The Challenge We Face

The childhood obesity epidemic in America is a national health crisis. One in every three children (31.7%) ages 2-19 is overweight or obese.[1] The life-threatening consequences of this epidemic create a compelling and critical call for action that cannot be ignored. Obesity is estimated to cause 112,000 deaths per year in the United States,[2] and one third of all children born in the year 2000 are expected to develop diabetes during their lifetime.[3] The current generation may even be on track to have a shorter lifespan than their parents.[4]

Along with the effects on our children's health, childhood obesity imposes substantial economic costs. Each year, obese adults incur an estimated $1,429 more in medical expenses than their normal-weight peers.[5] Overall, medical spending on adults that was attributed to obesity topped approximately $40 billion in 1998, and by 2008, increased to an estimated $147 billion.[6] Excess weight is also costly during childhood, estimated at $3 billion per year in direct medical costs.[7]

Childhood obesity also creates potential implications for military readiness. More than one quarter of all Americans ages 17-24 are unqualified for military service because they are too heavy.[8] As one military leader noted recently, "We have an obesity crisis in the country. There's no question about it. These are the same young people we depend on to serve in times of need and ultimately protect this nation."[9]

While these statistics are striking, there is much reason to be hopeful. There is considerable knowledge about the risk factors associated with childhood obesity. Research and scientific information on the causes and consequences of childhood obesity form the platform on which to build our national policies and partner with the private sector to end the childhood obesity epidemic. Effective policies and tools to guide healthy eating and active living are within our grasp. This report will focus and expand on what we can do together to:

1. create a healthy start on life for our children, from pregnancy through early childhood;
2. empower parents and caregivers to make healthy choices for their families;
3. serve healthier food in schools;
4. ensure access to healthy, affordable food; and
5. increase opportunities for physical activity.

What is Obesity?

Obesity is defined as excess body fat. Because body fat is difficult to measure directly, obesity is often measured by body mass index (BMI), a common scientific way to screen for whether a person is underweight, normal weight, overweight, or obese. BMI adjusts weight for height,[10] and while it is not a perfect indicator of obesity,[11] it is a valuable tool for public health.

Adults with a BMI between 25.0 and 29.9 are considered overweight, those with a BMI of 30 or more are considered obese, and those with a BMI of 40 or more are considered extremely obese.[12] For children and adolescents, these BMI categories are further divided by sex and age because of the changes that occur

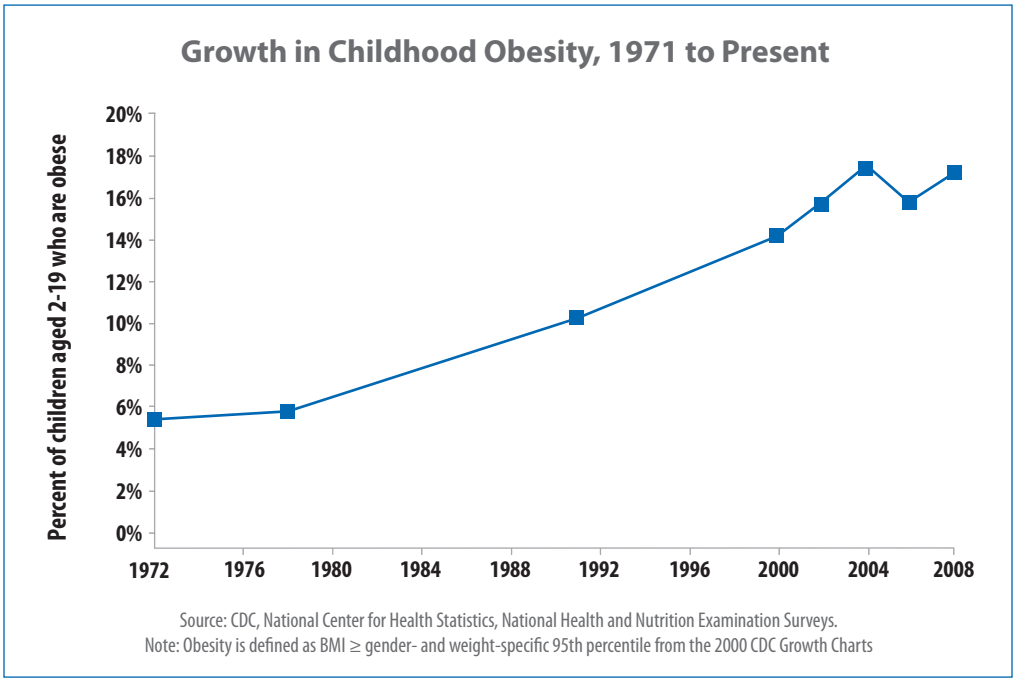
during growth and development. Growth charts from the Centers for Disease Control and Prevention (CDC) are used to calculate children's BMI. Children and adolescents with a BMI between the 85th and 94th percentiles are generally considered overweight, and those with a BMI at or above the sex-and age-specific 95th percentile of population on this growth chart are typically considered obese.

Determining what is a healthy weight for children is challenging, even with precise measures. BMI is often used as a screening tool, since a BMI in the overweight or obese range often, but not always, indicates that a child is at increased risk for health problems. A clinical assessment and other indicators must also be considered when evaluating a child's overall health and development.[13]

Who Does Obesity Impact? Prevalence and Trends

By gaining a deeper understanding of individuals who are impacted by obesity, we can better shape policies to combat it. Since 1980, obesity has become dramatically more common among Americans of all ages. Prevalence estimates of obesity in the U.S. are derived from the National Health and Nutrition Examination Survey (NHANES), conducted by the National Center for Health Statistics of the CDC. Between the survey periods 1976–80 and 2007–08, obesity has more than doubled among adults (rising from 15% to 34%), and more than tripled among children and adolescents (rising from 5% to 17%).[14]

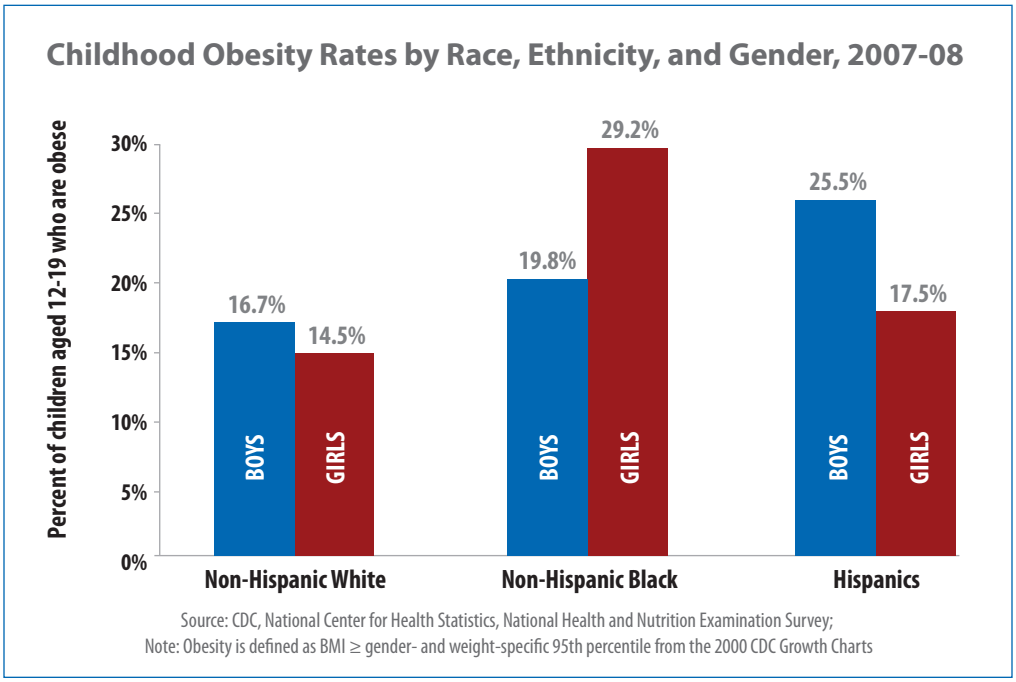
The rapid increase in childhood obesity in the 1980s and 1990s has slowed, with no significant increase in recent years.[15] However, among boys ages 6–19, very high BMI (at or above the 97th percentile) became more common between 1999–2000 and 2007–08; about 15% of boys in this age group are in this category.[16]



Source: CDC, National Center for Health Statistics, National Health and Nutrition Examination Surveys.
Note: Obesity is defined as BMI ≥ gender- and weight-specific 95th percentile from the 2000 CDC Growth Charts

Race/Ethnic Disparities

Childhood obesity is more common among certain racial and ethnic groups than others. Obesity rates are highest among non-Hispanic black girls and Hispanic boys. Obesity is particularly common among American Indian/Native Alaskan children. A study of four year-olds found that obesity was more than two times more common among American Indian/Native Alaskan children (31%) than among white (16%) or Asian (13%) children. This rate was higher than any other racial or ethnic group studied.[17]



Socioeconomic Disparities

Among adults, obesity rates are sometimes associated with lower incomes, particularly among women. Women with higher incomes tend to have lower BMI, and the opposite is true, those with higher BMI have lower incomes.[18] A study in the early 2000s found that about 38% of non-Hispanic white women who qualified for the Supplemental Nutrition Assistance Program (known then as food stamps), were obese, and about 26% of those above 350% of the poverty line were obese.[19] Also, a recent study of American adults found lower rates of obesity among individuals with more education. Specifically, the study found that nearly 35% of adults with less than a high school degree were obese, compared to 21% of those with a bachelor's degree or higher.[20]

The relationship between income and obesity in children is less consistent than among adult women,[21]and sometimes even points in the opposite direction. Another study from the early 2000s found that only among white girls were higher incomes associated with lower BMI. Among African-American girls, the prevalence of obesity actually increased with higher socioeconomic status, suggesting that efforts to reduce ethnic disparities in obesity must target factors other than income and education, such as environmental, social, and cultural factors.[22]

Regional Disparities

Across the country, the prevalence of obesity has been found to be highest in southeast states such as Alabama, Mississippi, South Carolina, Tennessee, and West Virginia, as well as in Oklahoma. It is lowest in Colorado.[23] Another study showed obesity was most common among adults in the Midwest and the South, as well as among adults who did not live in metropolitan areas.[24]

How Does Obesity Impact Our Health?

Obese adults have an increased risk for many diseases, including type 2 diabetes, heart disease, some forms of arthritis, and several cancers.[25] Overweight and obese children are more likely to become obese adults.[26] Specifically, one study found that obese 6-8 year-olds were approximately ten times more likely to become obese adults than those with lower BMIs.[27] The association may be stronger for obese adolescents than younger children.[28] Obese children are also more likely to have increased risk of heart disease.[29] One study found that approximately 70% of obese children had high levels (greater than 90th percentile) of at least one key risk factor for heart disease, and approximately 30% had high levels of at least two risk factors.[30] There is evidence that heart disease develops in early childhood and is exacerbated by obesity,[31] and people as young as 21 have been found to display early physical signs of heart disease due to obesity.[32] Obese children are also more likely to develop asthma.[33]

Obesity is the most significant risk factor for type 2 diabetes, a disease once called "adult onset diabetes" because it occurred almost exclusively in adults until childhood obesity started to rise substantially. The number of hospitalizations for type 2 diabetes among Americans in their 20s has gone up substantially, for example.[34] A 2001 study found that more than 75% of children ages 10 and over with type 2 diabetes were obese.[35] Type 2 diabetes occurs more frequently among some racial and ethnic minority groups, and rates among American Indians are particularly high.[36]

In addition to the physical health consequences, severely obese children report a lower health-related quality of life (a measure of their physical, emotional, educational, and social well-being). In fact, one study found that they have a similar quality of life as children diagnosed with cancer.[37] Childhood obesity is a highly stigmatized condition, often associated with low self-esteem, and obese children are more likely than non-obese children to feel sad, lonely, and nervous.[38] Obesity during childhood is also associated with some psychiatric disorders, including depression and binge-eating disorder, which may both contribute to and be adversely impacted by obesity.[39]

What Causes Obesity?

Early Life

A child's risk of becoming obese may even begin before birth. Pregnant women who use tobacco, gain excessive weight, or have diabetes give birth to children who have an increased risk of being obese during their preschool years.[40] Furthermore, although the evidence is not conclusive,[41] rapid weight gain in early infancy has been shown to predict obesity later in life.[42] Racial and ethnic differences in obesity may also be partly explained by differences in risk factors during the prenatal period and early life.[43]

Studies show that early influences can affect obesity rates. The increased occurrence of obesity among children of obese parents suggests a genetic component.[44] Multiple twin and adoption studies also indicate a strong genetic component to obesity.[45] However, genes associated with obesity were present in the population prior to the current epidemic; genes only account for susceptibility to obesity and generally contribute to obesity only when other influences are at work. Genetic susceptibility to obesity is significantly shaped by the environment.[46] In addition to genetic factors, recent research has focused on other factors, such as maternal nutrition, environmental toxins, and the prenatal environment, which may shape later risk for childhood obesity.

Environmental Factors During Childhood

There have been major changes in Americans' lifestyles over the last 30 years, as childhood obesity rates have been rising. This includes what and where we eat. Given the pace of modern life, Americans now consume more fast-food and sugar-sweetened beverages, eat outside the home more frequently,[47] and spend less time enjoying family meals. In addition, prepared and processed food is easily accessible and inexpensive. These items are also heavily promoted, as evidenced in a Federal Trade Commission (FTC) report revealing that at least $1.6 billion is spent annually on food advertising directed to children and adolescents.[48] All this adds up to poor eating habits. For example, 13% of the daily caloric intake for 12-19 year-olds now comes from sugar-sweetened beverages.[49]

At the same time, adults and children alike are getting less physical activity. Some schools have cut back on activities like physical education and recess, in part due to budget pressures at the state and local level. And children are increasingly driven to school by car or bus, rather than walking or biking.[50] In part, these shifts in transportation reflect changes in community design. Physical activity is higher in more "connected" communities that provide safe and reliable access to public transportation, as well as other forms of active transport like biking and walking.[51]

Meanwhile, "screen time" has increased, including television viewing, which is directly associated with childhood and adult obesity.[52] Among children, watching television or time spent on computers or gaming systems takes away from engaging in physical activity like organized sports or informal playing. It also has a more harmful effect on healthy eating habits; as children watch television, they are more likely to snack, including on the foods advertised.[53] In addition, screen time has been associated with children getting less and poorer quality sleep,[54] and insufficient sleep has been linked to a heightened risk of obesity.[55]

What Can We Do?

While additional studies to identify the precise causes of obesity will be useful, we do not need to wait to identify specific actions that we can take as a society to prevent obesity. There are many examples of effective therapies for diseases whose cause has not been fully identified. For example, remission rates of acute lymphocytic leukemia in children have been dramatically improved over the last 20 years, although the causes of the disease remain uncertain.

No single action alone will reverse the childhood obesity epidemic, although there is no question that improving eating habits and increasing physical activity are two critical strategies. As with tobacco prevention and control, comprehensive, multi-sectoral approaches are needed to address the many

behavioral risk factors associated with obesity.[56] These risk factors fall into three general categories: (1) material incentives, such as the cost of food or the desire to avoid poor health; (2) social norms, such as the nutritional and physical activity habits of friends and family, which influence us greatly; and (3) the broader environment, such as whether grocery stores and playgrounds are nearby or far away. Changes in each of these risk factors are possible. For example, with sound information, parents and caregivers will be able to seek out the most nutritious foods to improve their children's health; changes in social norms can be brought about through movements such as the successful seatbelt buckling campaigns of the late 20th century; and changes can be made in the broader environment by eliminating "food deserts" or "playground deserts."

In many parts of the country, we already have a head start, and initiatives that are already underway will provide instructive lessons. Comprehensive, community-wide efforts to reduce obesity have recently been initiated by both the public and private sectors. The American Recovery and Reinvestment Act of 2009 included $1 billion in funding for prevention and wellness investments, more than half of which was directed to prevention strategies to reduce tobacco use and obesity rates. Specifically, $373 million supported direct community-based interventions and $120 million supported state-based efforts in all 50 states and 25 communities in urban, rural, and tribal areas. Funds to support comprehensive strategies were awarded to states in February and to communities in March. The recently-enacted Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act (collectively referred to as the "Affordable Care Act") provides for additional investments in chronic disease and improving public health, which could include community-based prevention strategies. In addition, the philanthropic sector has been leading the way with stepped-up, focused investments. For example, the Robert Wood Johnson Foundation has created a "Healthy Kids, Healthy Communities" initiative that is funding 50 communities to implement strategies to prevent childhood obesity,[57] and the California Endowment recently launched a large-scale "Building Healthy Communities" project in 14 communities that will include a focus on childhood obesity prevention.[58]

Reducing childhood obesity does not have to be a costly endeavor, however. And indeed, in many communities it simply cannot be. Times are tough, and federal, state, local, and family budgets are all feeling squeezed. But a great deal can be accomplished without significant expenditures, and some steps may ultimately save money.[59] While many of the recommendations in this report will require additional public resources, creative strategies can also be used to redirect resources or make more effective use of existing investments.

In total, this report presents a series of 70 specific recommendations, many of which can be implemented right away. Summarizing them broadly, they include:

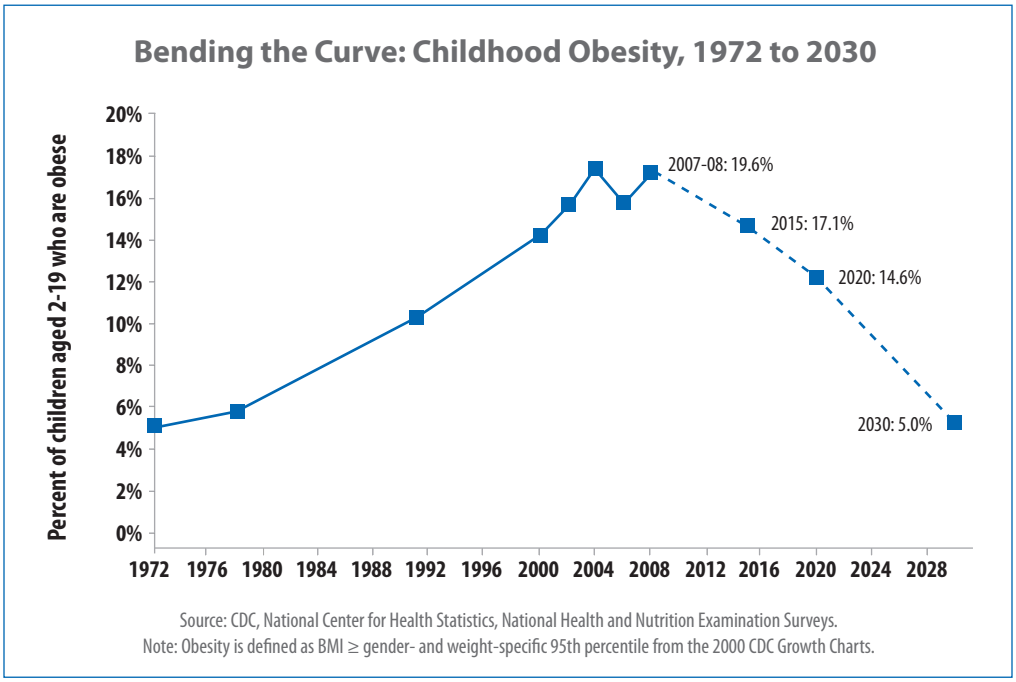
- **Getting children a healthy start on life**, with good prenatal care for their parents; support for breastfeeding; adherence to limits on "screen time"; and quality child care settings with nutritious food and ample opportunity for young children to be physically active.
- **Empowering parents and caregivers** with simpler, more actionable messages about nutritional choices based on the latest *Dietary Guidelines for Americans*; improved labels on food and menus that provide clear information to help make healthy choices for children; reduced marketing of unhealthy products to children; and improved health care services, including BMI measurement for all children.

- **Providing healthy food in schools**, through improvements in federally-supported school lunches and breakfasts; upgrading the nutritional quality of other foods sold in schools; and improving nutrition education and the overall school environment.
- **Improving access to healthy, affordable food**, by eliminating "food deserts" in urban and rural America; lowering the relative prices of healthier foods; developing or reformulating food products to be healthier; and reducing the incidence of hunger, which has been linked to obesity.
- **Getting children more physically active**, through quality physical education, recess, and other opportunities in and after school; addressing aspects of the "built environment" that make it difficult for children to walk or bike safely in their communities; and improving access to safe parks, playgrounds, and indoor and outdoor recreational facilities.

Many of these recommendations are for activities to be undertaken by federal agencies. All such activities are subject to budgetary constraints, including the weighing of priorities and available resources by the Administration in formulating its annual budget and by Congress in legislating appropriations.

How Will We Know We Have Succeeded?

Our goal is to solve the problem of childhood obesity in a generation. Achieving that goal will mean returning to the expected levels in the population, before this epidemic began. That means ***returning to a childhood obesity rate of just 5% by 2030***. Achieving this goal will require "bending the curve" fairly quickly, so that by 2015, there will be a 2.5% reduction in each of the current rates of overweight and obese children, and by 2020, a 5% reduction. Our progress can be charted through the CDC's annual National Health and Nutrition Examination Survey (NHANES), which is aggregated every two years.



Source: CDC, National Center for Health Statistics, National Health and Nutrition Examination Surveys.
Note: Obesity is defined as BMI ≥ gender- and weight-specific 95th percentile from the 2000 CDC Growth Charts.

In addition to monitoring the overall trends in childhood obesity, two key indicators will show the progress achieved:

1. **The number of children eating a healthy diet**, measured by those who follow the most recent, science-based *Dietary Guidelines for Americans (Dietary Guidelines)*. We can monitor our progress through the U.S. Department of Agriculture's (USDA) Healthy Eating Index (HEI), which reflects the intake of 12 dietary components: total fruit (including juice); whole fruit (not juice); total vegetables; dark green and orange vegetables and legumes; total grains; whole grains; milk products; meat and beans; oils; saturated fat; sodium; and calories from solid fats and added sugars. USDA generally regards a score of at least 80 out of 100 points as reflecting a healthy diet. Currently, the average child scores a 55.9 on the HEI.[60] To achieve a score of 80 for the average child by 2030, the average child should score 65 by 2015, and 70 by 2020. Two indicators should be monitored particularly closely:
   - **Less added sugar in children's diets.** Children today consume a substantial amount of added sugars through a whole range of products. Using existing data sources, CDC's National Center for Health Statistics can determine how much added sugar children are currently consuming. Targets for reducing added sugar will then need to be established that track the overall goal of driving obesity rates down to 5% by 2030.
   - **More fruits and vegetables.** Currently, children and adolescents consume far lower quantities of fruits and vegetables than recommended in the *Dietary Guidelines*. On average, children consumed only 64% of the recommended level of fruit and 46% of the recommended level of vegetables in 2003-04. Average fruit consumption should increase to 75% of the recommended level by 2015, 85% by 2020, and 100% by 2030; vegetable consumption should increase to 60% of recommended levels by 2015, 75% by 2020, and 100% by 2030.
2. **The number of children meeting current physical activity guidelines.** Right now, the only regular survey that shows whether children are meeting the Physical Activity Guidelines is limited to high school students, and regular data on younger children is not available. Resources will have to be redirected to develop a survey instrument that can provide a full picture of physical activity levels among children of all ages. Once baseline data is available, targets for improving the level of physical activity among children will need to be established that track the overall goal of driving obesity rates down to 5% by 2030.

Additional benchmarks of success, tied to specific recommendations in this report, are included throughout. The Healthy People goals set every decade by experts convened by the U.S. Department of Health and Human Services will provide additional, complementary opportunities to measure our progress in helping children achieve and maintain a healthy weight.

Monitoring our progress and the impact of our interventions, so that we know what is working and what strategies or tactics need to be adjusted, will be critically important. This is not an easy challenge, but it is one that we can solve as a society, and within a generation.