

Family Impact Seminar, 2008

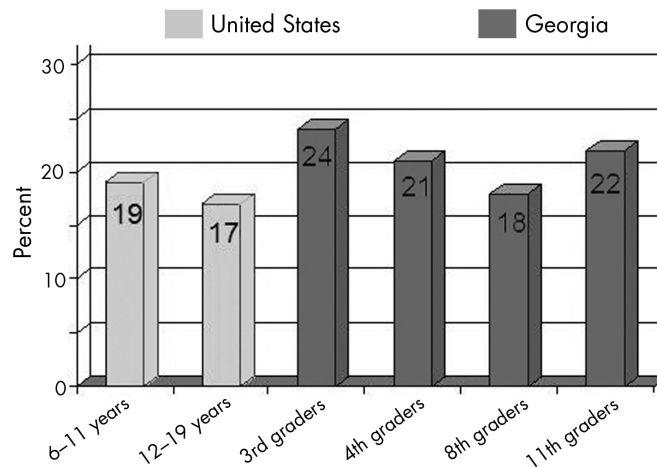
Georgia Policy Opportunities:  
Childhood Obesity



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## Introduction

Childhood obesity is now recognized as a public health crisis in the United States and in Georgia. Despite the increasing efforts and attention devoted to obesity prevention and treatment over the past three decades, the prevalence of childhood obesity has continued to rise. The latest national survey found that 18.8 percent of 6- to 11-year-olds and 17.4 percent of 12- to 19-year-olds are considered obese based on a definition of body mass index (BMI)-for-age percentile  $\geq$  95th with the highest rates in the southeastern United States (1, 2). Since the 1970s, obesity rates have more than doubled for 2- to 5-year-olds and 12- to 19-year-olds and more than tripled for 6- to 11-year-old children. The only comparable data in Georgia, based on actual height and weight measures, show that Georgia's children have a higher prevalence of obesity than the national sample, with nearly 24 percent of third graders, 20.9 percent of 4th graders, 18 percent of 8th graders, and 22.4 percent of 11th graders classified as obese (Figure 1; 3, 4). Additionally, the disparities found in Georgia are similar to those seen nationally, with children who are minorities, from low-income households, and from rural areas more likely to be obese.



**Figure 1. Childhood and Adolescent Obesity Prevalence in the United States and Georgia**

Dietary behaviors across the nation and Georgia are also alarming. Fruit and vegetable intake is a frequently targeted behavior in obesity prevention initiatives, and in the United States only 20 percent of adolescents consumed the recommended five or more servings of fruits and vegetables per day in 2005. In Georgia, 18 percent of high school students consumed this amount of fruits and vegetables (5). Insufficient fruit and vegetable consumption in low-income communities may be attributed to high costs. It was recently estimated that low-income families would need to spend 43–70 percent of their food budgets on fruits and vegetables in order to eat according to federal dietary guidelines (6).

The physical activity behaviors of the nation's and Georgia's youth are also discouraging. Approximately two-thirds of children walked or biked to school 30 years ago. Currently less than 20 percent of children in the United States walk or bike to school, with those living in rural areas and southern states least likely to do so (7). Limited access to sidewalks and/or safe routes to school and living too far from school may contribute to the low percentage. The Georgia Youth Fitness Assessment recently found that 44 percent of students do not get enough physical activity and 97 percent are not physically fit (8). Additionally, over half of middle and high school students in Georgia spend at least three hours per day watching television or playing video games (5).

These facts make one point very clear: action must be taken immediately to slow the epidemic and prevent the short- and long-term health complications that accompany obesity. This brief addresses obesity prevention from a policy perspective and discusses options for communities and schools to address the problem. Furthermore, the brief discusses the importance of partnerships in leveraging intervention efforts, particularly with philanthropic organizations, and the need for quality evaluation and monitoring to help identify effective interventions.

## **Impact of Childhood Obesity**

Obesity negatively impacts the quality of a child's life. Childhood obesity increases the risk of developing type II diabetes, cardiovascular diseases, asthma, sleep apnea, psychiatric disorders, and orthopedic problems. One study noted that obese children and adolescents reported a quality of life similar to that of children undergoing cancer treatment (9). Other studies have found that the decreased quality of life in obese children was related to lower physical functioning and lower self-esteem (10). Obese and overweight adolescents also tend to be more depressed and have poor school and social functioning. If the obesity prevalence in the current generation of children continues to increase, the United States will experience its first drop in life expectancy in nearly 200 years.

Not only is the individual child affected by obesity, but society as a whole is impacted. The costs from childhood obesity and related disorders affect health care and the economy, and the costs are continually rising. It is difficult, however, to determine the true costs of obesity, and many figures are likely underestimates. One reason for the ambiguity is that obesity is not a reimbursable diagnosis, so physicians may use associated co-morbidities as alternative diagnoses. In fact, a recent study of over 8,400 children 5 to 18 years of age found that only 43 percent of obese children were actually diagnosed as such in their medical records (11). The authors also found that overweight and obese children had significantly higher outpatient medical expenses. Whether paid by public or private insurance, the health care costs of obesity affect the entire population, and as greater numbers of overweight children become obese adults, these costs will rise further. As indicated in the 2007 Georgia Obesity Program and Data Summary, "[H]ospital costs due to obesity-related diseases in children increased from \$35 million in 1979–1981 to \$127 million during 1997–1999 nationwide." Annual adult obesity-attributable medical expenditures for 1998–2000 totaled \$2.1 billion for Georgia, with \$405 million coming from Medicare and \$385 million coming from the Medicaid populations (12). In the southeastern United States, only Florida had higher obesity-related expenditures.

Additional obesity-related costs will come from the workforce, or lack thereof. Often obese people are forced to retire early due to disability and illness, which results in escalating costs of public assistance programs. These issues along with increased absenteeism and lower work productivity will also affect private organizations. This was demonstrated by General Motors, whose 26 percent obesity rate among beneficiaries cost the company \$286 million in 2004 and affected the company's ability to compete with other automakers.

## Factors Contributing to the Obesity Epidemic

A child's weight is the balance of energy intake and energy expenditure, and ultimately, these two factors are dependent upon a complex combination of influences. The environments at home, school, and in the community influence a child's food choices and the amount and type of physical activity performed.

The socioecological model (Figure 2), used by public health experts and practitioners, provides the essential framework to address obesity prevention efforts. This model illustrates the multiple inputs that ultimately influence individual health behaviors. Public health policy is an important part of the socioecological approach to addressing childhood obesity. For example, a lack of policies related to community design, school nutrition standards, or physical education (PE) requirements could potentially contribute to variations in state obesity prevalence. While many states have used the power of legislation to elicit obesity-preventing changes in communities and schools, Georgia is one of the few southeastern states lacking much needed obesity-related policy.

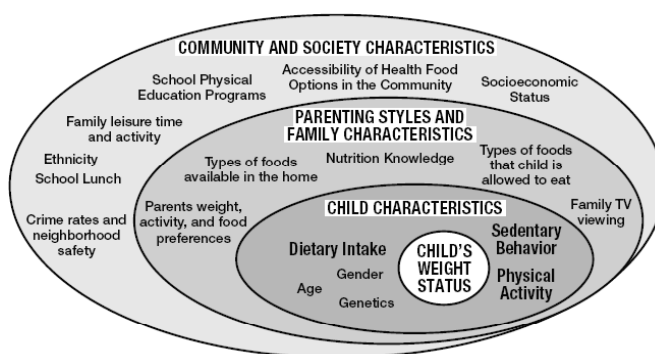


Figure 2. The Socioecological Model as It Relates to Childhood Obesity (13)

## Key Opportunities for Obesity Policy

Responsibility for policy development and implementation lies at the national and state levels of government. In order to significantly impact the high rates of childhood obesity, public health measures are needed to help children select healthier foods and become more active. The Centers for Disease Control and Prevention (CDC) recommends offsetting the current obesity-promoting environment through interventions that target communities and schools, such as increasing opportunities for children to walk to school, requiring longer and more frequent PE classes, increasing fruit and vegetable intake, decreasing intake of sugar-sweetened beverages, eating less fast food and spending less time in front of the television (14). While there are multiple intervention opportunities within the socioecological model (Figure 2), this brief will describe existing national and state childhood obesity policies at the community and school levels, where policy changes may have the most impact.

### The Role of Government

Previous public health initiatives, such as the anti-tobacco movement, have shown that the power of government is necessary in order to make significant changes. The public is asking for government's help with childhood obesity; nearly half of the U.S. population says that the government could do more about their overall health concerns. The Georgia Youth Fitness Assessment Report found that adults in Georgia favor an increase in alcohol or tobacco tax to fund initiatives promoting youth obesity prevention (8).

Arkansas is a prime example of government's capabilities in combating this public health crisis through community and school policies and interventions. At the community level, Arkansas added a two-cent sales tax per 12 ounces on soft drinks, which brings in \$40 million per year. At the school level, legislation includes the following: annual BMI assessment in schools, \$1.5 million to fund after-school nutrition programs, formation of Child Health Advisory Committees in school districts, and quarterly reporting on cafeteria foods and menus to district health committees. Through strong leadership by the governor and legislature in a variety of initiatives, Arkansas, over three years, stopped the increase in overweight prevalence among children, and the rate might even be declining (15).

### **Policy at the Community Level**

Communities can play a crucial role in preventing the obesity epidemic by providing the public access to healthy foods and safe and pleasant exercise surroundings. The Institute of Medicine (IOM) report "Preventing Childhood Obesity: Health in the Balance" contains 10 recommendations, 3 of which address the community (16). The IOM expert committee recommended that local governments, public health agencies, schools, and community organizations work collaboratively to promote healthful eating and regular physical activity, expand opportunities in the built environment for physical activity, and engage health care professionals in obesity efforts. Importantly, these community efforts must pay special attention to high-risk populations. For example, in rural areas of Georgia, where the obesity prevalence is higher than in other regions in the state, the intake of fresh fruit and vegetables may be limited by low availability of supermarkets (4). Similarly, children living in lower-income neighborhoods may have less access to school playgrounds, gymnasiums, fields, and other safe venues for playing or being physically active (17).

Numerous recommendations exist to help overcome community barriers to healthy eating and physical activity. Recommendations from the National Coalition for Promoting Physical Activity and Trust for America's Health include the following (7):

- Provide better access to healthy foods in low-income areas.
- Encourage transportation funds to be used for highway alternatives such as trails, sidewalks, and other safe routes.
- Offer crossing guards, public bike racks, open gymnasiums, and readily available medical care to encourage more community activity.
- Modernize new school site requirements.

While the impact of these activities or recommendations on obesity prevention may not be known, there are many innovative policies and interventions that hold promise.

#### *Other States' Policies*

Between 2003 and 2005, 37 percent of adopted childhood obesity-related bills and resolutions in U.S. state legislatures were aimed at supporting walking and biking paths in communities, and in 2007 both Maine and Hawaii passed bills to fund multi-use paths and trails. Legislators have also passed bills to establish and fund farmers' markets in several communities, while others are appropriating funds for obesity research. Numerous states, including Arkansas, Kentucky, Tennessee, and Texas, tax items like soft drinks and candy, allocating the proceeds to various special programs (18). For further information on other states' policies at the community level, see insert 3.

#### *Georgia's Policies*

Senate Resolution 517 formed the Senate Study Committee on Diabetes and Childhood Obesity to report on these issues and suggest proposed legislation before December 15, 2007, after which the resolution states that the committee will be abolished. For further information on Georgia's policies at the community level, see insert 1.

## **Policy at the School Level**

A 2007 report by the U.S. Department of Health and Human Services and the CDC states that it is easier and more effective to establish healthy habits early in life than to change bad habits later in life (19). Schools serve as a prime setting for delivering healthy messages and interventions because of the 54 million children and adolescents in attendance. Numerous school health programs have been initiated and effectively changed students' health behaviors. Such programs are most effective when a coordinated approach is taken that engages school health councils, administration, parents, and the community (19).

During the 2006–2007 school year, school districts participating in the National School Lunch Program (NSLP) were required to adopt and enact wellness policies that address standards for school-related nutrition and physical activity. Though these policies are a federal mandate, the government has no method for enforcing them or checking compliance. Within Georgia, the Department of Education (DOE) is responsible for enforcing the mandate; however, the DOE review occurs only every five years. One recent study found a disconnect between wellness policy existence and enforcement. It appears that there are frequent misconceptions and/or miscommunications between school principals and school food service directors regarding implementation of the new policies (20). This reflects a need for better communication and local monitoring and enforcement of wellness policies. Additional studies have also found that there is a need for funding of school wellness policies, due to increased costs associated with changing school nutrition and physical activity policies in schools across the nation (21).

### *School Foods*

Many children consume one and often two meals provided by schools per day. The federal school meal programs are an important source of nutrition for many children, and they have become more nutritious over the years. The United States Department of Agriculture (USDA) set federal school meal program guidelines that limit the amounts of total fat, saturated fat, cholesterol, and sodium in breakfast and lunch meals. Despite improvements in the federal meal program, there are still inadequate regulations on a la carte foods, vending machines, and foods sold at school events even though these items are often high in fat and sugar. Since the federal government is reluctant to enforce a la carte guidelines, regulation has been left to state Boards of Education, school districts, and the private sector. The Alliance for a Healthier Generation worked with the food and beverage industry for voluntary restrictions on vending foods sold to schools. While many companies have agreed to follow the guidelines, there are still several who are not willing to commit.

A 2007 report by the Council of State Governments Health Policy group recommends that legislators consider the following options for school nutrition (22):

- Offer financial incentives to school districts or local businesses/farmers that increase availability of healthier foods.
- Link state agriculture to schools and communities (Farm to School programs, farmers' markets, and gardening projects).
- Ensure that foods and beverages sold outside school meals are healthful.
- Encourage school districts to work with registered dietitians in deciding which foods to include on menus.

### *School Physical Activity*

Experts at the CDC and Harvard recommend using school-based interventions to target physical activity behaviors (23, 24). Schools have the opportunity to increase students' physical activity levels through recess, PE, and after-school programs. Opposition to increased PE and recess time is often related to perceptions that academic performance may suffer because class instruction time is reduced. A recent physical activity intervention in Georgia, however, has shown that PE added to the school curriculum does not negatively affect academic performance. In the study,

overweight children receiving 40 minutes per day of physical activity demonstrated an increase in standardized cognitive test scores (25). Physical activity has also been shown to positively affect students' concentration, memory, and classroom behavior (26). Since time is the major factor limiting PE and recess, schools should identify ways to incorporate activity into the curriculum by using programs such as Take 10!, Planet Health, or Coordinated Approach to Child Health (CATCH)(1). State governments, Boards of Education, and schools may need to reallocate time and financial resources for physical activity programs and PE classes, but given the scope of the obesity epidemic and its impending effects, this may well be worth the effort.

A recent study of Alabama youth found that as the time children spent viewing television increased, so did their risk of obesity (27). Additionally, children who watched two to four hours of television daily were more than twice as likely to have high blood pressure. Several interventions have shown promise in reducing sedentary time by providing students and parents with methods of monitoring and limiting TV viewing. In an intervention using the Planet Health curriculum, investigators found the most influential factor on overweight children's weight loss was a reduction in TV viewing (23). For further information on other states' policies at the school level, see insert 2. For further information on Georgia's policies at the school level, see insert 1.

### The Importance of Partnerships

The Association of State and Territorial Health Officials and the National Institute for Health Care Management Foundation studied several cases of public-private partnerships aimed at reducing childhood obesity in states around the United States. The assessment found that such collaborations positively impacted communities, with a major benefit being resource and skill sharing (28). The IOM 2007 report "Progress in Preventing Childhood Obesity: How Do We Measure Up?" acknowledges the importance of partnerships in policy development and program implementation and evaluation (29). Figure 3, from the IOM report, illustrates the mutual need for collaboration in order to close the gap that exists between intervention and evaluation efforts. For example, while opportunities exist locally to reach large audiences, a strong evaluation team is not always available. If local agencies can partner with state governments and universities, they can more effectively evaluate obesity efforts and identify programs that have the most impact. The IOM emphasizes the need for partnerships because there is a greater chance of long-term "success when public, private, and voluntary organizations merge their strengths" (29). Such partnerships may exist in the form of multidisciplinary taskforces or philanthropic collaborations.

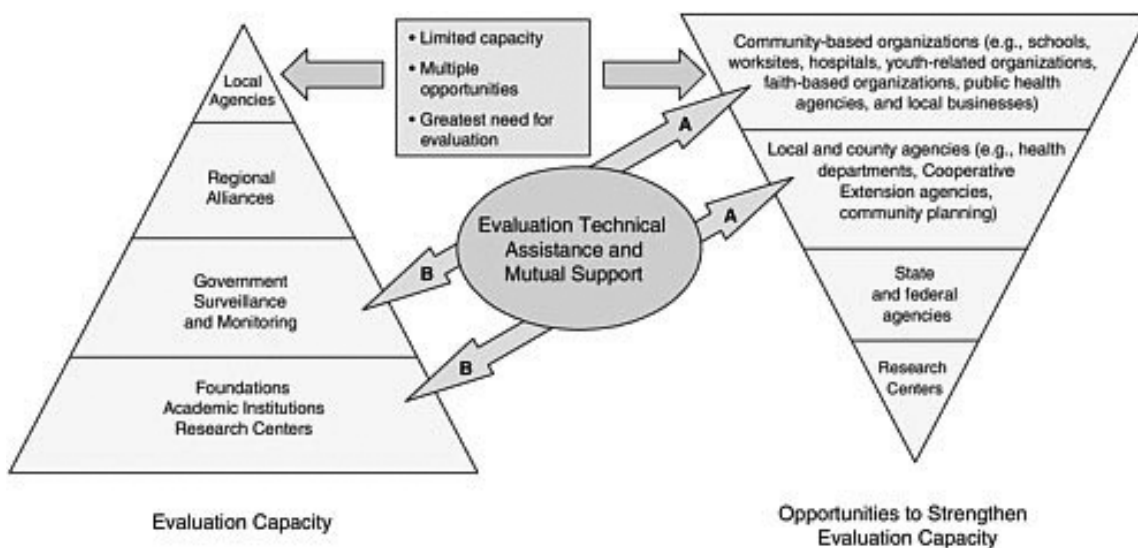


Figure 3. Closing the Evaluation Gap at the Local Level (29)

## **Multidisciplinary Taskforces**

The makeup of an obesity taskforce should be multidisciplinary and include members with expertise reflecting the society, community, family, and child characteristics described in the socioecological model (Figure 2). A national taskforce that exemplifies this diverse makeup is the IOM Committee on Prevention of Obesity in Children and Youth, supported by the National Academy of Sciences, National Institutes of Health, CDC, and the Robert Wood Johnson Foundation. Members of the committee are from academia, industry, and government, with expertise ranging from nutrition, community health, exercise science, and public health policy to economics, communications, and behavioral science. Committees like this IOM committee and other obesity taskforces utilize the varied expertise in gathering and evaluating the evidence, making recommendations and disseminating information to appropriate audiences and stakeholders. For further information on Georgia's childhood obesity taskforces, see insert 1.

## **Philanthropic Initiatives**

Philanthropic organizations have been responsible for funding and guiding childhood obesity initiatives throughout the nation and in Georgia. In 2006 alone, the Robert Wood Johnson Foundation, for example, committed nearly \$42 million in funding for 128 grants related to childhood obesity across the nation. The Alliance for a Healthier Generation, formed by the American Heart Association and the William J. Clinton Foundation, is partnering with the Robert Wood Johnson Foundation to expand a program to help schools in states with the highest rates of childhood obesity, including Georgia. In Georgia, Healthcare Georgia Foundation has been at the forefront of childhood obesity prevention efforts in communities and schools. In May 2006 they awarded over \$1 million to six Childhood Physical Activity and Nutrition Program (CPAN) grantees in Georgia.

## **Georgia's Initiatives with Philanthropic Support**

- Several philanthropic organizations including Georgia's Action for Healthy Kids are helping schools develop individualized wellness policies.
- The Atlanta Community Food Bank partners with communities and local schools to maintain community gardens. One Georgia high school has had a garden for over seven years.
- The Healthcare Georgia Foundation and the Atlanta Falcons Youth Foundation have given grants to various YMCA locations to offer an after-school program, Youth Fit for Life, in many schools around metropolitan Atlanta.
- HealthMPowers, a nonprofit organization located in Atlanta, received funding from Blue Cross Blue Shield to partner with Georgia schools in offering schoolwide nutrition and physical education. Their programs provide teachers and school staff with resources to easily include lessons in the daily curriculum.
- Healthcare Georgia Foundation provides funding for PLAY, a research initiative between Georgia State University, the Medical College of Georgia, and the University of Georgia. PLAY collaborates with other groups to identify and disseminate promising strategies to increase physical activity in youth.
- Healthcare Georgia Foundation currently funds six community grants (CPAN) to prevent childhood obesity and increase physical activity in school-age children outside Atlanta. The University of Georgia Nutrition Intervention Lab is also funded by Healthcare Georgia Foundation to assist in the evaluation of the projects. Current grantees are as follows:
  - HealthMPowers is implementing nutrition and physical activity education programs in seven schools in Greene and Walton counties with the help of local School Health Councils.

- The Lowndes County Board of Health is using funds in two middle schools to form Wellness Councils, offer before- and after-school programs, and assess BMI, blood pressure, and dietary and activity behaviors.
- Northwest Georgia Healthcare Partnership has programs in Murray County, Whitfield County, and Dalton public schools to implement new school policies and use appropriate curriculum materials to improve health, nutrition, and physical education.
- The Southwest Georgia Community Health Institute is implementing an overweight prevention program targeting students, parents, and staff in Albany, Georgia. Assessments include BMI, fitness, and physical activity behaviors.
- The U.S. Disabled Athletes Fund is offering a program to disabled children in K–8 grades in two Georgia communities. The program includes development of school curricula, an after-school fitness club, and fitness assessments.
- The YMCA of Metro Atlanta is expanding its Youth Fit for Life after-school program to elementary school in Coweta, Fayette and Henry counties. The program consists of cardiovascular activities, strength-building exercises, behavior skills training, and nutrition/health education.

## Evaluation and Surveillance

There are many policies and interventions being implemented to fight childhood obesity. In most cases, however, it is not known whether these initiatives are successful. According to the expert committee who authored the IOM 2007 report, “Evaluation is central to identifying and disseminating effective initiatives—whether they are national or local programs, large- or small-scale efforts” (29).

In addition to monitoring local changes in BMI or weight status, the IOM committee recommends using surveillance systems such as the Youth Risk Behavior Survey and public opinion polls to monitor attitude and behavior changes. There are several exemplary state programs that require assessing BMI, fitness testing, and other kinds of monitoring. For further information on evaluation and surveillance efforts in Georgia, see insert 1.

## Assessing Body Mass Index

- Arkansas was the first state (2003) to require BMI assessment in school children. Their third annual assessment shows that their efforts have stopped the increase in childhood obesity, and prevalence might be declining. The Arkansas Center for Health Improvement developed the most comprehensive system of collecting and analyzing BMI.
- Tennessee passed legislation in 2005 allowing schools to measure BMI and send the results as health report cards to parents. They are also required to send results to the state Department of Health.
- West Virginia’s governor lobbied federal officials in 2007 to allow the use of some Children’s Health Insurance Program funds to be used for obesity screening of students in kindergarten, second, fifth, and eighth grades. Additionally, the largest provider of Medicaid in the state began training and distributing BMI wheels to physicians to help prevent and treat childhood obesity.
- Pennsylvania’s Department of Health mandated statewide weight and height measurements by school nurses (2006). The program began in elementary schools and is to expand by 3 grades each year until all 12 grades are included. The department provides training, materials, and guidance for BMI screening.

## **Fitness Testing in Schools**

- Several states including Alabama and West Virginia require fitness testing at some grade levels, while many others including North Carolina, South Carolina, and Tennessee encourage fitness testing in public schools.
- In 2007 the Texas legislature passed a bill mandating fitness testing in all public schools for grades 3 and higher. Fitness test results will be sent to the Texas Education Agency to compare the fitness data with grades, attendance, discipline, school meal programs, and obesity rates.

## **Other Monitoring in Schools**

- Arkansas requires each school district, on a quarterly basis, to provide to the district's Child Health Advisory Committee information on menus and foods sold in school cafeterias.
- Florida requires school districts to submit to the Department of Education copies of local school wellness policies and PE policies.
- Illinois requires that health exams given by the state Department of Public Health include height and weight measurement. The department is required to maintain the data from local school boards.

## **Summary**

The high rates of childhood obesity pose serious threats to Georgians' future quality of life and lifespan as well as the state's economy. States around the country, including most southeastern states, are facing the same problems, and many are taking aggressive measures to ensure the future health of their residents. Innovative community and school policies designed to improve diet and physical activity behaviors of children and adolescents have been implemented in other high-risk southern states, and these policies deserve consideration.

In the 2007 IOM report "Progress in Preventing Childhood Obesity: How Do We Measure Up?" the expert committee examined the country's recent progress in reducing/preventing childhood obesity (29). They made specific recommendations addressing the government's role, which include the following: (1) provide leadership and sustained commitment by establishing a task force to prioritize and coordinate efforts; (2) evaluate policies and programs for effectiveness, with particular regard to cultural relevance; (3) monitor progress and conduct research by developing or improving surveillance systems and increasing/prioritizing funding for such research; and (4) disseminate promising practices to the public and commit long term to such efforts. For further information on policy opportunities for Georgia's communities and schools, see insert 1.

Effective policies and interventions aimed at preventing the obesity epidemic are needed in Georgia's communities and schools. Some Georgia schools and communities have adopted promising obesity prevention activities into their existing programs; however, these efforts are scattered, and many lack sufficient evaluation of impact. Philanthropic organizations have assumed significant responsibility for funding and guiding childhood obesity initiatives in Georgia. In addition to the private sector, communities and schools in Georgia need long-term commitments from government to help identify solutions and turn the epidemic around. State governments should lead obesity prevention efforts by committing sufficient resources and adopting policies that foster healthy lifestyles throughout communities, schools and all levels of society (29). As the expert committee summarized in the 2007 IOM report, "A long-term commitment to create a healthy environment for our children and youth is urgently needed" (29).

## References

1. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. 2006. Prevalence of overweight and obesity in the United States, 1999–2004. *Journal of the American Medical Association*, 295:1549–1555.
2. Tudor-Locke C, Kronenfeld J, Kim S, Benin M, Kuby J. 2007. A geographical comparison of prevalence of overweight school-aged children: The National Survey of Children's Health 2003. *Pediatrics*, 120(4): e1043–e1050.
3. Falb M, Kanny D. January 2006. *Obesity in Georgia's 3rd grade children*. DPH06.004HW. Georgia Department of Human Resources, Division of Public Health. Atlanta.
4. Lewis RD, Meyer MC, Lehman SC, Trowbridge FL, Bason JJ, Yurman KH, Yin Z. 2006. Prevalence and degree of childhood and adolescent overweight in rural, urban, and suburban Georgia. *Journal of School Health*, 76(4): 126–132.
5. Centers for Disease Control and Prevention. 2006. Youth risk behavior surveillance—United States, 2005. Surveillance summaries, June 2006. *Morbidity and Mortality Weekly Report*, 55(SS-5).
6. Cassidy D, Jetter KM, Culp J. 2007. Is price a barrier to eating more fruits and vegetables for low-income families? *Journal of the American Dietetic Association*, 107(11): 1909–1915.
7. Trust for America's Health. August 2007. *F as in fat: How obesity policies are failing in America 2007*. Washington, DC. [www.healthymamericans.org](http://www.healthymamericans.org).
8. Philanthropic Collaborative for a Healthy Georgia. September 2007. *Georgia Youth Fitness Assessment 2006*. Atlanta.
9. Schwimmer J, Burwinkle T, Varni J. 2003. Health-related quality of life of severely obese children and adolescents. *Journal of the American Medical Association*, 289: 1813–1819.
10. Swallen K, Reigher E, Haas S, Meier A. 2005. Overweight, obesity, and health-related quality of life among adolescents: The National Longitudinal Study of Adolescent Health. *Pediatrics*, 115(2): 340–347.
11. Hampl S, Carroll C, Simon S, Sharma V. 2007. Resource utilization and expenditures for overweight and obese children. *Archives of Pediatrics and Adolescent Medicine*, 161(1): 11–14.
12. Finkelstein EA, Fiebelokrn IC, Wang G. 2004. State-level estimates of annual medical expenditures attributable to obesity. *Obesity Research*, 12:18–24.
13. Georgia Child and Family Policy Initiative. 2005. *Childhood obesity: What are the states doing?* Georgia Family Impact Seminars. University of Georgia. Athens.
14. Centers for Disease Control and Prevention. 2003. *Promising practices in chronic disease prevention and control: A public health framework for action*. Georgia Department of Health and Human Services. Atlanta.
15. Arkansas Center for Health Improvement. August 2006. *Tracking progress: The third annual Arkansas assessment of childhood and adolescent obesity*. Little Rock.
16. Institute of Medicine. 2005. *Preventing childhood obesity: Health in the balance*. National Academies Press. Washington, DC.
17. Powell L, Slater S, Chaloupka F. 2004. The relationship between community physical activity settings and race, ethnicity and socioeconomic status. *Evidence Based Preventive Medicine*, 1(2): 135–144.
18. National Conference of State Legislatures. April 2007. *Childhood obesity: 2006 update and overview of policy options*. Denver. [www.ncsl.org/programs/health/ChildhoodObesity-2006.htm](http://www.ncsl.org/programs/health/ChildhoodObesity-2006.htm).
19. Centers for Disease Control and Prevention. 2007. *Healthy youth: An investment in our nation's future 2007*. U.S. Department of Health and Human Services. Washington, DC.
20. Nollen N, Befort C, Snow P, Makosky Daley C, Ellerbeck E, Ahluwalia J. 2007. The school food environment and adolescent obesity: Qualitative insights from high school principals and food service personnel. *The International Journal of Behavioral Nutrition and Physical Activity*, 4(18).
21. Kann L, Brener N, Wechsler H. 2007. Overview and summaries: School health policies and programs study 2006. *Journal of School Health*, 77(8): 385–397.
22. Council of State Governments. 2004. *Talking points: Using school nutrition to address obesity*. Lexington, KY. [www.healthystates.csg.org](http://www.healthystates.csg.org).
23. Gortmaker S, Peterson K, Wiecha J, Sobol A, Dixit S, Fox MK, Laird N. 1999. Reducing obesity via a school-based interdisciplinary intervention among youth. *Archives of Pediatric and Adolescent Medicine*, 153:409–418.
24. Centers for Disease Control and Prevention. 2007. Tips for parents—ideas and tips to help prevent childhood overweight. [http://www.cdc.gov/nccdphp/dnpa/obesity/childhood/tips\\_for\\_parents.htm](http://www.cdc.gov/nccdphp/dnpa/obesity/childhood/tips_for_parents.htm). Accessed November 2007.
25. Davis C, Phillip D, Tomporowski P, Boyle C, Waller J, Miller P, Nagliere J, Gregoski M. 2007. Effects of aerobic exercise on overweight children's cognitive functioning: A randomized controlled trial. In press.
26. Strong W, Malina R, Bumke C, Daniels S, Dishman R, Gutin B, Hergenroeder A, Must A, Nixon P, Pivarnik J, Rowland T, Trost S, Trudeau F. 2005. Evidence based physical activity for school-age youth. *Journal of Pediatrics*, 55:732–737.
27. Pardee P, Norman G, Lustig R, Preud'homme D, Schwimmer J. 2007. Television viewing and hypertension in obese children. *American Journal of Preventive Medicine*, 33(6): 439–443.
28. Association of State and Territorial Health Officials and the National Institute for Health Care Management Foundation. 2007. *Childhood obesity: Harnessing the power of public and private partnerships*. Washington, DC.
29. Institute of Medicine. 2007. *Progress in preventing childhood obesity: How do we measure up?* National Academies Press. Washington, DC.



## Acknowledgments

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