# Executive Summary

Adolescents are in a period of great transition. Children are in the process of becoming young adults during adolescence, and this has profound implications for physical, cognitive, emotional, and social development. During this metamorphosis, new health behaviors emerge, and many health habits that affect life outcomes are established.[1] This is a time of great opportunity because adolescent behavior, health, and educational achievement can positively influence the rest of their lives. Unfortunately, data show that far too many youth engage in behaviors that compromise their health; between the ages of 10 and 20, rates of death and serious health problems double—primarily because of problematic adolescent behaviors.

**Adolescents are in a period of great transition.**

Fortunately, behaviors are modifiable, which provides tremendous potential for prevention. Parents and other adults influence adolescents' choices and behaviors. Research shows that even as teenagers become older and spend less time with their parents, parents continue to be the most influential people in their teenagers' lives. This is particularly true when it comes to important decision making.[2] In addition to influencing individual adolescents, adults shape the context within which all adolescents live and develop. The environments created by parents, health professionals, schools, communities, and policymakers clearly shape the health and well-being of youth. Adults need to ensure that there are opportunities for adolescents to develop the skills and knowledge needed to be healthy adolescents, healthy adults, and productive members of society in the future.

In order to help ensure that our more than 1.4 million North Carolina adolescents have the greatest chance of success in life, The Duke Endowment generously funded the North Carolina Multidisciplinary Adolescent Research Consortium and Coalition for Health (NC MARCH) More Between 10 and 20 Adolescent Health Initiative, now known as the North Carolina Metamorphosis Project (NCMP), to study ways to improve adolescent health in our state. NCMP is a collaborative effort of the University of North Carolina at Chapel Hill (UNC-CH) School of Medicine and Gillings School of Global Public Health, NC MARCH, the North Carolina Institute of Medicine (NCIOM), the North Carolina Division of Public Health, and Action for Children North Carolina. NCMP consists of three distinct projects: an Adolescent Health Portrait, a survey of parents, and a Task Force on Adolescent Health.[a] NCMP asked the North Carolina Institute of Medicine to convene the Task Force. This report, released at the North Carolina Adolescent Health Summit in December 2009, is the culmination of the Task Force's work.

The Task Force was co-chaired by J. Steven Cline, DDS, MPH, Deputy State Health Director, Division of Public Health, North Carolina Department of Health and Human Services (NC DHHS); Carol A. Ford, MD, Director, Adolescent

a The Adolescent Health Portrait and parent survey are available online at http://www.med.unc.edu/ncmp.

Medicine, Program Director, NCMP and NC MARCH, Associate Professor, School of Medicine and Gillings School of Global Public Health, UNC-CH; and Howard Lee, Executive Director, North Carolina Education Cabinet. There were 38 other members of the Task Force, which met 12 times from May 2008 to September 2009. The Task Force made 32 total recommendations; ten were deemed especially important and were designated as priority.

**The CDC identified 21 Critical Health Objectives for adolescents and young adults. The Task Force focused most of its work on examining the health areas identified by the CDC, including unintentional injury, prevention of chronic illnesses, substance use and abuse, mental health, sexual health, and violence.**

The Task Force used the work of the Centers for Disease Control and Prevention (CDC) to help narrow its focus. In setting the Healthy People 2010 goals, the CDC identified 21 Critical Health Objectives for adolescents and young adults.[3] The Task Force focused most of its work on examining the health areas identified by the CDC, including unintentional injury, prevention of chronic illnesses, substance use and abuse, mental health, sexual health, and violence. In examining these issues, the Task Force organized itself around the premise of youth development. Instead of focusing solely on *preventing* certain adolescent health issues, the Task Force also looked at ways to *invest* in youth so they can *develop* the skills and attributes needed to become productive adults. Reframing the way we think about and how we address adolescent health issues is key to developing a successful approach. Right now, many of us look at adolescents and think about what can be done to prevent unhealthy outcomes; instead the Task Force tried also to think about what we can do to help them to meet the goals and dreams we share for their future. Everyday hundreds of thousands of North Carolina adolescents are trying to make the right choices; the Task Force identified strategies to support adolescents in making choices to support their best aspirations.

The following provides a summary of the Task Force on Adolescent Health recommendations. The summary recommendations are numbered to correspond to the chapter in which they are discussed in more detail. Priority recommendations are also noted.

***Strengthening Adolescent Health Leadership and Infrastructure, and Improving the Quality of Youth Policies, Programs, and Services:*** Families, schools, communities, health care providers, and public policies all influence adolescent health and well-being. One of the important public health lessons we learned from the decline in adolescent smoking rates in North Carolina is the importance of implementing multifaceted strategies that work together synergistically to support positive behavioral change. To maximize effectiveness, public health interventions must be offered within schools, communities, and clinical settings. Further, these interventions should be reinforced through social marketing campaigns and supportive public policies.

The Task Force recognized that these efforts would be stronger if there were more visible adolescent health leadership and a stronger infrastructure to provide support and coordination. Furthermore, the Task Force recognized that we are more likely to experience positive results if we implement evidence-based

strategies to influence specific health outcomes *and* strategies to enhance youth development. Evidence-based youth development approaches often have a positive impact on a wide range of adolescent health behaviors. With strong leadership, a solid infrastructure, and the strategic use of evidence-based programs, services, and policies, the unique needs of adolescents can be successfully addressed.

## Recommendation 3.1: Establish an Adolescent Health Resource Center

**An Adolescent Health Resource Center should be established within the Women and Children's Health Section of the Division of Public Health. The Center should support adolescent health around the state by coordinating health initiatives; expanding the use of evidence-based programs, practices, and policies; and providing adolescent health resources for youth, parents, and service providers. The North Carolina General Assembly should appropriate $300,000 in recurring funds beginning in SFY 2011 to support this effort.**

## Recommendation 3.2: Fund Evidence-Based Programs that Meet the Needs of the Population Being Served (PRIORITY RECOMMENDATION)

**Public and private funders supporting adolescent initiatives in North Carolina should place priority on funding evidence-based programs, including validation of the program's fidelity to the proven model, to address adolescent health behaviors across multiple protective and risk factors. Program selection should take into account the racial/ethnic, cultural, geographic, and economic diversity of the population being served.**

## Recommendation 3.3: Support Multifaceted Adolescent Health Demonstration Projects

**The North Carolina General Assembly should provide $1.5 million annually for five years beginning in 2011 to the Division of Public Health to support four multi-component, locally-implemented adolescent health demonstration projects aimed at improving health outcomes for at-risk adolescents. To qualify for funding, the demonstration project should have evidence-based components and involve families, adolescents, health care providers (which may include school-based health centers), schools, Juvenile Crime Prevention Councils, and local community organizations. DPH should contract for an independent evaluation of the demonstration projects.**

***Improving Adolescent Health Care:*** Adolescents as a group are generally healthy. However, the majority of youth will, at some time, engage in behaviors that can lead to serious negative health consequences. Regular

preventive check-ups and counseling can help ensure that adolescents develop patterns of behavior that will favorably influence life-long trajectories of health, and provide opportunities for early diagnosis and intervention when problems emerge.

All adolescents need access to high-quality preventive services, screenings, and anticipatory guidance. In addition, children who are ill, or those with special health conditions, need health services that address their specific health needs. To improve the quality of health services provided to adolescents, expectations for the content of a standard routine adolescent health care visit need to be explicitly clear to providers, and services need to be covered by insurers. A major barrier to this type of care is lack of adequate health insurance. Expanding health insurance coverage to more adolescents would allow more youth to access the kind of high-quality preventive services they need. Supporting and expanding health services in schools is another strategy for ensuring that more adolescents have access to health care. North Carolina's school-based and school-linked health centers, school nurses, and Child and Family Support Teams provide critical physical and mental health support services in schools.

## Recommendation 4.1: Cover and Improve Annual High-Quality Well Visits for Adolescents up to Age 20

**All public and private health insurers should cover annual well visits for adolescents that meet the quality of care guidelines of the US Preventive Services Task Force, Centers for Disease Control and Prevention, American Academy of Pediatrics/Bright Futures, and Advisory Committee on Immunization Practices. Community Care of North Carolina (CCNC), Area Health Education Centers (AHEC) Program, and the Division of Public Health should develop and pilot tools and strategies to help primary care providers deliver high quality adolescent health checks. North Carolina's foundations should provide $500,000 over three years to support and evaluate this effort.**

## Recommendation 4.2: Expand Health Insurance Coverage to More People

**In the absence of everyone having access to high-quality, affordable health insurance, the North Carolina General Assembly (NCGA) should begin expanding coverage to groups that have the largest risk of being uninsured, including children and adolescents, ages 0-20, with family incomes up to 300% of the federal poverty guidelines. Additionally the NCGA should require insurance companies to offer parents the option to continue dependent coverage until the child reaches age 26, regardless of student status.**

## Recommendation 4.3: Fund School-Based Health Services in Middle and High Schools (PRIORITY RECOMMENDATION)

**The Department of Public Instruction and the Division of Public Health should work together to improve school-based health services in middle and high schools. The North Carolina General Assembly should appropriate $7.8 million in recurring funds in SFY 2011, $13.1 million in recurring funds in SFY 2012, and additional funding in future years to support school-based health services, including school based- and school-linked health centers, school nurses, and Child and Family Support Teams in middle and high schools. North Carolina foundations should fund evaluations of the effectiveness of these initiatives.**

## Recommendation 4.4: Develop a Sixth Grade School Health Assessment

**The Women and Children's Health Section of the Division of Public Health should convene a working group to develop a plan to operationalize a sixth grade health assessment for all students.**

***Improving Adolescent Health through Education:*** The guiding mission of the North Carolina State Board of Education (SBE) is to prepare students to graduate from high school and be successful in the 21st century. To meet this mission, schools must do more than teach students academic subjects, schools must also help provide students with the knowledge and skills needed to become healthy and responsible adolescents and future adults.[4] There is mounting empirical evidence that education and health outcomes are tightly intertwined. Students with lower grades are more likely to participate in behaviors linked to negative health outcomes.[5] Success in school and the number of years of schooling impact health across the lifespan.[6] People who have completed more years of schooling generally have longer life expectancies and fewer chronic illnesses than those with fewer years of education.[7] Education is also linked to a range of risk behaviors; those with more years of schooling are less likely to smoke, drink excessively, be overweight or obese, or use illegal drugs as adults. Policies and programs that support improved educational outcomes for adolescents also have the potential to improve their immediate and long-term health.

The North Carolina Healthy Schools Partnership (NCHSP), a partnership between the Department of Public Instruction and the Department of Health and Human Services, promotes the union of health and learning within public schools using a coordinated school health approach.[8] The CDC has identified eight critical elements that should be included in a coordinated school health approach: health education, physical education, health services, nutrition

services, mental and behavioral health services, healthy school environment, health promotion for staff, and family/community involvement.[9] The Task Force mainly focused on the health education and physical education components of the coordinated school health approach.

Schools should implement evidence-based health education and physical education curricula that have a proven track record of positive behavioral changes among adolescents. Although challenging, implementing evidence-based health and physical education in the classroom, and evidence-based programs in schools, provide critically important opportunities to improve adolescent health. At least one study in North Carolina has shown that dedicated staff to facilitate the adoption of evidence-based curricula and programs in schools increases successful use and implementation.[10] Local healthy schools coordinators in Local Education Agencies (LEAs) could be the staff members dedicated to providing leadership on health issues to local schools, identifying funding opportunities, selecting evidence-based curricula, providing technical assistance for implementation, and monitoring for compliance.[11]

## Recommendation 5.1: Increase the High School Graduation Rate (PRIORITY RECOMMENDATION)

**The North Carolina State Board of Education and the North Carolina Department of Public Instruction should expand efforts to support and further the academic achievement of middle and high school students with the goal of increasing the high school graduation rate. The SBE and DPI should work with others to examine the experiences of other states and develop cost estimates to implement initiatives to increase the high school graduation rates and present this information to the North Carolina General Assembly by April 2010.**

## Recommendation 5.2: Enhance North Carolina Healthy Schools (PRIORITY RECOMMENDATION)

**The North Carolina School Health Forum should be reconvened and expanded to ensure implementation of the coordinated school health approach and expansion of the North Carolina Healthy Schools Partnership (NCHSP). The Department of Public Instruction (DPI) should expand the NCHSP to include a local healthy schools coordinator in each local education agency (LEA). The North Carolina General Assembly should appropriate $1.64 million in recurring funds beginning in SFY 2011, increased by an additional $1.64 in recurring funds in each of the following six years (SFY 2012-2017), for a total of $11.5 million recurring funds to support these positions. The NCGA should appropriate $225,000 in recurring funds to NCHSP to provide monitoring, evaluation, and technical assistance to the LEAs through the local healthy schools coordinators.**

## Recommendation 5.3: Actively Support the Youth Risk Behavior Survey and School Health Profiles Survey

**The North Carolina State Board of Education should support and promote the participation of Local Education Agencies in the Youth Risk Behavior Survey and the School Health Profiles Survey.**

## Recommendation 5.4: Revise the Healthful Living Standard Course of Study

**The North Carolina General Assembly (NCGA) should require the State Board of Education (SBE) to require schools to use evidence-based curricula when available to teach the objectives of the Healthful Living Standard Course of Study and to phase in over five years an increase in the Healthful Living requirements so that students would receive 225 minutes per week of Healthful Living instruction in middle schools and 2 units for high schools. The NCGA should appropriate $1.15 million in recurring funding beginning 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. The SBE should encourage DPI to develop healthful living electives beyond the required courses.**

***Preventing Unintentional Injuries:*** Unintentional injuries[b] are the leading cause of death in North Carolina for people ages 10-20.[12] Motor vehicle crashes are the most common cause of unintentional injuries and death for adolescents in North Carolina.[13] Many evidence-based strategies have been shown to reduce the number of motor vehicle crashes among adolescents (e.g., graduated driver's licensing systems, requiring all passengers to wear seat belts, a zero blood alcohol concentration limit for underage drivers). North Carolina has already adopted evidence-based strategies and is regarded as a national leader in this area.[14] However, further work could be done to ensure existing policies are implemented with fidelity and enforced.

In addition to motor vehicle crashes, a large number of adolescents are injured as a result of being cut, struck, or falling, and a significant number of these injuries are the result of participation in athletic programs.[15] Participation in sports and recreational activities is an important part of a healthy lifestyle for adolescents but is also a potential source of injury. Although it is impossible to prevent all accidents from occurring, many sports- and recreation-related injuries are preventable. There are many evidence-based strategies for reducing specific sports-related injuries, but there is not currently a way to ensure youth coaches are educated about these strategies and how to implement them.

b Unintentional injuries are defined as injuries judged to have occurred without anyone intending that harm be done.

## Recommendation 6.1: Improve Driver's Education (PRIORITY RECOMMENDATION)

**The North Carolina General Assembly should continue funding driver education through the North Carolina Department of Transportation (DOT). The DOT should work to improve the comprehensive training program for young drivers. Pilot programs to improve driver education should be developed, implemented, evaluated, and, if shown to be successful, expanded.**

## Recommendation 6.2: Strengthen Driving While Intoxicated (DWI) Prevention Efforts

**All North Carolina state and local law enforcement agencies with traffic responsibilities should actively enforce DWI laws throughout the year. The North Carolina General Assembly (NCGA) should increase the reinstatement fee for DWI offenders by $25. Funds from the increased DWI fees should be used to support DWI programs The NCGA should appropriate $750,000 in recurring funding in SFY 2011 to the North Carolina Division of Public Health to develop and implement an evidence-based dissemination plan for the existing *Booze It & Lose It* campaign. The plan should focus on reaching adolescents and young adults.**

## Recommendation 6.3: Fund Injury Prevention Educators

**The North Carolina General Assembly should appropriate $300,000 in recurring funds to the University of North Carolina Injury Prevention Research Center for the dissemination of evidence-based injury prevention programs and policies to schools and youth sports clubs across the state.**

***Reducing Substance Use and Abuse and Improving Mental Health for Adolescents and Young Adults:*** While most youth successfully navigate adolescence without significant psychological, social, or health problems, adolescence is a period when threats to mental and physical health increase and lifelong mental health problems begin or emerge.[16] The use, and misuse, of drugs and alcohol during adolescence can have serious, short- and long-term consequences including abuse and addiction, violence, high-risk sexual activity, injury, and criminal activity. Not only does the misuse and dependence on alcohol and other drugs have negative consequences for the individual and his or her family, but there are also much broader societal implications.

Mental and emotional well-being are important indicators of success for adolescents both during their teenage years and as young adults. Youth with better mental health are physically healthier; they exhibit more pro-social behavior, and improved academic achievement in school, and engage in fewer behaviors that put their health at risk. The majority of mental illness in

adolescents goes unrecognized or untreated, leaving youth vulnerable to diminished school success and to social and behavioral impairments during this critical phase of development.[17]

In North Carolina the Division of Mental Health, Developmental Disabilities, and Substance Abuse Services (DMHDDSAS) is the lead agency responsible for coordinating substance abuse prevention, treatment, and recovery supports as well as ensuring that the mental health needs of children and adolescents are being met. More needs to be done at the state and local level to ensure that all youth receive prevention and early intervention services for substance use and mental health problems.

## Recommendation 7.1: Review Substance Abuse and Mental Health Prevention and Services in Educational Settings

**The North Carolina General Assembly should direct the State Board of Education, Office of Non-Public Education, North Carolina Community College System, and University of North Carolina System to review their existing substance abuse and mental health prevention plans, programs, and policies, and the availability of substance abuse and mental health screening and treatment services and to report a description of their prevention plans to the North Carolina General Assembly biennially beginning in 2011.**

## Recommendation 7.2: Support the North Carolina Youth Suicide Prevention Plan

**The North Carolina Youth Suicide Prevention Task Force along with the Division of Public Health's Injury and Violence Prevention Branch should implement the recommendations in North Carolina's Plan to Prevent Youth Suicide. The North Carolina General Assembly should appropriate $112,500 in recurring funds in SFY 2011 to support this effort.**

## Recommendation 7.3: Develop and Implement a Comprehensive Substance Abuse Prevention Plan

**The Division of Mental Health, Developmental Disabilities, and Substance Abuse Services (DMHDDSAS) should develop a comprehensive substance abuse prevention plan for use at the state and local levels. The plan should increase the capacity at the state level and within local communities to implement a comprehensive substance abuse prevention system, prioritizing efforts to reach children, adolescents, young adults, and their parents. Priority should be given to evidence-based prevention programs that have shown to have positive impacts on multiple outcomes, including but not limited to preventing or reducing substance use, improving emotional well-**

**being, reducing youth violence, and/or reducing teen pregnancy. The North Carolina General Assembly should appropriate $1.95 million in SFY 2011 and $3.72 million in SFY 2012 in recurring funds to DMHDDSAS to pilot these prevention plans in six counties or multi-county efforts and to evaluate these efforts. If successful, the comprehensive prevention plans should be implemented statewide.**

## Recommendation 7.4: Increase Alcohol Taxes

**The North Caroina General Assembly should index the excise taxes on malt beverages and wine to the consumer price index so they can keep pace with inflation. The increased fees should be used to fund effective prevention and treatment efforts for alcohol, tobacco, and other drugs.**

## Recommendation 7.5: Drinking Age Remain 21

**The North Carolina General Assembly should not lower the drinking age to less than age 21.**

## Recommendation 7.6: Integrate Behavioral Health into Health Care Settings

**The Division of Mental Health, Developmental Disabilities, and Substance Abuse Services (DMHDDSAS) should work with the Office of Rural Health and Community Care (ORHCC), Governors Institute on Alcohol and Substance Abuse, and Area Health Education Centers (AHEC) to expand the use of Screening, Brief Intervention and Referral into Treatment (SBIRT) to increase the early identification and referral into treatment of patients with problematic substance use. A similar evidence-based model for screening, brief intervention, and referral to treatment should be identified and expanded to increase the early identification and referral of patients with mental health concerns. ORHCC should lead efforts to support and expand co-location in primary care practices of licensed health professionals trained in providing mental health and substance abuse services. The North Carolina General Assembly should appropriate $2.25 million in recurring funds in SFY 2011 to support these efforts.**

## Recommendation 7.7: Ensure the Availability of Substance Abuse and Mental Health Services for Adolescents (PRIORITY RECOMMENDATION)

**North Carolina Division of Mental Health, Developmental lDisabilities, and Substance Abuse Services (DMHDDSAS) should develop a plan for a comprehensive system that is available and accessible across the state to address adolescent' substance abuse treatment needs.**

***Preventing Youth Violence:*** Youth violence is "the intentional use of physical force or power, threatened or actual, exerted by or against children, adolescents, or young adults, ages 10–29, which results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation."[18] The social costs of youth violence include imprisonment, isolation, loss of income, and diminished "social capital" (the level of "connectedness" in a community) and are borne not just by the victim but also by the perpetrator, their families, North Carolina communities, and society at large. There are many types of youth violence, therefore, the Task Force decided to limit its discussion to types of youth violence for which there are evidence-based prevention strategies, including school violence, bullying, dating violence, and gang violence.

Reducing youth violence requires a community-wide effort that involves individuals, families, schools, and government agencies in both in- and out-of-school strategies. There are several evidence-based programs to reduce risk behaviors that contribute to violence and to reduce violence. While it is important to implement such programs for all youth in schools and communities (see **Recommendations 5.4** and **3.2**, respectively), community programs targeting at-risk youth need to ensure the best possible outcomes by using evidence-based programs and services. Furthermore, North Carolina is one of only two states that adjudicates all 16 and 17 year olds in the adult offender system. This policy leads to worse outcomes in the future; research shows that adolescents who are managed in an adult criminal system are 34% more likely to become repeat offenders when compared to adolescents managed in the juvenile system.[19,20]

## Recommendation 8.1: Enhance Injury and Violence Surveillance

**The North Carolina General Assembly should amend the Public Health Act § 130A-1.1 to include injury and violence prevention as an essential public health service and appropriate $175,000 in recurring funds in SFY 2011 to the Division of Public Heath to develop an enhanced intentional and unintentional injury surveillance system with linkages between data systems. The Department of Juvenile Justice and Delinquency Prevention should collect gang activity data each year.**

## Recommendation 8.2: Support Evidence-Based Prevention Programs in the Community (PRIORITY RECOMMENDATION)

**The Department of Juvenile Justice and Delinquency Prevention should strongly encourage Juvenile Crime Prevention Councils to fund evidence-based juvenile justice prevention and treatment programs, including prevention of youth violence and substance use, and community-based alternatives to incarceration.**

## Recommendation 8.3: Raise the Age of Juvenile Court Jurisdiction

**The North Carolina General Assembly should enact legislation to raise the age of juvenile court jurisdiction from 16 to 18.**

***Reducing Teenage Sexual Activity and Preventing Sexually Transmitted Diseases and Teenage Pregnancies:*** During childhood, young people spend most of their time with same-sex peer groups. This habit begins to change in the mid- to late-adolescent years. During this adolescent period, young people spend more time with mixed-gender peer groups and close relationships with romantic partners become increasingly important.[21] The majority of youth initiate sexual behavior within the context of romantic relationships. In 2007, 69% of 12th graders reported having engaged in sexual intercourse.[22] Engaging in sexual activity exposes adolescents to the risks of unwanted pregnancy and sexually transmitted diseases (STDs), including HIV. [23]

To reduce unwanted pregnancies, STDs, and HIV among youth, the Centers for Disease Control and Prevention recommends communities use a multifaceted strategy that promotes abstinence, helps youth who have been sexually active to return to abstinence, and educates youth who are sexually active in the correct and consistent use of condoms and other forms of contraception.[24] This approach recognizes that most teenagers initiate sex during middle and late adolescence and there is a need to reduce the risk of pregnancy and STDs among this large group of young people. Clinicians can help reduce teenage sexual activity, STDs, and unwanted pregnancy by providing screening, testing, and counseling for youth engaged in sexual activity (see **Recommendation 4.1**) and providing and promoting vaccines for STDs; schools can help by providing comprehensive reproductive health and safety education to all students; and communities can help by ensuring adequate funding for STD and pregnancy prevention, education, and awareness activities. In addition, public policies can help prevent STDs by promoting and supporting vaccination for vaccine-preventable STDs [i.e. hepatitis B and genital human papillomaviruses (HPV) vaccines].

## Recommendation 9.1: Increase Immunization Rates for Vaccine-Preventable Diseases

**The North Carolina Division of Public Health (DPH) should aggressively seek to increase immunization rates for all vaccines recommended by the Centers for Disease Control (CDC) and Prevention Advisory Committee on Immunization Practices, including but not limited to the human papillomavirus (HPV) vaccine which is not currently covered through the state's universal childhood vaccine distribution program. The North Carolina General Assembly should appropriate $1.5 million in recurring funds in SFY 2011 to support this effort. All public and private insurers should provide first dollar coverage for all CDC recommended vaccines that the state does not provide through the Universal Child Vaccine Distribution Program.**

## Recommendation 9.2: Ensure Comprehensive Reproductive Health and Safety Education for More Young People in North Carolina

**Local school boards should adopt an opt-out consent process to automatically enroll students in the comprehensive reproductive health and safety education program unless a parent or legal guardian specifically requests that their child not receive any or all of this education.**

## Recommendation 9.3: Expand Teen Pregnancy and STD Prevention Programs and Social Marketing Campaigns (PRIORITY RECOMMENDATION)

**The North Carolina General Assembly should appropriate $5.9 million in recurring funds to the North Carolina Division of Public Health to develop and disseminate an unintended pregnancy prevention campaign, expand the Teen Pregnancy Prevention Initiative, and expand the *Get Real. Get Tested.* Campaign for HIV prevention to include other STDs and reach more adolescents.**

***Preventing Adult-Onset Diseases:*** Currently, roughly half of US adults have at least one chronic disease. Although most adolescents do not have a chronic condition, behaviors developed in adolescence can lead to chronic disease in adulthood. To demonstrate the potential impact of improved adolescent health on life span health outcomes, the Task Force reviewed adolescent-focused strategies to reduce rates of adult cardiovascular disease, which is the second most common cause of death in North Carolina (cancer is the most common). Risk of cardiovascular disease can be reduced by addressing major modifiable risk factors such as tobacco use and obesity, which are risk factors that are often developed in adolescence. Most adults who use tobacco began smoking before the age of 18, with the

average age of initiation between ages 12 and 14 years.[25] Smokers typically become addicted to nicotine before they reached the age of 20. [26] Furthermore, reducing overweight and obesity among young people in North Carolina will, in turn, lead to reduced risk of high blood pressure, high cholesterol, diabetes, and adult cardiovascular disease. Changing social norms to encourage healthy eating among adolescents may be accomplished at least in part by providing healthy lunches in the school setting. Improving the nutritional value of school lunches increases the cost to the school. Thus, to improve school nutrition, schools will need more resources—or innovative models—to be effective. Finally, adolescents who have risk factors for adult cardiovascular disease (including high blood pressure, diabetes, and high cholesterol) need to be identified and receive high-quality health care and regular check-ups. (See **Recommendation 4.1**.)

## Recommendation 10.1: Support the Implementation of North Carolina's Tobacco Control Program (PRIORITY RECOMMENDATION)

**The North Carolina General Assembly (NCGA) should adopt measures to prevent and decrease adolescent smoking. As part of this effort, the NCGA should increase tobacco taxes to the national average; support the state's Comprehensive Tobacco Control Program; amend current smoke-free laws to mandate that all worksites and public places are smoke-free; and ensure comprehensive evidence-based tobacco cessation services are available for all youth. The increase in revenue from new taxes should be used to support the Comprehensive Tobacco Control program. The NCGA should appropriate $26.7 million in recurring funds in 2011 to support implementation of the Comprehensive Tobacco Control program. The NCGA should appropriate other funds as necessary until we reach the Center for Disease Control and Prevention recommended level of funding.**

## Recommendation 10.2: Improve School Nutrition in Middle and High Schools (PRIORITY RECOMMENDATION)

**North Carolina funders should develop a competitive request for proposal to fund a collaborative effort between North Carolina Department of Public Instruction and other partners to test and evaluate innovative strategies to deliver healthy meals in middle and high schools while protecting/maintaining revenue for the child nutrition program.**

## Recommendation 10.3: Establish Joint-Use Agreements for School and Community Recreational Facilities

**Local governmental agencies, including schools, parks and recreation, health departments, county commissioners and municipalities, and other relevant organizations should work together to develop joint-use agreements that would expand the use of school facilities for after-hours community physical activity and make community facilities available to schools.**

## Recommendation 10.4: Fund Demonstration Projects in Promoting Physical Activity, Nutrition, and Healthy Weight

**The North Carolina Division of Public Health (DPH) along with its partner organizations should fully implement the *Eat Smart, Move More North Carolina Obesity Plan* for combating obesity in selected local communities and, if shown to be effective, should expand efforts statewide. As part of this project, the North Carolina General Assembly should appropriate $500,000 in nonrecurring funds for six years beginning in SFY 2011 to DPH for pilot programs of up to $100,000 per year to reduce overweight and obesity among adolescents.**

## Recommendation 10.5: Expand the CCNC Childhood Obesity Prevention Initiative

**If shown to be successful through program evaluations, Community Care of North Carolina (CCNC) should continue expansion of the Childhood Obesity Prevention Initiative including the dissemination and use of already developed clinical initiatives aimed at obesity reduction for Medicaid-enrolled and other children and their families. The North Carolina General Assembly should appropriate $174,000 in nonrecurring funds in SFY 2011 to the North Carolina Office of Rural Health and Community Care to support this effort.**

***Conclusion***

Although North Carolina's youth are generally quite healthy, at some point the majority will engage in risky health behaviors. Intervening during adolescence provides a unique opportunity to improve not only adolescents' immediate health, but also their long-term health and well-being.[1] All youth face choices about how and with whom they spend their free time and whether they will engage in risky health behaviors. The decisions they make can impact both their short- and long-term health and well-being. Therefore it is critical that adolescents develop the skills and knowledge needed to make decisions that lead them to engagement in health-promoting, rather than health-compromising, behaviors. The environment created by parents, health professionals, schools,

communities, and policymakers contributes to the health and well-being of youth. In this role, it is important that adults ensure that there are opportunities for adolescents to develop and exercise their autonomy while minimizing the risks of negative consequences.

The most important finding of the Task Force is that coordinated, multifaceted, evidence-based interventions can improve adolescent health. For example, implementation of multifaceted evidence-based interventions led to dramatic decreases in smoking rates in children. From 2003 to 2007, the high school use rate declined from 27.3% to 19.0%, while the middle school use rate dropped from 9.3% to 4.5%.[27] The implication of this decline in tobacco use is that broad-based, systematic investments in multifaceted interventions can be effective in addressing seemingly "intractable" adolescent health problems. The path demonstrated by our success with tobacco should be replicated to address other adolescent health issues discussed in this report.

### References


1 Millstein SG, Petersen AC, Nightingale EO, eds. *Promoting the Health of Adolescents.* New York: Oxford University Press; 1993.

2 Laursen B, Collins WA. Parent-child relationships during adolescence. In: Lerner RM, Steinberg L, eds. *Handbook of Adolescent Psychology.* Vol 2. Third ed. Hoboken, New Jersey: John Wiley and Sons; 2009:3-42.

3 National Center for Chronic Disease Prevention and Health Promotion. 21 Critical Health Objectives for Adolescents and Young Adults. US Department of Health and Human Services Centers for Disease Control and Prevention, Division of Adolescent and School Health website. http://www.cdc.gov/HealthyYouth/AdolescentHealth/NationalInitiative/pdf/21objectives.pdf. Published 2000. Accessed September 21, 2009.

4 State Board of Education. Department of Public Instruction. Future-Ready Schools: Preparing Students for the 21st Century (2004-2006 Biennial Report). Raleigh, NC. http://www.ncpublicschools.org/docs/stateboard/resources/reports/2004-06/biennial-report.pdf. Accessed July 13, 2009.

5 Reeve RH, Langer SM, Bernholc AS. Running the numbers: High school student health and academic achievement in North Carolina. *NC Med J.* 2008;69(6):511-512.

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 Lleras-Muney L. National Bureau of Economic Research. The relationship between education and adult mortality in the United States. Working paper 8986. http://www.nber.org/papers/w8986.pdf. Published June 2002. Accessed June 8, 2009.

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

9 National Center for Chronic Disease Prevention and Health Promotion. Coordinated School Health Program. Centers for Disease Control and Prevention, US Department of Health and Human Services website. http://www.cdc.gov/HealthyYouth/CSHP/. Published September 24, 2008. Accessed July 13, 2009.

10 Hallfors D, Pankratz M, Hartman S. Does federal policy support the use of scientific evidence in school-based prevention programs? *Prev Sci.* 2007;8:75-81.

11 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.

12 North Carolina State Center for Health Statistics. North Carolina Department of Health and Human Services. 2007 NC Vital Statistics, volume 2: leading causes of death. Table A-F. http://www.schs.state.nc.us/SCHS/deaths/lcd/2007/pdf/TblsA-F.pdf. Published December 4, 2008. Accessed August 10, 2009.

13 Russell VC. State of the state: Adolescent injury. Presented to: North Carolina Institute of Medicine Task Force on Adolescent Health; July 11, 2008; Morrisville, NC. http://www.nciom.org/projects/adolescent/Russell_7_11_08.pdf. Accessed July 15, 2009.

14 Foss R. Preventing motor vehicle-related injury to North Carolina adolescents. Presented to: North Carolina Institute of Medicine Task Force on Adolescent Health; July 11, 2008; Morrisville, NC. http://www.nciom.org.libproxy.lib.unc.edu/projects/adolescent/Marshall_7_11_08.pdf. Accessed August 1, 2008.

15 Davis PM, McKelvey MK. Medicolegal aspects of athletic head injury. *Clin Sports Med.* 1998;17(1):71-82.

16 Compas BE, Reeslund KL. Processes of risk and resilience during adolescence. In: Lerner RM, Steinberg L, eds. *Handbook of Adolescent Psychology.* Vol 3. 3rd ed. Washington, DC: John Wiley & Sons, Inc.; 2009:561-588.

17 Friedman RA. Uncovering an epidemic-screening for mental illness in teens. *N Engl J Med.* 2006;355(26):2717-2718, 2719.

18 Krug EG, et al. World Health Organization. World report on violence and health. http://whqlibdoc.who.int/hq/2002/9241545615.pdf. Published 2002.

19 Community Guide Branch, National Center for Health Marketing. Guide to Community Preventive Services—Youth transfer to adult criminal court: policies facilitating the transfer of juveniles to adult justice systems. Centers for Disease Control and Prevention website. http://www.thecommunityguide.org/violence/transferpolicy.html. Published March 17, 2009. Accessed September 21, 2009.

20 Hahn R, McGowan A, Liberman A, et al. Centers for Disease Control and Prevention. Effects on violence of laws and policies facilitating the transfer of youth from the juvenile to the adult justice system. Centers for Disease Control and Prevention website. http://www.cdc.gov/mmwr/PDF/rr/rr5609.pdf. Published November 30, 2007. Accessed September 21, 2009.

21 Zimmer-Gembeck M. The development of romantic relationships and adaptations in the system of peer relationships. *J Adolesc Health.* 2002;31:216-225.

22 North Carolina Department of Public Instruction. North Carolina Youth Risk Behavior Survey, 2007. http://www.nchealthyschools.org/data/yrbs/. Accessed January 23, 2009.

23 Furman W, Brown B, Feiring C, eds. *The Development of Romantic Relationships in Adolescence.* New York, NY: Cambridge University Press; 1999.

24 US Department of Health and Human Services. Government Printing Office. Healthy People 2010. Washington, DC. http://wonder.cdc.gov/data2010/.

25 Malek SH, Hopking DP, Molloy M, McGloin T. The public health challenge of youth smoking in North Carolina, putting what we know into practice. *NC Med. J.* 2002;63(3):153-161.

26 White HR, Pandina RJ, Chen P. Developmental trajectories of cigarette use from early adolescence into young adulthood. *Drug Alcohol Depend.* 2002;65:167-178.

27 Shah V. North Carolina initiatives to reduce tobacco use: Part II. Presented to: the North Carolina Institute of Medicine Task Force on Prevention; May 8, 2008; Cary, NC. Accessed June 29, 2009.