These priorities along with the evidence-based strategies to achieve them could be reflected in our forthcoming national health goals (Healthy People 2020). Integration of delivery systems in the clinical and community setting is the next essential step. Promoting the integration and collaboration of these well-established and functioning systems preserves the strengths of the two systems and maximizes existing structures.

Conclusion

Major improvements in health have occurred as a result of effective health care and clinical and community-based preventive interventions. Although the current burden of disease and injury remains high, improvements can be made through effective prevention strategies (Table 2). To continue improvement in the health of the people in the United States we need to use the complete array of effective prevention tools at our disposal, increase their effectiveness and utilization by connecting them where possible, and systematically apply them at all levels of influence on behavior.

Resources/Contacts

Task Force on Community Preventive Services—www. thecommunityguide.org/about/

The Guide to Community Preventive Services—www. thecommunityguide.org

U.S. Preventive Services Task Force—www. preventiveservices.ahrq.gov

The Guide to Clinical Preventive Services—www.ahrq. gov/clinic/pocketgd.htm

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Agency for Healthcare Research and Quality and the Centers for Disease Control and Prevention. No financial conflict of interest was reported by the authors of this paper.

References

- Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. JAMA 2004;291:1238–45.
- Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Correction: actual causes of death in the United States, 2000. JAMA 2005;293:293–4 (errata).
- Maciosek MV, Coffield AB, McGinnis JM, et al. Methods for priority setting among clinical preventive services. Am J Prev Med 2001;21:10–9.
- Teutsch SM, Berger M. Evidence synthesis and evidence-based decision making: Related, but distinct processes. Med Decision Making 2005;25: 487–9 (editorial).
- Lomas J, Cuyler T, McCutcheon C, McAuley L, Law S. Conceptualizing and combining evidence for health system guidance. Ottawa: Canadian Health Services Research Foundation, May 2005.
- Greene LW, Orleans CT, Ottoson JM, et al. Inferring strategies for disseminating physical activity policies, programs, and practices from the successes of tobacco control. Am J Prev Med 2006;31(suppl 4):S66–81.
- Institute of Medicine. The future of the public's health in the 21st century. Washington DC: National Academies Press, 2002.
- Institute of Medicine. Calling the shots: immunization finance policies and practices. Washington DC: National Academy Press, 2000.
- Fiore M, Bailey W, Cohen S, et al. Treating tobacco use and dependence. Clinical practice guideline. Rockville MD: U.S. Department of Health and Human Services, Public Health Service, 2000.
- Curry S, Byers T, Hewitt M, eds. Fulfilling the potential of cancer prevention and early detection. Washington DC: Institute of Medicine, National Academies Press, 2003.
- Stokols D. Translating social ecological theory into guidelines for community health promotion. Am J Health Promot 1996;10:282–98.
- Ockene JK. Fulfilling our assignment to improve the health of all: good science just isn't enough. Ann Behav Med 2006;31:14–20.
- Agency for Healthcare Research and Quality. U.S. Preventive Services Task Force, 2005. Available at: www.ahrq.gov/clinic/uspstfix.htm.
- Task Force on Community Preventive Services. Guide to community preventive services, 2006. Available at: www.thecommunityguide.org/tobacco.
- Bentz C, Bayley K, Bonin K, et al. The feasibility of connecting physician offices to a state-level tobacco quit line. Am J Prev Med 2006;30:31–7.
- Robbins H, Krakow M, Warner D. Adult smoking intervention programmes in Massachusetts: a comprehensive approach with promising results. Tob Control 2002;11(suppl 2):ii4–7.
- 17. Biener L, Harris J, Hamilton W. Impact of the Massachusetts tobacco control programme: population based trend analysis. BMJ 2000;321:351-4.
- Cigarette smoking among adults—United States, 2004. MMWR Morb Mortal Wkly Rep 2005;54:1121–4.
- Centers for Disease Control and Prevention. Smoking prevalence among U.S. adults, 2006. Available at: www.cdc.gov/tobacco/research_data/ adults_prev/prevali.htm.
- Task Force on Community Preventive Services. Recommendations regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke. Am J Prev Med 2001;20:10–5.
- Centers for Disease Control and Prevention. Best practices for comprehensive tobacco control programs. Atlanta GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 1999.
- 22. Warner D, Meneghetti A, Pbert L, et al. QuitWorks. A Department of Public Health collaboration with eight health plans in Massachusetts linking 12,000 providers and their patients who smoke to proactive telephone counseling. 2002 Proceedings of the In National Conference on Tobacco or Health, San Francisco, 2002:78 (abstract).
- 23. Centers for Disease Control and Prevention. Telephone quitlines: a resource for development, implementation and evaluation. Atlanta: U.S. Department of Health and Human Services, National Center for Chronic Disease and Health Promotion, September 2004.
- Perry R, Keller P, Fraser D, Fiore M. Fax to quit: a model for delivery of tobacco cessation services to Wisconsin residents. Wisc Med J 2005; 104:37–44.
- Winickoff J, Buckley V, Palfrey J, Perrin J, Rigotti N. Intervention with parental smokers in an outpatient pediatric clinic using counseling and nicotine replacement. Pediatrics 2003;112:1127–33.
- Sorensen G, Emmons K, Hunt M, Johnston D. Implications of the results of community intervention trials. Ann Rev Public Health 1998; 19:379–416.

- Woolf SH, Glasgow RE, Krist A, et al. Putting it together: finding success in behavior change through integration of services. Ann Fam Med 2005; 3:S20-7.
- Flegal KM, Graubard BI, Williamson DF, Gail MH. Excess deaths associated with underweight, overweight, and obesity. JAMA 2005;293:1861–7.
- Hedley AA, Ogden CL, Johnson CL, et al. Prevalence of overweight and obesity among U.S. children, adolescents, and adults, 1999–2002. JAMA 2004;291:2847–50.
- Stein CJ, Colditz GA. The epidemic of obesity. J Clin Endocrinol Metab 2004;89:2522–5.
- 31. U.S. Preventive Services Task Force. Screening for obesity in adults: recommendations and rationale. Ann Intern Med 2003;139:930–2.
- McTigue KM, Harris R, Hemphill B, et al. Screening and interventions for obesity in adults: summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med 2003;139:933–49.
- 33. Whitlock EP, Williams SB, Gold R, Smith PR, Shipman SA. Screening and interventions for childhood overweight: a summary of evidence for the U.S. Preventive Services Task Force. Pediatrics 2005;116:e125–44.
- U.S. Preventive Services Task Force. Behavioral counseling in primary care to promote a healthy diet: recommendations and rationale. Am J Prev Med 2003;24:93–100.
- 35. Pignone MP, Ammerman A, Fernandez L, et al. Counseling to promote a healthy diet in adults: a summary of the evidence for the U.S. Preventive Services Task Force. Am J Prev Med 2003;24:75–92.

- U.S. Preventive Services Task Force. Behavioral counseling in primary care to promote physical activity: recommendation and rationale. Ann Intern Med 2002;137:205–7.
- Eden KB, Orleans CT, Mulrow CD, Pender NJ, Teutsch SM. Does counseling by clinicians improve physical activity? A summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med 2002;137:208–15.
- Moyer VA, Klein JD, Ockene JK, et al. Screening for overweight in children and adolescents: where is the evidence? A commentary by the Childhood Obesity Working Group of the U.S. Preventive Services Task Force. Pediatrics 2005;116:235–8.
- Centers for Disease Control and Prevention. The Community Guide. Obesity, 2006. Available at: www.thecommunityguide.org/obese/ default.htm.
- American Dietetic Association. Position of the American Dietetic Association: individual-, family-, school-, and community-based interventions for pediatric overweight. J Am Diet Assoc 2006;106:925–45.
- 41. U.S. Department of Health and Human Services. HHS awards \$35.7 million to support community programs that promote better health and prevent disease. Washington DC: U.S. Department of Health and Human Services, 2004 (September 28). Available online at http://www.hhs.gov/news/ press/2004pres/20040928.html.
- 42. Institute of Medicine. Future of the public's health: who will keep the public healthy? Washington DC: National Academies Press, 2003.