

CHILDHOOD OBESITY



UNDERSTANDING AND ADDRESSING AN EPIDEMIC



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PART 1

Introduction / Over the last three decades, childhood obesity rates have increased rapidly. However, only in recent years has the issue gained immense public attention as a health care crisis. Even in 2000, childhood obesity was treated as a problem that could be reigned in quickly. Upon release of Healthy People 2010, the U.S. Department of Health and Human Services announced a ten-year goal of cutting childhood obesity rates in half, from 11% to 5%. Five years later, the goal had “moved away from its target,”¹ and 17% of America’s youth were overweight or obese.

Today, 33%—one-third of our children and adolescents—are either obese or at risk for becoming obese,² and health care leaders are using urgent language to describe the problem. Charles Homer, president of the National Initiative for Children’s Healthcare Quality and associate professor of pediatrics at Harvard Medical School, has declared, “Childhood obesity is without doubt the most pressing threat confronting the future health and well-being of the U.S. population.”³

Overweight and obesity are associated with four of the ten leading causes of death, including heart disease, stroke, type 2 diabetes and some types of cancer. In 2000, obesity-related costs topped \$117 billion, straining an already financially burdened health care system. Obesity presents across genders, ages, income levels, geographic areas, races and ethnicities. Families facing obesity and related health complications are in every city, town, neighborhood, office, church and classroom in America, including MetroWest.

While childhood obesity is widely acknowledged as a problem that must be addressed, a solution is hard to come by. However, in the literature on this topic, consensus emerges in one area: there is no singular or simple course of action for addressing overweight and obesity. Rather, a multidimensional, multifaceted, multistage approach will be required across multiple settings. The task ahead will require participation from all segments of the public and private community.

Understanding the facts is the first step in working toward a solution. The MetroWest Community Health Care Foundation created this report to highlight the main elements of the obesity epidemic—particularly as it affects children and adolescents—and the efforts of the Foundation and its partners to combat the problem. ■

DEFINING THE PROBLEM

THE LANGUAGE

“OBESITY AND OVERWEIGHT ARE DEFINED AS AN ACCUMULATION OF EXCESS BODY FAT, TO AN EXTENT THAT MAY IMPAIR HEALTH.”⁴

WORLD HEALTH ORGANIZATION

Adults / For adults, overweight and obesity ranges are determined by using height and weight information to calculate a number called the body mass index (BMI). BMI allows adults to compare their own weight status to that of the general population. It is an inexpensive and easy-to-use screening tool for both clinicians and the general public. The standard weight status categories associated with BMI, for both men and women, are as follows:

- BMI 18.5 or below = Underweight
- BMI 18.5–24.9 = Normal
- BMI 25–29.9 = Overweight
- BMI 30 or above = Obese

While the BMI measure can identify possible weight problems for adults, it is not a diagnostic tool. For example, a person may have a high BMI, but to determine if excess weight is a health risk, a healthcare provider would need to perform further assessments such as blood pressure, diet, physical activity, and family history evaluations.

Here is an example of BMI status for a 5'9" adult:

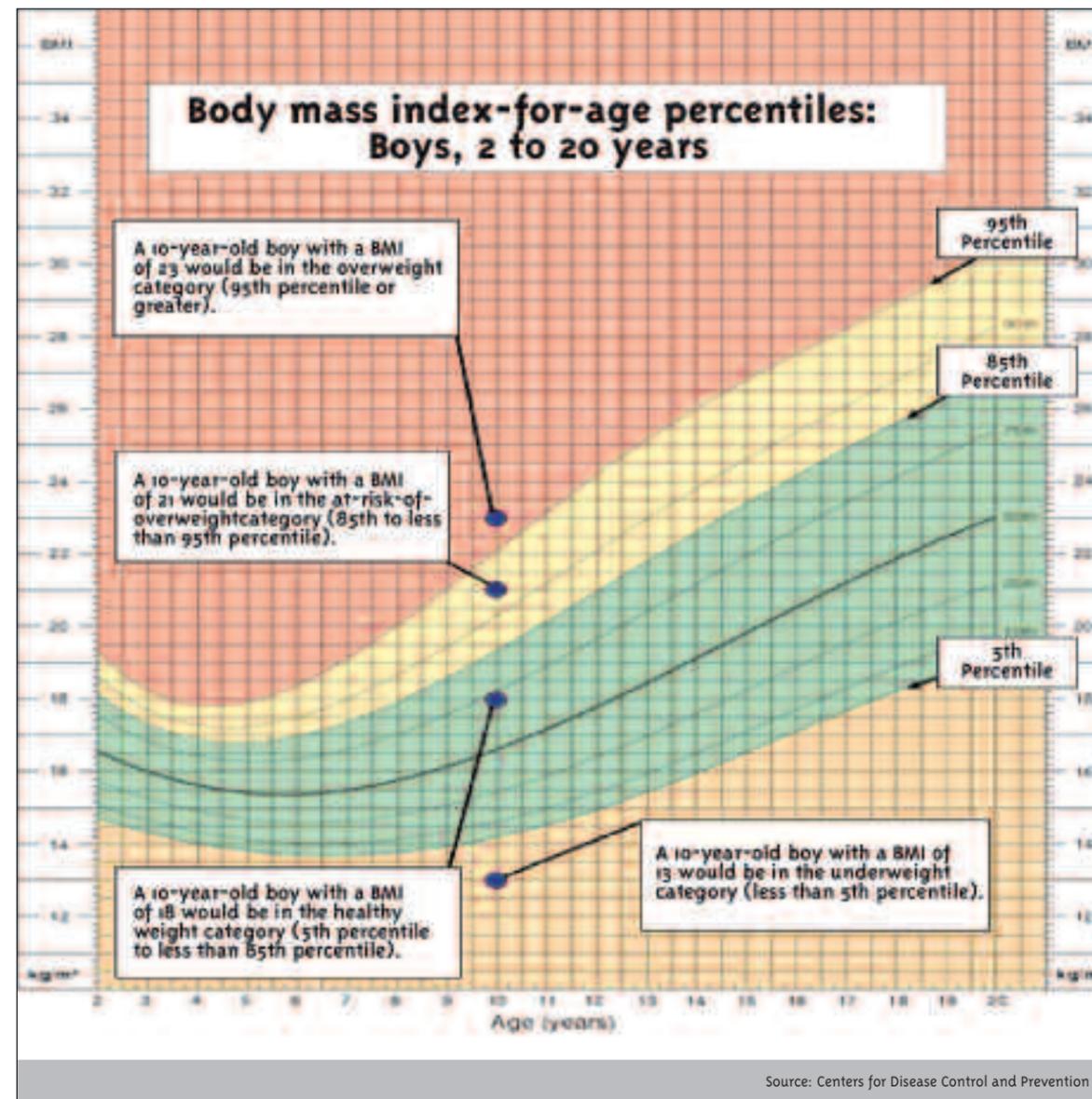
Height	Weight Range	BMI	Weight Status
5'9"	124 lbs or less	Below 18.5	Underweight
	125 lbs to 168 lbs	18.5 to 24.9	Normal
	169 lbs to 202 lbs	25.0 to 29.9	Overweight
	203 lbs or more	30 or higher	Obese

Source: Centers for Disease Control and Prevention

Children and Adolescents / For children and adolescents under 18 years of age, weight status is determined by an age- and sex-specific BMI scale. After BMI is calculated, the number is plotted along growth charts to obtain a percentile ranking. The percentile indicates the relative position of the child's BMI number among children of the same sex and age. As with adults, BMI is not a diagnostic tool for children. A child may have a high BMI for age and sex, but to determine if excess weight is a problem, a health care provider would need to perform further assessments. The Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics recommend BMI screenings for children beginning at two years of age.⁵ (see chart on right) ▶

Of Note / There has been considerable debate about describing children and adolescents as obese. Some organizations classify children between the 85th and 95th BMI percentile ranking as "at risk of overweight," and those above the 95th percentile as "overweight." Others use the terms "overweight" and "obese," respectively, to describe the same percentiles. Some dissenters are concerned that children described as "obese" will suffer from stigma and social discrimination; others believe that children might grow into their weight and should not be classified prior to adulthood.

Nonetheless, in June 2007, the Expert Committee on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity recommended that "overweight" and "obese" become



standard classification terms for children. Among the participants on the committee are the American Academy of Pediatrics, the American Medical

Association, the American Dietetic Association, the American Academy of Child and Adolescent Psychiatry, and the National Association of School Nurses. ■

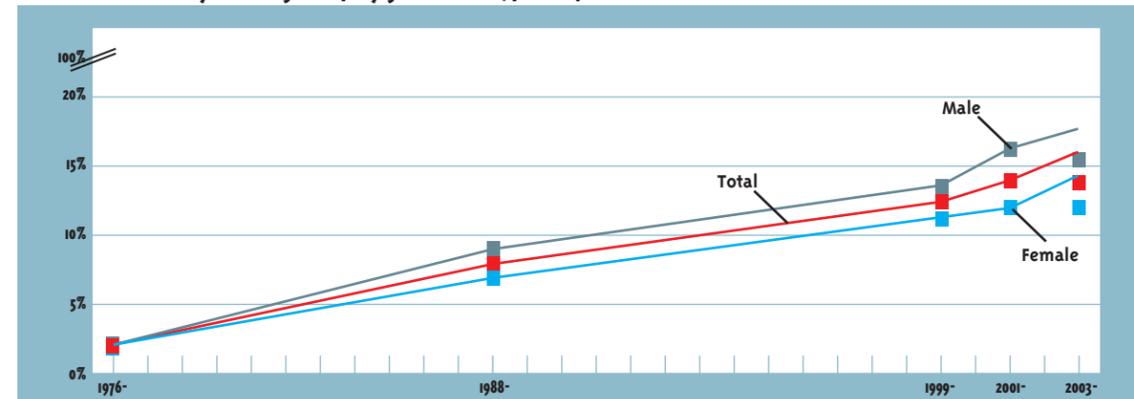
DEFINING THE PROBLEM

THE DATA

“THE MOST IMPORTANT THING TO NOTE IS THAT THE OBESITY EPIDEMIC IN THIS COUNTRY INVOLVES NOT JUST ADULTS, NOT JUST ADOLESCENTS, NOT JUST SCHOOL-AGE CHILDREN, BUT ALL THE WAY DOWN TO INFANTS. NO AGE GROUPS ARE SPARED.”⁶

MATTHEW GILLMAN, HARVARD MEDICAL SCHOOL

U.S. Childhood Obesity Rates, ages 6-17, by gender from 1976-2004⁷



Source: Forum on Family and Child Statistics

As the graph illustrates, the percentage of overweight and obese children from age 6 to 17 has tripled in recent decades:

- 1976-1980: 6%
- 1988-1994: 11%
- 1999-2000: 15%
- 2001-2002: 17%
- 2003-2004: 18%

Although the chart leaves out children under 6, the very young are also at risk for obesity. Nationwide, obesity rates for children aged 2 to 5 increased from 5% to 14% over the timeline above.⁸ If a child is overweight or obese, there is a strong likelihood he or she will remain so into adolescence and adulthood. In 2001, *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity* reported that 60% of overweight pre-schoolers and 80% of overweight elementary school children stayed overweight or obese as teens. Those teens then had a 70% chance of being overweight or obese adults—80% if one or both parents were overweight or obese.⁹

MetroWest Data / The 2006 MetroWest Adolescent Health Survey provides recent, local data about childhood obesity rates. Here in MetroWest, 20.4% of 7th and 8th grade students¹⁰ and 19.9% of high school students are overweight or obese.¹¹ These statistics compare favorably to the 2005 Youth Risk Behavior Survey, which identified 28.8% of high school students nationwide and 26.8% of high school students in Massachusetts as overweight or obese.¹²

The 2006 MetroWest Adolescent Health Survey reported several key findings about local students:¹³

- Obesity is more likely to affect males than females.
- Unhealthy weight control strategies such as fasting, taking diet pills, and vomiting are a greater issue for females.
- Unhealthy eating, specifically fast food and soda consumption, is associated with obesity.
- Regardless of actual weight status, students who perceive themselves to be obese reported more stress and mental health issues than those who did not perceive themselves as obese. ■

CLINICAL REPERCUSSIONS

THIS IS NOT ABOUT LOOKS

“YOUTH OF TODAY MAY, ON AVERAGE, LIVE LESS HEALTHY, AND POSSIBLY EVEN SHORTER LIVES THAN THEIR PARENTS.”¹⁴

NEW ENGLAND JOURNAL OF MEDICINE

Individuals who are overweight or obese are at increased risk for many diseases and health complications. The CDC identifies the following health risks:¹⁵

- Hypertension (high blood pressure)
- Osteoarthritis (a degeneration of cartilage and its underlying bone within a joint)
- Dyslipidemia (high total cholesterol or high levels of triglycerides)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Sleep apnea and respiratory problems
- Some cancers (endometrial, breast and colon)

Children and adolescents are not immune from these health problems. The risk factors for heart disease, such as high cholesterol and high blood pressure, occur more frequently in overweight and obese children than in children of healthy weight. According to the CDC, approximately 60% of obese children have at least one risk factor for heart disease, while 25% have two or more risk factors. There has also been a marked increase in Type 2 diabetes in children and adolescents. Previously considered an adult disease, early onset can result in advanced complications such as heart disease and kidney failure. In addition, overweight and obese children may experience asthma, sleep apnea and hepatic steatosis, the fatty degeneration of the liver.¹⁶ ■



A Physician's Perspective

RALPH SHERMAN, M.D.
DIRECTOR OF DIABETES DIVISION,
METROWEST MEDICAL CENTER
AFFILIATED STAFF, BETH ISRAEL
DEACONESS MEDICAL CENTER
DEPARTMENT OF MEDICINE

The growing presence of childhood and adolescent obesity has led to the *co-occurrence of risk factors for Type 2 diabetes and cardiovascular disease*. As clinicians, we have traditionally witnessed these diseases in middle to late adulthood, but they can now be demonstrated in children.

Some obese or overweight youths possess elements of the *metabolic syndrome*, which is a combination of several metabolic and physical traits that lay the foundation for premature disease. The syndrome is defined as abdominal obesity including increased waist circumference, elevated blood glucose or insulin levels (insulin resistance), dyslipidemia (elevated blood fats and reduced good [HDL] cholesterol), and blood pressure above the 90th percentile for age, sex and height.

There are several newly appreciated biochemical markers and early pathologic changes that serve as harbingers of approaching metabolic and cardiovascular disease. These are more strikingly apparent in members of the Hispanic and African American

continued on next page

populations who are seriously overweight. The *biochemical markers* include:

- Elevated C-reactive protein—an indicator of low-grade blood vessel inflammation associated with risk for cardiovascular disease, diabetes and future cognitive decline in adults.
- Depressed adiponectin levels—a hormone released by fat cells, the presence of which is universally related to the degree of obesity. The reduction in this hormone may contribute to enhanced atherosclerosis, elevated blood sugar and fatty liver disease.
- Microalbuminuria—a urinary protein, detected in youth with increased waist circumference and metabolic syndrome. It indicates early kidney dysfunction and enhanced risk for end-stage kidney disease.

If we perform non-invasive assessments of affected organs in adolescents who have metabolic syndrome, we see the following *early pathologic changes*:

- Enlargement of the left side of the heart, the main pumping chamber
- Heart rhythm disturbances
- Blood vessel changes, including poor elasticity of the arteries in the arms and increased thickness of the carotid arteries—which may impede blood flow to the brain later in life

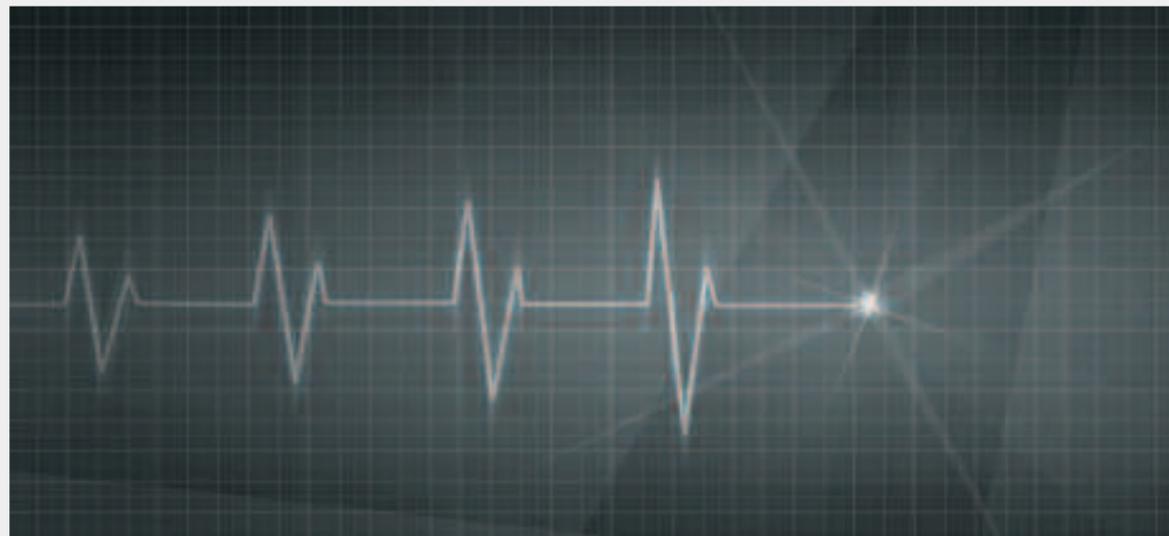
In addition, a series of autopsies of young persons dying from accidental injuries has revealed *early atherosclerosis in coronary arteries*, related to the severity of metabolic syndrome factors in existence before death.

It can then be concluded that the metabolic syndrome and the future development of Type 2 diabetes represent a public health time bomb.

The findings of two national studies, STOP Type 2 Diabetes Prevention Study Group and The Search for Diabetes in Youth, demonstrate the high prevalence of risk factors for diabetes and cardiovascular disease in minority youth.

The pre-diabetic state involves fasting glucose levels exceeding 100 mg. Once this level is noted, the progression to Type 2 diabetes is more rapid in youth than in adults. Prescriptions for anti-diabetic drugs for children ages 5–19 doubled between 2003 and 2005. In MetroWest, the adult form of diabetes (Type 2) is now present in one-third of diabetic children. Therefore, the development of youth screening programs would seem not only vital but cost effective.

If we can stem the factors that cause obesity in our MetroWest communities with aggressive lifestyle modification, we may prevent the high incidence of Type 2 diabetes in youth, a costly and tragic outgrowth of the metabolic syndrome.



DISPARITIES

RACE, INCOME AND OBESITY

“DISPARITIES IN OBESITY AND OVERWEIGHT ADD TO THE HEALTH CARE BURDEN OF POPULATIONS ALREADY DISPROPORTIONATELY UNINSURED AND EXPERIENCING DISPARITIES IN CARE.”¹⁷

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

While childhood obesity has increased among all races and ethnicities over time, data show significant spikes for some racial and ethnic groups. Non-Hispanic black girls exhibit particularly high rates of overweight and obesity, opposing the general trend of boys having a higher BMI than girls. American children aged 12–19 exhibit the following obesity rates:¹⁸

Non-Hispanic black girls:	25.4%
Non-Hispanic white girls:	15.4%
Mexican American girls:	14.1%
Non-Hispanic white boys:	19.1%
Non-Hispanic black boys:	18.5%
Mexican American boys:	18.3%

For many years, research showed large differences in obesity rates based on household income. Families with low incomes showed substantially higher obesity rates than higher income families. While the gap has not closed, it has narrowed considerably. According to Jennifer G. Robinson, M.D., M.P.H., associate professor of epidemiology at the University of Iowa, “Obesity prevalence now is similar across all income categories, with...the highest income group rapidly approaching that of the lowest.”¹⁹ A study co-authored by Dr. Robinson revealed the following statistics:

Obesity in families with income below \$25,000:	Obesity in families with income above \$60,000:
1971–1974: 22.5%	1971–1974: 9.7%
2001–2002: 32.5%	2001–2002: 26.8%
44% increase	176% increase

Despite this shift, low-income children still have a disadvantage. Thomson Medstat, a health care research company, found that obese children insured by Medicaid are less likely to visit the doctor and more likely to visit the emergency room compared to children with private health insurance. According to the findings, “this situation may suggest that inadequate outpatient services for children with Medicaid allow their health to deteriorate until urgent medical care is required.”²⁰ ■

THE BOTTOM LINE IT'LL COST YOU

“THE ADDED WEIGHT OF THE OBESITY EPIDEMIC TO OUR ALREADY AILING HEALTH SYSTEM IS CAUSING IT TO BURST AT THE SEAMS.”²¹

SHELLEY HEARNE, TRUST FOR AMERICA'S HEALTH

Overweight and obesity and their associated health problems have a significant economic impact on the U.S. health care system. Direct costs for adults, including preventive, diagnostic and treatment services, are estimated to range from \$98 billion to \$129 billion per year, approximately half of which is paid by the publicly funded programs Medicare and Medicaid.²² Indirect costs, including decreased productivity, restricted activity, absenteeism, and the value of future income lost by premature death, are more difficult to capture, but are estimated to be substantial.²³

The annual taxpayer cost of obesity in children is estimated at \$14 billion, and growing rapidly. Statistics from Thomson Medstat highlight the problem:

- Children treated for obesity are approximately three times more expensive for the health system than the average insured child.
- Children diagnosed with obesity are two to three times more likely to be hospitalized.
- Annual healthcare costs are about \$6,700 for children treated for obesity covered by Medicaid and about \$3,700 for obese children with private insurance.²⁴

Overweight and obesity impose not only financial strain but psychosocial costs that affect quality of life for children and adults. According to *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*, “the most immediate consequence of overweight, as perceived by children themselves, is social discrimination.”²⁵ The CDC reports that the stress of social discrimination can cause a chain reaction, beginning with poor self-esteem and leading to decreased academic and social functioning, and that these problems may “persist into adulthood.”²⁶ ■

SIMPLE MATH OR IS IT?

“DESPITE OBESITY HAVING STRONG GENETIC DETERMINANTS, THE GENETIC COMPOSITION OF THE POPULATION DOES NOT CHANGE RAPIDLY. THEREFORE, THE LARGE INCREASE IN [OBESITY]... MUST REFLECT MAJOR CHANGES IN NON-GENETIC FACTORS.”²⁷

JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS



The non-genetic sources of obesity are based on the simple concept of energy balance. The CDC uses the “energy balance scale” to demonstrate how food and beverage consumption coupled with physical activity affect our weight.

Energy balance is like a scale. When the number of calories consumed equals the number of calories used, one's weight remains constant. However, when the number of calories consumed is unequal to the number of calories expended, the scale tips, and the result is weight change. *Weight gain* happens when more calories are consumed than used. *Weight loss* happens when fewer calories are consumed than used.²⁸

While the concept of energy balance seems simple enough, managing calorie consumption and expenditure is complicated. Often, both sides of the scale contain imperfect information. Many people are unaware of the number of calories they need each day, the number of calories in the food they eat, and the amount of exercise required to burn those calories. Education is critical for making good decisions about energy balance, and will be presented as a component of the energy balance scale throughout this report. ■

CALORIES CONSUMED

THE WAY WE EAT NOW

“AMERICANS NOW SPEND MORE ON FAST FOOD THAN ON HIGHER EDUCATION, PERSONAL COMPUTERS OR NEW CARS.”²⁹

ERIC SCHLOSSER, *FAST FOOD NATION*

Recent decades have brought enormous changes in the food and beverage industry. Advances in food-related technology, production, transportation, safety, storage and marketing have changed the way we think about and consume food. Today we enjoy a plentiful supply of inexpensive, convenient, highly palatable, calorie-dense foods and drinks.³⁰ Food manufacturers are willing to spend big bucks to make sure we know about their products; in 1999 food advertising totaled \$7.3 billion dollars.³¹

The amount of foods and beverages consumed away from home has grown consistently in the past thirty years.³² The US Department of Agriculture reports that dining out now accounts for over 40% of annual food spending per American household.³³ A look at the health research findings in this area helps us understand why overweight and obesity are so prevalent:

- A single restaurant meal can provide 50 to 100 percent of a day’s caloric intake.³⁴
- One quarter of the vegetables eaten in the United States are in the form of French fries.³⁵
- Consuming fast food more than twice per week increases the risk of obesity by 50%.³⁶
- Children consume almost twice as many calories at a restaurant meal compared to an average meal at home.³⁷
- Children dined out three times as often in 1996 compared to 1977.³⁸

While food manufacturers continuously create and introduce new products, existing foods are reinvented to meet our “bigger is better” American culture. Since the 1980s, portion sizes have been on the rise, without major price hikes that might deter consumers. The National Alliance for Nutrition and Activity points out, “Larger portions not only

provide more calories, but studies show that when people are served more food, they eat more food.”³⁹

The National Heart Lung and Blood Institute has documented the Portion Distortion phenomenon in several familiar foods. The following chart illustrates some of the Institute’s findings. ■

Changes in Food Portions⁴⁰

20 Years Ago	Today	Difference
<u>Coffee with whole milk and sugar</u> 8 ounce serving size 45 calories	<u>Mocha with steamed milk and syrup</u> 16 ounce serving size 350 calories	305 calories
<u>Muffin</u> 1.5 ounce serving size 210 calories	<u>Muffin</u> 4 ounce serving size 500 calories	290 calories
<u>Pepperoni pizza</u> 2 slices 500 calories	<u>Pepperoni pizza</u> 2 slices 850 calories	350 calories
<u>Chicken Caesar salad</u> 1.5 cup serving size 390 calories	<u>Chicken Caesar salad</u> 3.5 cup serving size 790 calories	400 calories

Summed up simply, Americans’ tastes have changed.⁴¹



CALORIES USED

HAVE WE STALLED?

“THE BOTTOM LINE IS THAT SEDENTARY LIVING CONTRIBUTES TO OBESITY AND CHRONIC DISEASES LATER IN LIFE.”⁴²

CHARLES CORBIN, ARIZONA STATE UNIVERSITY

While calorie consumption climbs ever higher, calorie use has declined, tilting the energy balance scale dramatically. Physical activity is an essential tool for burning calories and maintaining a healthy weight. The National Association for Sport & Physical Education has clear recommendations in this area:

- Children should accumulate at least 60 minutes, and up to several hours, of age appropriate physical activity on all, or most days of the week.
- Children should participate in several bouts of physical activity lasting 15 minutes or more each day.
- Children should participate each day in a variety of age-appropriate physical activities designed to achieve optimal health, wellness, fitness and performance benefits.
- Extended periods (periods of two hours or more) of inactivity are discouraged for children, especially during the daytime hours.⁴³

Despite these recommendations, three quarters of American children do not get even half an hour of daily exercise.⁴⁴

Physical education and recess, once hallmarks of the typical school day, have become intermittent events in many schools. According to health expert Charles Corbin, activities that are not subject to formal assessment are getting short shrift: “Without any question, the number one barrier to physical activity in schools is the perception that time spent in activity such as physical education and recess will undermine academic learning.”⁴⁵ The CDC says that students are less and less physically active in school as they get older,⁴⁶ and that in 2003, only 28% of high school students participated daily in physical education.⁴⁷

While many studies show that physical activity supports learning, there is no federal law that requires public schools to have physical education.⁴⁸ Recess is also on the decline. According to Action for Healthy Kids, a national partnership of over 50 nutrition- and fitness-related organizations, only 4% of states require that elementary schools provide recess, and 22% recommend it.⁴⁹ In 2001, nearly 30% of elementary schools did not regularly offer recess for their young students.⁵⁰

Physical activity outside of school has also declined. Thirty years ago, walking or biking to school was a daily source of exercise for almost 90% of children who lived within a mile of their school. Today a growing student body is attending fewer, larger schools that are farther from home. Longer commutes are one reason that the use of automobiles for transportation to and from school has tripled over the same time period. Nearly one quarter of morning traffic during the school year is from parents driving children to school.⁵¹ In addition to school commutes, American families drive to do many local errands. The CDC reports, “Although 25% of all trips in the United States are less than a mile, 75% of those trips are taken by car.”⁵² The report’s authors identify neighborhood safety and community design as factors that contribute to the trend.⁵³ ■

THE ULTIMATE OFFENDER SCREEN TIME

"TV REDUCTION APPEARS TO BE THE MOST EFFECTIVE MEASURE IN REDUCING WEIGHT GAIN."⁵⁴
WILLIAM DIETZ, CENTERS FOR DISEASE CONTROL AND PREVENTION

A March 2007 study reported that American children (ages 6 to 13) spend an average of 5.5 hours in front of the television, computer and video-game screen every day.⁵⁵ The study, *Reducing Children's TV Time to Reduce the Risk of Childhood Overweight*, was conducted by the Children's Media Use Study Team, including members of RTI International, the Annenberg Public Policy Center and CDC Consultants. The typical family in this study owned four working televisions sets, and 46% had a TV in an eating area.⁵⁶ The study also noted that parents' estimates of their children's average daily screen time were lower than the children's reports, and that "parents admitted that they found it difficult to keep track of children's time with media, and this was particularly the case with videogame use."⁵⁷

The association between screen time, particularly television viewing, and childhood obesity is being studied closely. The Children's Media Use Study Team reported two main factors in the relationship. First, that television use may act as a substitute for physical activity, thereby decreasing calories used. Second, that children increase their snacking during television viewing, thereby increasing calories consumed.⁵⁸ One mother interviewed by the study team described her nine-year-old daughter's TV habit: "She would just watch it. She just sits there and eats. She'll finish something and she'll get up to get something else... She just doesn't realize what she's doing and how much she's eating and how much she's watching."⁵⁹

It is also important to consider the type of foods consumed in front of the television. Experts at the 2007 American Heart Association Annual Conference pointed out: "Just as more TV watching was associated with increased intakes of less healthful foods and nutrients...it was also associated with decreased intakes of more healthful foods and nutrients, including fruits and vegetables, calcium and dietary

fiber."⁶⁰ The combination of these factors, repeated over time, may shift the energy balance scale towards weight gain.

To add to the problem, screens are the premier vehicle for advertisers. Epidemiologists reported in 2004 that while watching TV, children view an average of one food commercial every five minutes; nearly half of these commercials advertise foods high in fat, sugar and sodium, particularly fast foods and high-sugar cereals.⁶¹ According to the authors, "Purchase requests for specific brands or categories of food products reflect product advertising frequencies."⁶²

Experts agree that parents can have a positive influence on their children's health by limiting screen time. The American Heart Association recommends parents keep televisions out of their children's bedrooms, and limit screen time to one to two hours per day.⁶³ The CDC recommends children have no more than two hours of screen time per day, and the American Academy of Pediatrics suggest parents eliminate screen time entirely for children aged two and under.⁶⁴

The CDC's Youth Media Campaign offers parents tips for reducing their children's screen time, including:

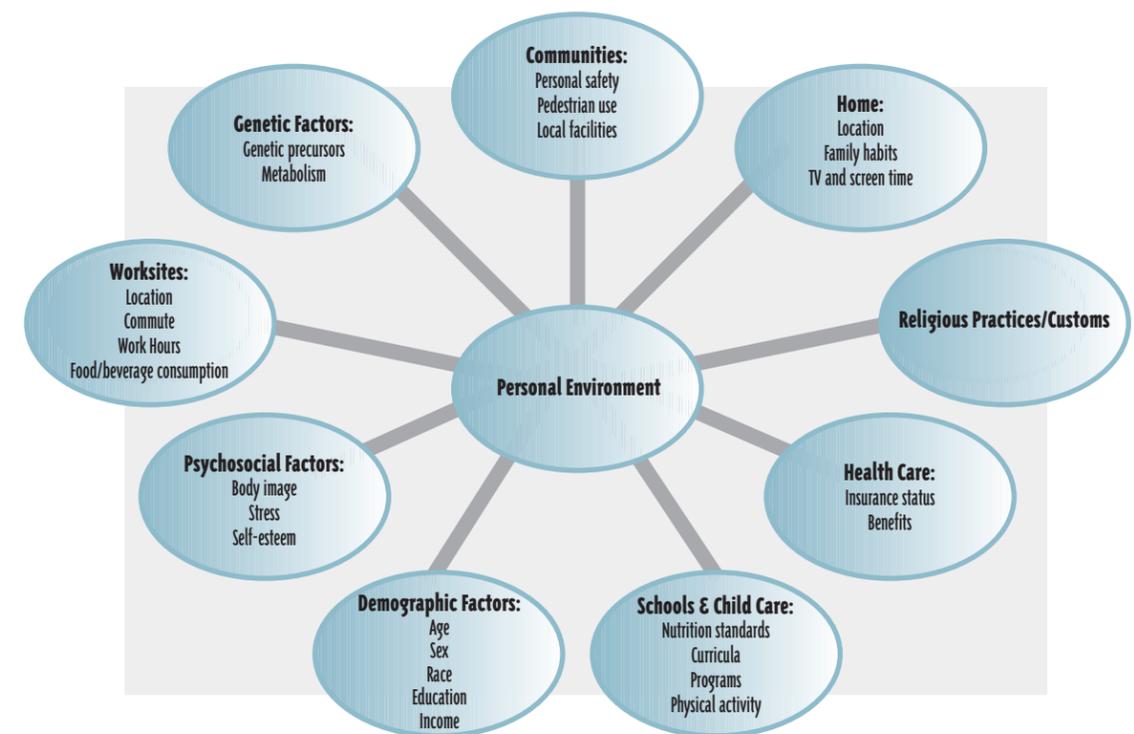
- View television programs with children and discuss the content.
- Use the VCR to show or record high-quality, educational programming for children.
- Suggest several options for positive physical and prosocial activities that are available through local park districts, schools, and community programs.
- Encourage alternative activities for children, including hobbies, athletics, and creative play.
- Serve as a good role model; be active when viewing television and surfing the Internet in the home.⁶⁵ ■

PERSONAL RESPONSIBILITY VS. PUBLIC DUTY POINTING YOUR FINGER DOES NOT COUNT AS EXERCISE

"IF SUCCESSFUL PROGRAMS ARE TO BE DEVELOPED TO PREVENT DISEASE AND IMPROVE HEALTH, ATTENTION MUST BE GIVEN NOT ONLY TO THE BEHAVIOR OF INDIVIDUALS, BUT ALSO TO THE ENVIRONMENTAL CONTEXT WITHIN WHICH PEOPLE LIVE."⁶⁶
INSTITUTE OF MEDICINE

Daily decisions and long-term habits have a major impact on our energy balance. The diagrams on this page and the next highlight some of the factors that influence our behavior, often without our realizing it.

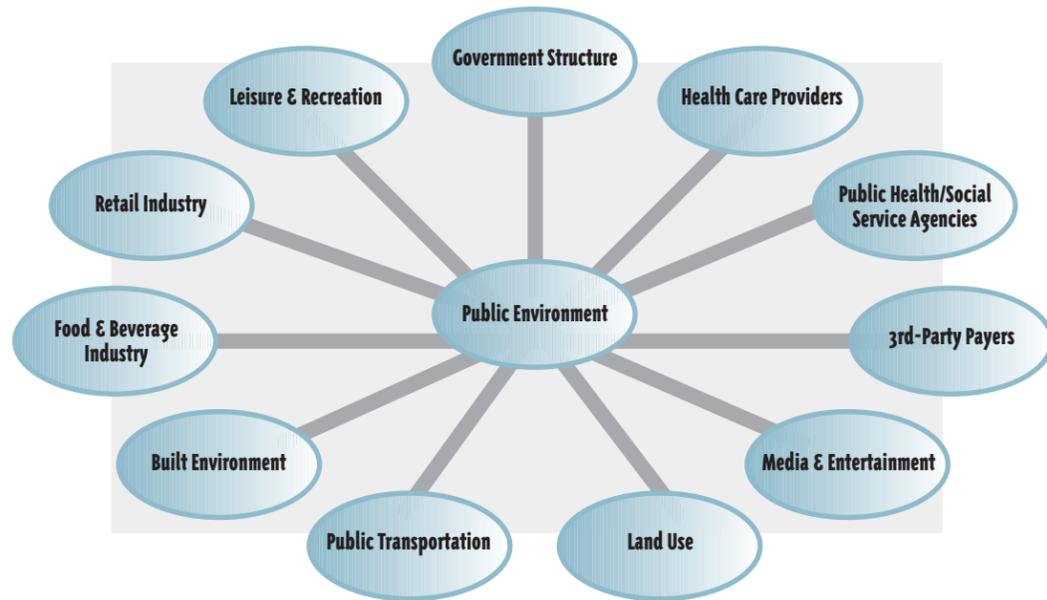
The diagrams reveal the number and complexity of factors that contribute to childhood obesity and offer opportunities for positive change.



While some aspects of the personal environment are pre-determined (such as race, sex, and other genetic precursors), many areas may be influenced by our individual decisions. Consider, for example, the "Smith" family. Over the past two years, the Smiths have phased a series of healthy behaviors into their personal environment:

- Bicycle or walk for an hour every day before work and school.

- Prepare healthy lunches to bring to work and school to limit food purchases.
- Restrict TV time to one hour a day.
- Eat dinner as a family at least four nights a week.
- Include all family members in grocery shopping and meal preparation.
- Get involved in athletic activities and events at school and work.



The Smiths' ability to turn their ambitions for a healthy personal environment into reality was in many ways influenced by the public environment around them. Let us examine some of the characteristics of "Town X," where the Smiths live.

- Town X is a medium-sized suburb. The Smiths live on a street without heavy traffic, and they know most of their neighbors.
- Many of the streets in Town X have sidewalks and crosswalks.
- There is a supermarket in Town X that has a good variety of fruits and vegetables, as well as a coupon program for special savings on healthy foods.
- Town X has several well lit public parks and a community center that families can use on week-days and weekends.
- The school system in Town X is replacing all of the soda and candy in their vending machine with water, 100% juice, low-fat milk, whole-grain snacks and yogurt.

- Town X governing officials have created several annual town-wide athletics events and convened a volunteer task force to get families involved.

Many components of the public environment in Town X support the Smiths' new healthy lifestyle. It is difficult to imagine where the Smiths would walk or bicycle if Town X did not have any sidewalks and there was heavy traffic on the streets. Likewise, their commitment to healthy meal preparation and eating dinner as a family would be very difficult without a supermarket in town, fresh produce available, or price incentives to buy healthy food.

The intersection of our personal and public environment may go unnoticed day to day, but it bears strongly on our ability to improve our health and weight. Tipping the energy balance scale to reduce childhood obesity requires change in both environments, so that one does not eclipse the other. ■

WHERE IT PLAYS OUT

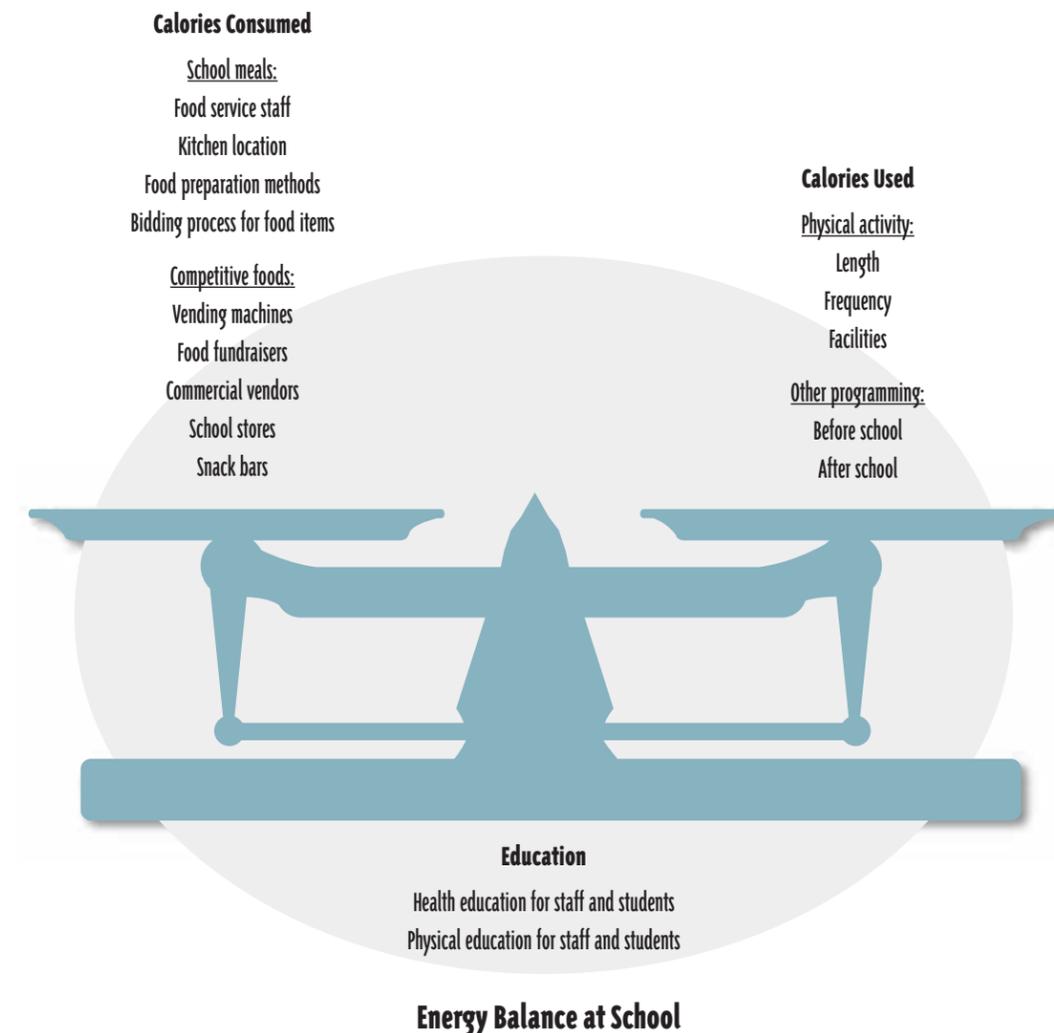
SCHOOLS IN THE CROSSHAIRS

"SCHOOLS ARE IN A UNIQUE POSITION TO PLAY A PIVOTAL ROLE IN PROMOTING HEALTHY LIFESTYLES AND HELPING TO PREVENT OBESITY."⁶⁷

INTERNATIONAL JOURNAL OF OBESITY

Schools have become a popular target for people who want "something done" about childhood obesity. After all, schools have the children, food, mealtime, playgrounds, athletics, educators, coaches and more. While schools can and should play an important role in our children's overall health, their efforts to

address overweight and obesity are tempered by other pressures. Academic accountability, resource constraints and administrative processes have real and unique effects on every school. They influence student energy balance in a variety of ways, as the following diagram illustrates. ■



Recognizing the role schools play in our children's health and weight, the government has begun to establish policy initiatives around food and exercise. Of particular interest is the "School Wellness Policy" mandate, applicable to any school district participating in the National School Lunch and/or Breakfast Program. As outlined by the Child Nutrition and WIC Reauthorization Act of 2004, wellness policies had to be implemented by the 2006-2007 school year to address specific nutrition and physical-activity areas, and tie back to school-meal regulations.

According to the Food Research and Action Center, school wellness policies must address:

- goals for nutrition education
- goals for physical activity
- nutrition guidelines for all foods available at school
- goals for other school-based activities designed to promote student wellness
- assurances that school meals guidelines are not less restrictive than federal requirements
- plans for evaluating implementation of the policy⁶⁸

In an effort to engage a variety of stakeholders in the policy-development process, the Child Nutrition and WIC Reauthorization Act seeks to involve parents, students, school food-service staff, the school board, school administrators, and the public. Surely the policy intent has merit: to help protect and improve children's health through adequate levels of physical activity and good nutrition during the school day. However, as with any other mandate, the devil is in the details, and the details are clear:

Congress provided no funds to facilitate the creation or adoption of wellness policies.⁶⁹ Despite the challenges of an unfunded mandate, Janet Schwartz, Chair of the Department of Food and Nutrition at Framingham State College, suggests the time may be right for change: "People who never sat around the table before are now sitting around the table... physical education people, cafeteria people, the after-school staff, administrators...they're all talking about how to make kids healthier."⁷⁰ ■



A MetroWest Resource

THE JOHN STALKER INSTITUTE

Framingham State College, one of the Foundation's grantees, is home to the John Stalker Institute. The Institute has partnered with the Department of Education to create an online resource center to help schools and community stakeholders create school wellness policies. Resources at www.johnstalkerinstitute.org include:

- Tips for assembling a wellness team
- Information about policy requirements
- Needs-assessment tools that involve students
- Sample wellness policies
- Action and evaluation plans

WHERE IT PLAYS OUT ANYBODY HOME?

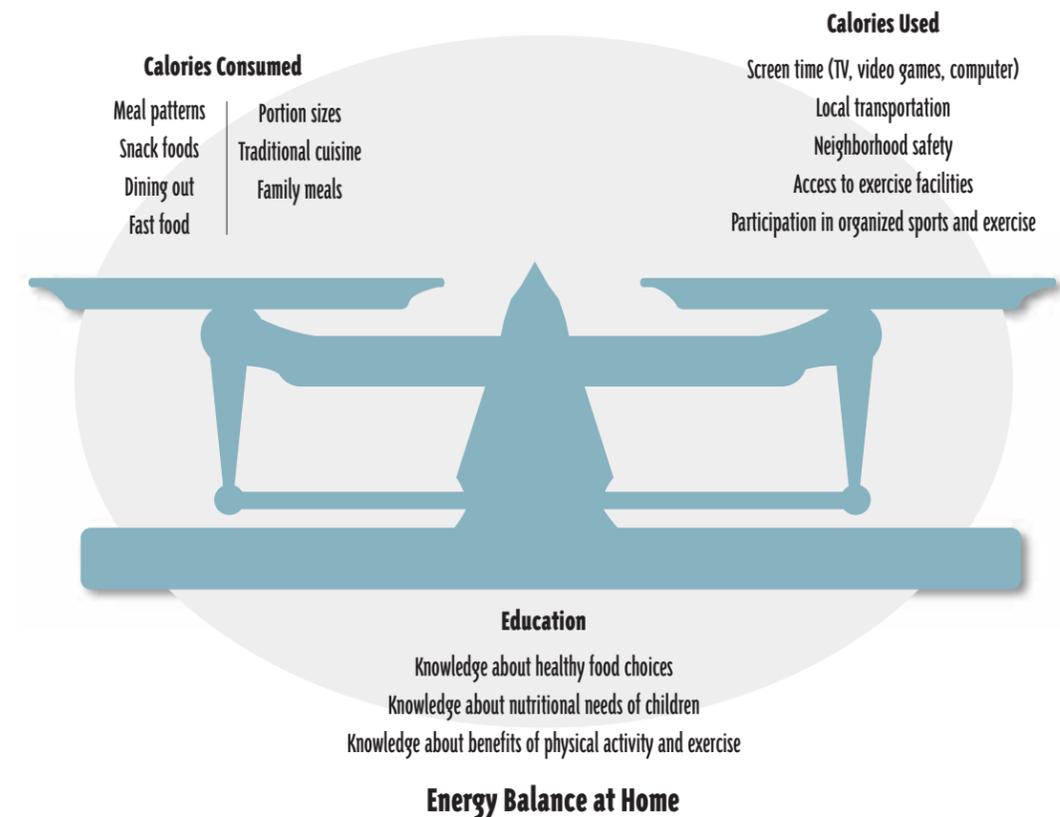
"PARENTS SEEM TO THINK THE CHILD WILL NOT EAT IF THEY DON'T OFFER FOODS THE CHILD WANTS...FRENCH FRIES, JUICE DRINKS, AND SODA. IF PARENTS KEEP HEALTHIER FOODS IN THE HOUSE, CHILDREN WILL EAT WHAT'S AVAILABLE."⁷¹

FRANK FRANKLIN, CHILDREN'S HOSPITAL, BIRMINGHAM, AL

The home environment is an important place for promoting a healthy weight and combating childhood obesity. Parents can have a major influence on what, when and how much their children eat, as well as their level of activity. Of course, the decisions that parents make about eating and exercise are related to their financial means, education, geographic location, and general health and well-being. Each factor tips the energy balance scale at home.

Parents can contribute to a healthy food environment by limiting meals eaten out in restaurants, preparing balanced meals high in calcium and

fiber, restricting portion sizes and increasing family meal time.⁷² Recent research indicates that parental behavior around food has a significant impact, particularly on young children. During the early years of life, the way children learn about food and eating plays a central role in shaping subsequent food choices, diet quality, snack intake, eating motivations, body satisfaction and weight status.⁷³ In fact, a recent study published by Health Education Research found "a positive parental role model may be a better method for improving a child's diet than attempts at dietary control."⁷⁴ Adolescents who eat evening meals with their parents are likely to consume



fruits, vegetables, and dairy products.⁷⁵ By making nutritious foods available and demonstrating their own healthy food choices, parents set the stage for lifelong behaviors.

Parents may also affect the nature and amount of physical activity their children get. The *Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity* offers tips for parents to help their children adopt active lifestyles:⁷⁶

- Plan family activities that provide everyone with exercise and enjoyment.
- Provide a safe environment for your children and their friends to play actively; encourage swimming, biking, skating, ball sports, and other fun activities.
- Reduce the amount of time you and your family spend in sedentary activities, such as watching TV or playing video games. Limit TV time to less than two hours a day. ■

WHERE IT PLAYS OUT A NEW MEDICAL MODEL

"MISSING FROM MUCH OF THE PUBLIC DISCUSSION IS WHAT THE [CHILDHOOD OBESITY] EPIDEMIC MEANS TO MEDICAL PRACTICE AND THE ROLE OF PHYSICIANS AS AGENTS OF PREVENTION AND CHANGE."⁷⁷

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

The health care industry also plays a major role in combating childhood obesity. According to Risa Lavizzo-Mourey, MD, MBA, President and CEO of the Robert Wood Johnson Foundation, "Today's childhood obesity epidemic means more patients will become seriously ill earlier in life with complex, time-consuming, and expensive comorbidities that are difficult to manage."⁷⁸ Health plans and providers face increasing pressure to create an effective reimbursement structure and health care delivery system to address those patients.

Like schools and families, health care providers face their own set of pressures, incentives and restrictions. Patient caseloads, time constraints, reimbursement rates and the availability of referral programs are

among the factors that affect a provider's ability to care for obese children and families.

The emerging Obesity Care Model proposes a joint effort between medical and non-medical parties. In this model, adapted from Edward Wagner's "chronic care model," families, schools, worksites, and communities are informed, directed and supported by the medical system. Together they contribute to patient weight-management plans.⁷⁹ Lavizzo-Mourey points out, "During the past century, physicians and public health professionals have found that a mix of comprehensive medical and community interventions provide significant protection and benefit to the health of the public."⁸⁰ The Obesity Care Model, like other chronic-care models, is unique in focusing on prevention and intervention alongside diagnosis and treatment. ■

The Obesity Care Model⁸¹



Source: Health Affairs

CONCLUSION

For MetroWest, and communities nationwide, childhood obesity presents a challenge of major scope and consequence. While the full impact of the epidemic is yet to be realized, particularly by the health care system, it is clear to many that the American way of life weighs heavily on our future. One of the major challenges to addressing this problem is that it remains relatively new. While evidence-based strategies for preventing and treating childhood obesity begin to emerge, the CDC advocates "acting on the best available evidence, rather than waiting for the best possible evidence."⁸²

In the absence of clear guidance, communities can and should explore a variety of intervention plans. Efforts that focus on individual projects and programs are common starting points, but their reach can be limited by the complex factors described in this report. Some experts in the field are using the social-ecological model as a framework for action

(made famous by tobacco control): layering interventions at the individual, interpersonal, organizational, community and societal levels. A 2001 report in the *Annual Review of Public Health* supports the notion that we can look to other chronic-disease management tools to inform our efforts. As the author notes, "The basic concepts and tools needed to develop obesity prevention strategies are familiar to public health professionals: for example, needs assessment, community development...and social marketing."⁸³

Here in MetroWest, an anti-obesity initiative may include parent education about obesity, walking programs for kids, public policies that enforce nutrition standards and portion sizes, sidewalk and crosswalk repair, and a media campaign that promotes healthy eating and physical activity. Such cross-cutting reforms require intense resource and personal investment, but that very commitment may be the key to long-term behavior change. ■



PART 2

MetroWest Community Health Care Foundation's Childhood Obesity Initiative /

The MetroWest Community Health Care Foundation is committed to working hand-in-hand with local communities to address childhood obesity. In 2006, the Foundation launched the multi-pronged Childhood Obesity Initiative, which has grown to include:

- Grantmaking
- Evaluation
- Training and technical assistance
- Formation of the MetroWest Obesity Task Force
- Public-awareness campaign
- New website: www.metrowestkids.org
- Partnerships with schools, health care agencies and academic institutions
- Policy endorsements

To date, the Foundation has invested more than \$1.85 million towards combating youth obesity in MetroWest. According to Martin Cohen, Foundation President, "Childhood obesity is the right issue for the Foundation. In responding to it, we have an opportunity not only to develop interventions that will help kids now, but in doing so may be able to influence their health as adults. We can also use our position to inform and educate kids, parents, schools and other organizations about what can be done to address the lifestyle, environmental and policy issues that contribute to this problem."

The following pages highlight activities, programs and projects in our Childhood Obesity Initiative. ■

GRANTEE PROGRAMS

COMMUNITY ORGANIZATIONS REACH OUT

Program Name:
Healthy Futures

Grantee:
**Hockomock Area YMCA,
Bernon Family Branch, Franklin**

The YMCA's Bernon Family Branch in Franklin is well into a three-year initiative to inform the community about childhood obesity. Healthy Futures includes a series of education and program opportunities for youth and families, and creates a referral stream to connect overweight and obese children with appropriate health services.

Among other activities, Youth Wellness Director Kim Minogue has overhauled the "Families First" dinner program to include healthy options, portion control, and a focus on fresh fruits and vegetables. Diners place their order by selecting options from the major food groups: one protein, one starch and two fruits or veggies. Over three months, nearly 100 people attended the dinners, and 88% reported new knowledge about healthy eating and nutrition.

With a year of work behind them, Program Supervisor Ethan Kehoe provided feedback for "others: "A demographic we underestimated and have spent extensive time on is the professional staff at our YMCA branches...We've conducted a vast educational campaign covering the key tenets of Healthy Futures so that staff...are able to articulate our goal to increase access to physical activity and improve healthy nutritional practices."

Kehoe added, "The YMCA has worked behind the scenes to communicate our passion about this issue to key local stakeholders, including legislators, local municipal leaders, school officials, and key local business partners." ■

PASSING A NEW POLICY

Program Name:
Childhood Obesity Prevention Initiative

Grantee:
Massachusetts Public Health Association

Over the past year, community organizer Greer Harewood has worked closely with one MetroWest town to create a comprehensive school wellness policy. Such policies are required of schools participating "in the federally funded school meals program. The process required several steps, including building a community-based coalition, creating public awareness about and support for the policy, and laying the groundwork for sustained activity in the town. While work on such a policy had been happening for several years, the creation of a staff position devoted to the project was key to building momentum and fostering change.

During the first few months of the project, Harewood navigated the terrain, learning who to talk to and how to find them. In many instances she adjusted her language or reframed the issue to create a more receptive environment. "You can't talk about obesity statistics without offending people," Harewood explained. "I stopped talking about childhood obesity altogether."

Once a group of interested community members emerged, success came in the form of small wins, some tangible, others conceptual. For example, Harewood identified a rallying point around school meals, and was able to work with school administration to remove Pop Tarts from the school breakfast menu. On another occasion, while committee members reviewed a draft of the wellness policy and questioned the feasibility of its ambitious goals, she assured them that the goals were designed to motivate the school system, and were not expected to be implemented overnight.

Harewood shared several pieces of advice for others: "Find some people who are organized and committed to the issue; they will facilitate the process. Identify a group of school-based folks—not just staff, but parents also, because they provide leverage and make certain tasks a priority. Work to bridge gaps in communication—for example, between parents and high-level school administrators." ■

CURRICULUM UPDATES

Program Name:
Spinning Towards Wellness

Grantee:
Needham High School

At Needham High School, Spinning Towards Wellness is a pilot program that integrates a new exercise and wellness component into the existing physical education curriculum. Director of Health and Physical Education Kathy Pinkham, who manages the program, organized training for her P.E. staff around goal-setting techniques, health education messages, and use of stationary bicycles.

"You have to support your teachers and make sure they are trained properly. That means finding the time, money and experts," said Pinkham. "The most important relationship is between the teachers and the kids, so the teachers have to feel confident in themselves."

Over the course of the 2006-2007 school year, staff implemented the program for all 9th-grade students. "We knew for sure that we could reach all the kids if we ran the program during the school day," Pinkham commented.

"To keep high school students interested in physical activity, you constantly have to keep it new. When it's a pilot project, there is not so much pressure. Failures are not failures, they are lessons." ■

MAKING TIME FOR FITNESS

Program Name:
Foundations of Health and Fitness

Grantee:
Millis Public Schools

In the Millis Public Schools, Superintendent Peter Sanchioni developed a pilot program that prioritizes health and fitness by carving out time for them in the school day. The Foundations of Health and Fitness program is a 90-day exercise and health-education program for all 7th and 8th graders that supplements existing physical education and activity requirements. To date, 81% of students with an initial BMI rating of "overweight" have lowered their BMI score. The program's energetic director, Scott Kendrick, has taken full advantage of the training and technical assistance offered by the Foundation, and is developing a network of contacts with staff from similar programs to share ideas and lessons learned.

Kendrick offered tips for others planning such a program:

- Take advantage of the resources available to you—for example, classes, workshops and teaching materials.
- Develop a good rapport with support staff. They can help improve your program.
- Try to establish a network of people involved with similar programs to get new ideas, perspectives and feedback. ■

RENEWED FUNDING STREAMS LEARNING FROM FAMILIES

Program Name:
The Snack Shack

Project Partners:
**Framingham High School Boosters Club
and Framingham State College**

For many schools, food and beverages create funding streams for important programs, athletics and special events. In Framingham, the Booster Club partnered with Framingham State College (FSC) to revamp Framingham High School's "Snack Shack" with a variety of healthy offerings. FSC selected food and drink options that met the Massachusetts A La Carte Food & Beverage Standards to Promote a Healthier School Environment, appealed to students, and could be easily purchased from local vendors. FSC students presented the new options to the Booster Club and high school representatives, who accepted the suggestions.

The Booster Club is now raising more money than ever. The project demonstrates that high school students will make smart snack choices if they are available, and it is a great model of collaboration among MetroWest organizations. ■

Program Name:
**Improving Communication to Reduce Obesity
Among Children in Framingham**

Grantee:
Trustees of Boston University

In an attempt to further understand how parents may affect their children's weight and eating habits, Boston University designed a research study to look at the impact of parent education on childhood obesity. The three-year study, which began in 2006, involves families with children who are overweight or at risk for becoming overweight (a BMI above 85%). Participants are placed randomly into an intervention group and a control group. The control group receives toolkits about healthy eating, while the intervention group gets the toolkit and individualized education sessions.

Program Director Alan Gellar noted, "More parent research is necessary. Namely, if we are trying to make fundamental behavioral changes for the children, how does the parent's BMI affect the child's practice? How entrenched is the parent's practice even with their five- and six-year-olds?"

"We need to know more about those who do not participate," he added. "It is unlikely that they need the program less." ■

PUBLIC AWARENESS MEDIA CAMPAIGN

In January 2007, the MetroWest Community Health Care Foundation rolled out its largest public awareness campaign: *Obesity: It's robbing our kids of their future.* "We need to educate the public in general and parents in particular about the seriousness of this issue and the steps that can be taken to help kids maintain a healthy weight," stated Bill McGinley, chair of the Foundation's Board of Trustees. In developing the campaign, the Foundation considered the region's demographic makeup, studied the most efficient ways to reach the public and enlisted the help and input of area physicians, psychologists, educators, and nutrition and exercise specialists.

The six-month campaign described the health risks associated with childhood obesity and served as a call to action for the entire region. Media components included a series of billboards, television

commercials (available on cable and public access channels), newspaper advertising, informational posters and booklets, and a comprehensive website with resources and information for families. The campaign received substantial coverage from national media outlets and prompted significant feedback and dialogue in MetroWest.

Website / The campaign's website, **metrowestkids.org**, is dedicated to the topic of childhood obesity. The site provides ongoing information about community-based programs and medical resources in MetroWest. It also presents fun food tips and activities for kids, parents and schools. At the "Ask the Experts" page, users can submit obesity-related questions to a panel of local clinicians. The website has become a well-used resource, with more than 7,000 visits since it was launched.



Billboards / Three sets of billboards were displayed throughout MetroWest to raise awareness about childhood obesity and serve as a call to action for

families to visit the campaign website. The billboards generated a great deal of media attention for their frank look at the problem of childhood obesity.



Newspaper Advertisements / Two half-page ads in the *MetroWest Daily News* followed the billboards, with more facts about childhood obesity and directions to the campaign website.



Physician Toolkits / The Foundation distributed informational booklets and posters to all family physicians and pediatricians in MetroWest. The booklet was printed in English, Spanish and Portuguese, and was designed to educate parents and families about childhood obesity and the benefits of healthy eating and exercise. It also included a list of local and national resources where families can find additional information. ■



RESOURCES

Centers for Disease Control and Prevention: www.cdc.gov
Areas of Interest: Division of Nutrition, Physical Activity and Obesity

American Diabetes Association: www.diabetes.org
Areas of Interest: Weight Loss and Exercise, Nutrition and Recipes

American Heart Association: www.americanheart.org
Areas of Interest: Healthy Lifestyle

Center for Screen Time Awareness: www.tvturnoff.org
Areas of Interest: TV Facts and Figures, TV-Turnoff Week

Action for Healthy Kids: www.actionforhealthykids.org
Areas of Interest: State-by-State Action, Resources to Improve Schools

Massachusetts Partnership for Healthy Weight: www.mphw.org
Areas of Interest: Get Active

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CHILDHOOD OBESITY

UNDERSTANDING AND ADDRESSING AN EPIDEMIC

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