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INTRODUCTION

Childhood obesity has grown at an alarming rate over the past several decades. In 1963, about 4 percent of children between the ages of 6 and 11 were considered obese based on their body mass index (BMI). By 2005, that age group's obesity rate climbed to nearly 18 percent, more than quadrupling the 1963 rate.[4] Adult obesity rates had similarly increased, nearly tripling from about 12 percent to over 33 percent during the same period. At present, one in three adults is obese and nearly one in five children is obese. The problem of obesity is serious enough that it became widely recognized as the "obesity epidemic" after then-Surgeon General Dr. David Satcher's 2001 report, "The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity," in which the word "epidemic" was used seven times in 39 pages.[5]

The obesity epidemic brought about an entirely new emphasis on healthful living that combined lifestyle, exercise, diet and nutrition. "Wellness" became a word commonly associated with healthful living, and grew to encompass meanings of both physical and psychological wellbeing. Medical science recognized the connections between being overweight and obese and the onslaught of chronic health conditions that increasingly burden people as individuals and increasingly draw on societies medical and public health resources. New research by the Duke University Global Health Initiative estimated the cost of childhood obesity at $19,000 more per obese child when compared to a normal weight child.[6] When this figure is multiplied by the number of obese 10 year olds in the U.S., the lifetime medical costs for this age group reaches a staggering $14 billion. In terms of the overall population of obese children, annual direct medical costs, including prescription medications, emergency room admissions, and outpatient care, costs $14.1 billion, with an additional $237.6 million of inpatient costs.[7] The Agency for Healthcare Research and Quality (AHRQ) estimated in 2011 that healthcare costs for overweight and obese children were two to three times higher than for normal weight children, for totals of $11 billion for children covered by private insurance and $3 billion for children on Medicaid.[8] In terms of individual children, in 2009 those who were overweight or obese had annual health costs that averaged between $172 and $220 more than the costs for normal BMI children.[9]

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[4] "NCHS Health E-Stat." Centers for Disease Control and Prevention. June 04, 2010. Accessed May 8, 2014. http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.htm

[5] David Satcher, M.D. Surgeon General of the United States, "The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity," U.S. Office of the Surgeon General, U.S. Office of Disease Prevention and Health Promotion, U.S. Centers for Disease Control and Prevention, U.S. National Institutes of Health, Rockville, MD, 2001. Accessed May 8, 2014. http://www.ncbi.nlm.nih.gov/books/NBK44206/.

[6] Eric A. Finklestein, et al. "Lifetime Direct Medical Costs of Childhood Obesity," *Pediatrics.* Vol. 133, No. 5. Published online April 7, 2014. Accessed June 11, 2014. http://pediatrics.aappublications.org/content/early/2014/04/02/peds.2014-0063.

[7] L. Trasande and S. Chatterjee. "The Impact of Obesity on Health Service Utilization and Costs in Childhood." *Obesity*. Vol. 17, No. 9. September 2009. Accessed June 11, 2014. http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291930-739X.

[8] AHRQ, "Childhood Obesity Prevention Programs: A Comparative Effectiveness Review and Meta-Analysis," December 20, 2011. Accessed June 11, 2014. http://www.effectivehealthcare.ahrq.gov.

[9] L. Trasande and S. Chatterjee. "The Impact of Obesity on Health Service Utilization and Costs in Childhood." *Obesity*. Vol. 17, No. 9. September 2009. Accessed June 11, 2014.

In April 2014, Pennsylvania had 189,823 children enrolled in CHIP.[10] The most current statistics show that approximately 26 percent to 28 percent of Pennsylvania children are overweight or obese. Applying the general population estimate of overweight and obese children to the CHIP population results in 53,000 overweight or obese children who receive CHIP benefits.[11] Based on available cost estimates, Pennsylvania's annual health expenditures for overweight and obese children served by CHIP is somewhere between $9.1 million and $11.7 million above CHIP expenditures for normal BMI children.

Economic factors aside, the true costs of childhood obesity lay in the damage it levels on people's lives. Diabetes, heart disease, hypertension, cancer, and a number of other ills were believed to originate, in part, with excessive body fat. As the threads of chronic disease tied in to overweight and obesity, evidence mounted that many of these conditions begin during childhood. Alarmingly, more and more children were being diagnosed with health problems, like type 2 diabetes, that had traditionally been considered a problem for adults.

A number of childhood obesity complications that are associated with cardiovascular disease, were identified in the report, including

- Chronic inflammation;
- Dyslipidemia;[12]
- Increased blood clotting;
- Endothelial dysfunction;[13]
- Hypertension; and
- Hyperinsulinemia.[14]

Together, this cluster of cardiovascular disease risk factors, known as insulin resistance syndrome, may exacerbate trouble later in life by a two-fold margin. Half of new Type 2 diabetes diagnoses are in child populations, which the authors referred to as an "ominous development." Other consequences of child obesity include sleep apnea, asthma, exercise intolerance, and psychosocial factors that lead to additional disadvantageous outcomes. *Nutrition Journal* published an article in 2005, "Childhood Obesity, Prevalence, and Prevention," that commented that once a person reaches a state of overweight or obesity, it is difficult to revert to a healthier weight, and rather convincingly argued that healthfulness must be established early in life:

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[10] Communication between Commission staff and DPW staff, June 11, 2014.

[11] Statistics for the number of overweight and obese children receiving medical assistance in Pennsylvania were not available from the Department of Public Welfare, according to communication between Commission staff and DPW staff, June 11, 2014.

[12] Dyslipidemia refers to an abnormally high level of fat in the blood.

[13] Endothelial dysfunction is a cardiovascular risk factor that precedes atherosclerosis, so-called "hardening of the arteries." Hadi AR Hadi, Cornelia S. Carr, and Jassim Al Suwaidi. "Endothelial Dysfunction: Cardiovascular Risk Factors Therapy, and Outcome." *Vascular Health and Risk Management*, Vol. 1, No. 3, September 2005. Accessed May 14, 2014 http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1993955/.

[14] Hyperinsulinemia refers to excess levels of insulin in the blood, which may lead to type 2 diabetes. Maria Collazo-Clavell, M.D. "Is Hyperinsulinemia a Form of Diabetes?" Mayoclinic.org. Accessed May 14, 2014. www.mayoclinic.org/diseases-conditions/type-2-diabetes/expert-answers/hyperinsulinemia/faq-20058488.

> "Until now, most approaches have focused on changing behavior of individuals in diet and exercise. It seems, however, that these strategies have had little impact on the growing increase of the obesity epidemic…All in all, there is an urgent need to initiate prevention and treatment of obesity in children."[15]

The currently accepted definition of overweight and obesity for children states,

> "Weight status among children and adolescents aged 2 through 19 years is defined based on BMI. In children and adolescents, overweight is defined as at or above the sex-specific 85th percentile on the CDC's 2000 BMI-for-age growth charts but less than the 95th percentile; obesity is defined as a BMI at or above the sex-specific 95th percentile."[16]

A high BMI, however, does not necessarily indicate overweight or obesity, particularly in children, because it does "not distinguish between fat and fat-free mass (muscle and bone) and may exaggerate obesity in large muscular children."[17] In other words, overweight and obese children have high BMIs; children with high BMIs are not necessarily overweight or obese.

The incidence of childhood obesity affects communities without regard to ethnicity or socioeconomic status. Some evidence, however, points toward a higher risk for minority children. *The Lancet* published a report in 2002 that concluded that obesity prevalence grew more than twice as fast among minority groups than in whites.[18] It appears that urban poor might be vulnerable because of limited opportunity for exercise and poor nutrition. Research findings point to the conclusion that "rising prevalence rates among genetically stable populations indicate that environmental and, perhaps, perinatal factors must underlie the childhood obesity epidemic."[19] In light of such findings, population obesity reduction strategies should be culture-specific, approach populations in ways that are ethnically relevant, and consider the population's socioeconomic characteristics.[20]

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[15] Mahshid Dehghan, Noori Akhtar-Danesh, and Anwar T. Merchant. "Childhood Obesity, Prevalence and Prevention." *Nutritional Journal* 4. September 2, 2005. Accessed May 14, 2014. http://www.nutritionj.com/content/4/1/24.

[16] Cynthia L. Ogden, Ph.D., and Katherine M. Flegal, Ph.D. "Changes in Terminology for Childhood Overweight and Obesity." *National Health Statistics Reports*, No. 25. June 25, 2010. Accessed June 9, 2014. http://stacks.cdc.gov/view/cdc/12020

[17] Mahshid Dehghan, Noori Akhtar-Danesh, and Anwar T. Merchant. "Childhood Obesity, Prevalence and Prevention." *Nutritional Journal* 4. September 2, 2005. Accessed May 14, 2014. http://www.nutritionj.com/content/4/1/24.

[18] Cara B. Ebbeling, Ph.D., Dorota B. Pawlak, Ph.D., and David S. Ludwig, M.D. "Childhood Obesity: Public-health Crisis, Common Sense Cure." *The Lancet* 360, No. 9331. August 10, 2002: 473-82. Accessed May 14, 2014 http://www.ncbi.nlm.nih.gov/pubmed/12241736.

[19] Cara B. Ebbeling, Ph.D., Dorota B. Pawlak, Ph.D., and David S. Ludwig, M.D. "Childhood Obesity: Public-health Crisis, Common Sense Cure." *The Lancet* 360, No. 9331. August 10, 2002: 473-82. Accessed May 14, 2014 http://www.ncbi.nlm.nih.gov/pubmed/12241736

[20] Mahshid Dehghan, Noori Akhtar-Danesh, and Anwar T. Merchant. "Childhood Obesity, Prevalence and Prevention." *Nutritional Journal* 4. September 2, 2005. Accessed May 14, 2014. http://www.nutritionj.com/content/4/1/24.

No comprehensive recommendation has been proven effective; empirical data have confounded policy makers' efforts. For example, there appears to be a questionable link between dietary fat and adiposity. Evidence cited by the authors of *The Lancet* report shows that consuming fat does not necessarily lead to being overweight. Ironically, the portion of fat in children's diets is decreasing as overweight and obesity are increasing, indicating that there may be a stronger link between sugar and obesity than there is between dietary fat and obesity. It has been theorized that adolescents may overeat because of a "sequence of hormonal events" that coincides with consumption of high glycemic index foods: among middle school children, there is a 60 percent increase in risk of obesity for each additional serving of sugary drink consumed. Conversely, adolescents' consumption of milk, a low GI food, appears to dampen their risk of obesity.

Challenges exist despite the best intentions of practitioners, care providers, pregnant women and parents. The availability of healthful food is often less than optimal. Despite that people may want to eat the right foods and get enough exercise, environmental factors can inhibit them from actualizing their intentions. In recent work, nutritionists, clinicians, and public health researchers have identified the concept of food deserts, areas where geography and socioeconomic conditions limit the availability of healthful foods. For example, a number of rural areas of Pennsylvania have been shown to have too few retailers that offer healthful food. Similarly, some urban areas have been identified to have limited access to healthful food. Characteristics of rural food deserts were identified by the report "Food Deserts and Overweight Schoolchildren: Evidence from Pennsylvania," in *Rural Sociology*, and include:

- limited to nonexistent public transportation;
- long distances to food stores, particularly when large outlets outcompete smaller, localized stores;
- long school bus rides; and
- standards established by No Child Left Behind diverted health & physical education resources to academic classes.[21]

Further, the authors observed that the socioeconomic changes caused by employment shifts from agriculture and natural resources to support services could worsen food desert conditions.

Two important conclusions were drawn in the report. First, school districts located in food deserts were more likely to be structurally and economically disadvantaged. A report by the Center for Rural Pennsylvania found that rural school districts in Pennsylvania had higher percentages of overweight children than had urban districts, and the rural districts' proportion of overweight children were increasing more rapidly.[22] Second, there is a proportional relationship between increased rates of child overweight and the percentage of the population residing in a food desert. As the food desert population increases, the percentage of children with overweight and obese BMI increases.

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[21] Kai A. Schafft, Eric B. Jensen, and C. Clare Hinrichs. "Food Deserts and Overweight Schoolchildren: Evidence from Pennsylvania." *Rural Sociology*. Vol. 74. No. 2. 2009

[22] Center for Rural Pennsylvania. "Examining Demographic, Economic, and Educational Factors: Overweight Children in Pennsylvania." *Center for Rural Pennsylvania Research Brief*. Harrisburg, PA: Center for Rural Pennsylvania. 2005

The authors' recommendation of ameliorating problems with healthful food availability in food deserts seems applicable to urban food deserts as well.

> "Rural school board members and school district administrators in food desert areas should be aware that their students face greater challenges to healthy eating than other students. Because of this, schools may consider devoting particular resources to physical education, physical activity, and nutrition education in order to counteract the adverse effects of limited access to healthful foods."[23]

Of course, food may be available in quantity; however, it is well-recognized that the traditional healthful diet of fruits, vegetables, dairy, and lean meats are more expensive than what many people can regularly afford to purchase.

The journal Health Affairs published an article by Cornell University's John Cawley, titled "The Economics of Childhood Obesity," that lists several economic factors that appear to explain childhood obesity.[24] Among them, food prices and agricultural policies have been blamed to have an influence on obesity rates among children.

For a number of reasons, food prices have seen a decline in real terms over the past two decades. Cawley reported that the real price of a two-liter bottle of Coca-Cola fell nearly 35 percent between 1990 and 2007, and the price of a McDonald's Quarter Pounder with cheese fell by over 5 percent. BMI for young adults from 1981 to 1994 increased by approximately 43 percent, and some research shows that the drop in fast food prices may have contributed to the increase.[25] At the same time, the real prices for fruits and vegetables increased by 17 percent. Current thought is that price changes, as in these examples, form a two pronged attack on children's health. As less healthful foods become cheaper and healthful foods become more expensive, overweight and obese BMI rates rise.

While agricultural policies have been suspected of contributing to the childhood obesity epidemic, the arguments are less decisive when details emerge. Sugar, an archrival of good health, appears to become more expensive when limit sugar imports. Further, some estimates are that subsidies that decrease prices of unhealthful foods account for only about .08 percent of the increases in children's BMI.

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[23] Kai A. Schafft, Eric B. Jensen, and C. Clare Hinrichs. "Food Deserts and Overweight Schoolchildren: Evidence from Pennsylvania." *Rural Sociology*. Vol. 74. No. 2. 2009. P. 173

[24] J. Cawley. "The Economics of Childhood Obesity," *Health Affairs.* March 2010. Vol. 29, No. 3. Accessed June 11, 2014. http://catchusa.org/documents/CATCH%20Research/2010,%20Cawley,%20The%20Economics%20of%20Childhood%20Obesity.pdf.

[25] J. Cawley. "The Economics of Childhood Obesity," *Health Affairs.* March 2010. Vol. 29, No. 3. Accessed June 11, 2014. http://catchusa.org/documents/CATCH%20Research/2010,%20Cawley,%20The%20Economics%20of%20Childhood%20Obesity.pdf.

There may be an indirect connection between subsidies and obesity, however. Food producers granted agricultural subsidies are required to contribute to commodity-specific advertising funds. In other words, the agricultural subsidies may contribute to childhood obesity by indirectly subsidizing marketing for fast foods.

Recognizing the array of negative influences, researchers continue to unravel the causes of childhood obesity, and continue to test promising ways of preventing it. As researchers release their results, health providers, educators, public health officials, parents, and even city planners are collaborating in ways to build on what has been learned. The landscape surrounding childhood obesity seems to shift frequently, and new findings and conclusions appear in the news media with regularity.

The Childhood Obesity Prevention Advisory Committee was established to add its members own expertise to these findings and conclusions, and to recommend to the General Assembly actionable ways of improving Pennsylvania's children's health and wellbeing. Members met several times over the course of a year to share their experiences and discuss potential solutions from a range of perspectives. Members included physicians, nutritionists, educators, healthful living program providers, and policy makers. They represented local and state-wide community organizations such as The Y and food banks, school district nutritionists, physical and health educators, and Commonwealth agencies charged with improving the health and wellbeing of Pennsylvania's children.

The Advisory Committee's recommendations establish a basis for using what is known about childhood obesity prevention and for creating opportunities to respond to and apply new approaches. Themes emerged as work on this report progressed. New findings are continually realized. Programs are initiated, maintained, evaluated, and improved in many parts of the Commonwealth. Public and private funding streams wax and wane, are eliminated and created. What is paramount is that the stakeholders remain aware of all of these factors and how they can be applied most effectively. Research continues to unravel the causes of childhood obesity, and continues to test promising ways of preventing it. As researchers release their results, health providers, educators, public health officials, parents, and even city planners are collaborating in ways to build on what has been learned. The landscape surrounding childhood obesity seems to shift frequently, and new findings and conclusions appear in the news media with regularity.

A young person's life can generally be considered in four categories of age and development: infancy, early childhood, school age, and teen years. For each category, this report presents the consequences of childhood overweight and obesity, the challenges of preventing and overcoming overweight and obesity, and opportunities to prevent and overcome childhood overweight and obesity. The Advisory Committee on Childhood Wellness and Obesity Prevention presents its recommendations to achieve these goals.

PRENATAL & INFANT PHASES OF LIFE

Insofar as human development begins in the womb, many of the characteristics that define people as individuals launch themselves at the earliest stages. While it is understood that genetics are the primary determinants of a person's characteristics, there is increasing evidence that external and environmental influences play undeniably important roles. Air and water pollution, the presence of chemicals in food and common items people are regularly in contact with may themselves cause problems for developing infants. Research into many of these factors is in its early stages, but what is becoming clearer are two conclusions. First, many external and environmental influences have lifelong implications. Second, many harmful factors are avoidable. It has been known for several decades that factors harmful to pregnant women are similarly harmful, if not more so, to their prenatal infants. Fetal alcohol syndrome is a tragically well-known condition that describes an extensive list of disabilities suffered by infants whose prenatal development was marred by their mothers' use or abuse of alcoholic drinks.[26] Similarly, a pregnant woman's use and abuse of illicit and illegal drugs leads to permanent extensive disabilities in her prenatal infant.[27]

In the emerging research into the avoidable factors that may have lifelong negative consequences, improper or unhealthful nutrition in the early stages of life are correlated with health problems later in life. Overweight and obesity in adults can often be traced back to conditions present in those people as children and infants. The link between risk factors and obesity can be traced back further, as some researchers suggest, to prenatal stages of life and the presence of previous generations' obesogenic environmental, genetic, and behavior patterns. Yet, some medical researchers are led to believe that "environmental factors during development can induce permanent alterations in epigenetic gene regulation, and epigenetic dysregulation can contribute to obesity. It is therefore plausible (if not likely) that environmental influences on epigenetic gene regulation contribute to the secular increase in obesity."[28]

[26] According to the Mayo Clinic, no safe amount of alcohol has been established by medical research. "Fetal Alcohol Syndrome." Mayoclinic.org. Accessed April 22, 2014. http://www.mayoclinic.org/diseases-conditions/fetal-alcohol-syndrome/basics/definition/con-20021015.

[13] The full extent of the deleterious effects of illicit/illegal drug use on prenatal infants is unknown. "Medical Consequences of Drug Abuse." National Institute on Drug Abuse, National Institutes of Health. Accessed April 22, 2014. http://www.drugabuse.gov/publications/medical-consequences-drug-abuse/prenatal-effects.

[28] Emily J. McAllister, et al., "Ten Putative Contributors to the Obesity Epidemic," *Critical Reviews in Food Science and Nutrition*, Vol. 49, No. 10, November 2009. Accessed April 28, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2932668/.

The *Critical Reviews in Food Science and Nutrition* published a study in 2009 that listed factors that likely contribute to obesity:

- Microorganisms
- Epigenetics[29]
- Increasing maternal age
- Greater fecundity among people with higher adiposity
- Assortative mating[30]
- Sleep debt
- Endocrine disruptors
- Pharmaceutical iatrogenesis[31]
- Reduction in variability of ambient temperatures
- Intrauterine effects
- Intergenerational effects.

Dr. Matthew Gillman reported on studies in "Developmental Origins of Health and Disease," that observed that pregnant women who consume a diet high in fish (provided the mercury content is low) have children who score higher on cognition tests.[32] Further, a pregnant woman's calcium intake was observed to relate inversely to her child's blood pressure: women with higher calcium have children with lower incidence of hypertension.[33] Observations reveal that women in low socioeconomic brackets tend to have more children than other women, women who are obese tend to have more children than non-obese women, women who are older when they bear children tend to have either high birth weight or low birth weight newborns, all of which increase the likeliness of having overweight or obese children.[34]

Scientific, medical, and clinical studies demonstrate that both low birth weight and high birth weight lead to childhood obesity, which follows to obesity later on through life. In "Developmental Origins of Health and Disease," Dr. William Gillman wrote that observational studies of infants show that rapid weight gain in infants can lead to being overweight and eventual obesity. Insulin resistance, hypertension, and high leptin levels may follow, and they may not be

[29] Epigenetics refers to heritable traits.
[30] Assortative mating, in human genetics, is a form of nonrandom mating, e.g. when individuals of similar body size mate with one another.
[31] Iatrogenesis refers to preventable and inadvertent harm resulting from medical treatment.
[32] Matthew W. Gillman, M.D., "Developmental Origins of Health and Disease," *New England Journal of Medicine*, Vol. 353, No. 17. October 27, 2005. Accessed April 25, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1488726/.
[33] Matthew W. Gillman, M.D., "Developmental Origins of Health and Disease," *New England Journal of Medicine*, Vol. 353, No. 17. October 27, 2005. Accessed April 25, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1488726/
[34] Emily J. McAllister, et al., "Ten Putative Contributors to the Obesity Epidemic," Critical Reviews in Food Science and Nutrition, Vol. 49, No. 10, November 2009. Accessed April 28, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2932668/.

apparent until 20 years after birth.[35] Weight gain patterns for infants born between 1927 and 1994 were studied and showed that obese infants were at more than nine times the risk of normal weight infants for obesity later in life, and infants who experienced rapid weight gain were at over five times the risk as infants who gained weight at normal rates.

The incidence of infant obesity, medically referred to as macrosomia (fetal macrosomia is determined after birth), is between 1 and 10 percent, and includes infants with a birth weight between 8lbs. 13oz. and 9lbs. 15oz., or greater than 90 percent for gestational age. The CDC's Pediatric Nutrition Surveillance System (PedNSS) reported in 2011 that 6.4 percent of newborns were categorized as having a high birth weight, and 12.2 percent of children under the age of 5 were obese.[36] Some researchers are concluding that pre-natal nutrition can even have an effect on childhood obesity.

Infant macrosomia and rapid weight gain are significant because of their long term health effects. Research dating back to the 1980s showed that chronic diseases, such as coronary heart disease, type 2 diabetes, stroke, and hypertension, may have their start during fetal development.[37] Medical researchers have since been led to believe that high birth weight is also associated with these same conditions later in life.[38]

Four contributing factors to infant and child obesity have been identified for their strong influences, and each are largely controllable: the mother's smoking status; gestational weight gain; duration of breastfeeding; and infant sleep. When these four factors are considered in unison, there are measureable differences in outcomes for infants' health. Of 1,100 mother and child pairs studied by Dr. Gillman, the modifiable determinants of obesity had a measureable impact. Maternal smoking leads to a paradox, of sorts: women who smoke are likely to give birth to underweight infants, yet they are also likely to have children who are obese.[39] Children whose mothers did not smoke, did not gain excessive gestational weight, who breastfed for at least 12 months, and slept an average of 12 hours per day, had a 6 percent probability of being overweight. Children who had "adverse levels" of all four of the modifiable determinants had a 29 percent probability of being overweight by age 3.[40]

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[35] Leptin is a hormone found in adipose tissue that regulates energy intake and metabolism and is thought to have a role in the pathogenesis of obesity. Matthew W. Gillman M.D., "Developmental Origins of Health and Disease," *New England Journal of Medicine*, Vol. 353, No. 17. October 27, 2005. Accessed April 25, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1488726/.

[36] PedNSS is no longer funded.

[37] D.J. Barker, "The Developmental Origins of Adult Disease," *Journal of the American College of Nutrition,* Vol. 23 (6 Suppl): 588S-595S. December 2004. Accessed April 24, 2014. www.ncbi.nlm.nih.gov/pubmed/15640511.

[38] "Prenatal and Early Life Influences," Harvard School of Public Health. Accessed April 24, 2014 http://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/prenatal-postnatal-obesity/..

[39] Matthew W. Gillman, M.D., "Developmental Origins of Health and Disease," *New England Journal of Medicine*, Vol. 353, No. 17. October 27, 2005. Accessed April 25, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1488726/

[40] Matthew W. Gillman, M.D., et al., "Developmental Origins of Childhood Overweight: Potential Public Health Impact," *Obesity*, Vol. 16, No. 7, July 2008. Accessed April 28, 2014. http://onlinelibrary.wiley.com/doi/10.1038/oby.2008.260/pdf. 1665

The four modifiable determinants provide the basis for concrete recommendations toward childhood wellness and obesity prevention. The Harvard School of Public Health recommends that clinicians counsel their pregnant and post-partum patients to:

- strive for a healthy weight before pregnancy;
- not smoke;
- aim for a reasonable weight gain during pregnancy;
- breastfeed for at least 12 months and include supplemental foods beginning no earlier than age four months; and
- ensure that children get adequate sleep during the first few years of life.[41]

In terms of the first modifiable determinant, a healthy weight, clinicians and caregivers can provide only indirect assistance. Health and nutrition education tailored for pre-pregnant and pregnant women that presents information in a usable fashion is the preferred means of helping. IOM's Committee on Nutritional Status During Pregnancy and Lactation made three recommendations for caregivers to present to their patients.

1. Set a weight gain goal together with the pregnant woman, preferably beginning at the comprehensive initial prenatal examination, and explain to her why weight gain is important.

2. Base the recommended range of total weight gain and pattern of gain mainly on pre-pregnancy weight for height.

3. For women with a normal pre-pregnancy BMI, recommend gain at the rate of approximately 0.4 kg (~ 1 lb.) per week in the second and third trimesters of pregnancy.[42]

Despite the obesogenic challenges present in the lives of pregnant women and parents of infants, there are a number of opportunities present that can have a healthful impact.

> "It is therefore imperative that, along with vigorous efforts to optimize childhood growth, researchers and policymakers identify, quantify, and evaluate strategies to modify prenatal and perinatal determinants of adverse adult health outcomes."[43]

[41] "Prenatal and Early Life Influences," Harvard School of Public Health. Accessed April 24, 2014 http://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/prenatal-postnatal-obesity/.
[42] *Nutrition during Pregnancy: Part I, Weight Gain: Part II, Nutrient Supplements.* Washington, D.C.: National Academy Press, 1990. Accessed April 25, 2014 http://www.nap.edu/openbook.php?record_id=1451&page=R1.
[43] Matthew W. Gillman, M.D., "Developmental Origins of Health and Disease," *New England Journal of Medicine*, Vol. 353, No. 17. October 27, 2005. Accessed April 25, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1488726/

Importantly, while many risks faced during pregnancy are unknown or unavoidable, there are some risks that pregnant women can control for the health of their unborn infants, including the risk of obesity. Three significant risks are the mother's smoking during pregnancy, excessive gestational weight gain, and gestational diabetes. Medical researchers concluded that maternal smoking during pregnancy causes a 50 percent higher risk of childhood obesity, and at least one study shows that the risk remains until age 33.[44] In 2008 researchers estimated that as many as 715,000 U.S. children were afflicted with overweight or obesity because their mothers smoked while pregnant.[45]

The second challenge is the pregnant woman's own weight gain while pregnant. In 1990, the National Academy of Sciences' Institute of Medicine (IOM) recommended a range of gestational weight gains that were based on the mothers' starting BMI. These recommendations followed on research that had been ongoing since the first set of recommendations that were published in 1970 by the IOM's Food and Nutrition Board, entitled *Nutrition and the Course of Pregnancy*, which themselves had followed on general population BMI guidelines recommended in 1959 by the Metropolitan Life Insurance Company.[46]

The link between childhood obesity and maternal obesity has not been conclusively identified, whether it be behavioral or environmental. Some laboratory research shows that fetal development in an obese mothers may lead to offspring who are prone to being obese later in life.[47] Observational studies of women who had undergone bariatric surgery reveal that children born before the surgery were more likely to be obese than the children born after the women's surgeries.[48] Further, there is evidence that obese women tend to have more children than non-obese women. Maternal BMI is one of the most significant factors influencing infant and early childhood health, yet it is not one that should be altered after the pregnancy starts.

The epidemic of childhood obesity was well-recognized by the time a study published in 2007 presented outcomes for mothers who had weight gains greater than those recommended by the IOM.[49] In "Gestational Weight Gain and Child Adiposity at Age 3 Years," researchers studied mothers' weight gains during pregnancy and compared the data with the adiposity of their children from birth to age 3. Women who gained more than the IOM recommendations, along with those

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[44] Emily Oken, E.B. Levitan, and M.W. Gillman, "Maternal Smoking During Pregnancy and Child Overweight: Systematic Review and Meta-analysis," *International Journal of Obesity*, Vol. 32, No. 2, 201–210. February 2008. Accessed April 24, 2014 http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2586944/.

[45] Emily Oken, E.B. Levitan, and M.W. Gillman, "Maternal Smoking During Pregnancy and Child Overweight: Systematic Review and Meta-analysis," *International Journal of Obesity*, Vol. 32, No. 2, 201–210. February 2008. Accessed April 24, 2014 http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2586944/.

[46] *Nutrition during Pregnancy: Part I, Weight Gain: Part II, Nutrient Supplements.* Washington, D.C.: National Academy Press, 1990. Accessed April 25, 2014 http://www.nap.edu/openbook.php?record_id=1451&page=R1.

[47] Emily J. McAllister, et al., "Ten Putative Contributors to the Obesity Epidemic," *Critical Reviews in Food Science and Nutrition*, Vol. 49, No. 10, November 2009. Accessed April 28, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2932668/.

[48] Emily J. McAllister, et al., "Ten Putative Contributors to the Obesity Epidemic," *Critical Reviews in Food Science and Nutrition*, Vol. 49, No. 10, November 2009. Accessed April 28, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2932668/.

[49] Emily Oken, M.D., MPH, et al., "Gestational Weight Gain and Child Adiposity at Age 3 Years." *American Journal of Obstetrics and Gynecology* Vol. 196, No. 4, April 2007. Accessed April 25, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1899090/#__ffn_sectitle.

whose weight gains were within guidelines for "adequate" weight gain, had children who were almost four times greater risk of being overweight and obese than women who gained what had been previously considered an "inadequate" amount of gestational weight.[50] The Harvard School of Public Health's "Prenatal and Early Life Influences" reported on a study of sibling births that included 513,501 mothers and 1,164,750 children between the years 1989 and 2003 that further solidified the conclusion that there is a "consistent association" between gestational weight gain and birth weight.[51]

In January 2013, the American College of Obstetricians and Gynecologists published an opinion that essentially supported the IOM's 2009 recommendations for weight gain during pregnancy.[52] The recommended weight gains are based on the woman's pre-pregnancy BMI and are divided into the four categories of Underweight, Normal Weight, Overweight, and Obese. Recommended gains range from 28 to 40 pounds for underweight women to 11 to 20 pounds for obese women.[53] The Committee on Obstetric Practice, which published the opinion, emphasized that specific weight gains and nutritional counseling must be tailored to optimize each individual's condition using each practitioner's clinical judgment. Recognizing that both underweight and overweight infants are at risk for developing serious health conditions, and with the emphasis on providing the best possible outcome for both mother and infant, the opinion is that no evidence supports counseling an overweight or obese woman to increase weight gains when those gains fall below the guidelines when she has an appropriately growing fetus.[54] The recommendations are, of course, generalized. Periodic measurements and ongoing counseling and observations are recommended throughout the pregnancy.[55] There is an interesting study, published in 2003 in the *International Journal of Obesity and Related Metabolic Disorders,* that reviewed papers published since 1966 to analyze the evidence between birth weight and BMI and obesity later in life.[56] The author found that birth weight is positively associated with lean body mass and negatively associated with adiposity. In other words, big babies appear to more likely grow into adults with high ratios of lean body mass and low ratios of relative adiposity. Rogers concluded that the association between birth weight and BMI is unclear.

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[50] Emily Oken, M.D., MPH, et al., "Gestational Weight Gain and Child Adiposity at Age 3 Years." *American Journal of Obstetrics and Gynecology* Vol. 196, No. 4, April 2007. Accessed April 25, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1899090/#__ffn_sectitle.

[51] "Prenatal and Early Life Influences," Harvard School of Public Health. Accessed April 24, 2014 http://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/prenatal-postnatal-obesity/.

[52] "Weight Gain During Pregnancy." *The American Congress of Obstetricians and Gynecologists* No.548, January 2013. Accessed April 25, 2014. http://www.acog.org/Resources_And_Publications/Committee_Opinions/Committee_on_Obstetric_Practice/Weight_Gain_During_Pregnancy.

[53] "Weight Gain During Pregnancy." *The American Congress of Obstetricians and Gynecologists* No.548, January 2013. Accessed April 25, 2014. http://www.acog.org/Resources_And_Publications/Committee_Opinions/Committee_on_Obstetric_Practice/Weight_Gain_During_Pregnancy.

[54] "Weight Gain During Pregnancy." *The American Congress of Obstetricians and Gynecologists* No.548, January 2013. Accessed April 25, 2014. http://www.acog.org/Resources_And_Publications/Committee_Opinions/Committee_on_Obstetric_Practice/Weight_Gain_During_Pregnancy.

[55] "Weight Gain During Pregnancy." *The American Congress of Obstetricians and Gynecologists* No.548, January 2013. Accessed April 25, 2014. http://www.acog.org/Resources_And_Publications/Committee_Opinions/Committee_on_Obstetric_Practice/Weight_Gain_During_Pregnancy.

[56] I. Rogers, "The Influence of Birthweight and Intrauterine Environment on Adiposity and Fat Distribution in Later Life," *The International Journal of Obesity Related Metabolic Disorders*, July 2003. Accessed April 30, 2014. http://www.ncbi.nlm.nih.gov/pubmed/?term=the+influence+of+birthweight+and+intrauterine+environment+on+adiposity+and+fat+distribution+later+in+life.

The third challenge is gestational diabetes mellitus, which is a serious health condition that occurs in about 18 percent of pregnancies.[57] Untreated gestational diabetes leads to immediate threats in terms of fetal and infant morbidity and mortality caused, in part, by fetal macrosomia. Women whose babies suffer from macrosomia are twice as likely to give birth by cesarean section, in addition to the risk of suffering lacerations and postpartum hemorrhaging.[58] The infants themselves are at risk for shoulder dystocia and birth trauma.[59] Of several serious consequences, the most tragic results in the infant's death.[60]

Some risks may continue to haunt the infant later in life. There is some evidence that shows that pregnant women who suffer from untreated gestational diabetes are more likely to bear children who have a higher than normal risk for obesity in through childhood and adulthood.[61] Other findings recognized an association between gestational diabetes and childhood obesity, but failed to support causation between gestational diabetes and an altered fetal metabolism that would lead to obesity.[62]

Interestingly, low income pregnant women and caregivers of young children who enroll in the federally funded Special Supplemental Food Program for Women, Infants and Children are provided with a bounty of information related to proper prenatal and infant nutrition as part of the benefits package provided to recipients. Those whose higher economic status is presumed to allow them appropriate access to helpful education and information, such as prenatal and infant nutrition, may not receive the information. The information may indeed be available, but it is perhaps not emphasized by medical providers or sought by these consumers. The experience of the Advisory Committee is that the nutritional information provided by WIC and other government assistance programs is highly beneficial.

A number of studies have investigated the role that community, culture, and socioeconomic status contribute to infant and early childhood nutrition. *Medical News Today* reported in the article "Parents Increase Infant's Obesity Risk Through Feeding and Activity Practices" that several studies indicate parents' behaviors are associated with their children's obesity. Certainly this is, in itself, not newsworthy. After all, parents and early childhood caregivers are the primary sources for food, both good and bad, in young children's lives. The concern, however, is that parents increase the risk without realizing it. Dr. Eliana Perrin, primary author of "Racial and Ethnic Differences Associated with Feeding- and Activity-Related Behaviors in Infants," studied

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[57]American Diabetes Association, "What Is Gestational Diabetes?". Accessed April 30, 2014. http://www.diabetes.org/diabetes-basics/gestational/what-is-gestational-diabetes.html

[58] Elizabeth G. Baxley, M.D., and Robert W. Gobbo, M.D. "Shoulder Dystocia." *American Family Physician*, April 2004, 1707-714. Accessed April 30, 2014. http://www.aafp.org/afp/2004/0401/p1707.html.

[59] Elizabeth G. Baxley, M.D., and Robert W. Gobbo, M.D. "Shoulder Dystocia." *American Family Physician*, April 2004, 1707-714. Accessed April 30, 2014. http://www.aafp.org/afp/2004/0401/p1707.html. Shoulder dystocia occurs during labor when the infant is unable to pass through the birth canal.

[60] Elizabeth G. Baxley, M.D., and Robert W. Gobbo, M.D. "Shoulder Dystocia." *American Family Physician*, April 2004, 1707-714. Accessed April 30, 2014. http://www.aafp.org/afp/2004/0401/p1707.html.

[61] Teresa A. Hillier, et al., "Childhood Obesity and Metabolic Imprinting: The Ongoing Effects of Maternal Hyperglycemia," *Diabetes Care*, May 22, 2007. Accessed April 30, 2014. http://care.diabetesjournals.org/content/30/9/2287.long.

[62] Matthew W. Gillman, et al., "Maternal Gestational Diabetes, Birth Weight, and Adolescent Obesity," *Pediatrics*, Vol. 111, No. 3, March 2003. Accessed April 30, 2014. http://pediatrics.aappublications.org/content/111/3/e221.long.

863 parents of Hispanic, black, and white ethnicities.[63] She concluded that "behaviors thought to be related to later obesity were highly prevalent in this large, diverse sample and varied by race/ethnicity, suggesting the importance of early and culturally-adapted interventions," to reduce the risk of childhood obesity. Among the study's observations are that

- "Self-reported race and ethnicity were strongly and independently associated with many behaviors" thought to contribute to obesity;
- "Culturally sensitive health behavior counseling during early infancy" is significant in the prevention of obesity; and
- only 15 percent of parents reported that their pediatricians discussed media television/screen time with them.[64]

Aside from the recommendations for what parents should not do (e.g., provide junkfood and use television and computer screens as surrogate babysitters) are recommendations of what they should do. Chief among these is breastfeeding. Although the body of medical research has not concluded that breastfeeding limits childhood and adult obesity, many studies do, in fact, demonstrate that there is a health benefit with regard to infant and childhood obesity.

Breastfeeding.

After decades of decline in the number of infants being breastfed, a resurgence in the practice began to gain momentum over the past decades. In 1974 the World Health Organization was alarmed enough by the worldwide trend to replace breastfeeding with formula feeding that its Twenty-seventh World Health Assembly began to develop guidelines to increase the rate of breastfeeding around the world. The Assembly urged nations to "review sales promotion activities on baby foods to introduce appropriate remedial measures, including advertisement codes and legislation where necessary."[65] Over the past 40 years, not only have breastfeeding rates been increasing, but U.S. hospitals are beginning to curtail or restrict the distribution of free infant formula samples to mothers of newborns. A 2010 study of U.S. hospitals found that most distributed free samples provided by manufacturers, but the proportion of hospitals that eliminated the free packs increased from 2007.[66] A sample of 1,239 hospitals in 20 states showed that the proportion of "sample-free" hospitals had increased from 14 percent to 28 percent over those three years. Moreover, the states where hospitals were more likely to eliminate free formula packs had higher rates of breastfeeding initiated at birth and sustained through the infant's first six months.

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[63] [63] E. Perrin M.D., MPH, "Racial and Ethnic Differences Associated with Feeding- and Activity-Related Behaviors in Infants," *Pediatrics*, Vol. 133, No. 4, April 2014. Accessed May 1, 2014 http://pediatrics.aappublications.org/content/ early/2014/03/11/peds.2013-1326.full.pdf+html.

[64] E. Perrin M.D., MPH, "Racial and Ethnic Differences Associated with Feeding- and Activity-Related Behaviors in Infants," *Pediatrics*, Vol. 133, No. 4, April 2014. Accessed May 1, 2014 http://pediatrics.aappublications.org/content/ early/2014/03/11/peds.2013-1326.full.pdf+html.

[65] World Health Organization, "International Code of Marketing of Breast-Milk Substitutes," Geneva, 1981. Accessed May 5, 2014. http://www.who.int/nutrition/publications/infantfeeding/9241541601/en/.

[66] Radha Sadacharan, et al., "Trends in US Hospital Distribution of Industry-Sponsored Infant Formula," *Pediatrics,* September 26, 2011. 702. Accessed May 5, 2014. pediatrics.aappublications.org/content/128/4/702.full.pdf.

There appeared to be a relationship between hospital policies toward free samples and the rate of breastfeeding.[67]

At present, there is little doubt that breastfeeding provides long-lasting benefits to both mother and child that are not easily, if even feasibly, replicated by other means of feeding and bonding. The American Academy of Pediatrics (AAP) recognized the significant physical and psychological advantages of breastfeeding, and first recommended in 2005 that infants be breastfed.[68] In February 2012 the AAP published a revised policy statement on breastfeeding to include recommending breastfeeding for the first year of life, and exclusively of all other forms of nutrition for the first six months.[69]

The United States Lactation Consultant Association provides evidence from a number of studies that demonstrate the anti-obesity benefits of breastfeeding. Included among these are a CDC report that nine months of breastfeeding reduce a baby's risk of overweight by more than 30 percent; a U.S. Department of Health and Human Services found that infants who are not breastfed have a 32 percent higher risk of being overweight; the White House Taskforce on Childhood Obesity reported that breastfed children are 22 percent less likely to be overweight than are their peers. Even among siblings, breastfed children had a BMI that was .39 standard deviations lower than non-breastfed siblings.[70]

Each year the CDC issues a report card of breastfeeding rates in each state. The report includes information on 12 categories that measure breastfeeding initiation, duration, and others such as whether or not each state's child care regulations support onsite breastfeeding. The 2013 CDC report shows that seven states have child care regulations that support breastfeeding: Arizona, California, Delaware, Mississippi, North Carolina, Texas, and Vermont.[71]

As seen in Table 1, Pennsylvania lagged the national average rate by about 6 percent for babies who have ever breastfed.[72] Pennsylvania's figures improve slightly as compared to the U.S. average for the categories measuring duration of breastfeeding. At six months, almost 26 percent of Pennsylvania infants were breastfeeding, which is about 1 percentage point below the national average. At 12 months, Pennsylvania babies were breastfeeding at 25.9 percent, which is slightly greater than 1 percentage point below the national average of 27 percent. In the category of exclusive breastfeeding at three months, Pennsylvania infants were 6 percentage points below the national average. The 16.5 percentage of exclusive breastfeeding at six months was essentially the

[67] Radha Sadacharan, et al., "Trends in US Hospital Distribution of Industry-Sponsored Infant Formula," *Pediatrics,* September 26, 2011. 702. Accessed May 5, 2014. pediatrics.aappublications.org/content/128/4/702.full.pdf.
[68] American Academy of Pediatrics, "Breastfeeding and the Use of Human Milk," *Pediatrics*, Vol. 115, No. 2, February 1, 2005. 496-506. Accessed on May 1, 2014. http://pediatrics.aappublications.org/content/115/2/496.full.
[69] American Academy of Pediatrics, "Breastfeeding and the Use of Human Milk," *Pediatrics*, Vol. 129, No. 3, March 1, 2012. Accessed May 1, 2014. http://pediatrics.aappublications.org/content/129/3/e827.short.
[70] Judith Gutowski, "Breastfeeding as Obesity Prevention," Judith Gutowski, and Healthy Keystone Kids Initiative presentation to the JSGC Advisory Committee on Childhood Obesity Prevention and Wellness, January 16, 2014.
[71] Judith Gutowski, "Breastfeeding as Obesity Prevention," Judith Gutowski, and Healthy Keystone Kids Initiative presentation to the JSGC Advisory Committee on Childhood Obesity Prevention and Wellness, January 16, 2014.
[72] Division of Nutrition, Physical Activity, and Obesity, "Breastfeeding Report card, 2013," CDC, 2013. Accessed May 6, 2014. http://www.cdc.gov/breastfeeding/data/reportcard.htm.

same as the national average. From the 2008 report through the 2013 report, Pennsylvania's percentage of breastfed infants had varied but mostly lagged the national average.[73]

Table 1
States' Percentages of Breastfed Infants by Age
2013 Report of 2010 Births

State	Ever Breastfed	Breastfeeding at 6 months	Breastfeeding at 12 months	Exclusive Breastfeeding at 3 months	Exclusive Breastfeeding at 6 months
Alabama	60.4	29.5	14.2	23.5	11.9
Alaska	84.7	58.1	37.4	48.8	26.8
Arizona	83.2	49.7	25.4	39.4	15
Arkansas	57.7	24.2	14.4	22.5	9.2
California	91.6	71.3	45.3	56.8	27.4
Colorado	89.1	56.5	27.4	44.6	24.7
Connecticut	76.9	45.6	20	35.8	15.5
Delaware	68	39.1	17.4	30.6	17.4
District of Columbia	73.7	45.1	20.8	32.1	14.6
Florida	71.8	40.9	20	29.2	10.6
Georgia	68.2	31.8	12.9	22.2	6.2
Hawaii	87.4	64.9	42.2	51.6	22
Idaho	91.8	74.5	45.5	60.3	27
Illinois	75.2	48.8	21	34.6	11.1
Indiana	63.6	37.7	16.5	27.7	13.8
Iowa	76.5	54	32.1	43.2	18.8
Kansas	72.9	41.8	27.3	30.5	15.1
Kentucky	52.6	32.5	18.9	33.4	14.4
Louisiana	60.6	31.3	14.9	30.6	10.7
Maine	75.4	48.9	27.9	46.2	22.9
Maryland	69.4	52	24.2	29.3	15.1
Massachusetts	83	62.4	28.9	55.7	20.6
Michigan	74.6	45.1	22.8	34.3	13
Minnesota	73.5	49.1	23.1	47.2	23.5
Mississippi	50.5	19.7	9.1	17	5.1
Missouri	77.5	39.3	21.6	39.8	15.7
Montana	82.4	59.3	37.2	50.2	20.1
Nebraska	80.8	53.8	22.3	48.6	21.4
Nevada	79.1	40.9	22.3	33.9	18.6
New Hampshire	88.5	53.6	25.5	49.5	24.9
New Jersey	71.5	47.8	31.4	32.3	10.9

[73] Division of Nutrition, Physical Activity, and Obesity, "Breastfeeding Report card, 2013," CDC, 2013. Accessed May 6, 2014. http://www.cdc.gov/breastfeeding/data/reportcard.htm.

Table 1
States' Percentages of Breastfed Infants by Age
2013 Report of 2010 Births

State	Ever Breastfed	Breastfeeding at 6 months	Breastfeeding at 12 months	Exclusive Breastfeeding at 3 months	Exclusive Breastfeeding at 6 months
New Mexico	85	46.7	27.3	30.3	19.3
New York	82.6	52.6	28.4	32.1	16.5
North Carolina	74.9	48.5	31.9	32.7	14.8
North Dakota	79	44.6	22.3	43.6	20.5
Ohio	65.4	48.1	20	40.2	17.7
Oklahoma	74.2	39.6	14.3	37.9	16.6
Oregon	90.2	71	52.3	53.2	23.9
Pennsylvania	70.2	42.9	25.9	31.9	16.5
Rhode Island	70.7	50.2	24.1	41.6	16.7
South Carolina	67.5	32	18.7	32.7	16
South Dakota	76.2	49.7	31.5	51.9	26.3
Tennessee	59.6	29.9	16.8	17.9	4.1
Texas	77.2	45.5	25.8	35.8	14.5
Utah	83.1	64.2	36.8	43	22.5
Vermont	84.1	62.3	40.7	51.7	25.9
Virginia	86.5	54.6	33	39.5	15.1
Washington	87.9	60.2	30.2	47.6	19.6
West	60.5	32.8	21.3	27.2	9.1
Wisconsin	75.5	55.5	34.3	40.5	15.3
Wyoming	86.5	55.6	30.6	51.1	24.9
U.S. Average	**76.5**	**49**	**27**	**37.7**	**16.4**

Source: CDC, Breastfeeding Report Card--United States, 2013. http://www.cdc.gov/breastfeeding/data/reportcard.htm

There is research to support the hypothesis that breastfeeding has an inverse relationship with obesity. The CDC made breastfeeding a recommendation in "Recommended Community Strategies and Measurements to Prevent Obesity in the United States," a 2009 issue of *Morbidity and Mortality Weekly Report*, based on a systematic review of epidemiological data that showed breastfed infants were 13 percent to 22 percent less likely to be obese than formula-fed infants, and further, each additional month of breastfeeding reduced the incidence of obesity by an additional 4 percent.[74] Further, the CDC cited studies demonstrating that infants fed with less than an 80 percent "intensity" of breastfeeding had double the risk of being overweight by age 12

[74] Center for Disease Control, "Recommended Community Strategies and Measurements to Prevent Obesity in the United States," *Morbidity and Mortality Weekly Report*, Vol. 58, No. RR-7, July 24, 2009. Accessed May 1, 2014. http://www.cdc.gov/mmwr/pdf/rr/rr5807.pdf.

months.[75] In a study of 847 children that examined the effects of age of when solid foods are introduced, it was shown that obesity risk was not associated with the timing of solid foods among breastfed infants; however, formula-fed babies starting solid foods before the age of 4 months showed a six-fold increase in risk of being obese by age 3 years.[76]

A 2013 report in *Pediatric Obesity*, "Influence of Breastfeeding on Blood-cell Transcript-based Biomarkers of Health in Children," concluded that breastfeeding seems to confer protective effects against obesity and its related metabolic problems.[77] The researchers studied the effects of breastfeeding on certain genes that act as biomarkers of conditions such as insulin resistance and high cholesterol, among others. Importantly, the authors theorize that, despite the benefits of breastfeeding, monitoring such biomarkers may help identify children who would benefit from early intervention for overweight, obesity, and metabolic problems.

The length of time an infant is breastfed may lead to beneficial outcomes in terms of childhood and adult obesity and related conditions. A study published in 2010 by Dr. Melissa Bartick and Arnold Reinhold in *Pediatrics* showed that breastfeeding exclusively for the first six months can reduce a number of serious illnesses and diseases aside from obesity, including necrotizing enterocolitis, otitis media, gastroenteritis, lower respiratory tract infections requiring hospitalization, atopic dermatitis, SIDS, childhood asthma, childhood leukemia, and Type I diabetes.[78] The authors estimate that having 80 percent of U.S. parents comply with APA breastfeeding recommendations for the first six months of life would save an estimated $10.5 billion and 741 infant lives annually. Ninety percent compliance would save an estimated $13 billion per year and 911 lives.

The initiation and duration of breastfeeding appears to be inversely correlated to the distribution of free infant formula at hospitals. Various organizations are making efforts to reduce or eliminate the distribution of free samples of baby formula in hospitals. The American Public Health Association published an article in 2008 that cited criticisms of the practice of free distribution that arose in reports from the GAO, CDC, AAP, American College of Obstetricians and Gynecologists, the U.S. Office on Women's Health, and the WHO.[79] A joint report of the not-for-profit organizations Ban The Bags and Public Citizen published a report in October 2013 that matched the list of the highest performing as evaluated by *U.S. News and World Reports* with

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[75] Center for Disease Control, "Recommended Community Strategies and Measurements to Prevent Obesity in the United States," *Morbidity and Mortality Weekly Report*, Vol. 58, No. RR-7, July 24, 2009. Accessed May 1, 2014. http://www.cdc.gov/mmwr/pdf/rr/rr5807.pdf.

[76] Susanna Y. Huh M.D., MPH, et al., "Timing of Solid Food Introduction and Risk of Obesity in Preschool-Aged Children," *Pediatrics*, Vol. 127, No. 3, March 2011. 544-551. Accessed May 1, 2014. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3065143/.

[77] T. Priego, et al., "Influence of breastfeeding on blood-cell transcript-based biomarkers of health in children," *Pediatric Obesity*, November 26, 2013. Accessed February 14, 2014. http://onlinelibrary.wiley.com/doi/10.1111/j.2047-6310.2013.00204.x/pdf.

[78] Melissa Bartick, and Arnold Reinhold, "The Burden of Suboptimal Breastfeeding in the United States: A Pediatric Cost Analysis," *Pediatrics*, April 5, 2010. Accessed May 5, 2014. http://pediatrics.aappublications.org/content/125/5/e1048.full.html.

[79] Anne Merewood, MPH, IBCLC, "Ban the Bags: A National Movement to Eliminate Take-Home Formula Sample Packs from the Hospital," *American Public Health Association*, 2008. Accessed May 5, 2014. http://www.apha.org/membergroups/newsletters/sectionnewsletters/food/winter08/banthebags.htm.

hospitals that had policies limiting or prohibiting distribution of free formula samples for newborns. Pennsylvania hospitals that met both criteria are

- Lehigh Valley Hospital;
- Hospital of the University of Pennsylvania;
- Thomas Jefferson University Hospital;
- Magee Women's Hospital of UPMC;
- Hahnemann University Hospital; and
- Western Pennsylvania Hospital. [80]

Commission staff considered whether or not the influence of free infant formula distribution at Pennsylvania hospitals influenced the overall rate of breastfeeding by Pennsylvania residents. The idea was that there might be a link between hospitals' free-formula policies, number of births, and breastfeeding rates. While information about infant formula policies is available, available data do not reliably identify the number of births per hospital.[81] Therefore, any particular hospital system's policies regarding free formula samples could not be evaluated against the number of newborns breastfed. Despite the lack of conclusive data, empirical research supports a policy of restricting the distribution of free infant formula samples and coupons when formula is not medically indicated.

The prenatal and infant stages of life are not discrete from each other in terms of health, wellness, and obesity prevention. They represent, rather, a continuum that begins early in fetal development, as influenced by innumerable factors that include maternal health, wellness, and BMI.

Recommendations

The Advisory Committee identified where the Commonwealth has a number of opportunities to mitigate the threat of childhood obesity and encourage childhood wellness beginning with prenatal and infant stages of life.

Nutrition Counseling.

1. The Advisory Committee recommends that all pregnant women, regardless of income status, receive high quality nutrition information and counseling. The Department of Health should be the lead agency to make the information already provided to WIC program participants available throughout the Commonwealth.

Proper nutrition counseling, whether presented by a doctor or a licensed nutritionist working in collaboration with the physician's office, should be provided to all pregnant women.

[80] Ban The Bags, "Top-ranked Hospitals Have Abandoned Infant Formula Promotion," Accessed May 5, 2014 *Banthebags.org*, http://banthebags.org/.

[81] Existing data reports show births per Pennsylvania hospital. With some large hospitals reporting 1 or 0 births per year, however, staff recognized that data submissions may not be accurate.

Low income women are provided with nutrition information through their doctor visits because the federally funded medical insurance programs require that it be presented. WIC also includes nutrition counseling as part of its benefits. The Advisory Committee recognizes that the information provided through these programs is valuable, useful, practical, and supported by medical and clinical research. Ironically, women who have higher incomes and private insurance coverage often do not receive robust prenatal and infant nutrition education and counseling from their healthcare providers because there is no mandate from insurers that it be presented.

Prenatal and infant nutrition education and counseling generally are provided through pediatricians, obstetricians/gynecologists, and family practitioners whether it be from the doctor or nutrition counselors. The information is provided by way of conversation with healthcare providers, and through informational brochures, videos, and websites. The materials are put together by the insurers, public health entities, and others. An example of a best practice exists in diabetes treatment, where diabetes patient nutritionists are available through doctors' offices, and patients regularly meet with the nutritionists as part of their ongoing health management.

2. The Advisory Committee recommends that an ongoing public service campaign be launched. Potential means of communication may include web-based applications that direct people to resources. Internet users could measure their nutrition intelligence through online surveys and quizzes. They could share the results with their primary healthcare providers, who could use the results to provide or refer to needed education and counseling.

Breastfeeding.

To benefit the Commonwealth's public health, and with no medical evidence to the contrary, the Advisory Committee exhorts the General Assembly to promote and facilitate breastfeeding by mothers of newborns and infants. Importantly, research associates breastfeeding with decreased risk of infant and child obesity, in addition to identifying numerous other health benefits to breastfeed babies. Pennsylvania Medicaid coverage includes lactation services, and the Advisory Committee urges the Commonwealth to continue making the benefits available to recipients. Moreover, the Department of Health's Breastfeeding Awareness and Support Program provides extensive information for nursing mothers and fathers of newborns.[82] The information compiled by the department is comprehensive, and includes educational materials for parents. The department also provides data, statistics, and reference guides for healthcare providers and policy makers.[83]

[82] "Welcome to the Pennsylvania Breastfeeding Awareness and Support Program," Pennsylvania Department of Health. Accessed May 7, 2014.http://www.portal.state.pa.us/portal/server.pt/community/breastfeeding_awareness_and_support_program/14206.

[83] "Pennsylvania Breastfeeding Referral Guide," Pennsylvania Department of Health. Accessed May 7, 2014. http://www.portal.state.pa.us/portal/server.pt/community/breastfeeding_awareness_and_support_program/14206.

Breastfeeding.

3. The Advisory Committee recognizes the significance of section 2407 of the federal Patient Protection and Affordable Care Act, which guarantees workplace opportunities and protections for breastfeeding mothers.[84] The advisory committee recommends that the General Assembly work to ensure compliance with federal lactation accommodation law, Section 4207 of the Affordable Care Act, which states that all breastfeeding employees have reasonable break times and a private place (that is not a bathroom) to express milk, as well as laws protecting breastfeeding women from being fired or discriminated against in the workplace.

4. The Advisory Committee recommends that the General Assembly consider legislation to require licensure of professional lactation consultants. Lactation consultants certified under the auspices of the U.S. Lactation Consultants Association have successfully completed extensive academic requirements and clinical training involving several years of work. Breastfeeding within the first months of life can play an important role in a person's health and wellness, and certified lactation consultants provide a significant resource for Pennsylvania's public health.

5. The Advisory Committee recommends that the General Assembly support regulations that restrict infant formula marketing practices that interfere with breastfeeding so that they are provided only to parents whose infants have a medical need. The World Health Organization (WHO) established guidelines in 1981 restricting free samples of infant formula. The intent of the regulations was not to prevent the distribution of free samples to mothers whose infants require formula feeding, but rather to restrict free access to infant formula generally because it may discourage mothers from initiating breastfeeding and impel them to purchase expensive infant formula.

6. The Advisory Committee recommends that funding be restored to staff the Department of Health's breastfeeding programs. The federal budget sequestration that began in March 2013 resulted in the elimination of the department's staff person dedicated to the breastfeeding programs. Programming continues with money and grants arranged through the department and the Pennsylvania chapter of the American Academy of Pediatrics, and is staffed by an employee paid through WIC administrative funds.[85] The department needs personnel specifically dedicated to the development and maintenance of lactation programs because of the significance of breastfeeding.

[84] "Patient Protection and Affordable Care Act Health-Related Portions of the Health Care and Education Reconciliation Act of 2010,"
[85] Email from DoH staff and JSGC staff. April 27, 2014.

Fresh Food Financing Initiative.

7. The Advisory Committee recommends that Pennsylvania's Fresh Food Initiative be reinvigorated with adequate funding. The successful WIC program makes it a point to include among its benefits packages of foods that are highly nutritious and healthful. Some states provide extra credits for foods purchased at farmers' markets, which is a benefit endorsed by the Advisory Committee. The Pennsylvania Fresh Food Financing Initiative could again make inroads into food deserts by increasing the availability and subsidizing the purchase of healthful foods.

Surplus Food.

State and federal government programs exist to assist low income families with the purchase of nutritionally valuable foods. While some programs tend to be cash assistance in nature, e.g. WIC and the Fresh Food Financing Initiative, Pennsylvania has made tremendous contributions to food distribution programs through the cooperation of legislative and executive action.

8. The Advisory Committee endorses and recommends the continuation of the Department of Agriculture's State Food Purchase Program, which provides funding to county governments to purchase food at wholesale prices for distribution to:

    - Food pantries;
    - Soup kitchens;
    - Food banks;
    - Feeding programs;
    - Shelters for the homeless; and
    - Similar organizations to reduce hunger.[86]

The department maintains a Food Standards List that specifies the types of foods that are eligible for purchase through the SFPP. The list includes foods that are recommended by nutritionists and dieticians as being healthful and nutritious. Pennsylvania's SFPP is the largest in the U.S., providing for more than 1.8 million people through the purchase of almost $14 million of food in 2012-2013.[87]

[86] "State Food Purchase Program," Pennsylvania Department of Agriculture Accessed May 7, 2014. http://www.agriculture.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_24476_10297_0_43/AgWebsite/ProgramDetail.aspx?name=State-Food-Purchase-Program-%28SFPP%29&navid=12&parentnavid=0&palid=15&.

[87] "The State Food Purchase Program Act: Report to the Pennsylvania General Assembly, January 2014." Pennsylvania Department of Agriculture. Accessed May 7, 2014. http://www.agriculture.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_24476_10297_0_43/AgWebsite/ProgramDetail.aspx?name=State-Food-Purchase-Program-%28SFPP%29&navid=12&parentnavid=0&palid=15&.

9. The Advisory Committee recommends that the General Assembly fund the Pennsylvania Agricultural Surplus Systems (PASS) Act of 2010, which was created to be a companion program of the State Food Purchase Program.[88] The PASS act directed the Department of Agriculture to develop and operate a system for the Commonwealth's food industry to donate, sell, or provide food products to Pennsylvania's charitable food. PASS was directed to include incentives and reimbursements for growers, packers, processors, and other entities in the food industry to participate. The purpose of PASS was to distribute food products based on the formula used in the State Food Purchase Program to needy or low-income individuals and families. Though enacted in 2010, there is no evidence that it had been funded.

Parenting.

While medical research into factors of prenatal and infancy largely focuses on medical aspects, occasionally researchers observe parenting practices that are believed to contribute to either healthy or unhealthy weights. Research published in *Pediatrics* concluded that racially and ethnically diverse sample of 863 parents demonstrated that "behaviors thought to relate to later obesity were highly prevalent…and varied by race/ethnicity suggesting the importance of early and culturally-adapted interventions."[89] Social marketing has been largely successful in reducing a number of public health risks such as SIDS, tobacco use, sun overexposure, and have encouraged healthy behaviors such as seatbelt usage.

10. The Advisory Committee recommends that programs be designed with respect to the best practices of social marketing techniques so they may provide guidance and assistance in ways that are culturally and ethnically relevant to the targeted parents.

[88] Pennsylvania Agricultural Surplus System Act, Act 2010-113, P.L. 1134 of Nov. 23, 2010.
[89] Eliana Perrin M.D., MPH, et al., "Racial and Ethnic Differences Associated with Feeding- and Activity-Related Behaviors in Infants," *Pediatrics*, Vol. 133, No. 4. Published online March 17, 2014. Accessed May 8, 2014. http://pediatrics.aappublications.org/content/early/2014/03/11/peds.2013-1326.abstract?sid=235598ae-08dd-403f-ba07-9f545b57fa1e.

EARLY CHILDHOOD

The nation is facing an epidemic; obese and overweight children are at greater risk for numerous health risks, stigma, and diseases. Research shows one in three children are overweight by age 6, a shocking statistic before school age.[90] Unfortunately, this issue is not new, childhood obesity rates have caused concern dating back to the 1970s.[91] Continued research shows obesity established during the first 5 years of the child's life endures to teenage years and adulthood, leading to greater risk for serious health complications.

Alarmingly, diseases once known only to affect adults are becoming prevalent in today's youth. In addition, overweight and obese children could face increased risk of mental health and psychosocial morbidities.[92] Notwithstanding physical implications of childhood obesity, the growing economic impact of childhood obesity and obesogenic environments is a concern leading to today's children at risk of lower life expectancy than their parents.

Early childhood obesity poses a unique dilemma for physicians. Early childhood is a time span generally accepted to include the first five years of the child life. To date, no clear method of prediction exists for all children. Physicians are aware of the short- and long-term detrimental outcomes associated with childhood obesity; however, no absolute criteria exist for predicting when or which child may be at risk for obesity.

For early childhood, consistent monitoring of the child in physical exams remains the prominent prevention method on behalf of physicians. Given the lack of certainty in prediction techniques, slight variances are present when physicians determine ideal weight and BMI of the child, posing greater difficulty in determining when intervention is required. Of greater concern, it is not certain if early childhood BMI intervention alone reduces the risk for obesity at later ages; however, BMI remains the most common assessment tool for physicians and school nurses alike.[93]

[90] According to the Let's Move campaign, initiatives for early childhood and education.
[91] Philip Nader, et al., "Identifying Risk for Obesity in Early Childhood." *Pediatrics* 118.3 (2006): 594-601. Print.
[92] Severely obese children and adolescents have lower quality of life pertaining to health than those children who are not obese. According to "Health-Related Quality of Life of Severaly Obese Children and Adolescence" children with obesity suffer from roughly the same quality of life as those children and adolescents diagnosed with cancer. Elise Maher, "Health-related Quality of Life of Severely Obese Children and Adolescents." *Child: Care, Health and Development* 30.1 (2004): 94-95. Print.
[93] Elise Maher, "Health-related Quality of Life of Severely Obese Children and Adolescents." *Child: Care, Health and Development* 30.1 (2004): 94-95. Print.

The Centers for Disease Control and Prevention (CDC) defines BMI and provides a percentile range of weight ranging from underweight to obese. The following ranges are applicable to children:[94]

- **Underweight**: Less than the 5th percentile
- **Healthy Weight**: 5th percentile to less than the 85th percentile
- **Overweight**: 85th percentile to less than the 95th percentile
- **Obese**: Equal to or greater than the 95th percentile

Research suggests children at 4 years of age, with BMIs between the 50th and 75th percentile are 4 times more likely to be overweight at age 12. Children age 4, with a BMI between the 75th and 85th percentile are 6 times more likely to be overweight at age 12.[95] Due to a lack of certain evidence in predicting which children will become overweight or obese, a method of intervention called "watchful waiting" may be the best course of action for pediatricians and physicians alike. Watchful waiting involves physicians examining the patient over longer durations, not basing their conclusions on single patient visit BMI scores alone.

Current national trends show alarming rates of childhood obesity: approximately one in four children ages 2 to 5 in the United States is overweight, with one in ten children of the same age obese.[96] There is increasing evidence of significant racial and ethnic disparities present among today's youth.[97] In Pennsylvania, African Americans have the highest rate of obesity, with Hispanics and non-Hispanic white children following.[98] Pennsylvania also shows socioeconomic trends in childhood obesity, with 10 percent to 15 percent of obese children living in low income families.[99] Research indicates that children' food intake patterns are imprinted early in life and are established during early childhood years. These early-established eating habits tend to carry with the child through adolescence and adulthood.

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[94] Information according to cdc.gov. An individual's body mass index is calculated from their height and weight. For adults 20 years old and older, BMI is interpreted using standard weight status categories that are the same for all ages and for both men and women. For children and teens, the interpretation of BMI is both age and gender specific. http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html

[95] Elise Maher, "Health-related Quality of Life of Severely Obese Children and Adolescents." *Child: Care, Health and Development* 30.1 (2004): 94-95. Print.

[96] Throughout the years, the percentage of overweight and obese children ages 2 to 5 has increased. This suggests obesity prevention techniques should be focused and implemented early in a child's life. Patti Banghart, *Comprehensive Obestiy Prevention in Early Childhood*. Rep. N.p.: National Center For Children in Poverty, n.d. Print.

[97] Pennsylvania Department of Health: nationwide, Hispanic boys, ages 2-19, were significantly more likely to be or become obese than non-Hispanic white boys of the same age; the same statistics were present for Hispanic girls compared to non-Hispanic white girls.

[98] According to the Pennsylvania Department of Health, African American children have the highest rates of obesity with 41 percent, Hispanics have approximately 34 percent, and non-Hispanic whites have 29 percent in 2011. According to national research, African Americans have the highest rates of obesity with 44.1 percent, Hispanics 37.9 percent, and non-Hispanic whites 32.6 percent in 2011.

[99] Information according to "*F as in Fat: How Obesity Threatens America's Future 2013*" Robert Wood Johnson Foundation. August, 2013.

It is difficult to decrease one's BMI if it has reached overweight or obese levels, thus raising the significance of prevention starting early in life. Along with healthy eating, children with higher levels of physical activity, during early childhood years, have a reduced risk for excessive weight gain later in life.

Nationally, more than 60 percent of children in the United States under the age of 5, and 5.6 percent of children in Pennsylvania are under the age of 5.[100] Currently, there are numerous state and federal initiatives aimed at reducing childhood obesity, some of which include specific early childhood intervention components. President Obama created a National Task Force on Childhood Obesity with its primary goal to reduce childhood obesity rates to just 5 percent nationwide by 2030.[101] Furthermore, nearly 75 percent of children under the age of 5 and whose mothers are employed outside of the home are in some form of licensed care setting.[102]

Within the Commonwealth and United States alike, childcare settings play a key role in the nation's youth. Promoting health in children throughout early childhood can significantly enhance healthy lifestyle habits as well as school readiness. For this reason, childcare settings should be a critical step in promotion of healthy eating, physical activity, and limited screen time. Obesity prevention in childcare settings may include incentivized programs, childcare staff training with health consultants, curriculum pertaining to nutrition and physical activity, quality improvement systems, and licensing regulation reform.[103]

Within Pennsylvania, child care facilities and after-school programs have the option to participate in the Child and Adult Care Food Program (CACFP). This program is administered at the federal level through the United States Department of Agriculture (USDA) and state level by the Department of Education, Division of Food and Nutrition.[104] The goal of this program is to enhance healthy eating and promote healthy eating habits and nutritional education activities. This program provides reimbursements for participating facilities depending on the type and number of meals served. Most importantly, meals must meet USDA meal pattern requirements; however, participation in this program is voluntary.[105]

The American Academy of Pediatrics (AAP) recommends all child care facilities provide nutrition education, attractive foods for children, and adoption of CACFP nutrition guidelines. AAP also recommends child care facilities undertake staff training and policies encouraging physical activity, and adopt policies that incorporate physical activity both indoors and out.[106]

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[100] United States Census, 2012 percent of children within the Commonwealth of Pennsylvania under the age of 5.
[101] Whitehouse.gov.
[102] Half of all children under the age of 6 spend time with a family member, friend, or neighbor. Nearly 80 percent of children under the age of 5 are in child care settings for an average of almost 40 hours per week. Patti Banghart, *Comprehensive Obesity Prevention in Early Childhood*. Rep. N.p.: National Center For Children in Poverty, n.d. Print.
[103] Childcare centers, group childcare homes, and family childcare homes are licensed by the Department of Public Welfare within the Commonwealth.
[104] Pennsylvania Department of Education, Child and Adult Care Food Program.
[105] In 1998, P.L. 105-336 consolidated benefits for homeless children under the CACFP and expanded the program to include an at risk after-school program for children through the age of 18 in low-income areas. Pennsylvania Department of Education, Division of Food and Nutrition
[106] Patti Banghart, *Comprehensive Obesity Prevention in Early Childhood*. Rep. N.p.: National Center For Children in Poverty, n.d. Print.

When the child is not engaged in physical activity, AAP suggests limited screen time, including media and computer time the child is engaged in.[107]

In additional to child care settings, Pennsylvanians who qualify for WIC are provided economic supports to purchase nutritionally balanced foods, nutrition education, nutritional counseling, breastfeeding education, and referrals to health and other social services. The Pennsylvania WIC program has served the Commonwealth since 1974 and targets low income women, infants, and children under age 5 who are deemed to be of nutritional risk.[108] Research shows children from low income, food-insecure households suffer from inferior health when compared to their counterparts; low birth weight infants from food insecure households are almost 30 times more likely to be overweight at age 54 weeks of age.[109]

Early childhood obesity poses the greatest risk for our Commonwealth's youth. While identification methods are not concrete, physicians and medical professionals alike are trained and skilled to combat the issue of childhood obesity. With children most susceptible to imprinting during early childhood years, the opportunity to promote healthy lifestyles including proper nutritional and physical intake for the child is critical. Intervention during these years has the potential to alter the risk for obesity and chronic disease through the child's lifespan, avoiding retroactive attempts to alter unhealthy lifestyles later in life. The following recommendations below are the results of advisory committee and staff research.

Recommendations

1. Healthcare providers should standardize the way in which children's weight, length, and height are measured during health related visits. Sample growth charts provided by the Centers for Disease Control and Prevention (CDC) are available. The CDC also provides World Health Organization (WHO) growth standards. According to the CDC, WHO growth standards should be used for infants and children age 0 to 2 years of age. WHO standards provide for a better description of physiological growth and provide for how children should grow in optimal conditions. CDC growth charts should be used for children 2 years of age and older. These charts provide for children past the age of 5, and up to age 19. For early childhood years, both CDC and WHO growth charts used similar methods in creation.[110]

[107] The National Center for Children in Poverty suggests 70 percent of children 2 years old and younger exceeded AAP guideline for television. Also, only 17 states regulate screen time in child care settings.
[108] Pawic.com. Providers, eligibility, Pennsylvania WIC stores, and other information can be found at the Pennsylvania WIC website.
[109] Partnership for America's Economic Success (2008). *The Consequences of food insecurity on children, and on our nation's economic success.*
[110] CDC growth charts, as well as WHO growth charts can be found on the CDC website. The CDC's website provides data tables for both forms of growth charts, as well as free online training for using WHO growth charts.

2. Although no clear-cut form of prediction exists for identifying those children who are at risk of becoming overweight and obese, healthcare professionals should consider a child's BMI, the child's rate of weight gain, and parental weight status as possible risk factors for early childhood obesity.

3. Expanding nutrition programs such as WIC and CACFP can help to reduce food and nutritional insecurities among families. Additional funding for CACFP programs can reduce the gap between reimbursements and the actual costs of program requirements. Often reimbursements are not sufficient, and program participation suffers due to a lack of solvency in the future. Research into a single application form for Pennsylvania's Children's Health Insurance Program (CHIP) and the Supplemental Nutrition Assistance Program (SNAP) should be considered, as often a single entry point or consolidation of applications results in greater consumer access.

4. Coordination of early childhood obesity prevention initiatives should be implemented at the state level. State-level implementation can result in increased federal dollars, ultimately reaching a greater number of consumers.

5. Pediatric professionals, child care professionals, and consultants should promote healthy nutritional and physical activity practices across the state. Child care and nutritional consultants can educate and offer training to child care facilities, focusing on the needs of an early childhood setting. Child care settings can also offer health screenings before the child enters school age years. Child care settings should offer opportunities for infants, toddlers, and preschool children to become physically active. For infants, these settings can provide an opportunity for the child to move about freely under adult supervision. This includes proper use of equipment for toddlers; using cribs, car seats, and high chairs for their primary purpose only. For toddlers and preschool children, child care settings should provide at least 15 minutes of light to moderate physical activity per care hour in coordination with indoor/outdoor physical activity for all children throughout all care settings.[111]

[111] Research shows limiting the use of mobility inhibiting equipment for toddlers has a positive effect on the child while awake. The Institute of Medicine of the National Academies suggests activities that limit mobility should not occur for more than 30 minutes while the infant is awake. Information according to *Early Childhood Obesity Prevention Policies*. Rep. N.p.: Institute of Medicine, 2011. Print.

6. Pediatricians should offer guidance to parents on breastfeeding, proper nutrition, and proper physical activity levels for the family, including the child. This early identification and screening, alongside pediatric watchful waiting in examinations, provide for a crucial first step in preventing early childhood obesity. Included in this information should be age appropriate sleep durations for children.

7. The community should promote physical activity ensuring children ranging from infants to high school age have access to publically maintained facilities, including public schools and parks.

8. Child care setting should limit screen time to 2 hours or less per full day of care for children ages 2 to 5. Screen time includes use of television, cell phones, or other forms of digital media.

9. Creation of an Early Childhood Advisory Council, comprised of leading professionals throughout all services and supports, should be examined in order to help facilitate a comprehensive plan for obesity prevention.

Children are susceptible to household, environmental, and lifestyle changes that ultimately affecting how today's youth interact, socialize and mature to adults. A critical period for children is their school age years; typically ages 6-17 are commonly accepted school age years for children. Although obesity rates are higher in adults, obesity in children can potentially harm every system in the child's body, notwithstanding the heart and lungs. The body, in carrying excess weight, is at risk for disease and disability later in life, with those overweight or obese in youth at greater risk for remaining overweight or obese into adulthood.[112]

With direct medical costs associated with obesity estimated to be $152 billion in 2009, and an estimated $30 billion annual cost due to obesity-related loss of productivity, the role of schools in combatting childhood obesity is great.[113] Reducing the overall obesity rate by 5 percent could save over $29 billion in five years' time, up to $600 billion in twenty years.[114] This reduction applies to children, with schools uniquely situated to combat childhood obesity. Children are estimated to spend over 2,000 hours per year in school settings where they consume on average 50 percent of their daily caloric intake, often in settings that prove to be ridden with obstacles. Food industry investment in advertising, advocacy, lobbying, and research to support and promote high calorie processed foods often overwhelm healthier options.[115] According to one study, "Professional nutritional societies maintain lucrative relations through sponsorships and endorsement with the food industry, creating a potential conflict of interest."[116]

Early childhood and school age interventions provide the best opportunities for success in curbing national and state childhood obesity prevalence, which, in turn, stands the best chance to lower adult obesity rates in the future.

Adolescence.

Infants and children rely on their parents and caregivers to provide for their nutritional needs. Teenagers, by comparison, become less reliant as they mature and begin to make their own food decisions. Teens are, nonetheless, constrained by many of the same factors, such as healthful

[112] The Harvard School of Public Health estimates 43 million children globally, under age 5, were overweight or obese in 2010. This number is a 60 percent increase since 1990 with the rate of increase for childhood obesity greater than obesity rates in adults.

[113] The Strategies to Overcome and Prevent (STOP) Obesity Alliance is a collaboration of consumer, provider, government, labor, business, health insurers and quality-of-care organizations with a goal of combating obesity Information according to stopobestiyalliance.org.

[114] The Strategies to Overcome and Prevent (STOP) Obesity Alliance is a collaboration of consumer, provider, government, labor, business, health insurers and quality-of-care organizations with a goal of combating obesity Information according to stopobestiyalliance.org.

[115] Cara B. Ebbeling Ph.D., Dorota B. Pawlak, Ph.D., and David S. Ludwig, M.D., "Childhood Obesity: Public-health Crisis, Common Sense Cure." *The Lancet* 360, No. 9331. August 10, 2002: 473-82. Accessed May 14, 2014 http://www.ncbi.nlm.nih.gov/pubmed/ 12241736.

[116] Cara B. Ebbeling Ph.D., Dorota B. Pawlak, Ph.D., and David S. Ludwig, M.D., "Childhood Obesity: Public-health Crisis, Common Sense Cure." *The Lancet* 360, No. 9331. August 10, 2002: 473-82. Accessed May 14, 2014 http://www.ncbi.nlm.nih.gov/pubmed/ 12241736.

food availability, opportunities for physical education and activity, and socioeconomics, that influence overweight and obesity in infants and children.

The power of the social media is understood by health policy makers. From epidemiologists following Twitter feeds to track the spread if influenza to public health authorities advertising the importance of seatbelts, public health policy makers are doing what they can to exploit the practicality offered by social media. Social marketing must continue to develop effective means of engaging young people to understand that self-determination is only possible if one has the capacity to exploit it. [117]

Mutual friendship ties, not merely biological family or relationships found within the household, can contribute to an adult's risk of obesity, but little is known about whether the social mechanisms associated with weight gain in adults pertain to adolescents.[118] Studies of adolescent social networks have identified the extent to which clique formation, the tendency for people to form social ties with others who are similar, are associated with weight status and physical activity.[119] One study found that adolescent friendships tended to cluster on the basis of weight status.[120] The boys who were friends engaged in similar levels of physical activity; however, this finding was not noted within girl friendship networks.[121] Another study found similarities in the consumption of sweet foods and fast foods and types of physical activities among male friends, and female friends were similar in the time spent on computer-based leisure activities.[122]

The mechanisms of social influence on adolescent overweight vary, but all depend on social interaction. Cultural and group norms and attitudes significantly affect how teens process information about themselves and the world around them. For example, adolescents' attitudes about body image can be influenced by social and cultural norms.[123]Parents can serve as role models, especially for younger children whose health behaviors are completely influenced by their parents' habits, and older children may look to their friends, teachers, and community leaders as role models for their own health behaviors.[124]

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[117] Laura M. Koehly and, Aunchalee Loscalso. "Adolescent Obesity and Social Networks." *Preventing Chronic Disease*. CDC. Vol. 6. No. 3. 2009. http://www.cdc.gov/pcd/issues/2009/.

[118] N. Christakis and J. Fowler. "The Spread of Obesity in a Large Social Network Over 32 Years." *New England Journal of* Medicine. Vol. 357. No. 4.

[119] L.M. Koehly and V.A. Shivy. "Social Environments and Social Contexts: Social Network Applications in Person Environment Psychology." Mahwah, N.J. : Lawrence Erlbaum. 2000.

[120] T. Valente, et al. "Adolescent Affiliations and Adiposity: A Social Network Analysis of Adolescent Friendships and Weight Status." *Journal of Adolescent Health*.n.d.

[121] K. Fujimoto, et al. "Social Network Influences on Adolescent Weight and Physical Activity." Paper presented at: Sunbelt XXVIII International Sunbelt Social Network Conference; 2008; St. Pete Beach, FL.

[122] K. de la Haye, et al. "Obesity-related Behaviors in Adolescent Friendship Networks." *Social Networks*. n.d.

[123] J.E. Boyington, et al. "Cultural Attitudes Toward Weight, Diet, and Physical Activity Among Overweight African American Girls." *Preventing Chronic Disease*. Vol. 5. No. 2. http://www.cdc.gov/pcd/issues/2008/apr/07_0056.htm.

[124] S. Scanglioni,, M/ Salvioni M, and C. Galimberti. "Influence of Parental Attitudes in the Development of Children Eating Behaviour." *British Journal of Nutrition.*;99 (Suppl 1):S22-5. 2008. http://www.ncbi.nlm.nih.gov/pubmed/18257948?report=docsum.

Pennsylvania School Age Obesity:

In 2010-2011 school years, the Pennsylvania Department of Health growth screens reported 155,115 children in grades K-6 to be overweight, falling with the 85th and 95th percentiles on BMI for age percentiles. This equates to 15.91 percent of the 975,256 children screened. During the same school year, 162,679, or 16.68 percent of children grades K-6, had a BMI greater or equal to the 95th percentile. These children are considered obese according to CDC BMI percentiles. Similarly, 136,129, or 16.43 percent of Pennsylvania school children grades 7-12, had a BMI score between the 85th and 95th percentiles. Roughly 146,221, or 17.65 percent of children in grades 7-12, had a BMI greater than or equal to the 95th percentile.[125] The statewide average for those students with a BMI falling within the 85th and 95th percentiles is 291,244, or 16.14 percent of the population between grades K-12. The number of students considered obese in the 2010-2011 school year is 308,900, or 17.12 percent of students in grades K-12. Table 2 shows data for overweight and obese children in grades K-12 for the 2010-2011 school year.[126]

Table 2
Pennsylvania Students K - 12
Overweight or Obese by BMI Measurement
By County, 2010-2011 Academic Year

County	Overweight	Percent	Obese	Percent
Adams	2,323	15.20	2,857	18.70
Allegheny	28,690	17.18	25,973	15.55
Armstrong	1,889	18.54	2,076	20.37
Beaver	5,093	21.42	4,427	18.62
Bedford	1,231	16.27	1,636	21.62
Berks	12,708	17.25	12,754	17.31
Blair	2,973	15.83	3,7282	19.85
Bradford	1,717	17.06	2,285	22.70
Bucks	15,895	16.51	13,670	14.20
Butler	4,871	16.73	4,445	15.27
Cambria	3,620	17.56	3,732	18.10
Cameron	130	18.36	152	21.47
Carbon	1,532	17.00	1,798	19.96
Centre	2,078	15.03	2,120	15.33
Chester	13,325	17.07	10,212	13.08
Clarion	971	15.49	1,281	20.44
Clearfield	2,092	15.43	2,840	20.95
Clinton	794	17.15	1,032	22.30

[125] Numbers and percentages according to 2010-2011 school year growth screens reported to the Pennsylvania Department of Health. Data is reported annually by Educational Institutions to the Department of Health. The Department takes responsibility for analysis of data, however data accuracy lies with individual educational institutions.

[126] Calculations conducted by the Joint State Government Commission based on 2010-2011 growth screens/BMI-for-age percentiles by Health District and County published by the Pennsylvania Department of Health. Document last modified 09/23/03.

Table 2
Pennsylvania Students K - 12
Overweight or Obese by BMI Measurement
By County, 2010-2011 Academic Year

County	Overweight	Percent	Obese	Percent
Columbia	1,563	16.76	1,939	20.79
Crawford	1,805	15.15	2,159	18.12
Cumberland	4,651	15.07	4,590	14.87
Dauphin	6,388	16.33	6,936	17.73
Delaware	16,679	19.35	12,087	14.02
Elk	738	15.53	821	17.28
Erie	6,926	15.63	7,757	17.50
Fayette	3,057	16.39	4,402	23.59
Forest	102	18.38	92	16.58
Franklin	3,306	17.34	3,612	18.94
Fulton	356	15.34	489	21.08
Greene	896	16.58	1,244	23.02
Huntingdon	868	15.56	1,240	22.22
Indiana	1,610	15.98	2,033	20.18
Jefferson	870	16.58	1,113	21.21
Juniata	556	16.96	771	23.52
Lackawanna	5,485	17.64	6,048	19.45
Lancaster	11,821	15.70	11,273	14.98
Lawrence	2,240	16.75	2,704	20.22
Lebanon	2,897	15.45	3,359	17.91
Lehigh	8,969	15.87	10,100	17.87
Luzerne	8,095	17.66	8,079	17.63
Lycoming	2,850	17.02	3,258	19.47
McKean	1,111	17.24	1,347	20.91
Mercer	2,892	16.16	3,441	19.23
Mifflin	1,002	21.08	980	20.61
Montgomery	20,878	15.81	17,734	13.43
Monroe	5,731	17.56	6,021	19.68
Montour	423	16.83	425	16.91
Northampton	8,648	18.71	8,782	19.00
Northumberland	1,969	14.98	2,664	20.27
Perry	947	14.34	1,227	18.57
Philadelphia	14,810	9.65	29,658	19.32
Pike	1,783	19.70	1,652	18.25
Potter	394	15.84	521	20.94
Schuylkill	3,287	16.25	4,197	20.75
Snyder	1,405	27.97	1,028	20.47
Somerset	1,663	15.96	2,073	19.89
Sullivan	93	14.62	126	19.81

Table 2
Pennsylvania Students K - 12
Overweight or Obese by BMI Measurement
By County, 2010-2011 Academic Year

County	Overweight	Percent	Obese	Percent
Susquehanna	1,071	16.56	1,528	23.61
Tioga	996	17.15	1,296	21.85
Union	693	15.78	783	17.88
Venango	1,907	21.28	1,877	20.95
Warren	860	17.28	1,113	22.36
Washington	4,499	15.20	5,315	17.95
Wayne	886	16.44	1,037	19.25
Westmoreland	8,580	16.36	9,427	17.98
Wyoming	660	16.35	766	18.97
York	10,456	15.16	10,710	15.53
Statewide[127]	291,244	16.14%	308,900	17.12%

Source: Pennsylvania Department of Health, 2010-2011 data.
http://www.portal.state.pa.us/portal/server.pt/community/health_statistics/14136

Federal Legislation

National School Lunch Act

Richard B. Russell National School Lunch Act, as amended, 42 U.S.C. 1751 1760, 1779. In creating the National School Lunch Program (NSLP) in 1946, Congress recognized that providing healthful meals benefited national security, maintained the health of the nation's children, and encouraged consumption of U.S. agricultural products.[128] Schools that participate in the NSLP are provided with cash reimbursements and donations from the USDA's stock of surplus foods. A lead agency in each state, typically an education agency, administers its state's participation. Federally appropriated NSLP funds are available to each state agency to reimburse participating public and nonprofit private schools, of high school grades or under, including residential child care institutions, for lunches meeting the nutritional requirements prescribed by the Secretary of Agriculture, served to eligible children. Schools meeting eligibility criteria may be reimbursed for snacks served to children enrolled in eligible after school hour care programs.[129]

[127] According to the information above, Chester County has the lowest percentage of children with a BMI score greater than or equal to the 95th percentile during the 2010-2011 school year. During the same school year, Susquehanna and Fayette counties had the largest percentage of K-12 students with a BMI greater than or equal to the 95th percentile, with over one-quarter of the schools surveyed students considered obese.
[128] Gordon W. Gunderson, "National School Lunch Act," Food and Nutrition Service, USDA website. Accessed June 8, 2014. http://www.fns.usda.gov/nslp/history_5.
[129] Refer to regulation: 7 CFR Part 210 -- National School Lunch Program.

Participating schools are reimbursed at rates that are adjusted on an annual basis to reflect changes in the Food Away From Home series of the Consumer Price Index for All Urban Consumers. All participating schools must agree to serve free and reduced price meals to eligible children.[130] Pursuant to sections 11 and 17A of the Richard B. Russell National School Lunch Act, the Department of Agriculture annually announces National Average Payment Factors. A breakdown of reimbursements can be found in Table 3.

National School Lunch Program (NSLP)*:* The National School Lunch Program traces its roots to 1932, when some school lunch programs received agricultural supplies and federal dollars. Legislation in 1935 authorized the USDA to purchase surplus farm merchandises from farms and dispense them to schools. In 1946, the National School Lunch Act permanently established school lunches and established a basic meal pattern requirement, with an additional requirement to serve reduced price and free meals to children in need.[131] In 2004, P.L.108-265 Child Nutrition and WIC Reauthorization Act provided regulations to enhance nutrition programs and promote healthy choice among children. This act specifically required local wellness policies to be established and authorized an expansion of the then pilot Fruit and Vegetable Program.

The National School Lunch Program is a federal and state program designed to reimburse participating public, intermediate, charter, area vocational or career technology schools, public residential child care institutions, and tax exempt non-public schools or residential child care institutions for adherence to federal meal guidelines. Nationwide, the program provides reimbursements for over 28 million meals daily.[132] Meal requirements are much the same for NSLP as they are for SBP, with reimbursements coming from four food components consisting of five items. The components are Breads/Grains, Fruit/Vegetables, Meat/Meat Alternate and Fluid Milk with serving sizes dependent on the age of the student. The Department of Agriculture annually announces adjusted rates of reimbursement July1, based on changes in the Food Away From Home series of the Consumer Price Index for All Urban Consumers published by the Bureau of Labor Statistics by the Department of Labor.[133]

Child Nutrition Act of 1966

School Breakfast Program (SBP). The School breakfast program has been serving breakfast to children in schools since its initial form as a pilot program in 1966. Today, almost 9 million children across the nation participate in this program; within Pennsylvania, more than 200,000 children participate in the School Breakfast Program.[134] Any school, public residential child care facility, and tax exempt non-public school or residential child care facility may apply to become a SBP sponsor. This program issues federal and state reimbursements as incentives for each breakfast served so long as the meal meets federal nutritional requirements.[135]

[130] Refer to regulation: 7 CFR Part 245 -- Free and Reduced Price Eligibility.
[131] USDA- National School Lunch Program background and development. Usda.gov/nslp/history.
[132] Pennsylvania Department of Education. According to PDEs 2004-2005 school year survey, more than 186 million school lunches were served in Pennsylvania.
[133] Federal Register, 45178 Government Printing Office § Vol. 78, No. 144 (Friday, July 26, 2013). Print.
[134] Pennsylvania Department of Education. Numerous studies have shown a direct correlation between breakfast intake and enhanced academia.
[135] Refer to regulation: 7 CFR Part 220 -- School Breakfast Program.

These meal requirements have four components, including three food components and serving sizes based on student age. The three food components are Meat/Meat Alternate and/or Breads/Grains, Juice/Fruit/Vegetable and Fluid Milk as a beverage or on cereal.[136] All SBP sponsors are required to offer reduced and free meals to eligible students; eligibility criteria are set by the USDA, and can be found at usda.gov.

Child Nutrition and WIC Reauthorization Act of 2004

Section 204 of Public Law 108-205 required all school districts participating in federally funded school meal programs develop wellness policies addressing physical activity and school nutrition.[137]

Healthy Hunger-Free Kids Act of 2010: (HHFKA) Child Nutrition Reauthorization*:* Improving child nutrition is the main goal of the HHFKA of 2010. This legislation authorized funding and set policy for USDA child nutrition programs. The Healthy, Hunger-Free Kids Act of 2010, enacted December 13, 2010, made changes to the reduced and free price eligibility determination for free and reduced price meal benefits in schools. Section 201 of the Healthy Hunger-Free Kids Act of 2010 made significant changes to the National School Lunch Act. In April of 2012, meal requirement standards established under the Healthy Hunger-Free Kids Act were published amending previous standards set forth under the National School Lunch Program with regard to performance-based cash assistance for school food authorities certified compliant with meal pattern and nutrition standards.[138]

This rule requires State agencies to certify participating school food authorities (SFAs) that are in compliance with meal pattern and nutrition standard requirements as eligible to receive performance-based cash assistance for each reimbursable lunch served (an additional six cents per lunch available beginning October 1, 2012 and adjusted annually thereafter). This rule also requires state agencies to disburse performance-based cash assistance to certified SFAs, and if necessary, withhold or recuperate performance-based cash if the SFA is determined to be out of compliance. The intended effect of this rule is to provide additional funding for SFAs for implementation of newly promoted meal pattern requirements leading to enhanced nutritional meals options for school and children.[139] For further detail on the National School Lunch Program, see below.

The School Breakfast Program and the National School Lunch Program are permanently authorized. However, the other child nutrition programs that affect school nutrition operators must be reauthorized every five years. The Child and Adult Care Food Program (CACFP), Summer Food Service Program (SFSP), the Special Nutrition Program for Women, Infants and Children (WIC), the State Administrative Expenses (SAE), and other smaller programs have their own

[136] USDA food components and other criteria for reimbursement eligibility must be met before a SBP sponsor can be reimbursed.
[137] Food and Nutrition Service website, USDA, http://www.fns.usda.gov/tn/local-school-wellness-policy.
[138] 77 Federal Register 25024, Certification of Compliance With Meal Requirements for the National School Lunch Program Under the Healthy, Huger-Free Kids Act of 2010.
[139] 77 Federal Register 25024, Certification of Compliance With Meal Requirements for the National School Lunch Program Under the Healthy, Huger-Free Kids Act of 2010.

expiration dates. The Healthy, Hunger-Free Kids Act of 2010 authorizes these programs for a term of 5 from December 2010.[140]

Patient Protection and Affordable Care Act (PPACA)

The Patient Protection and Affordable Care Act has several provisions within its vast language dealing with obesity. Section 4004 of the PPACA provides for education and outreach to be conducted for preventative and obesity-related services available to Medicaid enrollees; these services include obesity screening and counseling services for children and adults alike.[141] Under the law, the Secretary of Health and Human Services (HHS) is to report to Congress on the status and effectiveness of the efforts outlined in § 4004 of the PPACA.

Section 4306 of the PPACA, amending 42 U.S.C. 1320b-9a(e)(8)) allocated $25 million to four research grantees to conduct a Childhood Obesity Demonstration Project (CORD) from 2010 to 2014.[142] The goal of this extended research project is to improve children's nutrition and physical activity behaviors in all aspects of the community. Currently, research tends to limit the settings in which studies are conducted, capping studies to schools or focusing only on the individual affected by obesity. With CORD, the project goal is to determine if interventions in the pediatric health care setting combined with public health interventions in schools, early care and education centers, and communities can reduce obesity in children. Methods explored by these grantees include increasing children's physical activity, consumption of fruits, vegetables, and healthier beverages, ensuring children attain proper age-guided sleep requirements, and decreasing children's consumption of sugary drinks, screen time, and energy-dense foods.[143]

CORD did not base grantee locations on application, but rather targeted communities with a high proportion of children aged 2–12 years who are eligible for the Children's Health Insurance Program (CHIP). Due to the increased prevalence of childhood obesity in minority and low-income communities, a majority of CHIP consumers or CHIP consumer dense communities were targeted for CORD. Of the $25 million allocated to four grantees, the University of Texas Health Science Center at Houston, San Diego State University, Massachusetts State Department of Public Health in coordination with the Harvard School of Public Health, and University of Houston have been chosen to conduct this 4 yearlong Childhood Obesity Demonstration Project. These grantees work with partners throughout all levels of the community, including but not limited to seventy-five schools, fifteen health care centers, over 60 early child care and education centers, six select communities, and numerous families. Look for published research findings from these grantees in the coming months.

The PPACA also covers diet counseling for adults, alongside obesity counseling for children. According to the U.S. Preventative Services Task Force (USPSTF), children six years or older who have BMIs ranging between the 85th and 95th percentiles should receive moderate to

[140] School Nutrition Association.
[141] In the PPACA, each state is to organize a public awareness campaign designed to educate Medicaid enrollees regarding the availability of coverage for services intended to reduce obesity levels. Patient Protection and Affordable Care Act, § 4004 (2010). Print.
[142] PPACA § 4306 (2010).
[143] [143] "Childhood Obesity Demonstration Project" Centers for Disease Control and Prevention. March 2014 http://www.cdc.gov/obesity/childhood/researchproject.html

high intensity behavioral interventions.[144] USPSTF recommends more than 25 hours of counseling, preferable with the child and family present, over a six month span. Also included and covered by the PPACA is obesity education related to nutritional counseling. These interventions include weight-management programs targeting physical activity and dietary changes.

Nutritional and obesity counseling is also available for adults under the PPACA so long as the consumer uses an in-network provider and has a prescription for "medical nutrition therapy" from their primary care physician. Corresponding with nutritional counseling are vitamin supplements included under the essential health benefits provision of the ACA. Although The Affordable Care Act provides these services in hopes Americans will become healthier and lose weight, it does not cover weight loss programs that are not supervised by a physician, licensed nutritionist or dietitian. Proper nutrition is a key component to better health, which is why the ACA is providing many preventive services that include nutrition counseling to consumers.

Agricultural Act of 2014, "The Farm Bill"

The Agricultural Act of 2014, also called the Farm Bill includes two new initiatives set to provide funding for exploration and research into the nutritional benefits of pulse crops in American diets.[145] Pulse crops include dry beans, dry peas, lentils, and chick-peas that are gluten-free crops. The Farm Bill also establishes criteria to place pulse crops on the lunch trays of American school children. The Secretary of Agriculture is to conduct a pulse crop health competitive research and extension initiative, incorporating the Pulse Crop Health Initiative (PHI) and Pulse Crops Products Program to address the critical needs of the pulse crop industry by developing and disseminating science-based tools and information, conducted with respect to pulse crops in the areas of health and nutrition.[146]

The PHI will provide $125 million over 5 years to conduct research with three main goals: address obesity and chronic disease in America, address global hunger, and increase the sustainability of agricultural production. The primary goal of the Pulse Crops Product Program, with its $10 million dollar allocation to the USDA is to purchase pulse crops and establish a method of introduction into school food programs.[147] According to the USDA, dietary fiber and potassium are some of the most needed nutrition absent from school foods; pulse crops are promising in that they are less expensive than nutritionally equivalent foods, have a high concentration of protein, fiber, potassium, and iron.[148]

Section 4202 of the Agricultural Act of 2014 institutes a pilot program for the purposes of procurement of unprocessed fruits and vegetables. This section amends section 6 of the Richard B. Russell National School Lunch Act adding language directing the Secretary of Agriculture to conduct a pilot project enhancing farm to school programs in selected states.[149] The Farm Bill also

[144] The U.S. Preventative Services Task Force is an independent panel of non-federal experts in prevention and evidence-based medicine and is composed of primary care providers. http://www.uspreventiveservicestaskforce.org/
[145] House Committee on Agriculture. Agricultural Act of 2014. http://agriculture.house.gov/bill/agricultural-act-2014
[146] House Committee on Agriculture. Agricultural Act of 2014. http://agriculture.house.gov/bill/agricultural-act-2014
[147] "Farm Bill Initiatives Tackle Child Obesity and Pulse Crop Research." February 7, 2014.
[148] "Farm Bill Initiatives Tackle Child Obesity and Pulse Crop Research." February 7, 2014.
[149] Agricultural Act of 2014 § 4202(f)(4)(B)

directs the Secretary of Agriculture, in working through the Director of the National Institute of Food and Agriculture, to establish a competitively awarded food and agriculture service learning grant program. This program aims at increasing agricultural knowledge and improving nutritional health of children through promoting and building on farm to school programs implemented under section 18(g) of the National School Lunch Act.[150]

National Programs

Fresh Fruit and Vegetable Program (FFVP)*:* FFVP can be an important tool in our efforts to combat childhood obesity. The Program has been successful in introducing school children to a plurality of produce they otherwise might not have the opportunity to consume. FFVP initiatives are congruent with the Institute of Medicine's recommendations to provide healthier snack choices in schools.[151] The Farm Security and Rural Investment Act of 2002 authorized the Fresh Fruit and Vegetable Pilot in 4 states and 1 Indian Tribal Organization (Zuni, New Mexico).[152] The goal of this program was to determine methods in which fruit and vegetables, both fresh and dried, would be readily consumed. Due to successful program results, the Child Nutrition and WIC Reauthorization Act of 2004 added 4 more states, of which Pennsylvania was included.

The Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act of 2006, Public Law 109-97, subsequently appropriated money to expand the Fresh Fruit and Vegetable Program to include additional states, with the program now covering selected schools nationwide in all 50 states, the District of Columbia, Guam, Puerto Rico and the Virgin Islands[153].

Special Milk Program (SMP)*:* Pursuant to section 3 of the Child Nutrition Act of 1966, as amended (42 U.S.C. 1772), this program provides federal reimbursement for milk to children in child care institutions and schools that do not participate in federal school breakfast or lunch programs.[154] Reimbursements are based on each half pint of milk served and must be used only for reducing milk prices for children. The Special Milk Program is open to any non-profit child care institution or school, including summer camps and temporary shelters. Schools participating in the National School Lunch Program or School Breakfast Program may participate in the Special Milk Program only for those students in half day kindergarten or pre-kindergarten programs. Free milk is available through the Special Milk Program and may be provided if a family meets USDA-established income guidelines. For the period July 1, 2013 through June 30, 2014, the rate of reimbursement for SMP is 20.25 cents.[155]

Summer Food Service Program (SFSP)*:* The Summer Food Service Program was established in 1975 under the Ford Administration following a 1968 Special Food Service Program for Children. This program is designed to provide free meals to children from low income families. Meals adhere

[150] 42 U.S.C. 1769(g).
[151] USDA Fresh Fruit and Vegetable Program.
[152] USDA Fresh Fruit and Vegetable Program.
[153] USDA Fresh Fruit and Vegetable Program.
[154] 7 CFR Part 215 -- Special Milk Program
[155] From May 2012 to May 2013, SMP reimbursement rates increased 6.13 percent due to an increase in the Producer Price Index for Fluid Milk Products from 208.8 in May 2012 to 221.6 in May 2013. Federal Register, 45178 Government Printing Office § Vol. 78, No. 144 (Friday, July 26, 2013). Print.

to the same high quality nutritional guidelines that students receive during the school year. According to PDE, there is a great need for the Summer Food Service Program in areas where children qualify for free or reduced price meals. Federally funded, $12,908,230 SFSP dollars were allotted to Pennsylvania, covering 859,000 breakfasts, 2,916,315 lunches, 130,542 dinners, and 1,374,675 snacks[156]. In total, 5,280,532 meals were served in 2012 through Pennsylvania's 2,178 SFSP sites and 245 SFSP sponsors.[157]

2014 SFSP reimbursement rates are based on the number of USDA qualifying meals served to eligible children. Operating rates are as follows: $1.84 for breakfast, $3.21 for lunch/supper, and $0.75 for snacks. Administrative rates for rural or self-prep sponsors are provided on a per meal basis, as follows: $0.1825 for breakfast, $0.3350 for lunch/supper, and $0.0900 for snacks.[158] All qualifying meals served through the SFSP must meet federal nutrition standards, follow USDA set meal patterns, and require servings of milk, grains, proteins, fruits, and vegetables. For additional information on or application to become a SFSP, see the Pennsylvania Department of Education website Summer Food Service Program.

Child and Adult Care Food Program (CACFP)*:* P.L. 90-302 established a Special Food Service Program for Children in 1968; this program was later revised to include adults and underwent a name change in 1989 to its current CACFP standing. The Child and Adult Care Food Program is federally administered by the USDA. On a state level, the Pennsylvania Department of Education, Division of Food and Nutrition is responsible for oversight and implementation of this program. CACFP provides meals to children and adults enrolled in non-residential child or adult care facilities with the primary goal to improve and develop proper eating habits for those in child and adult care facilities. Eligibility criteria and participation requirements can be found on the Centers for Disease Control and Prevention website. As with other federally administered programs, USDA meal pattern requirements must be adhered to for proper reimbursement.

Let's Move Campaign*:* The following chart below demonstrates the National Average Payment Factors with Section 4 of the Child Nutrition Act of 1966 (42 U.S.C. 1759a), and section 11 of the Richard B. Russell National School Lunch Act (42 U.S.C. 1773) combined. Section 4 of the Child Nutrition Act of 1966 pertains to school food authorities participating in the National School Lunch Program. School food authorities certified to receive performance-based assistance will receive an additional 6 cents added to their section 4 payments (as shown below). Section 11 of the National School Lunch Act provides special cash assistance to aid schools in providing reduced and free school lunches. Section 17A of the Richard B. Russell National School Lunch Act establishes National Average Payments for free, reduced price, and paid afterschool snacks.[159] Section 4 of the Child Nutrition Act of 1966 establishes National Average Payment Factors for free, reduced price, and paid school breakfasts served in the School Breakfast Program.[160]

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[156] PDE Summer Food Services Program information pamphlet, available at www.education.state.pa.us.
[157] SFSP sites can be located at PAsummermeals.com. Sites are divided into five categories by the Pennsylvania Department of Education; more information can be found at www.education.state.pa.us.
[158] SFSP sites can be located at PAsummermeals.com. Sites are divided into five categories by the Pennsylvania Department of Education; more information can be found at www.education.state.pa.us.
[159] 42 U.S.C. 1766a.
[160] 42 U.S.C. 1773.

Table 3
National Average School Program
Payments to States and School Food
Authorities for Meals, Snacks, and Milk[161]

Expressed in dollars from July 1, 2013 to June 30, 2014

National School Lunch Program	Percentage Free or Reduced Meals Served: Less than 60%	Less than 60% + 6 cents	60% or more	60% or more + 6 cents	Maximum Rate	Maximum Rate + 6 cents
Continental United States						
Paid	0.28	0.34	0.30	0.36	0.36	0.42
Reduced Price	2.53	2.59	2.55	2.61	2.70	2.76
Free	2.93	2.99	2.95	3.01	3.10	3.16

School Breakfast Program	Non-severe Need	Severe Need
Continental United States		
Paid	0.28	0.28
Reduced Price	1.28	1.59
Free	1.58	1.89

Special Milk Program	All Milk	Paid Milk	Free Milk
Pricing Programs without Free Option	0.2025	N/A	N/A
Pricing Programs with Free Option	N/A	0.2025	Ave. Cost Per 1/2 Pint of Milk
Nonpricing Programs	0.2025	N/A	N/A

Afterschool Snacks Served in Afterschool Care Programs	Reimbursement
Continental United States	
Paid	0.07
Reduced Price	0.40
Free	0.80

The Pennsylvania Department of Education Bureau of Budget and Fiscal Management, Division of Food and Nutrition Child Nutrition employs numerous programs available for schools and consumers alike. Millions of children receive meals and snacks through federal school meal programs, of which the National School Lunch Program (NSLP), School Breakfast Programs (SBP), Summer Food Service Program, and Child and Adult Care Breakfast Programs are included. Establishing proper eating habits, combined with availability to access healthy nutritious foods, is an essential component to the learning environment and the overall health of each student.[162]

[161] Reimbursement rates are the same for states within the continental United States, Alaska and Hawaii's rates are increased due to erroneous transportation and packaging costs. Averages shows are the result of combining Section 4 of the Child Nutrition Act of 1966 and Section 11 of the National School Lunch Act only. Averages shown reflect Federal Register, 45178 Government Printing Office § Vol. 78, No. 144 (Friday, July 26, 2013). Print.
[162] Pennsylvania Department of Education.

Pennsylvania Programs

The Pennsylvania Department of Education has a commitment to all students ensuring access to healthy meals throughout the day given numerous federal and state programs listed below. Although Pennsylvania does not mandate participation in federal school meal programs, schools have the choice to participate and receive federal and state funding.

Fresh Fruit and Vegetable Program (FFVP): The United States Department of Agriculture Fresh Fruit and Vegetable Program (FFVP) provides students with a fresh vegetable or fruit snack during school hours. In Pennsylvania, FFVP is administered by the Department of Education. Not only does this promote consumption of healthy foods, increased exposure to fresh fruits and vegetables promotes a healthy school environment.[163] In 2008, the Farm Bill expanded FFVP to include additional schools in numerous states. Currently within Pennsylvania, 175 Fresh Fruit and Vegetable program sites participate in the FFVP for the 2013-2014 school year, working from 97 school districts or selected sponsors.[164] The number of schools selected each year is based upon federal funding with participation limited to elementary schools participating in the National School Lunch Program with free and reduced eligibility rates at or above 50 percent.[165] A list of sponsors eligible to apply for this program can be found on the Department's website, alongside program requirements, limitations, and handbook.

Farm to Schools Programs: Schools in Pennsylvania, as well as nationwide, are working to provide healthier foods to students and teach them the skills they need to make good decisions about nutrition and health. As part of these efforts, the number of schools participating in Farm to School programs has been increasing. The primary goal of Farm to School activities is to provide students with fresh and local foods for consumption and education purposes. Farm to School activities also include a variety of other types of activities including school gardens, nutrition and agriculture classroom lessons, field trips to local farms, and taste-testing of local products. In addition, Farm to School programs support local farmers and local food systems and economies.[166]

The many ongoing Farm to School programs and facilitators include the Buy Fresh, Buy Local Campaign, the nationally recognized nonprofit The Food Trust, the Penn State Cooperative Extension, Pennsylvania Farm Bureau, Fair Food Organization, Grow Pittsburgh, Pennsylvania Association for Sustainable Agriculture, and Project PA.[167]

The Department of Agriculture's Bureau of Food Distribution helps facilitate the initiation and transportation of food from farms and other channels to those at risk for hunger.[168] The State Food Purchase Program (SFPP) provides cash grants to Pennsylvania's counties for the purchase

[163] Pennsylvania Department of Education.
[164] PDE, 2013-2014 PA FFVP Schools.
http://www.education.state.pa.us/portal/server.pt/community/pa_food_and_nutrition_programs.
[165] PDE, 2013-2014 PA FFVP Schools.
http://www.education.state.pa.us/portal/server.pt/community/pa_food_and_nutrition_programs.
[166] Projectpa.org.
[167] Farm to School- Pennsylvania.
[168] Pennsylvania Department of Agriculture- State Food Purchase Program. According to the Department, Pennsylvania leads the nation in providing food assistance for the needy under the SFPP.

and distribution of food to low income individuals.[169] In addition to work on the SFPP, the bureau handles USDA supplies through programs like the National School Lunch Program and Summer Food Service Program, as well as the Commodity Supplemental Food Program (CSFP) and The Emergency Food Assistance Program (TEFAP).

Project PA

Project PA is a collaboration between the Pennsylvania Department of Education and Pennsylvania State University. The team's first effort initiated in 1995 as an educational campaign targeting Pennsylvania School Food Service personnel. Project PA provided assistance and training in order to successfully implement appropriate menu planning systems for their schools, in compliance with the School Meals Initiative[170]. Since then, the Project PA partnership has been extended to families, community resources, and all levels of school professionals. Project PA applies distance education and face-to-face educational tactics to accomplish its goals. Funding is provided by PDE and includes several USDA grants[171]. Resources are available via Project PA pertaining to all aspects of nutritional education including but not limited to school wellness policies, school meal participation, Farm to School programs, the School Breakfast Program, the National School Lunch Program, and nutrition-friendly schools.

Keystone STARS

Keystone STARS is a rating system for early learning and school-age child care programs. A Keystone STARS rating, STAR 1 to STAR 4, guides parents to facilities that receive higher ratings for quality standards. Early learning child care programs participating in Keystone STARS must meet certain quality standards in four key areas: learning environment, staff education, leadership/management, and family/community partnerships, and are awarded stars based on how well they meet each criterion. [172] Keystone STARS works with child care programs, Head Start, school-aged programs, and programs certified by the Pennsylvania Department of Public Welfare. Between 2009 and 2010, nearly 5,000 Keystone STARS programs served over 170,000 children from birth to age 12[173]. Keystone STARS programs are not required to meet USDA food nutrition requirements unless they participate in the National School Lunch Program or the School Breakfast Program. The Advisory Committee recommended that participation in these food programs be included in the STARS ranking system so participants would have further incentive to improve and maintain healthy foods as part of the services they offer.

[169] Pennsylvania Department of Agriculture- State Food Purchase Program. According to the Department, Pennsylvania leads the nation in providing food assistance for the needy under the SFPP.
[170] Projectpa.org.
[171] Projectpa.org.
[172] Pennsylvania Department of Education, Keystone STARS Program.
[173] Pennsylvania Department of Education, Keystone STARS Program.

Pennsylvania Breakfast and Lunch Reimbursements

There are three main levels of funding for school lunches: free, reduced, and full price. Both federal and state money provides the subsidy. Free lunches are provided at no cost to the student. Reduced price lunches cost 30¢ or 40¢ per day. Full price lunches are partially subsidized despite their name. Schools that do not comply with USDA standards risk losing their federal funding. Foods are reimbursed at 23¢ per "processed" meal. That is, items sold to students are considered processed and are, therefore, reimbursed.[174]

Currently, the federal government provides a 6¢ reimbursement per meal for schools that comply. Pennsylvania had an established School Nutrition Incentive Program that provided additional reimbursement for each meal that complied with USDA standards. This program ended with the 2010-2011 school year. PDE can "reclaim" meals - that is, require reimbursement - from schools that are out of compliance with USDA standards.[175] Reimbursements for the School Nutrition Incentive Program are shown in Table 4.

Table 4
School Nutrition Incentive Program
Nutritional Standards for Competitive Foods
Implemented vs. Not Implemented
Pennsylvania State Reimbursement, 2010-2011 Academic Year

Not Implemented		Implemented	
Meal	**Reimbursement Rate[176]**	**Meal**	**Reimbursement Rate**
Breakfasts served	$0.10	Breakfasts served	$0.11
Lunches Served (schools do not participate in the School Breakfast Program)	$0.10	Lunches Served (School does not participate in School Breakfast Program)	$0.11
Lunches Served (School serves breakfast to fewer than 20% of enrolled students)	$0.12	Lunches Served (School serves breakfast to fewer than 20% of enrolled students)	$0.14

[174] Commission staff meeting with Vonda Cooke, M.S., R.D. State Director, Child Nutrition Programs, Division of Food and Nutrition, Bureau of Budget and Fiscal Management, PDE, July 26, 2013.
[175] Vonda Cooke, interview by Glenn Pasewicz, Harrisburg, PA, July, 26, 2013
[176] Reimbursement rates according to *State-by-State Listing for School Meal Mandates and Reimbursements*. Rep. N.p.: School Nutrition Association, April 2013. Print.

Table 4 School Nutrition Incentive Program Nutritional Standards for Competitive Foods Implemented vs. Not Implemented Pennsylvania State Reimbursement, 2010-2011 Academic Year			
Not Implemented		**Implemented**	
Meal	**Reimbursement Rate[176]**	**Meal**	**Reimbursement Rate**
Lunches Served (School serves breakfast to 20% or more of enrolled students)	$0.14	Lunches Served (School serves breakfast to 20% or more of enrolled students)	$0.17

Barriers

Often, many schools are subject to strict budgets, a lack of resources for quality physical education programs, and a shift in focus from physical activity to core subjects all deter from effective childhood obesity prevention techniques. A decline in physical education and activity in recent years is a significant barrier to reducing obesity rates among today's youth. According to the CDC, physical activity builds strong muscles, helps to maintain bone structure, and controls weight and fat levels. Among the elements that cannot be seen, physical activity helps to maintain appropriate blood pressure and can help to reduce blood pressure in those at risk for hypertension.[177] Physical activity is linked to enhanced cognitive outcomes; however, despite the benefits, physical activity and education classes are subject to disappear in light of current funding quandaries. In addition, some school leaders contend physical education and activity classes are less important than core subjects, those being math, science, English, and reading or language arts[178].

Schools are changing, but take time to adopt and properly implement policies that will work in their location. Time to fruition of a proper wellness policy, implementation of a NLSP program, and other changes in school policy vary widely due to contextual factors. Lack of time, financial recourses, limited support from stakeholders, and lack of student acceptance all play a critical part in reducing childhood obesity in the Commonwealths schools.

School Wellness Policies

School wellness policies are intended to prevent childhood obesity and promote student health. Section 204 of The Child Nutrition and WIC Reauthorization Act of 2004 required all school districts or local education agencies (LEA) participating in federally funded school meal programs develop wellness policies addressing physical activity and school nutrition by the year

[177] The CDC recommends light to moderate physical activity; the activity does not have to be rigorous with brisk walking considered physical activity.

[178] Supporters of this notion state vigorous academic activity leaves little to no time for physical activity or education classes. According to: Kyle P. Cline, Terry E. Spradlin, and Jonathan A. Plucker, "Child Obesity, A Growing Public Policy Concern." Review. *Education Policy Brief* 2005: n. page. Print.

2006.[179] Responsibility for developing wellness policies was given to each locality to ensure unique needs for each district would be met; wellness policy criteria were to include goals for nutrition education, physical activity, and other school based activities designed to foster nutritional learning and school wellness[180].

Section 204 of the Healthy, Hunger-Free Kids Act of 2010 (HHFKA) revised the Richard B Russell National School Lunch Act by adding a new section 9A, expanding the scope of wellness policies and bringing additional stakeholders into the wellness policy process. Specifically within the new language in section 9A of the NSLA, as prompted by the HHFKA, school wellness policies were to include, at minimum: [181]

- Goals for nutritional education and promotion, physical activity, and other school based activities;
- Nutritional guidelines for all foods available on schools grounds for the duration of the school day. Foods available must adhere to USDA guidelines for meal pattern requirements and nutritional standards for competitive foods. Guidelines must also promote healthy eating and should be designed to reduce childhood obesity;
- Wellness policies were to designate one or more LEA or school officials to ensure compliance to the policy within the schools; and,
- Opportunities for the general public, including but not limited to parents, food authority representatives, teachers, members of the school board, and other representatives to review and update the local school wellness policy.

In February 2014, proposed rules were published pertaining to school wellness policies. The proposed rule would require all local educational agencies participating in the National School Lunch Program and/or the School Breakfast Program to meet expanded local school wellness policy requirements consistent with the new requirements set forth in section 204 of the Healthy, Hunger-Free Kids Act of 2010. This proposed rule would:[182]

- Establish the structure for content of the local school wellness policies;
- Ensure stakeholder participation in the creation and implementation of such policies;
- Require periodic evaluation of compliance and reporting on the progress toward achieving the goals of the local school wellness policy;
- Require all information about local school wellness policies and participating schools to be public on a periodic basis.

[179] Local School Wellness Policy Implementation Under the Healthy, Hunger-Free Kids Act of 2010. 79 Fed. Reg. 10,693-10,706 (Feb. 26, 2014) (to be codified at 7 C.F.R. Parts 210 and 220). 79 FR 10693- Feb. 26, 2014.
[180] Local School Wellness Policy Implementation Under the Healthy, Hunger-Free Kids Act of 2010. 79 Fed. Reg. 10,693-10,706 (Feb. 26, 2014) (to be codified at 7 C.F.R. Parts 210 and 220). 79 FR 10693- Feb. 26, 2014.
[181] Local School Wellness Policy Implementation Under the Healthy, Hunger-Free Kids Act of 2010. 79 Fed. Reg. 10,693-10,706 (Feb. 26, 2014) (to be codified at 7 C.F.R. Parts 210 and 220). 79 FR 10693- Feb. 26, 2014.
[182] Local School Wellness Policy Implementation Under the Healthy, Hunger-Free Kids Act of 2010. 79 Fed. Reg. 10,693-10,706 (Feb. 26, 2014) (to be codified at 7 C.F.R. Parts 210 and 220). 79 FR 10693- Feb. 26, 2014.

- Require local educational agencies, as part of the local school wellness policy, to implement policies for the marketing of foods and beverages on the school campus during the school day consistent with nutrition standards for Smart Snacks.[183]

Smart Snacks in School are standards established within the HHFKA of 2010. Any snack foods or drinks sold to children at school during the school day must adhere to Smart Snack standards established by the USDA. Beginning on July 1, 2014 any foods sold in school must

- be whole grain-rich grain product; or
- have as the first ingredient a fruit, a vegetable, a dairy product, or a protein food; or
- be a combination food that contains at least ¼ cup of fruit and/or vegetable; or
- Contain 10 percent of the Daily Value (DV) of one of the nutrients of public health concern in the 2010 Dietary Guidelines for Americans (calcium, potassium, vitamin D, or dietary fiber).[184]

Snack foods sold under Smart Snacks guidelines must have less than or equal to 200 calories, less than or equal to 230mg sodium, less than or equal to 35 percent total fat (including zero grams of trans fat and saturated fat of less than 10 percent of caloric intake), and less than or equal to 35 percent of weight from total sugars in foods.[185] On July 1, 2016, snack items just contain less than or equal to 200mg sodium.

Entrée items sold under Smart Snacks guidelines must have less than or equal to 350 calories, less than or equal to 480mg sodium, less than or equal to 35 percent total fat per calories, and less than or equal to 35 percent of weight from total sugars in foods.[186]

The provisions of the proposed rulemaking and Smart Snacks in Schools standards are to ensure LEAs establish and implement local school wellness policies, meeting and exceeding minimum standards outlines in the HHFKA and NSLA. LEAs and school wellness policies should support a school environment that promotes student health and quality nutritional education while reducing childhood obesity and providing transparency to the public on school wellness policy content and implementation.

[183] The definition of food marketing commonly includes oral, written, or graphic statements made for the purpose of promoting the sale of a food or beverage product made by the producer, manufacturer, seller, or any other entity with a commercial interest in the product.
[184] USDA Smart Snacks in Schools "All Foods Sold in Schools" Standards. Smart Snacks in Schools standards apply to beverages sold in schools. Additional details on no calorie and low calorie foods, as well as serving sizes per age group can be found on the USDA website.
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Interagency Coordinating Council for Child Health, Nutrition, and Physical Education

The Interagency Coordinating Council for Child Health, Nutrition, and Physical Education, was created by act 114 of July 11, 2006 (P.L. 1092), §1422.2. By statute, the ICCCHNPE was established by the Secretaries of Education, Health, and Agriculture to annually review, revise, and publish a Pennsylvania Child Wellness Plan to promote child health, nutrition, and physical education. The council was composed of employees of the three departments, with the chairman appointed by the secretary of PDE. The council was directed to make recommendations regarding nutritional guidelines for food and beverages sold in schools, local wellness policies, physical education curriculum, teaching about nutrition, and the utilization of federal funds that may be available for the aforementioned.

Child obesity had risen to alarming proportions several years earlier, and the ICCCHNPE was created in response to the epidemic. The Pennsylvania School Boards Association (PSBA) and PDE collaborated to create a template for wellness, including an "a la carte" list of goals. The ICCCHNPE's most recent annual Child Wellness Plan was released for the 2009-10 school year. Its work included an inventory of existing state and local programs, and it sought to identify areas for collaboration. Although apparently successful, the ICCCHNPE has not met for several years. It should be noted that the Secretary of Education is statutorily directed in §1422.2(a) to appoint a chairman of the ICCCHNPE.

Accountability: Each school, its community, and PDE are supposed to monitor the school's compliance with its local wellness plan. If the school is not in compliance, the school board may get involved to address the plan policies. Neither the ICCCHNPE nor the Division of Food & Nutrition have enforcement powers or measures of quality within compliance. Parents have a reasonable expectation that their children will receive healthful nutritional food in school breakfasts and lunches; but parents must contribute in the effort by doing their parts outside of school.

Nutrition Standards: Nutrition standards for schools are expected to improve. The new standards will be phased in over the next couple of years. Ms. Cooke learned from the School Nutrition Association's 2013 national conference that there will be a big turn in school nutrition standards and expectations over the next several years.

Farm-to-School: School children are being introduced to healthful foods through farm-to-school programs. The programs exhibit different methods of farming and gardening to increase the supply of local produce. Cooperatives have been initiated in both the eastern and western corners of the state to buy locally produced farm goods for school food programs. Staff suggested to Ms. Cooke that Intermediate Units' (IUs') administrative infrastructure may help, and she agreed that there may be potential for their involvement.

Physical Activity: Physical activity improves brain activity. As physical education classes and recess time are being reduced in favor of increased time spent on math and language arts, an important component of children's overall health and development is being sacrificed. Researchers have proven that physical activity is beneficial to many different classroom behaviors, including improved focus, test scores, and social behavior.

California has successful experience with Brain Breaks, which are two to five minute breaks for physical activity in the classroom. It is true that some teaching time is lost to Brain Breaks, but the exchange is for more and better student focus. Educators have to be educated to accept and implement curriculum changes to allow more time for physical activity during the school day.

USDA Regulations: The USDA is raising standards for what foods are acceptable for schools to provide. Pennsylvania schools are currently not as strictly regulated as schools in other states, and rigid standards may face resistance over compliance. Ms. Cooke believes that the department must put a positive spin on the new developments to preempt negative media stories that may negatively influence the public's acceptance.

The new USDA standards have no federal or state financial incentive associated with them. The rationale behind the new standards is that they are intended to help ensure the best outcome for students' health and nutritional well-being.

Marketing: PDE recognizes the importance of developing a strong connection between the department, schools, students, and the public. Ms. Cooke collaborated with Commonwealth Media Services to produce a 20 minute video that highlights successful school nutrition programs that were developed and implemented around Pennsylvania. The video had been nominated for an Emmy award.

Generally: Schools are used to following the trends shown by their students. Only several years ago, healthful eating was not trendy among students and their families. However, schools are now feeling the responsibility, and to some extent the blame, for falling behind the overall movement toward better health through nutrition. The schools now recognize that they are faced with an opportunity to embrace the trend of healthful eating, and are accepting the challenge of providing healthful environments so their students' expectation is that healthful eating is the new norm. Schools will raise the bar to build a solid foundation.

Health and Physical Education: *Sedentary Lifestyle.* Reduced physical education opportunities, lack of recreational and sports equipment in schools, playgrounds, and family life, lack of sidewalks, bike paths make healthy active lifestyle options difficult or non-existent. The U.S. has devolved into a culture built on convenience that relies on automobiles and quick transportation to travel virtually any distance. Researchers are investigating the advantages that conventional physical activity contributes to the fight against child obesity, and some do question its value.[187] It must be noted, however, that the field of physical education is continually evolving, and becoming increasingly science-based and creative. Certainly, the physical education classes being taught in 2014 are significantly and substantially different from the physical education classes experienced by the audience of this report. Gym class today is not like it was twenty years ago.

[187] Cara B. Ebbeling Ph.D., Dorota B. Pawlak, Ph.D., and David S. Ludwig, M.D., "Childhood Obesity: Public-health Crisis, Common Sense Cure." *The Lancet* 360, No. 9331. August 10, 2002: 473-82. Accessed May 14, 2014 http://www.ncbi.nlm.nih.gov/pubmed/ 12241736.

Researchers at the CDC concluded that Health and Physical Education are two essential components of maintaining good health in children and adolescents.[188] There are a number of benefits that derive from providing consistent curricula in health and physical education; further, not all are directly related to physical wellness. The CDC lists several well-known advantages to school children's participation in regular physical activity, physical education, and health classes.[189]

- Healthy bones and muscles
- Reduced risk of developing obesity and chronic diseases, such as diabetes, cardiovascular disease, and colon cancer
- Reduced feelings of depression and anxiety; increased sense of well-being
- Improved academic performance, including
  - Academic achievement and grades
  - Academic behavior, such as time on task
  - Factors that influence academic achievement, such as concentration and attentiveness in the classroom[190]

Importantly, the CDC concluded that the last three listed, academic achievement, academic behavior, and concentration and alertness, were found to be positively associated with physical activity (including physical education, recess, classroom-based physical activity, and extracurricular physical activity). The CDC surveyed 50 studies, reporting that slightly more than half found positive associations between academic performance and physical activity, slightly fewer than half had no significant influence on academic performance, and only 1.5 percent showed a negative association between physical activity and academic performance.[191] In other words, the benefits of regular, school-based physical activity, particularly physical education and health classes, reach beyond the obvious prevention and reduction of obesity and improved physical health. Time spent in physical education and health classes is time well spent, particularly with regard to overall academic performance.

Physical Education. The American Alliance for Health, Physical Education, Recreation and Dance (SHAPE America) recommends that every K-12 students have the opportunity to participate in high quality physical education. SHAPE America guidelines define a high quality physical education program as the opportunity to learn meaningful content through appropriate instruction. Meaningful content is defined as instruction in a variety of motor skills that are designed to enhance the physical, mental, and social/emotional development of the students. More broadly, fitness education and monitoring through assessments have been found to help children understand, improve, and maintain their physical well-being.

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[188] "Adolescent and School Health," Centers for Disease Control. Accessed May 13, 2014 http://www.cdc.gov/healthyyouth/physicalactivity/facts.htm.

[189] "Adolescent and School Health," Centers for Disease Control. Accessed May 13, 2014 http://www.cdc.gov/healthyyouth/physicalactivity/facts.htm.

[190] "The Association Between School-Based Physical Activity, Including Physical Education, and Academic Performance," Centers for Disease Control. Accessed May 13, 2014 http://www.cdc.gov/HealthyYouth/health_and_academics/index.htm

[191] "The Association Between School-Based Physical Activity, Including Physical Education, and Academic Performance," Centers for Disease Control. Accessed May 13, 2014 http://www.cdc.gov/HealthyYouth/health_and_academics/index.htm

Such programs develop fitness, physical competence, and cognitive understanding of the significance of physical activity. The knowledge and experience enable children to adopt and maintain healthy and physically active lifestyles, thereby preparing them with the means to combat obesity and its associated chronic health problems. Through developmentally appropriate school curricula, the experiences help improve mental alertness, academic performance, readiness to learn, and enthusiasm for learning.[192]

Table 5 shows the conclusions of leading medical and health science research organizations as they relate to health and physical education.

Table 5
Medical Research Organizations'
Recommendations for Physical Education

Organization	Recommendation
American Academy of Pediatrics	Daily physical education K-12 taught by physical education teachers (2012)
Centers for Disease Control and Prevention	Physical education is the cornerstone of a comprehensive physical activity program; physical education for 150 min./wk for elementary and 225 min./wk for secondary (2012)
Harvard School of Public Health	Daily physical education-150 min./wk for elementary 225 min./wk for secondary taught by certified physical education teachers (2012)
Institute of Medicine	Schools should be the focal point of obesity prevention by providing daily physical education (2012)
National Association of State Boards of Education	Increase the time and frequency of physical education (2010)
National Physical Activity Plan	Comprehensive physical activity programs of quality, quantity and school district accountability (2010)
American Alliance of Health, Physical Education, Recreation and Dance (Name change April 2014 to: SHAPE)	Physical education should be required 150 min./wk for elementary and 225 min./wk for secondary (2013)
White House Childhood Obesity Task Force	Increase the frequency of quality physical education that is taught by certified physical education teachers (2010)

Comprehensive Health Education.

SHAPE America recognizes the Educational Materials Center's Comprehensive Health Education curriculum, which uses a building block approach to addresses the physical, mental,

[192] J. Jacobs, "Recommendations for Inclusion in the Advisory Committee on Obesity's Final Report," SHAPE America, February 19, 2014.

emotional, and social dimensions of health.[193] At each grade level, lessons and objectives build upon the foundation of skills learned in previous grades. This continuity of information and reinforcement of health practices, through age-appropriate activities, builds a solid core of skills, attitudes and knowledge. The overall intent is designed to motivate and assist students in maintaining and improving their health by preventing disease in reducing health-related risk behaviors. Furthermore, it allows students to develop and demonstrate increasingly sophisticated health-related knowledge, attitudes, skills, and practices. The Comprehensive Health Education curriculum addresses a variety of topics including Social and Emotional Health, Nutrition and Physical Activity, Safety including Violence Prevention, Alcohol and Other Drug Prevention, and Personal Health and Wellness. Table 6 lists the medical research organizations' recommendations for health education.

Table 6
Medical Research Organizations'
Recommendations for Health Education

Organization	Recommendation
American Cancer Society	Improves the health of children and makes them successful learners (2010)
American Diabetes Association	Improves the health of children and makes them successful learners (2010)
American Heart Association	Improves the health of children and makes them successful learners (2010)
Centers for Disease Control	Promotes lifelong healthy eating and physical activity (2012)
Joint Committee on National Health Education Standards	40 hrs/yr for K-2nd; 80 hrs/yr for 3rd-12th grade

Source: J. Jacobs. "Recommendations for Inclusion in the Advisory Committee on Obesity's Final Report." February 19, 2014.

It is important to note that there is a difference between physical activity and Physical Education. While both contribute to the development of healthy, active children, physical activity is bodily movement of any type and may include recreational, fitness, or sports activities. Physical Education, taught by a certified Health and Physical Education instructor, teaches how to be wise consumers of physical activity. Physical Education teaches participants how to realize and take advantage of the benefits, skills, techniques, training principles, values, and fulfillment of a physically active lifestyle.

The following recommendations clarify the expectations and guidelines necessary to assure that Comprehensive Health and Quality Physical Education instruction is appropriately implemented in Pennsylvania schools, while at the same time closing the majority of existing loopholes. Because school children spend one third of their day in school, schools are the optimal setting to deliver Comprehensive Health and Quality Physical Education instruction to large groups of children.

[193] J. Jacobs, "Recommendations for Inclusion in the Advisory Committee on Obesity's Final Report," SHAPE America, February 19, 2014.

Recommendations

1. The Advisory Committee recommends that Health and Physical Education be adopted into the PA Core Standards. There should be appropriate assessments that require students to demonstrate the acquisition and application of skills and knowledge.

2. The Advisory Committee recommends that Physical Education be taught to every child in grades K-12, every year, throughout the school year in accordance with the recommendations of the organizations listed in Table 5 of this report.

3. The Advisory Committee recommends that Comprehensive Health Education be offered to students at all grade levels. At a minimum, Comprehensive Health Education should be taught throughout each year to students at the primary and intermediate levels, for two semesters at the middle-level, and for two years at the high school level.

4. The Advisory Committee recommends that, wherever possible, K-12 Health and Physical Education be taught by qualified Health and Physical Education instructors who have obtained appropriate certification to teach those subjects in the Commonwealth of Pennsylvania.[194]

5. The Advisory Committee recommends that a student/teacher ratio, comparable with other classes at K-12 grade levels, should be maintained in Health and Physical Education classes.

6. The Advisory Committee recommends that the following language be added to Chapter 4 of Title 22, "Academic Standards and Assessment:"[195]

   > School Districts or schools may not substitute other activities for physical education classes or credit. This includes any and all activities that take place before, during or after school hours (excluding zero or early bird physical education or health classes taught by school district employed certified physical education and health teachers).

[194] PDE, CPSG No. 41, March 1, 2012. Accessed May 13, 2014. http://www.education.state.pa.us/portal/server.pt/community/certification_staffing_policies_%28cspgs%29/8626/instructional_certification_%28numbers_30_-_68%29.

[195] PA Code, Title 22 Chapter 4. http://www.pacode.com/secure/data/022/022toc.html.

Currently, the PDE webpage on Physical Education states:

> "Neither the Pennsylvania School Code nor the State Board of Education allows for waivers for students from the requirements of health and physical education due to participation in a physical activity, such as interscholastic sports, band or ROTC. Physical activity is only one component of physical education and physical activity does not meet all of the requirements and standards of physical education."[196]

7. The Advisory Committee is thus recommending that PDE formally adopt that statement as part of its regulations.

8. The Advisory Committee recommends that a permanent staff position be established at PDE with the sole responsibility for the coordination of Health and Physical Education curricula throughout the Commonwealth and for the enforcement of regulations pertaining to Health and Physical Education as set forth in Chapter 4 of Title 22.

9. School entities should make a reasonable effort to provide access to a minimum of 30 minutes per day of vigorous or moderate-intensity physical activity. This may include recess and before and/or after school activities. Recess is not substantively interchangeable with physical education.

[196] PA Code, Title 22 Chapter 4. http://www.pacode.com/secure/data/022/022toc.html.

COMMUNITY-BASED PROGRAMS

There are many community-based programs that are designed to prevent childhood obesity and promote wellness, many of which have been widely known for many years. These programs bring generations of practical experience supported by research, and are typically at the forefront of wellness programming. Although they go by different names, they are often recognizable players.

The Agency for Healthcare Research and Quality (AHRQ) Effective Health Care Program released its findings on "Childhood Obesity Prevention Programs: A Comparative Effectiveness Review and Meta-Analysis," in December 2011.[197] The review provided evidence for which programs were successful so that decisions could be made to direct resources and support those areas that were most likely to produce beneficial outcomes.

AHRQ found strong evidence that school-based studies of physical activity that included a home component improved obesity outcomes. Studies of combined interventions of diet and physical activity, that also included home and community components, showed strong evidence of beneficial outcomes. Moderate success was demonstrated by school-based interventions that relied on diet or physical activity alone. Successful interventions contained enhanced classroom physical activity lessons, moderate to vigorous physical activity sessions, nutrition education materials, healthful diet promotion, and reductions in sedentary activities.[198]

Successful interventions in schools were comprehensive, and promoted environmental changes (including the selections of foods and beverages, and changes in school physical activity) along with individuals' knowledge and attitude. Interestingly, "education interventions were less likely to be effective than environmental changes."[199]

AHRQ discovered that the strength of evidence is low that interventions based on home or child-care facilities successfully prevent overweight and obesity.[200] Parental involvement in the intervention may lead to better outcomes. Further, AHRQ noted that additional studies with larger sample sizes and greater intensity of intervention may be necessary before strong conclusions are drawn regarding the effectiveness of targeting programs for home and child-care settings. The researchers were pleased to find that school-based interventions were shown to have success despite the influences children face outside of the school environment. Nonetheless, schools may

[197] AHRQ, "Childhood Obesity Prevention Programs: A Comparative Effectiveness Review and Meta-Analysis." December 20, 2011. www.effectivehealthcare.ahrq.gov.
[198] AHRQ, "Childhood Obesity Prevention Programs: A Comparative Effectiveness Review and Meta-Analysis." December 20, 2011. www.effectivehealthcare.ahrq.gov.
[199] AHRQ, "Childhood Obesity Prevention Programs: A Comparative Effectiveness Review and Meta-Analysis." December 20, 2011. www.effectivehealthcare.ahrq.gov.
[200] AHRQ, "Childhood Obesity Prevention Programs: A Comparative Effectiveness Review and Meta-Analysis." December 20, 2011. www.effectivehealthcare.ahrq.gov.

not be the optimal location for obesity prevention in the long run because of the strength of outside influences.

AHRQ cited the Institute of Medicine's recommendations for childhood obesity prevention:

> "…a) the school is the most frequent setting to be studied and included in meta-analysis or review; b) despite small effect sizes and sometimes inconsistent evidence, there is a cumulative body of research showing that school-based interventions can prevent obesity; c) school-based interventions modifying both diet and physical activity are more effective in preventing childhood obesity than modifying either diet or physical activity alone; d) school-based interventions, with family or community involvement, are more likely to be effective; e) different stakeholders, including governments, community, health care systems, industry, and educators should work together to modify the obesogenic environment to facilitate healthful behaviors; and f) we need more research to test interventions in settings other than schools, in particular, those that test environmental and policy changes, as well as those in clinical settings."[201]

The findings of the AHRQ, in concert with the IOM's recommendations, may guide policy makers to create a broad base of approaches. By their nature, schools provide opportunities that are not feasible in other settings. Not only can interventions be structured to take advantage of school resources, the schools are also where children spend a great deal of their time. Schools are where children can be provided with healthful meals, with opportunities for structured physical activities, and where they can be taught the importance of healthful nutrition.

AHRQ could not conclude that schools are the optimal setting for interventions because of outside, non-school influences in children's lives, and therein lies an opportunity for community-based resources to contribute with their support. As shown by the studies' results, the strongest effects were realized from interventions that included more than one prevention component. Physical activities coupled with nutrition education, linked to increased availability of healthful foods and improved school environments produced the most beneficial results. The strength of community-based programs is that they have the resources to maintain those components outside of the school setting, so that children benefit from a continuum of healthful living contributors.

[201] Institute of Medicine. (2012). "Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation." Washington, DC: National Academies Press. Accessed June 12, 2014. www.iom.edu/Reports/2012/Accelerating-Progress-in-Obesity-Prevention.aspx.

The Y.

The YMCA clubs around Pennsylvania have developed a number of obesity prevention and wellness programs that are targeted at everyone, although they are particularly successful at helping children. The journal *Clinical Pediatrics* published a 2008 study that measured the success of YMCA programs in preventing and reducing obesity in children. The study's authors concluded:

> "A YMCA weight management program, which included group counseling, nutrition education, physical activity, and gift card incentives, resulted in favorable changes in overweight children."[202]

Essentially, the authors compared the BMIs of children who were enrolled in YMCA weight management programs against children who were not. The enrolled children gained an average of 0.62 pounds per month while the children who were not enrolled gained an average of 1.37 pounds per month. The program operated through core three strategies:

1. Reduction of caloric intake while maintaining optimal nutrient intake to protect growth and development;

2. Increased energy expenditure by promoting increased physical movement and fewer sedentary activities; and

3. Actively engaged parents and primary caretakers as agents of change.

This particular study differed from others related to childhood obesity in that the children were not evaluated in research settings. Both children and their parents were included in the programs, although the physical activities were child-focused and the nutritional counseling was targeted at their parents. Additionally, a local food bank participated by regularly delivering boxes of fruits and vegetables to the participants, free of charge.[203]

The *Journal of the American Board of Family Medicine* published a study of YMCA membership on childhood obesity.[204] The authors observed that there was an association between child weight loss (as measured by BMI) and the number of nutrition classes attended. However, there appears to be no effect from eliminating financial barriers. In other words, providing free Y memberships did not induce weight loss. Rather, their weight loss was correlated with the number

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[202] David P. McCormick M.D., et al., "YMCA Program for Childhood Obesity: A Case Series," *Clinical Procedures*, Vol. 47, No. 7, September 2008. Accessed May 14, 2014.http://scholar.google.com/scholar_url?hl=en&q=http://udec.edu.mx/BibliotecaInvestigacion/Documentos/2009/Abril/Medicina%2520obesidad%2520en%2520ni%25C3%25B1os.pdf&sa=X&scisig=AAGBfm1zPhcw_2fLonY-FfY7bPM3uNF0ng&oi=scholarr.

[203] David P. McCormick M.D., et al., "YMCA Program for Childhood Obesity: A Case Series," *Clinical Procedures*, Vol. 47, No. 7, September 2008. Accessed May 14, 2014.http://scholar.google.com/scholar_url?hl=en&q=http://udec.edu.mx/BibliotecaInvestigacion/Documentos/2009/Abril/Medicina%2520obesidad%2520en%2520ni%25C3%25B1os.pdf&sa=X&scisig=AAGBfm1zPhcw_2fLonY-FfY7bPM3uNF0ng&oi=scholarr

[204] Maurice Duggins, M.D., et al., "Impact of Family YMCA Membership on Childhood Obesity: A Randomized Controlled Effectiveness Trial," *Journal of the American Board of Family Medicine,* May-June 2010, Vol. 23, No. 3. 323-333. Accessed May 14, 2014. http://www.jabfm.org/content/23/3/323.full.

of classes they attended after their enrollment in the Y. The authors concluded with recommendations that community based interventions, such as those offered through the Y, focus on improving participants' motivation, removing financial barriers, removing barriers to transportation, and integrating measureable physical activities to the apparently successful programs of nutrition classes and counseling.[205]

The success of the programs studied in this particular instance bodes well for the overall approach taken by YMCAs on a national level. Nationally, the YMCA's Activate America initiative has four approaches to combatting childhood obesity.

1. Promote physical activity and the consumption of more fresh fruits, vegetables, and water by children in afterschool programs;

2. Advocate for policies to put physical education back in schools;

3. Build new or enhance existing walking or biking trails and sidewalks; and

4. Provide opportunities for families to purchase and consume fresh fruits and vegetables through entities such as community gardens and farmers' markets.

With well over 2,600 chapters and over 20 million members in the U.S., the YMCA is among the few organizations with the resources capable of delivering childhood wellness programs.

The Commonwealth has initiated several obesity prevention programs recent years. Addressing both physical activity, food and nutrition, and community improvements, these programs draw on multiple resources and take advantage of the expertise of different contributors.

Safe Routes to School.

The federal Safe Routes to School (SRTS) program was founded in 2005. Its objective was to encourage children to walk or bicycle to school, and it provided funding for both infrastructure and non-infrastructure improvements to help achieve the objective. SRTS partnered with state transportation agencies to apply the funding to school districts and municipalities that chose to participate. The Pennsylvania Department of Transportation (PennDOT) was the SRTS state agency for the Commonwealth. Between 2005 and 2012, PennDOT, collaborating with the Pennsylvania State Association of Township Supervisors, provided over $41 million to school districts and municipalities in support of improvements to physical routes and for education, encouragement, and enforcement of traffic safety laws.[206] The program no longer exists on its

[205] Maurice Duggins, M.D., et al., "Impact of Family YMCA Membership on Childhood Obesity: A Randomized Controlled Effectiveness Trial," *Journal of the American Board of Family Medicine,* May-June 2010, Vol. 23, No. 3. 323-333. Accessed May 14, 2014. http://www.jabfm.org/content/23/3/323.full.
[206] "Pennsylvania Safe Routes to School" website. Accessed June 12, 2014. http://www.saferoutespa.org/.

own; infrastructure improvements are currently covered by Transportation Alternatives Program, through the federal transportation reauthorization act referred to as MAP-21.[207]

Non-infrastructure components of the SRTS program are currently funded through the CDC's Preventive Health and Health Services Block Grant. The grants are administered through the Department of Health. The Penn State Hershey PRO Wellness Center manages the program that awards SRTS mini-grants to schools.[208]

Capacity Building for Increased Physical Activity

The Penn State PRO Wellness center also provides mini-grants funded by the CDC's Preventive Health and Health Services Block Grant and administered by the Department of Health. These mini-grants provide money for schools and community-based organizations to form partnerships that promote wellness and help create healthy community environments by facilitating physical activities.

WalkWorks

The Department of Health administers the WalkWorks program, which is a locally based program that is accessible to people of all ages and abilities.[209] The program is managed in cooperation with the University of Pittsburgh's Graduate School of Public Health, and has developed walking groups and routes in Cambria, Crawford, Greene, McKean, Venango, and Washington counties. Twenty-eight communities participate, and 48 walking groups have been formed. The objectives of the program are to identify safe walking routes, establish community-based walking groups, facilitate local government's role in increasing access to safe walking routes, and help schools develop walk-to-school programs.

Pennsylvania Statewide Afterschool Youth Development Network

Another prominent community-based health and wellness organization that targets its programming for children is the Pennsylvania Statewide Afterschool Youth Development Network (PSAYDN). PSAYDN's mission is to help build partnerships between schools and community organizations to provide high quality afterschool programs that focus on youth development, which includes developing wellness and anti-obesity programs. PSAYDN recognizes the successful work of the Alliance for a Healthier Generation, which was established by the American Heart Association and The Clinton Foundation. Further, the Alliance for a Healthier Generation endorses the National AfterSchool Association's Healthy Eating and Physical Activity Standards (NAA HEPA). The standards are intended to inform programs about

[207] Email between PennDOT and Commission staff, June 12, 2014. MAP-21 information available at http://www.dot.state.pa.us/typ/index_files/MAP21.htm.
[208] Penn State Hershey PRO Wellness Center. "A Case Report: Mini-Grant Program, Safe Routes to School & Capacity Building for Increased Physical Activity Mini-Grants." http://www.pennstatehershey.org/PROwellness.
[209] Department of Health, "WalkWorks," website. http://www.portal.state.pa.us/portal/server.pt?open=514&objID=750276&mode=2.

guidelines for activities and eating, and cover four topics including program content, nutrition education, staff training, and social, organizational, and environmental support.

In Philadelphia, the Public Health Management Corporation (PHMC) afterschool programs are viewed by the Alliance for a Healthier Generation as successful. PHMC programs follow six steps recommended by NAA HEPA as leading to successful outcomes in childhood wellness:

1. Build community support.

2. Assess the proposed site of the program to ensure its feasibility.

3. Develop an action plan.

4. Explore resources and take advantage of those that are available.

5. Take action by launching and maintaining the program.

6. Celebrate success by recognizing both the positive outcomes for the participants and also by accentuating the success through evaluation and modification.[210]

Further, the Alliance for a Healthier Generation identifies five core components it provides to afterschool programs that are successfully addressing children's health and wellness:

1. Staff development in schools, which is provided via video on Schooltube.com;

2. Afterschool Gets Moving, which is a package of activities;

3. Afterschool Energizers, which is a package of activities;

4. Fit Sticks, a craft and physical activity; and

5. DIY Deal-or-No Deal, a fun physical activity.[211]

Highmark Foundation.

National organizations, such as the YMCA, have been positioned at the forefront of health and wellbeing in their communities for generations. Organizers of regional and local initiatives provide the advantage of knowing their communities, yet sometimes lack needed resources to fulfill their missions. With the guidance and assistance of funders like the Highmark Foundation, many organizations that are somewhat smaller in scope than the YMCA are able to contribute their knowledge and desire to help promote childhood wellness.

[210] Information collected via Commission staff at the PSAYDN annual retreat, September 13, 2014.
[211] Information collected via Commission staff at the PSAYDN annual retreat, September 13, 2014.

The Highmark Foundation was established in 2000 as a private charitable organization the mission of which is to improve community health by proving grants to health and wellness initiatives and grants.[212] The Foundation has four areas of priority: chronic disease, family health, service delivery, and healthy communities.[213] The problem of childhood obesity and bullying prevention are included in the focus of healthy communities.

Grant applicants are required to document where they have identified a need and how the funding will be used. The Foundation requires that applicants provide information on the geographic and demographic areas they propose to serve, that they identify gaps where health care needs are currently not met, and how the grant funds will be used to fill those gaps.

The Foundation employs two program officers who evaluate and monitor grants awarded, covering a total of 49 counties in central and western Pennsylvania. Northeast Pennsylvania and Philadelphia are served by other Highmark providers.

The grant process begins with a letter of interest from the organization that seeks funding. This is followed by an interview with the Foundation program officer. The program officer then forwards the information, along with her recommendations, to a grant review committee. If the grant review committee approves, the applicant submits a full grant application for Foundation board review. The review board meets quarterly.

Grant applications are evaluated based on the defined needs and the applicant's partners and other sources of funding. Grantees are required to report to their program officer every six months. Grants are awarded for either one or two years.

The Foundation does not have its own grant application form. There are several organizations that provide grant application forms for not-for-profit and charitable organizations. The United Way and Grantmakers of Western Pennsylvania are two organizations that provide suitable application forms.

"Know your service area" is both a key to submitting a successful grant application and also a major step toward operating a successful community-based health and wellness program. Further, local programs need to identify other organizations that are addressing the same community health needs in order to develop partnerships. Experience has taught that needs are best met when programs comprehensively approach physical health, healthful eating, and healthy lifestyle choices.

Because funding and resources are always in short supply, it is critical that programs show evidence of positive outcomes that result from the funding invested in them.

[212] "About Us," Highmark Foundation, Accessed May 14, 2014 http://www.highmarkfoundation.org/about_us.shtml.
[213] Conversations between Highmark Foundation program directors and Commission staff, January – March 2014.

The National Conference of State Legislatures has produced annual surveys of state legislative action directed toward childhood obesity, beginning in 2003. The "2012 Update of Legislative Policy Options," published in February 2013, lists ten categories of childhood wellness and anti-obesity measures.[214] The categories surveyed for 2012 were

- BMI
- Insurance coverage for obesity prevention and treatment
- Physical activity or physical education in school and recess
- School nutrition
- Task forces, commissions, studies, grants, and other special programs
- Diabetes screenings and management at school
- Joint or cooperative use agreements for school facilities
- Raising awareness
- School wellness policies
- Taxes, tax credits, tax exemptions, and other fiscal incentives

See **Table 7** shows the states' legislation on childhood obesity by category.

Body Mass Index

Ohio. Senate bill 316 (2012) allows schools to collect BMI data and report it to the Ohio Department of Health. Also, drinks provided in public and charter school food service programs, vending machines, and school stores are limited to having no more than 10 calories per eight oz. serving. Milk and water are exempted.

Insurance Coverage for Obesity Prevention and Treatment

Arkansas. Senate bill 66 (2011) established a pilot program for health insurance coverage for morbid obesity. State and public school employee health plans must provide comprehensive coverage for obesity diagnosis and treatment.

[214] Amy Winterfeld, "Childhood Obesity | 2012 Update of Legislative Policy Options," National Conference of State Legislatures, February 2013. Accessed October 4, 2013http://www.ncsl.org/issues-research/health/childhood-obesity-2012.aspx#BMI.

Physical Activity or Physical Education in School and Recess

Five states enacted legislation or adopted resolutions addressing physical activity in school in 2012.

California. Assembly bill provides financial incentives for hiring teachers and instructional support staff for physical education. Eligibility for incentives is based on meeting requirements and submission of plans to correct deficiencies in the next fiscal year.

It is an interesting twist to provide funding incentives based on future actions. This arrangement may help provide funding now without holding schools accountable for future performance.

Illinois. House Bill 3374 (2012) established a multidisciplinary Enhance Physical Education Task Force to promote and recommend "enhanced" physical education programs that can be integrated into comprehensive school wellness programs and curricula. Specific tasks of the task force include training, development and leadership of school officials and professionals; the development and use of metrics to measure effectiveness; and the identification of resources. Recommendations were due August 31, 2013, and were to include neuroscience research about learning and physical activity.

House Bill 605 (2012) has school report cards report the number of days spent on physical activity and wellness programs.

New Mexico. House memorial 3 and Senate memorial 10 (2012) support outdoor activities for children by encouraging state department to develop outdoor activity programs for children on state lands and in and around schools. Activities include physical education, outdoor gardening, outdoor natural resource job and skills training.

Rhode Island. House Resolution 8196 (2012) proclaimed May 23, 2012 as "Shape Up Rhode Island Day," recognizing the obesity epidemic.

Wisconsin. Senate Bill 95 (2011) allowed local school boards to apply .5 physical education credit to students who participate in sports or physical activity, allowing those students to complete .5 credits in English, social studies, math, or science.

School Nutrition Legislation

In 2012 11 states took legislative action in the area of school nutrition. The actions were aimed at providing healthier food and beverages in school meals and also provided support for community based child nutrition initiatives. The states' actions complemented the federal Hunger-Free Kids Act of 2010 (P.L. 111-296), which reauthorized the School Lunch and School Breakfast programs; increased meal reimbursements by 6¢; and authorized the federal Secretary of Agriculture to adopt nutrition standards for all foods and beverages served on school grounds during the school day, without preempting stricter state standards. Also among the states' actions were provisions for improving the nutrition and quality of school food and beverages served apart

from the meals included in school lunch programs (a la carte) or snack items, and training for school personnel to implement new standards.

Alabama. House Resolution 156, House Joint Resolutions 78 and 158 (2012) commended several school nutrition managers and staff for receiving the federal Healthier U.S. School Challenge Gold Award of Distinction.

California. Assembly Bill 1464 (2012) was enacted to provide a $4.8 million appropriation to fund training for school food managers on training of the federal Healthy, Hunger-Free Kids Act of 2010 (P.L. 111-296). AB 1464 also provides funds for physical education support.

Colorado. Senate Bill 68 (2012) prohibits public and charter schools from making available any amount of industrially produced trans fat in cafeteria, vending, stores, other service entities, and fundraiser foods on school grounds during the school day.

Connecticut. Senate Bill 299 (2012) expanded the school breakfast pilot program for schools with student populations with severe needs.

Senate Bill 458 (2012) clarified school nutrition standards.

House Bill 6001b (2012) provided grants to two school district pilot programs to develop and coordinate obesity prevention, health, education, and wellness in schools. Promotes development of interdisciplinary teams to assess needs, plan, implement, and evaluate a wide range of school health, nutrition, wellness, and physical education, counseling, psychological, and social services.

Delaware. House Joint Resolution 11 (2012) proclaimed March 2012 as National Nutrition Awareness Month in Delaware.

Maine. House Bill 1373 (2012) proposed changes to the Fund for a Healthy Maine to add prevention, education, and treatment activities for unhealthy weight and obesity. Requires a separate line item for funding unhealthy weight and obesity prevention.

New Mexico. Senate Memorial 8 and House Memorial 22 (2012) designated January 26, 2012 as School Nutrition Day, and noted that New Mexico ranks first nationally in students participating in school breakfast programs.

Pennsylvania. House Bill 1901 (2012) continues a 10¢ per meal reimbursement and an additional 2¢ incentive for schools that provide both breakfast and lunch if fewer than 20 percent of students participate and 4¢ if more than 20 percent participate.

Tennessee. Senate Bill 3606 (2012) encourages schools to work with community partners on parenting classes that include childhood obesity and nutrition.

Virginia. House Bills 1300 and 1301 (2012) prohibit disbursing state school nutrition payments to schools that permit the sale of competing foods during the school day; and authorize use of state lottery funds as supplemental incentives for increased student participation in school breakfast programs.

Task Forces, Commissions, Studies, Grants, and Other Special Programs

Hawaii. Senate Bill 2778, House Bill 2516 (2012) created a childhood obesity prevention task force to promote best practices and healthy life choices as initiated by community-based programs.

Kentucky. House Bill (2012) directed the Kentucky Legislative Research Commission to review nutritional habits and outcomes for the state's population related to obesity and chronic disease.

Louisiana. Senate Resolution 146 (2012) requested state education agencies to review compliance with laws regarding vending machines and physical activity in schools.

House Resolution 138 (2012) requested the state department of health and hospitals to study the feasibility of establishing a chronic disease database.

Vermont. House Bill 202 (2012) provides for the creation of a state health improvement plan and encourages local health plans as part of the state's single-payer unified health system.

Raising Awareness

NCSL provided a sampling of state resolutions to raise public awareness of childhood obesity and the policy options available to address it.

Illinois. Senate Resolution 624 (2012) designated December as Childhood Obesity Awareness Month. The resolution supported "complete" streets for pedestrians, bicyclists, and motorists, in addition to promotion of standard obesity and wellness programs and initiatives on the parts of schools and the community.

School Wellness Policies

The federal Child Nutrition and WIC Reauthorization Act of 2004 (P.L. 108-265) required each school district that participates in the National School Lunch and Breakfast programs to submit district wellness policies beginning in the 2006-2007 school year. Despite federal encouragement and the threat of loss of reimbursements, compliance was spotty. States begin to encourage compliance by passing their own laws regarding wellness policies.

Louisiana. House Bill 867 (2012) authorized the University Medical Center at Lafayette to partner with the Lafayette Parish Schools to develop a pilot program for coordinated health and wellness programs.

Massachusetts. House Bill 4200 (2012) provided for school-based health services in public and nonpublic schools to include obesity prevention and wellness education in school curricula.

Mississippi. Senate Bill 2572 (2012) authorized the State Board of Education to consult with the state health department to establish school health pilot programs in local school districts.

Taxes, Tax Credits, Tax Exemptions, and Other Fiscal Incentives

Legislative action included funding for food banks, tax credits for fitness and wellness, tax credits for grocery store development or incentives for grocers to offer fresh fruits and vegetables, new or increased taxes on food and beverages with minimal nutritional value as a disincentive for purchase by consumers. California, Mississippi, Nebraska, and Rhode Island considered linking sugary drink taxes to childhood obesity prevention programs, but none were enacted.

Kentucky. House Bill 419 (2012) established an income tax check-off for contributions to a farm-to-food banks trust fund.

Louisiana. House Bill 458 (2012) established an income tax check-off for contributions to the Louisiana Food Bank Association.

South Dakota. House Bill 1206 (2012) funded emergency food assistance grants and repealed a sales tax on the food refund program.

Tennessee. House Bill 3761 (2012) set the tax rate on retail food sales at 5.25 percent.

Table 7
States' Legislation on Childhood Obesity Enacted 2013

State	School Nutrition	Physical Education, Physical Activity	School Wellness	Joint Shared Use Agreement	Insurance Coverage For Obesity	Task Forces, Studies
Alabama						
Alaska						■
Arizona						
Arkansas	■	■		■		
California	■			■		
Colorado	■					■
Connecticut						■
Delaware						
Florida	■					
Georgia	■					■
Hawaii	■					■
Idaho					■	
Illinois		■				
Indiana						
Iowa						
Kansas	■					
Kentucky						
Louisiana	■					■
Maine	■					

Table 7

States' Legislation on Childhood Obesity Enacted 2013

State	School Nutrition	Physical Education, Physical Activity	School Wellness	Joint Shared Use Agreement	Insurance Coverage For Obesity	Task Forces, Studies
Maryland						
Massachusetts	■		■			
Michigan	■					
Minnesota						
Mississippi	■					■
Missouri	■					
Montana	■					
Nebraska						
Nevada	■					
New Hampshire						
New Jersey						
New Mexico						
New York						
North Carolina	■	■				
North Dakota						
Ohio		■				
Oklahoma	■					
Oregon	■					■
Pennsylvania						■
Rhode Island	■		■			
South Carolina	■	■				■
South Dakota						
Tennessee						
Texas	■					
Utah						■
Vermont						
Virginia			■			
Washington						
West Virginia	■					
Wisconsin						
Wyoming						
Washington, D.C.						

RECOMMENDATIONS

The Childhood Obesity Prevention Advisory Committee was comprised of 22 people with extensive experience in working with children's health and wellbeing. It counted among its member's pediatricians, school nutritionists, educators, food bank administrators, and executive policy makers from not-for-profit organization such as The Y. In discussing the pressing matters of childhood obesity and wellness, they contributed expansive knowledge based on the day-to-day work of improving Pennsylvania's children's lives.

The myriad of programs and initiatives that touch children's lives from prenatal through teenaged years are constantly evolving as scientific research unwraps new solutions. Rarely does a day pass without new information about how to turn back the epidemic of childhood obesity. Although obesity prevention efforts require perennially increasing funding, the real dollar and quality of life costs of childhood obesity spiral upward at even greater velocities. Between the ever-changing programs and the ever-more-expensive costs of obesity, a comprehensive Commonwealth effort is needed to ensure that resources are directed in the most effective and efficient way possible.

The overriding recommendation is that a statewide childhood obesity prevention advisory board be established as a continuing body. The advisory board should be collaborative partnership between public and private childhood obesity experts. Unlike previous advisory boards, that where placed under control of one government agency, the childhood obesity prevention advisory board should be organized as an independent commission where not-for-profit, academic, and community-based representatives work in partnership with government agencies.

Prenatal and Infancy (1-10)

The Advisory Committee recommends that all pregnant women and parents/caregivers of infants and young children, regardless of income status, receive high quality nutrition information and counseling. The Department of Health should be the lead agency to make the information already provided to WIC participants available throughout the Commonwealth.

1. The Advisory Committee recommends that programs be designed with respect to the best practices of social marketing techniques so they may provide guidance and assistance in ways that are culturally and ethnically relevant to the targeted parents.

2. The Advisory Committee recommends that the Commonwealth work to ensure compliance with federal lactation accommodation law, section 2407 of the federal Patient Protection and Affordable Care Act, which states that all breastfeeding employees have reasonable break times and a private place (that is not a bathroom) to express milk, as well as protection of breastfeeding women from being fired or discriminated against in the workplace.

3. The Advisory Committee recommends that the General Assembly consider legislation to require licensure of professional lactation consultants. The U.S. Lactation Consultants Association may provide a model for certification, as it certifies consultants who have successfully completed extensive academic requirements and clinical training involving several years of work.

4. The Advisory Committee recommends that the General Assembly support initiatives that limit infant formula marketing practices that interfere with breastfeeding so that free formula is provided only to parents whose infants have a medical need. Free access to infant formula may discourage mothers from initiating breastfeeding and lead them to purchase infant formula, which is very expensive. Several Pennsylvania hospital systems have already begun limiting distribution of free samples and coupons.

5. The Advisory Committee recommends that funding be restored to staff the Department of Health's breastfeeding programs.

6. The Advisory Committee recommends that Pennsylvania's Fresh Food Initiative be reinvigorated with adequate funding, provided it is available. Some states provide extra credits to WIC recipients for foods purchased at farmers markets, which is a benefit endorsed by the Advisory Committee. The Pennsylvania Fresh Food Financing Initiative could again make inroads into food deserts by increasing the availability and affordability of healthful foods.

7. The Advisory Committee endorses and recommends the continuation of the Department of Agriculture's State Food Purchase Program, which provides funding to county governments to purchase food at wholesale prices for distribution to:

    - food pantries
    - soup kitchens
    - food banks
    - feeding programs
    - shelters for the homeless and
    - similar organizations to reduce hunger

The cooperation of legislative and executive actions has made Pennsylvania's State Food Purchase Program tremendously successful.

8. The Advisory Committee recommends that the General Assembly fund the Pennsylvania Agricultural Surplus Systems (PASS) Act of 2010, which was created to be a companion program of the State Food Purchase Program. The PASS act directed the Department of Agriculture to develop and operate a system for the Commonwealth's food industry to donate, sell, or provide surplus food products to Pennsylvania's charitable nutrition organizations.

9. The Advisory Committee recommends that early childhood obesity prevention initiatives should be coordinated and implemented at the state level. State-level implementation may result in increased federal funding, ultimately reaching a greater number of consumers.

10. The Advisory Committee recommends that pediatric professionals, child care professionals, and consultants promote healthful nutritional and physical activity practices across the state. Child care and nutrition consultants can educate and offer training to child care facilities, focusing on the needs of an early childhood setting. Child care settings can also offer health screenings before the child enters school age years. Child care settings should offer opportunities for infants, toddlers, and preschool children to become physically active. For infants, these settings can provide an opportunity for the child to move about freely under adult supervision. For toddlers and preschool children, child care settings should provide at least 15 minutes of light to moderate physical activity per care hour in coordination with indoor/outdoor physical activity for all children throughout all care settings.

11. The Advisory Committee recommends that pediatricians and their staff regularly offer guidance to parents on breastfeeding, proper nutrition, and proper physical activity levels for their patients' families. Early identification and screening, alongside pediatric watchful waiting in examinations, provide a crucial first step in preventing early childhood obesity. Included in this information should be age-appropriate sleep durations for children.

School Nutrition (12-19)

12. The Advisory Committee recommends that schools strive, to the best of their ability, to offer healthful food and beverage choices beyond those included in school meal programs.

13. The Advisory Committee recommends that students be encouraged to participate in school meal programs, including but not limited to the National School Lunch Program, School Breakfast Program, and snack programs.

14. School breakfast programs should be focused on healthful foods and updated to the extent that full reimbursement to school entities is available.

15. School entities should ensure that all students are provided adequate time each day to consume meals offered by the school.

16. School entities should promote the serving of foods which meet competitive nutritional guidelines during school events, parties, and school functions. This may include the limitation of foods being served as rewards.

17. School entities should limit the marketing of foods not meeting USDA nutritional guidelines. This may include foods consumed in outside eating areas, in the classroom, and during school sanctioned events.

18. School entities should consider restricting the purchase of sugar-sweetened beverages.

19. Farm to school programs should be encouraged to support local food sources insofar as the programs benefit community wellness and local economies.

Physical Activity & Nutrition Education (20-29)

20. The Advisory Committee recommends that Physical Education be taught to every child in grades K-12, every year, throughout the school year in accordance with the recommendations of the organizations listed in Table 5 of this report, provided that sufficient resources are available.

21. The Advisory Committee recommends that, wherever possible, K-12 Health and Physical Education be taught by qualified Health and Physical Education instructors who have obtained appropriate certification to teach those subjects in the Commonwealth of Pennsylvania.

22. The Advisory Committee recommends that a student/teacher ratio, comparable with other classes at K-12 grade levels, should be maintained in Health and Physical Education classes both for the safety of the students and to ensure quality of desired outcomes.

23. The Advisory Committee recommends that Chapter 4 of Title 22, "Academic Standards and Assessment," be amended to reflect the existing language of the Public School Code and State Board of Education policy, which states that interscholastic sports, marching band, and ROTC are not acceptable substitutes for physical education.

24. The Advisory Committee recommends that Comprehensive Health Education be offered to students at all grade levels. At a minimum, Comprehensive Health Education should be taught throughout each year to students at the primary and intermediate levels, for two semesters at the middle-level, and for two years at the high school level. The curricula should provide students with information regarding access to health, mental health, and social services to address healthy eating, physical activity, and related chronic disease prevention.

25. Encourage schools to include nutrition education that provides students with the knowledge, skills, and experiences needed for lifelong healthy eating and physical activity.

26. The Advisory Committee recommends that a permanent staff position be established at PDE with the sole responsibility for the coordination of Health and Physical Education curricula throughout the Commonwealth and for the enforcement of regulations pertaining to Health and Physical Education as set forth in Chapter 4 of Title 22.

27. School entities should make a reasonable effort to provide access to a minimum of 30 minutes per day of vigorous or moderate-intensity physical activity. This may include recess, and before and/or after school activities. Recess is not substantively interchangeable with physical education.

28. Develop a comprehensive physical activity program with quality physical education as the cornerstone.

29. The State Board of Education should consider including Physical Education as a CORE subject.

School Wellness Policies (30-34)

30. Encourage partnerships with families and community members in the development and implementation of healthy eating and physical activity policies, practices, and programs.

31. Encourage district or school wellness policy committees to partner with families and community members to implement school wellness policies that facilitate the use of local resources to make wellness a part of community life.

32. School district employees should be encouraged to participate in the school/district wellness plans along with the students, to demonstrate leadership in healthful living and in hopes that fewer employee days lost to illness may have a beneficial effect on school budgets.

33. School districts should seek partners such as The Y and PSAYDN to optimize each other's strengths and share resources. Organizations such as The Y have tremendously valuable resources in place and are positioned to collaborate with schools.

34. School entities shall accept, along with existing professional development courses, training in healthful living education, including but not limited to physical activity and nutrition, as appropriately fulfilling professional development requirements.

Healthful Living and Wellness (36-39)

35. The Advisory Committee recommends that an ongoing public service campaign be launched. Potential means of communication may include web-based applications that direct people to resources. Internet users could measure their nutrition intelligence through online surveys and quizzes. They could share the results with their primary healthcare providers, who could use the results to provide or refer to needed education and counseling.

36. The Commonwealth should encourage and promote bike paths, sidewalks, and other methods of multi-modal transportation to existing and new infrastructure during design and planning.

37. The Commonwealth should encourage communities to promote physical activity, ensuring children ranging from infants to high school age have access to safe publically maintained facilities, including public schools and parks.

38. Child care setting should limit screen time to 2 hours or less per full day of care for children ages 2 to 5. Screen time includes use of television, cell phones, or other forms of digital media.

39. The Advisory Committee recommends creation of a statewide Childhood Health and Wellness Advisory Council, comprised of organizations such as The Y and that can provide leading professionals throughout all services and supports, should be examined in order to help facilitate a comprehensive plan for obesity prevention.