Cross-Cutting Strategies in Schools, Worksites, and Clinical Settings

Chapter 12

Many of the leading causes of premature death and disability can be prevented through healthier lifestyle choices. Children can be encouraged to adopt these health-promoting behaviors through promotion of exercise, providing healthy and nutritious meals, promoting social connections to school and community, and helping them gain the knowledge and skills to make healthy choices. Health care professionals can influence health choices of both children and adults through the advice they give in the clinical setting. In addition, the state can help people in making healthy choices by ensuring they have healthy places to work and play.

Multifaceted prevention efforts that promote healthy behaviors at the individual, interpersonal, clinical, community, and policy level have a better chance of positively impacting the health of a population than solitary interventions.[1] In the preceding chapters, we have focused on evidence-based strategies to reduce specific risk factors (i.e. tobacco use, lack of exercise, substance use or abuse). However, the Task Force also wanted to examine site-specific strategies to improve population health across multiple risk factors.

School-aged children spend approximately one-third of their waking time per week in schools; thus, schools are a good place to intervene to improve the health of school children.[2] Adults who work spend approximately one-half of their waking hours in the workplace on workdays.[3] Additionally, the clinical setting—and specifically a primary care office—is also an important intervention point. Thus, this chapter focuses on those health-promoting strategies that cut across multiple risk factors in schools, worksites, or clinical settings.

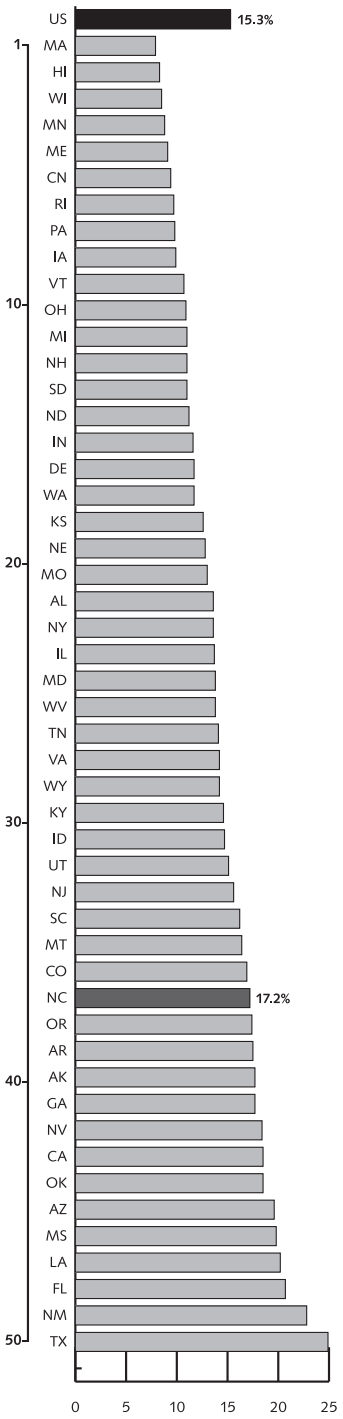
Healthy Schools

One of the five goals of the North Carolina State Board of Education (SBE) is to ensure that North Carolina public school students are healthy and responsible. Healthy children and adolescents are better learners and are likely to do better in school.[4,5] Not only are healthy children more likely to do better in school, but those youth who succeed in school and have more years of education are more likely to be healthy adults.[6] While the core mission of public education is academic achievement, schools can and must play an important role in positively shaping health behaviors in the state's youth. The North Carolina Healthy Schools Initiative promotes the union of health and learning within the public school setting.[7]

Coordinated School Health Program

The Centers for Disease Control and Prevention (CDC) promotes an integrated approach to student and staff well-being through the use of the Coordinated School Health Program (CSHP). The CSHP model has eight components including health education, physical education, health services, nutrition services, mental and behavioral health services, healthy school environment, health promotion for staff, and family and community involvement. The CDC provides funding to 22 states, including North Carolina, to implement the CSHP.

Percent Uninsured, 2006-2007



Source: The Kaiser Family Foundation. statehealthfacts.org. Data Source: Urban Institute and Kaiser Commission on Medicaid and the Uninsured estimates based on the Census Bureau's March 2007 and 2008 Current Population Survey. Accessed August 21, 2009.

School-aged children spend approximately one-third of their waking time per week in schools; thus, schools are a good place to intervene to improve the health of school children.

To effectively meet the health needs of students and staff requires support from multiple state agencies. The North Carolina Healthy Schools Initiative is a collaboration of the North Carolina Department of Public Instruction (DPI) and the North Carolina Department of Public Health (DPH). Together, staff in both departments work to design, implement, and sustain CSHPs throughout the state. This interdepartmental partnership bolsters the cooperative working relationship between education and health at both the state and local levels.[8] The North Carolina School Health Forum was created in 1998 to convene top-level leadership in DPI and the North Carolina Department of Health and Human Services (DHHS), along with representatives of key DPI and DHHS leaders, to discuss and maintain support for coordinated school health.[a,b] In addition to DPI and DPH, other state agencies play important roles in the implementation of the CSHP. For example, the North Carolina Department of Environment and Natural Resources (DENR) is responsible for environmental safety in schools and day care settings. DENR sets the sanitation rules, which are enforced through authorized environmental health specialists in local health departments.[9] Similarly, the Department of Juvenile Justice and Delinquency Prevention has helped fund programs in the school to improve student behavior and thus reduce delinquency and violence.[10]

The CSHP model has eight components including health education, physical education, health services, nutrition services, mental and behavioral health services, healthy school environment, health promotion for staff, and family and community involvement.

In addition to state level support, local support is also needed for the successful implementation of CSHPs. In 2003 the SBE mandated that local school districts create and maintain a School Health Advisory Council (SHAC).[c] SHACs are supposed to be composed of community and school representatives, including representatives of local health departments, who represent the eight areas of the coordinated health model. SHACs are charged with assessing school district needs and resources, establishing program goals, developing a district/community plan, coordinating school programs with community programs and resources, providing leadership and assistance for local schools, and assuring continuous improvement through evaluation and quality assurance. In addition to providing advice about policy, program, or environmental changes that encourage healthy schools, the SHAC is also required to report annually on the implementation of the Healthy Active Children Policy to DPI.[11]

In the past, many school districts (50 of 117 Local Education Agencies (LEAs)) had trained and certified school health coordinators.[11] These staff were dedicated to promote school health and student wellness. They were not responsible for other curricula or administrative duties and could provide focused and sustained support to schools for wellness initiatives and health-related curriculum programs.

a The North Carolina School Health Forum is composed of leaders of the North Carolina Department of Health and Human Services (DHHS) and the North Carolina Department of Public Instruction (DPI) as well as representatives from DHHS and DPI divisions. This group was not meeting while key positions were vacant but is expected to begin meeting again soon.

b Gardner D. Section Chief, North Carolina Healthy Schools, North Carolina Department of Public Instruction. Oral communication. July 15, 2009.

c North Carolina State Board of Education. HSP-S-000. Available at: http://sbepolicy.dpi.state.nc.us (Accessed July 13, 2009).

However, over time the state funding that was used to support these positions was reallocated to other purposes. Today, while all 115 LEAs still have personnel responsible for the Healthful Living curriculum, they are also responsible for a number of other health-related programs.[d] Most districts that choose to fund a local school health coordinator do so with local dollars.[e]

In order for school districts to effectively teach a health curriculum that has evidence of causing behavior changes in youth and to successfully integrate school health into the instructional and operational components of a school, there needs to be strong leadership and an infrastructure in place for administering funds, selecting evidence-based curricula, providing technical assistance for implementation, and monitoring for compliance and improvement.[12] In addition, local healthy schools coordinators would help LEAs by providing the infrastructure to meet these goals and assisting local teachers and school administrators in selecting and implementing evidence-based health education curricula (described more fully below). Additionally, local healthy schools coordinators could support schools in collecting the data needed for the Youth Risk Behavior Survey (YRBS),[f] School Health Profiles,[g] and School Level Impact Measures.[h] The National School Boards Association found in their review of 25 schools with exemplary school health programs that all schools had designated a central person to be the school health coordinator.[13] This may be a critical school district position for the successful infusion of healthier environments, practices, and policies in North Carolina public schools.

Local healthy school coordinators can help school districts select evidence-based curricula and provide technical assistance to help schools implement a coordinated school health program.

To ensure the effective implementation of the coordinated school health program, the Task Force recommends:

Recommendation 12.1: Enhance North Carolina Healthy Schools (PRIORITY RECOMMENDATION)

a) The North Carolina School Health Forum should be reconvened and expanded to ensure implementation and expansion of the North Carolina Healthy Schools

d Gardner D. Section Chief, North Carolina Healthy Schools, North Carolina Department of Public Instruction. Oral communication. July 15, 2009.

e Collins P. Senior Policy Advisor, Healthy Responsible Students, North Carolina State Board of Education. Written (email) communication. June 22, 2009.

f The Youth Risk Behavior Survey (YRBS) is a school-based survey of middle school and high school students. It is conducted to assess the extent to which different students are engaging in certain health risk behaviors, particularly those that contribute to the leading causes of death and disability among children and adolescents. (http://www.dpi.state.nc.us/newsroom/news/2007-08/20080215-01)

g School Health Profiles is a survey of states and large education systems that assesses school health policies and programs in health education, physical education and activity, health services, nutrition services, healthy and safe school environment and family and community involvement. (Centers for Disease Control and Prevention. School Health Profiles. http://www.cdc.gov/healthyYouth/profiles/index.htm)

h School Level Impact Measures (SLIMs) measures the percentage of secondary schools in the state or community that adopted a CDC recommended policies or practices that have been demonstrated to be effective in reducing health problems facing children and adolescents. Schools must select at least 3 HIV measures, 3 coordinated school health measures, 1 physical education and activity, 1 nutrition, 1 tobacco-use prevention measures, and 3 asthma management measures. Schools must determine a target percentage of schools that will have adopted the selected policy or practice by 2012. (Centers for Disease Control and Prevention. Program Guidance. Tips on Selecting, Monitoring, and Using School Level Impact Measures (SLIMs). http://www.cdc.gov/DASH/program_mgt/docs_pdfs/slimstips.pdf)

Initiative. The North Carolina School Health Forum should be expanded to include the Department of Juvenile Justice and Delinquency Prevention, Department of Environment and Natural Resources, and other partners as needed to implement the eight components of the Coordinated School Health program.

b) The North Carolina School Health Forum should develop model policies in each of the eight components of a Coordinated School Health System. This would include reviewing and modifying existing policies as well as identifying additional school-level policies that could be adopted by schools to make them healthier environments for students. When available, evidence-based policies should be adopted. The North Carolina School Health Forum and the North Carolina Healthy Schools Initiative should develop a system to recognize schools that adopt model policies in each of the eight components.

c) The North Carolina Department of Public Instruction (DPI) should expand the North Carolina Healthy Schools Initiative to include a local healthy schools coordinator in each Local Education Agency (LEA). The North Carolina General Assembly should appropriate $1.5 million in recurring funds beginning in SFY 2011 increased by an additional $1.5 in recurring funds in each of the following five years (SFY 2012-2017) for a total of $12 million recurring funds to support these positions.

1) **The North Carolina School Health Forum should identify criteria to prioritize funding to LEAs during the first five years. The criteria should include measures to identify LEAs with the greatest adolescent health and educational needs.**

2) **In order to qualify for state funding, the LEA must show that new funds will supplement existing funds through the addition of a local healthy schools coordinator and will not supplant existing funds or positions. To maintain funding, the LEA must show progress towards implementing evidence-based programs, practices, and policies in the eight components of the Coordinated School Health system.**

3) **Local healthy schools coordinator will work with the School Health Advisory Council, schools, local health departments, primary care and mental health providers, and community groups in their LEAs to increase the use of evidence-based practices, programs, and policies to provide a coordinated school health system and will work towards eliminating health disparities.**

d) The North Carolina Healthy Schools Section of DPI should provide monitoring, evaluation, and technical assistance to the LEAs through the school health coordinator. The North Carolian General Assembly should appropriate $225,000 in recurring funds in SFY 2011 to DPI to support the addition of three full-time employees to do this work. Staff would be responsible for:

1) **Implementing the monitoring system (including gathering data, measuring compliance, and reporting to the North Carolina State Board of Education (SBE)) for the Healthy Active Children Policy).**

2) **Implementing the monitoring system (including gathering data, measuring compliance, and reporting to the SBE) for the School Health Profiles survey.**

3) **Providing technical assistance and professional development to LEAs for coordinated school health system activities and implementing evidence-based programs and policies with fidelity.**
4) **Implementing, analyzing, and disseminating the Profiles survey, including reporting on school-level impact measures (SLIMs).**
5) **Working with the PTA and other partners as appropriate to develop additional resources and education materials for parents of middle and high school students for the Parent Resources section of the North Carolina Healthy Schools website. Materials should include information for parents on how to discuss material covered in the Healthful Living Standard Course of Study with their children as well as evidence-based family intervention strategies when available. Information on how to access the materials should be included in the Student Handbook.**

Evidence-Based Curricula

North Carolina schools are required to teach health education to students in kindergarten through ninth grade.

North Carolina schools are required to teach health education to students in kindergarten through ninth grade.[i] By statute, health education is required to include age-appropriate instruction covering mental and emotional health, drug and alcohol prevention, nutrition, dental health, environmental health, family living, consumer health, disease control growth and development, first aid and emergency care, preventing sexually transmitted diseases, abstinence-until-marriage education, and bicycle safety. The SBE is charged with developing a comprehensive school health education program that meets these standards and accomplishes this by establishing competency goals and objectives for health education and physical education. These are included in the *Healthful Living Standard Course of Study* (HLSCOS), which is a curriculum guide that includes content areas and skills to be taught in each grade level. It is reviewed and revised as needed every five years.[j,14]

The SBE approves the HLSCOS, but the selection of the specific curriculum used to teach these objectives is a decision made at the local level by school districts. While there are evidence-based curricula for some of the subject areas that have been shown to produce behavioral changes, schools are not required to use these curricula.[k,15] Although the state does not collect data on the health education curricula used by each school district, one study that examined the curricula used to prevent use of alcohol or drugs showed that most schools have not implemented evidence-based substance abuse prevention curricula.[16]

i NCGS §115C-81(e1).
j More detailed information about the Healthful Living Standard Course of Study is available at: http://www.ncpublicschools.org/docs/curriculum/healthfulliving/scos/2006healthfullivingscos.pdf
k Examples of evidence-based health education include: Making a Difference (covers HIV/STD/teen pregnancy prevention); Life Skills Training and Project TNT (covers drug/alcohol and tobacco prevention), and Second Step and Victims, Aggressors, and Bystanders (covers violence prevention). (Breitenstein D. North Carolina standard course of study in healthful living. Presented to: the North Carolina Institute of Medicine Task Force on Substance Abuse Services; October 10, 2008; Morrisville, NC.)

It is difficult to meet the current yearly requirements in the HLSCOS and still have the time needed to dedicate to evidence-based programs, as implementing evidence-based curricula often requires a greater investment in time, costs (to purchase the curricula if proprietary), and teacher training. DPI is in the process of reviewing the HLSCOS, and is examining ways to streamline the required annual curricula to provide the time needed to implement evidence-based curricula. To the extent possible, the health education curricula used in North Carolina's middle and high schools should have evidence of effectiveness in the adoption of health-promoting behaviors by adolescents. DPI can promote the use of evidence-based curricula by reviewing and selecting specific curricula that have been shown to be effective in health-promoting behavioral changes in adolescents across multiple dimensions (i.e. violence prevention, teen pregnancy prevention, and prevention of substance use) and providing grants to local school systems to help them offset the additional costs in using these curricula. To help ensure that such curricula are implemented with fidelity, DPI should provide training and technical assistance to the schools.

To the extent possible, the health education curricula used in North Carolina's middle and high schools should have evidence of effectiveness in the adoption of health-promoting behaviors by adolescents.

In addition to the grants to implement specific evidence-based curricula, DPI can assist schools in selecting evidence-based curricula by helping to train school personnel in the use of the Health Education Curriculum Analysis Tool (HECAT)[l] and Physical Education Curriculum Analysis Tool (PECAT).[m] CDC developed the HECAT and PECAT for school systems to identify effective health education and physical education curricula. The HECAT and PECAT contain guidance and analysis tools to improve curriculum selection, strengthen health and physical education instruction, and improve the ability of Healthful Living educators to have a positive effect on health behaviors and healthy outcomes in adolescents.[n]

l The Health Education Curriculum Analysis Tool (HECAT) is based on the National Health Education Standards and the CDC's Characteristics of Effective Health Education Curricula. These standards and characteristics have been identified based on reviews of effective programs and curricula and inputs from experts in the field of health education. (Division of Adolescent School Health, National Center for Chronic Disease Prevention and Health Promotion. Health education curriculum analysis tool. Centers for Disease Control and Prevention website. http://www.cdc.gov/healthyyouth/HECAT/index.htm. Accessed June 16, 2009.)

m The Physical Education Curriculum Analysis Tool (PECAT) is designed, based on national physical education standards, to provide the structure for a complete, clear and consistent review of a written physical education curriculum and to help districts develop new curricula, enhance current curricula, or select a published curriculum, as well as to strengthen the delivery of physical education instruction. (Centers for Disease Control and Prevention, US Department of Health and Human Services. Physical education curriculum analysis. http://www.cdc.gov/HealthyYouth/PECAT/pdf/PECAT.pdf. Published 2006. Accessed June 16, 2009.)

n These tools can greatly assist curriculum committees and educators at the school district level by being used in conjunction with the North Carolina Standard Course of Study as a framework for the development of new or improved courses of study and learning objectives. The resources can also help in the selection of curricula for purchase and in the scrutiny of curriculum currently in use. At the state level, the HECAT and PECAT could assist staff in the North Carolina Department of Public Instruction in the development of a list of recommended health and physical education curricula for Local Education Agencies to use in selecting their curricula. (Centers for Disease Control and Prevention, US Department of Health and Human Services. Health education curriculum analysis tool: an overview. http://www.cdc.gov/healthyyouth/HECAT/pdf/HECAT_Overview.pdf. Accessed June 16, 2009.)

Using evidence-based curricula to teach health and physical education courses has great potential to improve the health and well-being of the state's adolescents. However, the teaching of Healthful Living is often given short shrift in North Carolina public schools.[15] The Task Force supports DPI's Accountability and Curriculum Reform Effort (ACRE) to address learning standards, student tests, and school accountability for all courses in the standard course of study, including Healthful Living.

Using evidence-based curricula to teach health and physical education courses has great potential to improve the health and well-being of the state's adolescents.

Additionally, the state should encourage students to take additional health education or physical education classes past the ninth grade. Currently, most students complete their high school requirement in the ninth grade.[17] Although the teenage years are formative in developing life-long health habits, most students do not take additional health education classes after they complete their required unit of Healthful Living. As noted in Recommendation 4.3, the state should expand the high school graduation requirements to require two units of Healthful Living. Additionally, high schools should offer honors-level health education or physical education classes, as many of the high school students who are preparing for college self-select into these classes to be competitive for college admission. Thus, to encourage students to take additional Healthful Living electives, the curriculum should be expanded to include honors level high school courses such as exercise physiology or socio-cultural and historical perspectives of sports and exercise.

To ensure that North Carolina schools implement evidence-based health and physical education curricula that will give students the knowledge and skills needed to adopt and maintain healthy behaviors and active lifestyles, the Task Force recommends:

Recommendation 12.2: Require the Use of Evidence-based Curricula for Healthful Living Standard Course of Study

The North Carolina General Assembly should require schools to use evidence-based curricula when available to teach the objectives of the Healthful Living Standard Course of Study.

a) **The North Carolina General Assembly should appropriate $1.2 million in recurring funds in SFY 2011 to the North Carolina Department of Public Instruction (DPI) to provide grants to Local Education Agencies (LEAs) to implement evidence-based curricula. To implement this provision, the DPI Healthy Schools Section should identify three to five evidence-based curricula that demonstrate positive change in behavior across multiple health risk behaviors (i.e. substance use, violence, sexual activity) and provide grants (of up to $10,000 per LEA) for implementation and technical assistance to ensure curricula are implemented with fidelity.**

b) **The North Carolina State Board of Education (SBE) and DPI should work together to ensure that middle and high schools are effectively teaching the Healthful Living Standard Course of Study objectives.**

1) **The DPI Healthy Schools Section should coordinate trainings[o] for local school health professionals on the Centers for Disease Control and Prevention's Health Education Curriculum Assessment Tool (HECAT) and the Physical Education Curriculum Assessment Tool (PECAT) so that they are able to assess and evaluate health and physical education programs and curricula.**
2) **The SBE should require every LEA to complete the HECAT and PECAT for middle and high schools every three years beginning in 2013 and submit them to the DPI Healthy Schools Section. The Superintendent should ensure the involvement of the local healthy schools coordinator and the School Health Advisory Council.**
3) **Tools to assess the implementation of health education should be developed as part of DPI's Accountability and Curriculum Reform Effort (ACRE).**

c) **The SBE should encourage DPI to develop healthful living electives beyond the required courses, including academically rigorous honors-level courses. Courses should provide more in-depth coverage of Healthful Living Course of Study Objectives. DPI and health partners should identify potential courses and help schools identify evidence-based curricula to teach Healthful Living electives.**

Worksite Wellness

Common health risks, such as physical inactivity and poor nutrition, account for up to 35% of annual medical costs among the employed population.

Approximately one-half of chronic disease results from preventable lifestyle behaviors among the United States population.[18] These common health risks, such as physical inactivity and poor nutrition, account for up to 35% of annual medical costs among the employed population.[19] The most common health risks among employees include the following: body mass index (BMI) over 27.5 (41.8%), stress (31.8%), physical inactivity (23.3%), smoking (14.4%), poor perception of health (13.7%), and having more than five illness days per year (10.9%).[20] Increasing health risks are associated with increasing health care costs. Employees with five or more health risks have over $3,000 more medical and pharmacy expenses per year than those with zero to two health risks.[20] However, medical and pharmacy costs are just a small part (23.0%) of the costs to employers for their employees with excess health risks. Absenteeism, presenteeism, and short-term and long-term disability contribute up to 75% of the costs to employers for employees with excess health risks.[p,20-23]

o The CDC provides trainings on using these tools free of charge. Funding is needed to cover substitutes, food and facilities for trainings.

p *Presenteeism* refers to decreased job productivity due to a health problem or health risk, while absenteeism refers to being absent from work due to these problems.

Given that the majority of adults spend at least eight hours a day in the workplace, this environment is an ideal site for intervening on lifestyle behaviors that lead to chronic disease and related death and disability. Comprehensive worksite health promotion programs have been shown to be effective in improving health outcomes and reducing risky health behaviors such as tobacco use, lack of physical activity, excessive use of alcohol, high blood pressure, and high cholesterol.[24]

Healthy People 2010 defined comprehensive worksite health promotion programs to include five components:

1) Health education and health promotion programs including the education and skills to support lifestyle behavior change.
2) Supportive social and physical environment including worksite policies that support healthy behaviors and reduce risks.
3) Integration of the worksite wellness program into the organizational structure.
4) Linkages between the comprehensive worksite health promotion program and other related worksite programs (such as employee assistance programs).
5) Worksite screening and education with appropriate referrals.[25]

Comprehensive worksite health promotion programs have been shown to be effective in improving health outcomes and reducing risky health behaviors such as tobacco use, lack of physical activity, excessive use of alcohol, high blood pressure, and high cholesterol.

Evidence has shown that specific worksite policy interventions have led to improved health outcomes. For example, based on the Guide to Community Preventive Services (Community Guide), there is sufficient evidence to recommend specific worksite policy changes when combined with informational outreach strategies. Specific worksite policy changes include smoke-free policies to reduce tobacco use among workers, incentives or competitions among workers to increase smoking cessation, point-of-decision prompts to encourage the use of stairs in the worksite, and access to places for physical activity, such as walking trails, on-site exercise facilities, or access to nearby facilities. In addition, the Community Guide notes that the use of a health risk assessment (HRA), when combined with employee feedback, has led to positive changes in employee health behaviors and outcomes such as tobacco use, excessive alcohol use, seat belt use, dietary fat intake, blood pressure control, reducing high cholesterol level, and reducing the number of days lost from work due to illness or disability.[24]

Implementing comprehensive worksite health promotion programs takes commitment and leadership. The National Business Group on Health has identified steps to integrate worksite wellness programs into the organizational structure.[q] Business leaders must start by defining a strategy for improving employee health, including clarifying the purpose of improving health, setting expectations, and fostering buy-in among key decision makers. The firm must also

q The National Business Group on Health is a non-profit organization that represents large employers' perspective on national health policy issues. Members are primarily Fortune 500 companies and large public sector employers. For more information: http://www.businessgrouphealth.org/.

be willing to allocate funds to implement health improvement and risk reduction policies and programs. Firms should also implement evidence-based worksite health promotion strategies. In addition, the organizational leaders must communicate worksite health promotion efforts throughout the firm and should support healthy behaviors in the worksite. Finally, firms should measure their progress through process measures (e.g. whether employees are participating in the initiative) and outcome measures (e.g. changes in health expenditures, reduced absenteeism, improved productivity, and/or changes in health status of the employees).[26] A positive return on investment has been found for evidence-based worksite wellness interventions with a mean return on investment of $3.93 for medical cost savings and $5.07 for absenteeism savings.[27]

A positive return on investment has been found for evidence-based worksite wellness interventions with a mean return on investment of $3.93 for medical cost savings and $5.07 for absenteeism savings.

In 2004, only 6.9% of worksites nationally offered a comprehensive program—with all five elements described by *Healthy People 2010*. Large firms were much more likely to offer such programs than were smaller firms. For example, 24.0% of firms with more than 750 employees provided a comprehensive worksite health promotion program, compared to only 4.6% of firms with 50 to 99 employees.[25] Large firms generally have more internal resources to apply towards these initiatives, including dedicated staff, financial resources, opportunities for flexible time schedules to accommodate wellness initiatives, and in-house expertise in wellness, implementation, and evaluation. It is much more difficult for small firms—with 50 or fewer employees—to implement comprehensive worksite wellness programs. In North Carolina, approximately 28.0% of employees who work for private firms work in firms with 50 or fewer employees.[28]

There is an increased interest in implementing effective health promotion activities in the worksite at the state and national levels. However, the cost is prohibitive to many, especially to small employers. In Congress, there is bipartisan support for offering a tax credit to businesses that offer comprehensive health promotion programs. One bill being considered, the Healthy Workforce Act of 2009,[r] would provide a tax credit of up to $200 per employee for the first 200 employees, and up to $100 per employee thereafter, for firms that have comprehensive employee wellness programs. Firms would be eligible for the tax credit by establishing programs that raise health awareness among employees, encourage employee behavioral changes, and prompt employee participation through an incentive. In addition, employers who establish qualified programs would be eligible to receive a tax credit for 10 years. While there is bipartisan support for this bill, it has been introduced without enactment in each of the last two Congresses.

Because of the delay in implementing a federal tax credit, some states have considered similar legislation. Between 2001 and 2006, 13 states introduced legislation to offer a state tax credit to support worksite health promotion programs, similar to the Healthy Workforce Act of 2009. Despite interest in many

r Senators Tom Harkin (D-IA) and John Cornyn (R-TX), and Representatives Earl Blumenauer (D-OR) and Mary Bono (D-CA), have introduced the Healthy Workforce Act of 2009. S 803/HR 1987.

states to encourage worksite wellness approaches, none of the 34 tax credit bills introduced in 13 states have been enacted.[30]

North Carolina can do more to assist employers in offering comprehensive worksite health promotion programs.

North Carolina can do more to assist employers in offering comprehensive worksite health promotion programs. As workers spend more than one-third of their day on the job, employers are in a unique position to promote the health of their employees. The use of effective, evidence-based worksite policies and programs can reduce health risks and improve the quality of life for employees. Further, studies have shown that healthy employees miss fewer days of work, are more productive, and have lower health care costs.[20,27] To encourage broader implementation of comprehensive worksite health promotion programs, the Task Force recommends the creation of a statewide collaborative that would offer technical assistance to small firms, nonprofits, and state and local government for implementing evidence-based strategies and best practices. The collaborative should also monitor federal legislation. If it is enacted, the collaborative should help employers with comprehensive health promotion programs to qualify for the tax credit. Further, the state should consider implementing a state tax credit for small firms if the Healthy Workforce Act of 2009 is not enacted at the federal level.

Recommendation 12.3: Create the North Carolina Worksite Wellness Collaborative and Tax Incentives for Small Businesses

a) The North Carolina Worksite Wellness Collaborative should include, but not be limited to, representatives of state and local government, organizations with expertise in worksite wellness, insurers, small and large employers, Chambers of Commerce, and other natural groupings of employers. Initially, the Collaborative should focus on providing assistance to state and local governments, small businesses with 50 or fewer employees, and nonprofit organizations.

b) The Collaborative should lead efforts to implement the following four components of a statewide worksite wellness effort using evidence-based strategies (and best and promising practices when necessary):

1) **Assessment of organizational-level worksite indicators such as policies, benefits, and workplace environments that influence employee health, and development of an organizational-level worksite action plan for workplaces to make improvements.**

2) **Individual employee assessments via Health Risk Appraisals (HRAs) tied to personal feedback and an actionable and specific plan for employees.**

3) **Technical assistance to worksites to help them implement evidenced-based strategies to address needs identified in both organizational and individual employee-level assessments and to assist worksites in meeting criteria for comprehensive employee wellness programs.**

4) **A data collection system that includes both organizational and individual employee indicators, tracks progress, and evaluates outcomes at the organizational and employee level.**

c) **The North Carolina General Assembly should appropriate annual funding for five years as shown below to support this effort as the Collaborative develops a sustainable business plan that will eliminate the need for funding after five years.**

1) **$800,000 in SFY 2011**
2) **$700,000 in SFY 2012**
3) **$500,000 in SFY 2013**
4) **$500,000 in SFY 2014**
5) **$250,000 in SFY 2015**

d) **The North Carolina General Assembly should provide a tax credit to small businesses with employees of 50 or fewer that offer and promote comprehensive wellness programs for their employees. Eligible businesses should be provided a tax credit of up to $200 per employee for establishing or maintaining a wellness program that is certified under a process established by the Collaborative.**

e) **The Collaborative should develop a process and set of criteria to certify businesses as eligible to receive state or federal tax credits.**

High Quality Clinical Care

As noted in Chapter 2, there are many factors which contribute to personal health. Clearly, our own individual behaviors—whether we smoke, exercise, or engage in other risky health behaviors—affect our health status. However, people do not operate in a vacuum. Our health behaviors are influenced by our families, peers, and other social influences, community and environmental factors, public policies, and clinical care.

Certain clinical preventive services serve as primary prevention help[ing] ...prevent disease and disability... Other[s] serve as secondary prevention help[ing] identify health conditions early in the progress of the disease, making it easier to treat or manage.

Certain clinical preventive services serve as primary prevention—that is they help prevent disease and disability. Other clinical preventive services serve as secondary prevention; these services help identify health conditions early in the progress of the disease, making it easier to treat or manage. Congress has charged the US Preventive Services Task Force (USPSTF) with identifying which screening, counseling, and preventive medications should be offered routinely to different populations in a primary care setting. (See Chapter 2.)

The USPSTF currently recommends 30 preventive services for all or a subpart of the population. Some of these recommendations are targeted to the early identification of cancer (e.g. mammograms for women age 40 or older or colorectal screenings for adults ages 50-75). Others are aimed at preventing or

reducing the risk factors that contribute to disability and death. The Task Force on Prevention did not specifically address all the areas covered by the USPSTF. However, the Task Force did adopt USPSTF recommendations in the areas of overlap, including screening and counseling for specific risk factors and screening and treatment to prevent the spread of sexually transmitted diseases (STDs) or other communicable diseases. For example, the Task Force specifically endorsed the following recommendations:

Screening and counseling for risk factors:

- Counseling for tobacco use and tobacco-caused disease (Chapter 3).
- Obesity screening for adults and intensive counseling and behavioral interventions to promote sustained weight loss for obese adults (Chapter 4).
- Screening and behavioral interventions for alcohol misuse (Chapter 6).
- Screening for depression (Chapter 6).

Screening and treatment for STDs/HIV or other communicable diseases (Chapter 5):

- Screening for chlamydial infection
- Screening and prophylactic medications for gonorrhea
- HIV screening
- Screening for syphilis

In addition to the clinical preventive services identified by the USPSTF, there are other clinical services that have been shown to be highly effective in treating specific health problems. While not primary prevention per se (i.e. these services do not prevent individuals from contracting the disease or health problem), they are nonetheless highly effective in helping patients manage their health problems and can help prevent health problems from escalating into more serious health conditions. For example, Hemoglobin A1c monitoring can help patients manage their diabetes so they are not at increased risk of heart disease, stroke, and diabetic neuropathies.

Typically, individuals receive preventive clinical services or the health services and health education needed to manage their health problem through their primary care practice. The most effective primary care practices operate as a patient-centered medical home, where physicians work with a team of other providers who collectively help manage the care of their patient population. Ideally, each patient has an ongoing relationship with a primary care provider (i.e. physician, nurse practitioner, or physician assistant) who provides comprehensive health services and coordinates the care that the patient receives from other professionals. The individual and his or her family are actively engaged in care and decision making. Further, the primary care practitioners offer high quality care and are engaged in continuous quality improvement efforts to ensure that the care they provide is optimal.[31] Research generally shows that people who have a regular source of primary care are more likely to receive preventive services and have fewer

Research generally shows that people who have a regular source of primary care are more likely to receive preventive services and have fewer avoidable hospitalizations, even after controlling for several other potentially confounding factors.

avoidable hospitalizations, even after controlling for several other potentially confounding factors. Some studies also indicate that communities with a higher primary care provider to population ratio have better health outcomes, including lower infant mortality rate and higher life expectancy.[32]

Unfortunately, many people lack access to preventive screenings, preventive services, or primary care—generally when they lack health insurance coverage. Currently, there are an estimated 1.75 million non-elderly people in North Carolina who lack insurance coverage. North Carolina has been hit harder by the downturn in the economy than many other states. As a result, North Carolina experienced one of the largest increases in the number and percent uninsured of any state in the country.[33]

Unfortunately, many people lack access to preventive screenings, preventive services, or primary care—generally when they lack health insurance coverage.

Table 12.1
The Uninsured are Generally Less Likely to Receive Preventive Screenings or Have a Regular Source of Care (North Carolina, 2008)

	Insured	Uninsured
Have one or more people who they consider to be their personal doctor or health care provider	85.3%	44.4%
Had a mammogram in the last two years (women 50 and older)	84.5%	57.2%
Had a pap smear in the past three years (women 18 and older)	88.4%	79.8%
Received the HPV vaccine	14.0%	8.1%
Tested for diabetes	64.8%	41.8%
Tested for HIV	41.9%	44.1%

http://www.schs.state.nc.us/SCHS/brfss/2008/nc/risk/topics.html

Source: North Carolina State Center for Health Statistics, North Carolina Department of Health and Human Services. Behavioral Risk Factor Surveillance System, 2008.

The lack of health insurance creates barriers which prevent people from obtaining some of the recommended clinical preventive services. (See Table 12.1.) In addition, the uninsured are also less likely to have a regular source of care.

Because of the importance of having insurance coverage to obtain preventive screenings and other primary care services, the Task Force recommended that everyone in the country have health insurance coverage. As this report is being written, Congress is currently debating national health reform that would expand coverage to most of the uninsured. In the absence of action at the federal level, there are specific actions that the state or state agencies can take to expand coverage. Currently, the three groups that are most likely to lack insurance coverage in North Carolina are:

- Children in families with incomes below 300% of the federal poverty guidelines (17%). Most uninsured children have family incomes below 200% FPG (68% of uninsured children). Of these, most are already eligible, but not enrolled in, publicly-sponsored insurance coverage such

as Medicaid or NC Health Choice (North Carolina's State Children's Health Insurance Program).

- Adults with incomes below 200% FPG (46%).
- People with a family connection to a small employer with 25 or fewer employees (36%).

Together, these groups constitute almost four-fifths (79%) of all the uninsured in the state.[34] The North Carolina Institute of Medicine recently completed a study which identified options to expand coverage to the uninsured. These options included more outreach and administrative simplification to enroll low-income children who are currently eligible, but not enrolled, in public programs; expanding subsidized health insurance coverage to children with family incomes below 300% FPG; expanding Medicaid coverage to provide a primary care focused, limited benefits package to uninsured low-income adults; and developing a subsidized health insurance product for small employers.[s] In addition, North Carolina should explore other options to expand coverage to children and young adults, including changes in state law to require insurance companies to offer parents the option of covering their children up to the age of 26 (regardless of the child's student status)[t] and encouraging the University of North Carolina (UNC) System to require students who are enrolled full-time in one of its universities to obtain insurance coverage.[u,35]

Existing benefit packages should be expanded to ensure coverage of all the recommended preventive screenings.

In addition, existing benefit packages should be expanded to ensure coverage of all the recommended preventive screenings. Currently, state law requires that insurers offer coverage for mammograms and pap smears, similar to what is recommended by the USPSTF. However, it is unclear whether existing insurers offer coverage for other highly recommended preventive screenings. There are no existing data which show which insurers cover which screenings. Therefore, the Task Force also endorsed the goal of obtaining information to determine which of the recommended preventive screenings are currently covered by North Carolina insurers and to expand covered services to include the recommended screenings and treatment if not currently covered.

s Section 10.53 of the 2009 Appropriations Act charges the Division of Medical Assistance, among other North Carolina Department of Health and Human Services' agencies, with increasing outreach to identify populations eligible for state and county assistance.

t Currently, North Carolina laws require insurance companies to continue to cover children on their parents' policies up through the age of 23 if the child is a full-time student or until they graduate. Thirty other states require insurance companies to offer parents the opportunity of covering their dependent children, regardless of student status.

u Since the Task Force completed its work the UNC Board of Governors has instituted a policy requiring all full-time students to have health insurance coverage (either through their parents or other private coverage, or by purchasing the policy available through the University). (UNC Gerneral Administration. Board of Goverors Meeting August 14, 2009 minutes. http:// www.northcarolina.edu. Published September 2009. Accessed September 11, 2009.)

Recommendation 12.4: Expand Health Insurance Coverage to More North Carolinians (PRIORITY RECOMMENDATION)

a) The Task Force believes that everyone should have health insurance coverage. In the absence of such, the North Carolina General Assembly should begin expanding coverage to groups that have the largest risk of being uninsured. Such efforts could include, but not be limited to:

1) Provide funding to the North Carolina Division of Medical Assistance to do the following:

i) Expand outreach efforts and simplify the eligibility determination and recertification process to identify and enroll people who are already eligible for Medicaid or NC Health Choice.

ii) Expand coverage to children with incomes up to 300% of the federal poverty guidelines (FPG) on a sliding scale basis.

iii) Develop a limited benefits package to provide coverage to adults with incomes up to 100% FPG, with a phase in of coverage of adults up to 200% FPG.

2) Change state laws to require insurance companies to offer parents the option to continue dependent coverage until the child reaches age 26, regardless of student status.

3) Develop a subsidized health insurance product targeted to small businesses that employ a low-wage work force.

b) The North Carolina Division of Public Health (DPH) should collaborate with NC Prevention Partners to include the coverage of all the US Preventive Services Task Force's (USPSTF) recommended screenings and treatment, including but not limited to screenings, counseling, and treatment for STD/HIV, obesity, alcohol and substance use, and depression in the existing annual Preventive Benefits Profile survey of public and private health insurers in the state. If coverage is found to be inadequate or lacking, then public and private health insurers should expand coverage to include all the USPSTF recommended screenings, counseling, and treatment. The North Carolina General Assembly should appropriate $75,000 in recurring funds to DPH to support these efforts.

Expanding access to clinical services can improve health outcomes. Nonetheless, just guaranteeing access to a provider does not ensure that individuals will receive all the recommended health services. Studies have shown that adults and children generally only receive about half of the recommended health services.[36,37] Part of the reason for this is the difficulty of both keeping up with all the changes in recommended treatment guidelines and in delivering all the care recommended.

For example, at the time this report was being written, there were more than 2,111 evidence-based clinical guidelines for the treatment of certain diseases, although many of these recommended guidelines are for specialists rather than primary

care providers.[v] Because medical care is constantly evolving, health care professionals need help keeping up with changes in medicine, as recommended guidelines change as new treatments are developed or new evidence suggests a better or different course of action.

The North Carolina Area Health Education Centers (AHEC) program provides educational programs in partnership with health professional associations, academic institutions, and other health agencies. These trainings are intended to enhance the quality of care and improve health outcomes. The Task Force identified the need to enhance health professional training around clinical preventive services in order to help patients reduce their health risks leading to poor health outcomes. During the course of the 17 months the Task Force met, the Task Force identified specific areas where greater training was needed, including screening, counseling, and treatment of sexually active youth and adults (Chapter 5); substance abuse screening, counseling, and brief intervention (Chapter 6); training for evidence-based strategies to reduce injuries (Chapter 8); information about the impact of socioeconomic status on health outcomes (Chapter 11); and training on evidence-based clinical preventive services.

The Task Force identified the need to enhance health professional training around clinical preventive services in order to help patients reduce their health risks leading to poor health outcomes.

Although an important component, provider education is not sufficient *per se* to affect substantive change. A more effective strategy is a comprehensive intervention involving not only education but also incentives, quality improvement, patient empowerment, and other similar activities. For example, health information technology offers great promise to provide provider point-of-care decision prompts as well as quality assurance activities tracking provider's performance on clinical prevention measures. The North Carolina Healthcare Quality Alliance (NCHQA), building off the Improving Performance in Practice (IPIP) program, is providing technical assistance to physician practices across the state to help improve performance on a select group of quality measures. AHEC is the lead agency on the practice support arm of the NCHQA. Finally, as pay for performance and other payer incentives become more prevalent, there may be opportunities for incentives to foster improvement. Thus, although there are many necessary components to bringing about change, provider education is an important step.

Because of the importance of practitioner education in bringing about real change, the Task Force recommends:

Recommendation 12.5: Improve Provider Training To Promote Evidence-based Practices

a) The Area Health Education Centers (AHEC) Program should offer training courses to enhance the training of health professionals, including physicians, nurses, allied health, and other health care practitioners; increase the use of

v The National Guideline Clearinghouse™ is a comprehensive database of evidence-based clinical practice guidelines developed by provider associations, governmental agencies, or health care organizations. It is supported by the US Agency for Healthcare Research and Quality, within the US Department of Health and Human Services. More information about the National Guideline Clearinghouse is available at: http://www.guideline.gov/about/about.aspx (Accessed July 1, 2009).

evidence-based prevention, screening, early intervention, and treatment services to reduce certain high-risk behaviors; and address other factors that contribute to the state's leading causes of death and disability. Training courses should be expanded into academic and clinical settings, residency programs, and other continuing education programs. AHEC should:

1) **Partner with the North Carolina Division of Mental Health, Developmental Disabilities, and Substance Abuse Services, the Governor's Institute on Alcohol and Drug Abuse, and other appropriate organizations and professional associations to offer trainings to do the following:**
    i. **Educate and encourage health care professionals to use evidence-based screening tools and to offer screening, brief intervention, and referral to treatment (i.e. SBIRT) to help patients prevent, reduce, or eliminate the use of or dependency on alcohol, tobacco, or other drugs.**
    ii. **Educate health care providers to ensure accurate diagnosis, effective treatment, and follow up for major depressive disorder in youth ages 12-18 and adults.**
2) **Partner with the North Carolina Division of Public Health (DPH) and other appropriate organizations and health professional associations to offer training on screening, assessing, and counseling to all sexually active youth and adults, especially high-risk individuals, and to promote STD, HIV, and unintended pregnancy risk reduction, including the use of appropriate and effective contraception.**
3) **Partner with the UNC Center for Injury Prevention Research Center (IPRC), DPH, and other appropriate organizations and health professional associations to offer trainings in evidence-based strategies to prevent motor vehicle crash injuries, unintentional poisoning (including the appropriate use of pain medications), falls, family violence, and other injuries to state and local public health professionals, physicians, nurses, allied care workers, social workers, and others responsible for injury and violence prevention as well as proper use of e-codes to document injuries and ICD codes to document disease.**
4) **Partner with other appropriate organizations and health professional organizations to offer training to primary cae providers and other providers about the screenings, counseling, and treatment recommended by the US Preventive Services Task Force.**
5) **Help providers better understand how social issues such as housing, poverty, and education impact health so that this knowledge can be integrated into medical practice**

b) **The North Carolina General Assembly should appropriate $250,000 in recurring funds beginning in SFY 2011 to AHEC to support these efforts.**

References

1 Glanz K, Rimer B, Lewis MF, eds. *Health Behavior and Health Education.* 3rd ed. San Francisco, CA: Jossey-Bass; 2002.

2 Hofferth S, Sandberg JF. How American children spend their time. *J Marriage Fam.* 2001;63(2):295-308.

3 Bureau of Labor Statistics. Table 1. Time spent in primary activities (1) and percent of the civilian population engaging in each activity, averages per day by sex, 2008 annual averages. US Department of Labor website. http://www.bls.gov/news.release/atus.t01.htm. Published June 24, 2009. Accessed July 16, 2009.

4 Action for Healthy Kids. The learning connection: the value of improving physical activity and nutrition in our schools. http://www.actionforhealthykids.org/pdf/LC_Color_120204_final.pdf. Published 2008. Accessed June 22, 2009.

5 Llewallen T. Healthy learning environments. Association for Supervision and Curriculum Development website. http://www.ascd.org/publications/newsletters/infobrief/aug04/num38/toc.aspx. Published August 2004. Published 2009. Accessed June 22, 2009.

6 Cutler D, Lleras-Muney A. National Bureau of Economical Research. Education and health: evaluating theories and evidence. http://www.nber.org/papers/w12352. Published 2006. Accessed May 15, 2009.

7 Collins PH. School health policy in North Carolina. *NC Med J.* 2008;69(6):461-466.

8 North Carolina Healthy Schools Division. North Carolina Healthy Schools. North Carolina Department of Public Instruction, North Carolina Department of Health and Human Services website. http://www.nchealthyschools.org/. Accessed June 11, 2009.

9 North Carolina Division of Environmental Health. North Carolina Department of Environment and Natural Resources. Authorization manual. http://www.deh.enr.state.nc.us/oet/forms/authorization/Authorization%20Manual%202008-1.pdf. Published April 2008. Accessed July 17, 2009.

10 North Carolina Department of Juvenile Justice and Delinquency Prevention. 2007 Annual Report. http://www.ncdjjdp.org/resources/pdf_documents/annual_report_2007.pdf. Published March 2007. Accessed July 31, 2008.

11 State Board of Education, Department of Public Instruction, North Carolina Department of Health and Human Services. Effective School Health Advisory Councils: Moving from Policy to Action. Raleigh, NC. http://www.nchealthyschools.org/docs/schoolhealthadvisorycouncil/advisorycouncilsmanual.pdf. Published October 2003. Accessed July 13, 2009.

12 Greenberg T, Weissberg R, O'Brien MU, et al. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *Am Psychol.* June/July 2003;58(6/7):466-474.

13 Allensworth D. Improving the health of youth through a coordinated school health program. HealthMPowers website. http://www.healthmpowers.org/about_school_health/implementing_schoolhealth.htm. Published March 2, 2007. Accessed June 11, 2009.

14 State Board of Education. NC Department of Public Instruction. Healthful Living: K-12 Standard Course of Study and Grade Level Competencies. Raleigh, NC.

15 Breitenstein D. North Carolina standard course of study in healthful living. Presented to: North Carolina Institute of Medicine Task Force on Substance Abuse Services; October 10, 2008; Morrisville, NC. http://www.nciom.org/projects/adolescent/Breitenstein_10_10_08.pdf. Accessed May 22, 2009.

16 Pankratz MM, Hallfors DD. Implementing evidence-based substance abuse prevention curricula in North Carolina public school districts. *J School Health.* 2004;74(9):353-358.

17 Breitenstein D. North carolina's standard course of study in healthful living education. *NC Med J.* 2008;69(6):467-471.

18 Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA.* 2004;291(10):1238-1245.

19 Wright D, Adams L, Beard MJ, et al. Comparing excess costs across multiple corporate populations. *J Occup Environ Med.* September 2004;46(9):937-945.

20 Edington DW. *Zero Trends: Health as a Serious Economic Strategy.* Ed. Anonymous Ann Arbor, MI: University of Michigan; 2009. 162.

21 Burton WN, Chen CY, Conti DJ, Schultz AB, Edington DW. The association between health risk change and presenteeism change. *J Occup Environ Med.* 2006;48(3):252-263.

22 Wright DW, Beard MJ, Edington DW. Association of health risks with the cost of time away from work. *J Occup Environ Med.* 2002;44(12):1126-1134.

23 Burton WN, Chen CY, Conti DJ, Schultz AB, Pransky G, Edington DW. The association of health risks with on-the-job productivity. *J Occup Environ Med.* 2005;47(8):769-777.

24 The Community Guide. The community guide: worksite health promotion. Centers for Disease Control and Prevention website. http://www.thecommunityguide.org/worksite/index.html. Published February 10, 2009. Accessed June 25, 2009.

25 Linnan L, Bowling M, Childress J, et al. Results of the 2004 national worksite health promotion survey. *Am J Public Health.* 2008;98(8):1503-1509.

26 Young JM. Improving Employee Health in Six Steps: A Guide to Planning, Implementing and Achieving Targeted Outcomes. Ed. Anonymous. Washington, DC: National Business Group on Health; 2008. 23.

27 Aldana SG. Financial impact of health promotion programs: A comprehensive review of the literature. *Am J Health Promot.* 2001;15(5):296-320.

28 Agency for Healthcare Research and Quality. US Department of Health and Human Services. Medical Expenditure Panel Survey: insurance component. Table II.B.1.a (2006) percent of number of private-sector employees by firm size and state: United States, 2006. Washington, DC. http://www.meps.ahrq.gov/mepsweb/data_stats/summ_tables/insr/state/series_2/2006/tiib1a.pdf. Published 2006. Accessed June 25, 2009.

29 US Census Bureau and Bureau of Labor Statistics. Current population survey, annual social and economic (ASEC) supplement [machine-readable data file]. Washington:. 2006; Acessed 29 August 2006.

30 Lankford T, Kruger J, Bauer D. State legislation to improve employee wellness. *Am J Health Promot.* 2009;23(4):283-289.

31 National Committee for Quality Assurance. Patient centered medical home. National Committee for Quality Assurance website. http://www.ncqa.org/tabid/631/Default.aspx. Accessed July 17, 2009.

32 Starfield B, Shi L. The medical home, access to care, and insurance: A review of evidence. *Pediatrics.* 2004;113(5):1493-1498.

33 North Carolina Institute of Medicine and Cecil G. Sheps Center for Health Services Research. North Carolina's increase in the uninsured: 2007-2009. http://www.nciom.org/data/DS_2009-01_UninUnemp.pdf. Published March 2009. Accessed July 17, 2009.

34 North Carolina Institute of Medicine. Characteristics of Uninsured North Carolinians, 2006-2007. Morrisville, NC. http://www.nciom.org/projects/access_study08/Snapshot_9_23_08.pdf. Published September 2008. Accessed December 16, 2008.

35 North Carolina Institute of Medicine Health Access Study Group. North Carolina Institute of Medicine. Expanding access to health care in North Carolina: a report of the NCIOM Health Access Study Group. http://www.nciom.org/projects/access_study08/HealthAccess_FinalReport.pdf. Published March 2009. Accessed July 17, 2009.

36 McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med.* 2003;348(26):2635-2645.

37 Mangione-Smith R. The quality of ambulatory care delivered to children in the United States. *N Engl J Med.* 2007;357:1515-1523.