



AMCHP/CityMatCH Women's Health Partnership



Promoting Healthy Weight Among Women of Reproductive Age

January 2006

Introduction and Background

With funding from the Center for Disease Control and Prevention's Division of Reproductive Health (DRH) and the Health Resources and Services Administration's Maternal and Child Health Bureau (MCHB), the Association of Maternal and Child Health Programs (AMCHP) and CityMatCH have formed a Women's Health Partnership to build state and local capacity to promote safe motherhood and enhance women's health before, during and after pregnancy.

AMCHP, CityMatCH and our Women's Health Partnership colleagues will explore how to build the knowledge base, gather promising strategies, develop tools and influence policies to improve the health of women of reproductive age. Our partnership efforts will focus on the unique opportunities available to national, state and local maternal and child health (MCH) professionals to assure and improve women's health during preconception and interconception periods. For purposes of the partnership, the terms "preconception" and "interconception" do not presume a planned pregnancy but rather define specific periods of time when preventive clinical and community health interventions may be effective.

In the first phase of the Women's Health Partnership, we will:

- Work with federal, state and local MCH experts to draft a framework for maintaining healthy weight for women of reproductive age using evidence-based, data-driven strategies to improve preventive health services, policies and financing at state and local levels;
- Analyze research findings on interventions to promote healthy weight among women;
- Provide opportunities for federal, state, local and other partners to discuss implications of those findings for state and local MCH programs;
- Work with federal, state, local and other partners to identify promising strategies supported by research that state and local MCH programs could implement to assist women in maintaining a healthy weight before and between pregnancies.
- Assess possible data sources and methods that state and local MCH programs may use to evaluate proposed strategies; and
- Document and distribute recommendations from these efforts.

Healthy Weight for Women Strategy Meeting

The AMCHP/CityMatCH Women's Health Partnership hosted

a meeting on August 18 — 19, 2005 in Denver, Colorado, to focus on healthy weight for women of reproductive age. The primary goals of the meeting were to:

1. Review and discuss existing research and recommendations on healthy weight for women of reproductive age;
2. Determine implications of the research for maternal health and birth outcomes, and opportunities for state and local MCH collaboration on this issue;
3. Identify, investigate and recommend promising strategies supported by research that state and local MCH programs could implement to address this issue; and
4. Form a Women's Health Partnership Advisory Committee to assist with long-term planning of joint activities and implementation of proposed state and local strategies.

The suggested strategies and recommendations derived from this meeting will be used to drive the next steps of this project. Next steps may include additional information gathering, consultation with AMCHP and CityMatCH members and the Women's Health Partnership Advisory Committee, and the development and implementation of a strategic plan.

This paper outlines why the maintenance of healthy weight among women of childbearing age was chosen as the first focus area for the AMCHP/ CityMatCH Women's Health Partnership, and describes two frameworks that provide the theoretical underpinning for our efforts. The paper outlines factors that influence healthy weight, demographics of weight among women of reproductive age, and the impact of overweight and obesity on perinatal outcomes. Finally, the paper outlines additional resources and lists possible community-based prevention strategies for assisting women of reproductive age to maintain a healthy weight.

About AMCHP and CityMatCH

AMCHP is a national nonprofit organization serving the directors and staff of state and territorial MCH and children with special health care needs programs. CityMatCH is a freestanding national membership organization of city and county health department MCH programs and urban community leaders. Both organizations provide leadership to assure and improve the health and well-being of women, children and families at state and local levels.

Our members engage in infrastructure-building activities such as needs assessment and planning; community-based services and education campaigns; enabling services such as coordination with Medicaid and other programs; as well as direct care such as

prenatal services when no other providers are available. Because they offer a broad array of services and are able to reach all mothers and children, AMCHP and CityMatCH members are uniquely positioned to improve the health of women of reproductive age.

AMCHP and CityMatCH use a variety of techniques to facilitate learning, information exchange and innovation among members. Both organizations regularly share evidence-based information and useful resources through websites, special reports, newsletters and other publications. Teleconferences and annual meetings provide training and facilitate information-sharing among peers. Intensive learning experiences improve public health professionals' capacity to address important MCH issues such as infant mortality, perinatal HIV or smoking. These special sessions provide access to national, state and local experts, and help members develop and implement evidence-based programs and practices in their states and communities.

Promoting Pre- and Interconception Health to Improve Perinatal Outcomes

The AMCHP/CityMatCH Women's Health Partnership has identified the pre- and interconception periods to ensure women's health and reproductive well-being. The period before and between pregnancies offers many opportunities for both clinical and public health intervention. By assisting women of reproductive age maintain a healthy weight, MCH programs can have a positive impact on birth outcomes as well as women's health.

Compelling Reasons to Focus on Healthy Weight

Overweight and obesity are major causes of preventable illness and death in this country. The AMCHP/CityMatCH partnership will assist local and state MCH professionals in helping women achieve a healthy weight in order to promote health and optimize women's well-being.

The partners chose this area of emphasis because:

- It is consistent with the identified needs of our members. In 2003, AMCHP members identified obesity as one of the top five most important emerging health issues for women ages 25 — 44. Obesity was also listed as one of the highest future priorities in the most recent CityMatCH members' assessment.
- The widely acknowledged obesity epidemic is a recognized public health priority.
- Obesity in pregnancy has been directly and indirectly linked to maternal and infant morbidity and mortality.
- Obesity can be addressed by a community-based public health intervention.
- Other population-based efforts, such as elimination of tobacco use or addressing HIV/AIDS, are already underway within our organizations.
- Of the factors that can be impacted by our organizations, obesity impacts the largest number of women and thus has the greatest potential to affect the largest number of pregnancies.

- MCH professionals have long addressed the need for adequate nutrition, exercise and appropriate weight as essential to a healthy life and pregnancy.
- Collaboration is possible with a number of partners working in this area such as CDC, MCHB, the WIC program and others. The importance of healthy weight is promoted through the CDC program, Steps to a Healthier US, and is integral to diabetes, cardiovascular disease and cancer control programs. The USDA WIC program addresses the importance of nutrition during pregnancy. HRSA's MCH Bureau focuses on the needs of women within their childbearing years and has recently devoted funding to improving overall women's health and healthy weight.
- A focus on a healthy weight will have a positive impact on our organizations' other priority areas. For example, obesity influences hypertension and diabetes, thus a focus on healthy weight may have a positive influence on chronic disease, perinatal outcomes and health disparities among women.
- The high percentage of unintended pregnancies among American women necessitates a focus on healthy women not only for their own sake, but also for any pregnancy that may be entered into without health care planning.
- A large body of research is available in the area of nutrition, health promotion, physical activity and other areas that may direct future project activities. Related best practice information and guidelines are available.
- This approach will address several aspects of good preconception care including: increasing the intake of folic acid; encouraging seriously underweight or overweight women to achieve a healthy weight prior to pregnancy; and improving the management of hypertension, diabetes and kidney disease, which can negatively impact pregnancy outcome.

Healthy Weight among Women in the United States

According to the 1999-2002 National Health and Nutrition Examination Survey (NHANES), almost 65 percent of the population is overweight or obese, with higher rates for minority groups. Obesity is now present in 31 percent of the population and overweight in 34 percent.ⁱ One of the national health objectives for the year 2010 is to reduce the prevalence of obesity among adults to less than 15 percent. Given the well-documented upward trend in obesity, this goal will not be met.

Defining Healthy Weight

A healthy weight contributes to overall health and well-being. The Body Mass Index (BMI), the accepted measure of body

ⁱ It is possible for athletes or individuals with a lot of muscle to be considered overweight according to their body mass index (BMI). Although this would lead to a classification of overweight, these individuals will likely not have excess fat. In these situations, other methods of weight determination (skin-fold measurement or other techniques) should be used in addition to BMI.

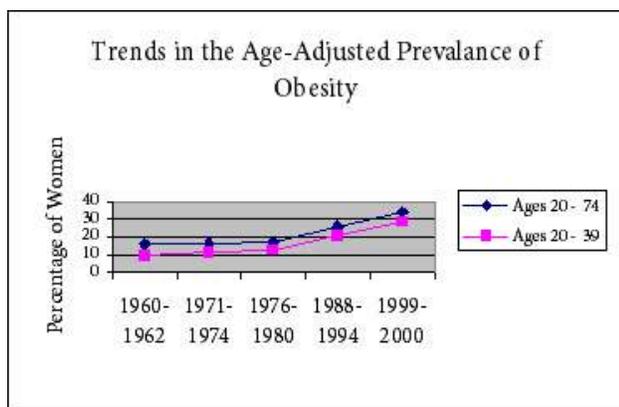
weight adjusted for height for most individuals, is a reliable tool for identifying adults at increased risk for mortality and morbidity due to overweight and obesity.¹ BMI ranges are based on the effect body weight has on disease and death— as BMI increases, the risk for many diseases and conditions also increases.² For adults aged 20 years or older, BMI falls into one of the following categories: underweight (BMI below 18.5), normal (BMI of 18.5 to 24.9), overweight (BMI of 25 to 29.9) or obese (BMI of 30 or higher). For the purposes of this project we define a healthy weight as a BMI of 18.5 to 24.9.

Being obese or overweight increase the likelihood of illness and early death. Obesity is a chronic, relapsing, stigmatized and neurochemical disease³ and is a major cause of preventable illness and death in the U.S. Overweight and obesity are associated with hypertension, type 2 diabetes mellitus, hypertension, dyslipidemia (high total cholesterol or high levels of triglycerides), coronary heart disease, stroke, heart failure, certain kinds of cancers (endometrial, breast, and colon), gallbladder disease, osteoarthritis, sleep apnea, respiratory problems, and early mortality.^{4,5} Obesity is also associated with four of the ten leading causes of death.⁶

Not only are obesity and overweight devastating to individuals and families, they cost society billions each year in medical expenses and lost productivity. According to *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*, the direct and indirect costs of obesity in the United States in 2000 was more than \$117 billion dollars. Between 1987 and 2002, private spending on obesity-linked medical problems grew from \$3.6 billion, or two percent of all health spending, to \$36.5 billion or 11.6 percent.⁷

Obesity and Overweight among Women

One out of four women of reproductive age is considered obese, with a well-documented increase since 1960. Obesity in women has greater epidemiological importance than in men because of women's childbearing role.⁸ Women who are obese have higher rates of amenorrhoea and infertility, and when pregnant have an increased risk of pregnancy and delivery complications. One out of four women of reproductive age is considered obese, with a well-documented increase since 1960. A recent population-based study from Utah documents a 25 percent increase in



	All*	Non-Hispanic White	Non-Hispanic Black	Mexican American
Overweight	54.3	49.0	70.8	61.6
Obese	28.4	24.4	46.2	30.6

prepregnancy overweight and obesity and a nearly 29 percent increase in maternal obesity between 1991 and 2001.

NHANES data shows that more adult women are obese (33 percent) than men (28), with the problems greatest among non-Hispanic black women (49 percent), Mexican-American women (38 percent) and non-Hispanic white women (31 percent).⁹ The following charts use NHANES¹⁰ data to illustrate the obesity trends among American women.

The Impact of Weight on Reproductive Health

Strong evidence exists that obesity can begin to develop very early on in life, and that the prevention and control of obesity in women of childbearing age needs to be addressed.¹¹ Obesity is easy to diagnose, as are most of its risk factors, yet very little progress has been made in preventing obesity among these women.¹² The nutritional well-being of a woman before conception, during pregnancy, post-partum, and during lactation affects her health and the health of her child. Maternal obesity affects a woman's health and pregnancy outcome, and threatens her child's health from the fetal period through adulthood.¹³ Maternal overweight may increase risks for overweight and obesity in their children.¹⁴

Preconception Health

The impact of nutrition prior to and during pregnancy has taken on even greater significance due to the Barker Hypothesis that adult disease has origins in early life.¹⁵ This commonly accepted hypothesis states that environmental factors, particularly nutrition, act in early life to program the risks for adverse health outcomes in adult life. The hypothesis has been supported by a worldwide series of epidemiological studies that have shown the association between the early nutritional environment and the major risk factors for cardiovascular disease, diabetes and the metabolic syndrome in adult life.¹⁶ These diseases may be consequences of "programming," whereby a stimulus or insult at a critical, sensitive period of early life has permanent effects on structure, physiology and metabolism.¹⁷ Additionally, another critical phase for adult obesity development includes the time periods between conception and adolescence.¹⁸

Experts recommend that women achieve an optimal weight and adopt a healthy diet before becoming pregnant. This is especially important for women with chronic conditions such as diabetes. Pre- and interconceptional care in women with diabetes reduces the risk of spontaneous abortion and congenital

malformations due to improved glycemic control before and during organogenesis.¹⁹ Diabetes mellitus complicates three to five percent of all pregnancies and is a major cause of perinatal morbidity and mortality, as well as maternal morbidity.

The Impact of Obesity and Overweight on Pregnancy

According to Healthy People 2010, the U.S. average of 8.9 deaths per 100,000 live births not only far exceeds the 2010 target of 3.3 deaths but also conceals wide variation in maternal mortality rates. African American women have the highest rates of maternal death at 24.9 and white women have the lowest at 6.0. The major causes of maternal mortality are hemorrhage, ectopic pregnancy, pregnancy-induced hypertension, embolism, infection and other complications of pregnancy and childbirth.²⁰ Some of these conditions are exacerbated by obesity and overweight.

According to a review article by Gaultier-Dereure, the prevalence of overweight and obesity during pregnancy is rising, making prepregnancy overweight one of the most common high-risk obstetric situations. Although the designs and populations of published studies vary widely, most authors agree that prepregnancy overweight increases maternal and fetal morbidity. Even moderate overweight is a risk factor for gestational diabetes and hypertensive disorders of pregnancy, and the risk is higher in women who are obese. Maternal obesity is associated with a higher rate of cesarean deliveries and a higher incidence of anesthetic and postoperative complications in these deliveries. Low Apgar scores, macrosomia (an infant born with a birth weight of more than 8 lb, 13 ounces), and neural tube defects are more frequent in infants of obese mothers, and maternal obesity also increases perinatal mortality. Long-term complications include worsening of maternal obesity and development of obesity in the infant. The average cost of hospital prenatal and postnatal care is higher for overweight mothers than for normal-weight mothers. Infants of overweight mothers also require more frequent admission to neonatal intensive care units.²¹

Maternal obesity adversely affects pregnancy outcome primarily through increased rates of chronic hypertension and pre-eclampsia, diabetes (pregestational and gestational), cesarean section and infections. Obesity is associated with a higher rate of venous thromboembolic disease and respiratory complications, and may be an independent risk factor for neural tube defects, fetal mortality and preterm delivery. Maternal Obesity has been shown to impact the risk of stillbirth and neonatal deaths. Complications associated with obesity in labor are augmentation, early amniotomy, cephalopelvic disproportion, cesarean section and perioperative morbidity. Complications associated with obesity in children are macrosomia, shoulder dystocia, small for gestational age, late fetal death and congenital malformations, especially neural tube defects. Large for gestational age or macrosomic neonates are at an increased risk of subsequent childhood obesity and its associated morbidity. Yet another adverse pregnancy outcome

associated with maternal obesity is increased risk for birth defects such as spina bifida, omphalocele, and heart defects.^{22, 23, 24, 25}

Weight Gain During Pregnancy

Research on maternal weight gain during pregnancy has typically focused on inadequate weight gain and the consequences for the health of the infant. Studies have focused on encouraging adequate weight gain based upon the woman's prepregnancy weight. However, the increasing numbers of women of childbearing age who are obese, combined with the high proportion of pregnant women who gain weight in excess of recommendations, require that this area be addressed as well.²⁶

In 1990, the Institute of Medicine (IOM)²⁷ issued weight-gain recommendations with the primary goal of improving infant birth weight. *Healthy People 2010* includes an objective to increase the proportion of mothers who achieve a weight gain consistent with the IOM guidelines during their pregnancies.²⁸ Studies show that pregnancy weight gain within the IOM's recommended range is associated with the best outcome for both mothers and infants. However, weight gain in most pregnant women is not within the IOM's ranges.²⁹ Studies suggest that only between 30 and 40 percent of American women actually have prenatal weight gains within the IOM ranges.³⁰ Many women report receiving incorrect advice about how much weight they should gain during pregnancy, especially women who enter pregnancy either underweight or overweight.³¹

A number of studies indicate that pregnancy may lead to excessive weight gain and retention that may affect a woman's future risk of obesity.³² A literature review by Gore examined the role of pregnancy in the development of overweight. Average postpartum weight retention ranges from one pound to over six pounds, with some women retaining as much as 39 pounds. Women who enter pregnancy obese tend to have larger weight changes compared to lower-weight women. A small number of women greatly increase their weight during pregnancy, but it is not clear whether this is the result of the pregnancy or other factors. Also, excessive postpartum weight retention appears to be common among minority women.³³ Some women gain weight postpartum, suggesting that lifestyle factors can be significant determinants of weight gain during a reproductive cycle.³⁴ There are few controlled studies of behavioral interventions to prevent substantial pregnancy-related weight gain or postpartum weight retention. However, excess weight gain and failure to lose weight after pregnancy are important and identifiable predictors of long-term obesity.³⁵ Attending to the weight gain patterns of mothers from minority groups should be done given the likelihood of greater weight retention in this group.³⁶ Lower-income women who gain excess weight in pregnancy are also at high risk for postpartum weight retention.

According to Siega-Riz, the few studies that have examined determinants of excessive weight gain and postpartum weight retention in the U.S. are not comprehensive in assessing diet, physical activity and psychosocial factors and suffer from small

sample sizes. Information is lacking on pregnant women's perceptions about eating and gaining weight, what they actually eat, how consumption and exercise relate to weight gain, and how psychosocial factors influence these behaviors during pregnancy. Little is known about obese pregnant women's perceptions of risk, changes in lifestyle, functioning, health behaviors and symptoms experienced during pregnancy.³⁷ Likewise, little is known concerning these same attitudes and behaviors during the postpartum period that may contribute to weight retention.³⁸ Preconception counseling, careful prenatal management, tight monitoring of weight gain and long-term follow-up could minimize the social and economic consequences of pregnancies in overweight women.³⁹

One study by Olson focused on healthy pregnant women with normal and overweight early pregnancy body mass indexes. The women were monitored from early pregnancy until one-year postpartum. One hundred seventy-nine women in the intervention group had their gestational weight gains monitored by health care providers and also received patient education by mail. Low-income women who received the intervention had a significantly reduced risk of excessive gestational weight gain. Overweight women within this income subgroup were at a significantly lower risk of retaining more than 2.27 kg postpartum (OR=0.24, 95% CI=0.07-0.89). The intervention appeared to reduce the risk of excessive gestational weight gain only in the low-income subgroup.⁴⁰

Role of Breastfeeding on Maternal and Child Weight

Recent review articles indicate that breastfeeding seems to have a small but consistent protective effect against obesity in children.^{41, 42} A review of maternal weight retention and breastfeeding has conflicting results, possibly due to differences in study quality. The results of high-quality studies indicate that breastfeeding does improve the rate of weight loss postpartum, but the effect is relatively small and may not be detectable in studies that lack adequate statistical power, have imprecise data on postpartum weight change, or do not account for the exclusivity or duration of breastfeeding.⁴³ Another review concluded that there is insufficient evidence to support an effect of lactation on maternal weight after delivery. The author also indicated that better data is needed such as longitudinal studies with a clear definition of breastfeeding, specific outcome measures, study periods extending one to two years after delivery, and better control of potentially confounding factors.⁴⁴ Finally, a high BMI among women is associated with reduced breastfeeding initiation and duration. Women who are obese prior to pregnancy or who gain too little or too much weight during pregnancy need extra support for breastfeeding.⁴⁵

Women's Preventive Health - Using a Lifespan Framework

Two frameworks have influenced AMCHP's and CityMatCH's approach to promoting pre- and interconceptional health for

women. Both frameworks take a lifespan perspective and recognize that powerful influences shape maternal health and birth outcomes years before pregnancy actually occurs.

Integrated Perinatal Health Framework: A Multiple Determinants Model with a Life Span Approach. Dawn Misra, Bernie Guyer and A. Allston.⁴⁶

This perinatal health framework incorporates risk factors for health not included in other models, and posits that pregnancy outcomes are shaped by social, psychological, behavioral, environmental, and biological forces that may occur at many stages in a woman's life. The authors categorize these as distal and proximal risk factors.

Distal-level risk factors are those that have the potential to directly influence individual health, but are more likely to increase or decrease an individual's predisposition to more "proximal" risk behaviors and exposures. Proximal level risk factors have a direct impact on an individual's health.

The model also recognizes the powerful impact of access to health care (from primary prevention to medical intervention) on the perinatal health framework. Health care access modifies the relationships among the various components of the framework, and the mix of preventive and therapeutic will vary at different levels of the model (see *Figure 1* on page 6).

Racial and Ethnic Disparities in Birth Outcomes: A Life-Course Perspective. Michael Lu and Neil Halfon.⁴⁷

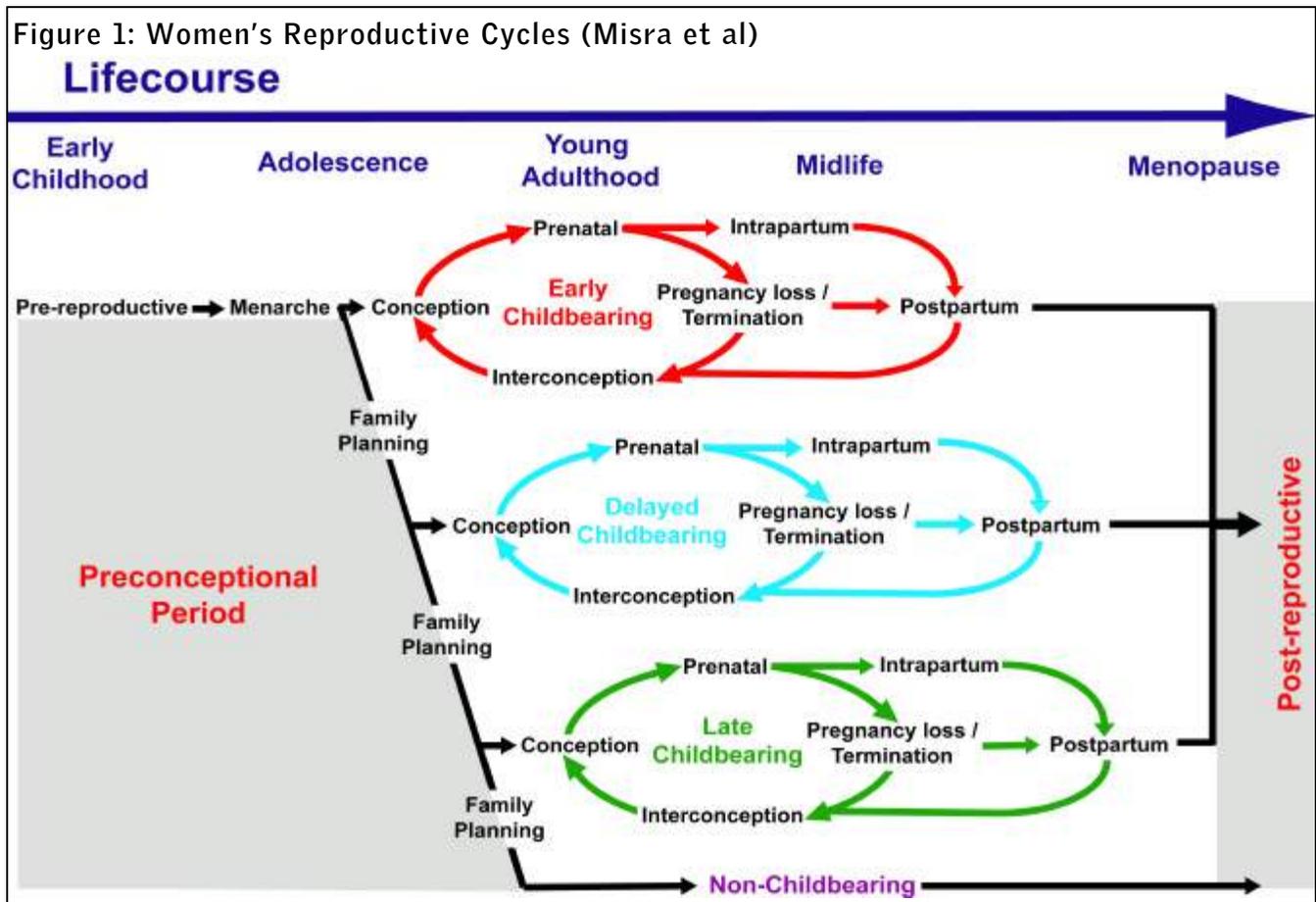
The life-course perspective calls for research that goes beyond comparing exposures to risk and protective factors during pregnancy to comparing cumulative experiences over the life course of women. It calls for better data integration, more longitudinal study designs, an integrative approach to disparities research and the creation of an infrastructure that supports life-course research.

According to the life-course perspective, clinical and public health interventions need to be longitudinally and contextually integrated, and should include multiple factors interacting over the life course (biological, psychological, behavioral, and social determinants of women's health). From the life-course perspective, eliminating racial and ethnic disparities in birth outcomes will require:

1. Closing the gap in one generation to give the next generation an equal start;
2. Targeted interventions during sensitive developmental periods (e.g., in utero development, early childhood, puberty, pregnancy); and
3. Risk reduction and health promotion strategies across the lifespan.

The life-course perspective has far-reaching policy implications for eliminating disparities in birth outcomes. It calls for greater investments in women's health, since many women, particularly

Figure 1: Women's Reproductive Cycles (Misra et al)



low-income women and women of color, lack access to women's health care. It also calls for greater investments in community health. Also this perspective calls for greater investments in improving social conditions, with the goal of reducing allostatic load or accumulated stress over the life course of women.

Applying the Frameworks

Both frameworks assume that preexisting factors, present long before a woman is pregnant and even during her own time spent in utero, will influence the outcome of her pregnancy. The Misra model recognizes both distal and proximal risk factors. Distal risk factors include biological and societal factors (e.g., genetics, physical and social environments). Proximal level risk factors have a more immediate impact on individual health and include biomedical responses (e.g., nutrition, chronic disease, infertility, stress) and behavioral responses (alcohol and drug use, smoking, nutrition, sexual behavior, assisted reproductive technology utilization, and psychological factors). Health care is recognized as an indirect factor that influences health at all levels of the model.

These risk factors exert their influence over maternal health and birth outcomes not only during pregnancy, but also during the pre- and interconception stages of a woman's life that begins in utero and continues until cessation of reproduction. Lu and Halfon contend that the life course context of these risk factors differs between black and white women, resulting in different

impacts on their reproductive health and birth outcomes. This is consistent with the *Integrated Perinatal Health Framework* that also takes a lifespan perspective and focuses on the determinants of health that influence the "wear and tear" women experience according to the Lu model.

These two frameworks challenge those vested in improving maternal health and birth outcomes to consider the entire span of a woman's life, not just the immediate preconception and prenatal periods. AMCHP and CityMatCH argue that the achievement of a healthy weight is desirable for women prior to and between pregnancies, because a healthy weight cannot be adequately addressed during pregnancy. The factors that influence healthy weight should be addressed before and after pregnancy to influence perinatal outcomes. Addressing eating and exercise patterns, food access issues, eating behavior, and social and physical environments can positively influence the maintenance of healthy weight. A wealth of tools and resources are available to assist women to develop and maintain a healthy weight. Additionally, promising community-based approaches can be used to assist women of childbearing age in maintaining a healthy weight.

Factors Influencing Healthy Weight According to the Misra Framework

Body weight is the result of a number of risk factors including genes, metabolism, behavior, environment, culture and

socioeconomic status.⁴⁸ It is likely that obesity represents the manifestations of a spectrum of disorders, each arising from distinct defects or groups of defects in the weight regulatory system.^{49, 50, 51} The following factors that influence a healthy weight have been arranged according to Perinatal Health Framework (see *Figure 2*).

Distal Factors

Genetics. Evidence for the strong genetic contribution of human obesity comes from a variety of sources including twin and family studies as well as animal studies. There are at least several dozen genes involved in obesity. Not only does current weight status have an inherited component, but the metabolic processes underlying weight gain may also have strong genetic influences. Genes can directly cause obesity in disorders such as Bardet-Biedl syndrome and Prader-Willi syndrome. Diet and genetic factors are intimately related in the development of obesity,¹ and genes and behavior may both be needed for a person to be overweight. In some cases, multiple genes may increase one’s susceptibility for obesity and require outside factors, such as abundant food supply or little physical activity, to lead to excess fatness.⁵³ Experts emphasize that a gene-environment interaction appears to exist, with some individuals being more sensitive than others to external factors.⁵⁴

Physical Environment — Food Security. Evidence exists that individuals who are food insecure (i.e., report a lack of consistent

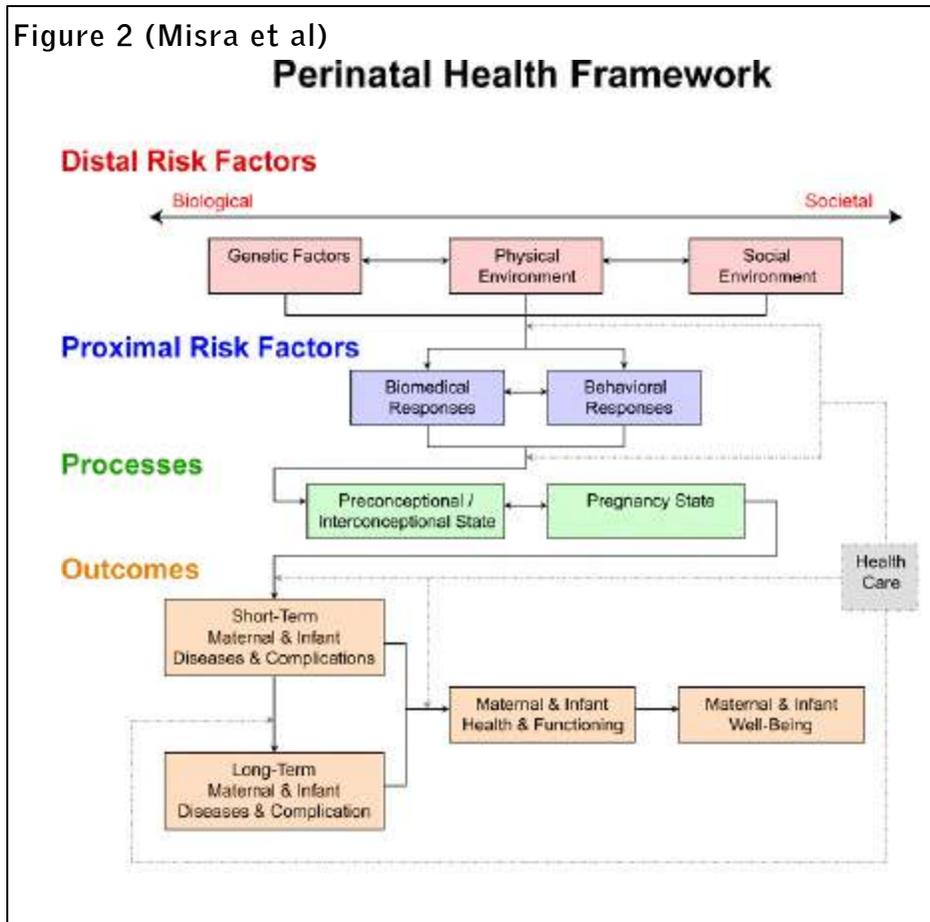
access to food) may be more likely to be obese than those who don’t report this concern. According to a recent USDA-sponsored survey conducted by the US Census Bureau, 11 percent of households experience food insecurity. Obesity is a socioeconomic issue related to limited social and economic resources, and may be linked to disparities in access to healthy foods. Financial disparities that limit access to healthier diets may help explain why the highest rates of obesity and diabetes are found among minorities and the working poor.⁵⁵ Foods high in added sugars and fats are more affordable than healthy foods. Good taste, convenience and low cost may be the principal reasons for overeating and weight gain among individuals with low incomes.

According to the American Dietetic Association, environmental factors influencing weight gain include an overall decrease in physical activity combined with an increase in food availability. With the advent of fast and convenience foods, there has been an increase in the caloric density of readily available foods coupled with aggressive and sophisticated food marketing by the mass media. In addition, there has been a significant increase in the portion size of food as it is sold and served. Also, our lifestyles have become more stressful. Americans are working longer hours outside the home, which limits the time and emphasis on food planning and preparation, often leading to chaotic patterns of eating and the decrease in planned, relaxed and nutritious home meals.

Social and Cultural Environment.

A number of reviews have been published on the psychosocial aspects of obesity. In American and other Westernized societies there are powerful messages that people, especially women, should be thin, and that to be fat is a sign of poor self-control. Negative attitudes about the obese have been reported in children and adults, in health care professionals, and in the obese themselves. People’s negative attitudes toward the obese often translate into discrimination in employment opportunities, college acceptance, less financial aid from their parents in paying for college, job earnings, rental availabilities and opportunities for marriage.⁵⁶

Our culture places a value on attractiveness and interprets slenderness as essential to attractiveness. This interpretation of attractiveness demands conformity to a narrow definition and indicates that those who fail to conform will be denied success, love, power and



other rewards. These values may lead to an obsession with thinness among some groups of women. The cultural and physical environments contribute to difficulties in weight management by focusing on an unrealistic thinness.⁵⁷

Behavior and environment play a large role in overweight and obesity, and present the greatest areas for prevention and treatment actions.⁵⁸ Factors contributing to increases in energy intake include increases in the percentage of the population eating away from home (particularly at fast-food restaurants), larger portion sizes of foods and beverages, increased consumption of sweetened beverages, changes in snacking habits, and improved dietary methodology.⁵⁹

Psychological status is another factor associated with obesity. Data analysis from the follow-up study to the first NHANES revealed that depression played a substantial role in the patterns of weight change in US adults.⁶⁰ Persons who gain weight with one episode of depression tend to gain weight with the next, just as persons who tend to lose weight with depression have a similar response with the next occurrence of depression.⁶¹

Proximal Factors

Behavioral. It is well known that regular physical activity is good for overall health. Physical activity is defined as any bodily movement that results in an expenditure of energy. According to the CDC, physical activity decreases the risk for colon cancer, diabetes and high blood pressure. It also helps to control weight and contributes to healthy bones, muscles and joints. Despite all the benefits of being physically active, however, most Americans are sedentary. The belief that physical activity is limited to exercise or sports may keep people from being active. Another myth is that physical activity must be vigorous to achieve health benefits; physical activity does not have to be strenuous to be beneficial. Moderate physical activity, such as 30 minutes of brisk walking five or more times a week, is beneficial.⁶²

Biomedical/Medication Control. Drugs such as steroids and some antidepressants may also cause weight gain.⁶³ Several classes of psychotropic medications are associated with unwanted weight gain including antipsychotics, antidepressants, mood stabilizers and, to a lesser degree, drugs used to treat anxiety.⁶⁴

Summary

Attaining and maintaining a healthy weight are influenced by a number of distal and proximal risk factors which are described above. Also, there are influential stages within a woman's life where opportunities for maintaining a healthy weight can be emphasized, such as in youth during the development of eating and exercise habits, during pregnancy and within the postpartum period.

Resources and Community-Based Interventions

Using the factors that influence healthy weight among women

of childbearing age, this section reviews some relevant literature and resources. Specific recommendations and resources for women of childbearing age are not typically available — resources are often directed at adults, without taking into account sex or age. Therefore it is necessary to extrapolate from the available literature and adapt recommendations to women of childbearing age. We are confident that these evidence-based recommendations will provide help to build state and local capacity to promote healthy weight among women, enhance safe motherhood and improve overall women's health. These multifaceted strategies address several factors that have a direct impact on health.

Interventions for Preventing Weight Gain

From the perspective of energy balance, resolving obesity should be simple — eat less and exercise more. *The Dietary Guidelines for Americans* recommends that to maintain body weight in a healthy range, it is necessary to balance calories from foods and beverages with calories expended through physical activity. However, as has been documented by the struggles many Americans undergo with weight loss and weight maintenance, it is not simple. A variety of tools and resources are available to assist in weight management.

Findings of widespread weight gain, particularly among those already overweight, suggest that early adulthood may be an important time for implementing strategies to promote maintenance of healthy weight.⁶⁵ Other key times include adolescence and, for women, before, during and after pregnancy.

There is an emerging consensus that the best ways to address the obesity epidemic are to assist people in preventing weight gain and prevent additional gain among those who are already overweight. According to the *2005 Dietary Goals for Americans*, the ideal goal for adults is to achieve and maintain a body weight that optimizes their health. However, prevention of weight gain is critical because it is more difficult to lose weight than to prevent weight gain. Since many adults gain weight slowly over time, even a small decrease in calorie intake can help avoid weight gain, especially if accompanied by increased physical activity. For example, for most adults a reduction of 50 to 100 calories per day may prevent gradual weight gain, whereas a reduction of 500 calories or more per day is a common initial goal in weight loss programs. Similarly, up to 60 minutes of moderate to vigorous physical activity per day may be needed to prevent weight gain, but as much as 60 to 90 minutes of moderate physical activity per day is recommended to sustain weight loss for previously overweight people.

Hill et al have offered the following three goals for weight management:⁶⁶

1. Prevent weight gain: This requires the least amount of behavior change. Even people who need to lose weight can start by ceasing to gain weight.
2. Produce weight loss: Losing weight is a temporary process that can best be achieved with food restriction. There are many different ways to help people lose weight. It is

important to increase physical activity, not for weight loss, but to prepare the individual for keeping the weight off.

3. Maintain weight loss: Negative energy balance cannot be maintained indefinitely and the individual must learn to re-achieve energy balance after weight loss. Most people fail because they try to maintain their weight loss with food restriction alone. Data suggests that those who are able to make and sustain substantial increases in physical activity are most likely to succeed.

Studies show that even relatively small decreases in weight and relatively small increases in exercise have a profound effect on health.⁶⁷ Many researchers agree it is not necessarily the type of diet that matters in weight loss, but adherence to a given diet.⁶⁸ Recommendations for long-term weight loss include cutting calories, choosing nutritious foods, and exercising daily.⁶⁹

Research from the National Weight Control Registry led to the conclusion that there are different processes for losing and keeping weight off that require different behaviors.⁷⁰ Over 20 percent of overweight or obese persons are successful at long-term weight loss maintenance (defined as intentional loss of at least 10 percent of initial body weight and keeping it off for at least one year). Registry data indicates that those who are successful at maintaining long-term weight loss share common behaviors including eating a diet low in fat, frequent self-monitoring of body weight and food intake, and high levels of regular physical activity.⁷¹

A number of factors can be categorized as possible protective and risk factors for obesity. A study by Swinburn found regular physical activity and a high intake of dietary fiber to be protective factors. Other likely protective factors include supportive home and school environments for children and breastfeeding. Convincing risk factors for obesity were sedentary lifestyles and a high intake of energy-dense and micronutrient-poor foods. Probable factors included heavy marketing of energy-dense foods and fast food outlets, sugar-sweetened soft drinks and fruit juices, and adverse social and economic conditions, especially in women.⁷²

Weight Management Guidelines

United States Preventive Services Task Force Recommendations for Screening for Obesity in Adults⁷³

The United States Preventive Services Task Force (USPSTF) recommends that clinicians screen all adult patients for obesity

ⁱⁱ The USPSTF defined intensity of counseling by the frequency of the intervention. A high-intensity intervention is more than 1 person-to-person (individual or group) session per month for at least the first 3 months of the intervention. A medium-intensity intervention is a monthly intervention, and anything less frequent is a low-intensity intervention. There are limited data on the best place for these interventions to occur and on the composition of the multidisciplinary team that should deliver high-intensity interventions.

and offer intensive counseling and behavioral interventions to promote sustained weight loss for obese adults.ⁱⁱ Furthermore, the USPSTF states that the most effective interventions combine nutrition education and diet and exercise counseling with behavioral strategies to help patients acquire the skills needed to change eating patterns and become physically active. The 5-A framework (Ask, Advise, Assess, Assist and Arrange) has been used in behavioral counseling interventions such as smoking cessation and may be useful in helping clinicians guide interventions for weight loss.

There is fair to good evidence, according to the USPSTF, that high-intensity counseling about diet, exercise or both, together with behavioral interventions aimed at skill development, motivation and support strategies produce modest, sustained weight loss (typically 3-5 kg for one year or more) in adults who are obese (as defined by BMI ≥ 30). Although the USPSTF did not find direct evidence that behavioral interventions lower mortality or morbidity from obesity, they concluded that changes in intermediate outcomes from modest weight loss — such as improved glucose metabolism, lipid levels and blood pressure — provide indirect evidence of health benefits. The USPSTF concluded that the benefits of screening and behavioral interventions outweigh potential harms.

Experts recommend that pharmacological treatment of obesity be used only as part of a program that also includes lifestyle modification interventions, such as intensive diet or exercise counseling and behavioral interventions. According to the USPSTF, fair to good evidence suggests that surgical interventions such as gastric bypass, vertical banded gastroplasty and adjustable gastric banding can produce substantial weight loss (28 to >40 kg) in patients with class III obesity. Clinical guidelines developed by the National Heart, Lung and Blood Institute (NHLBI) Expert Panel on the identification, evaluation and treatment of overweight and obesity in adults recommend that these procedures be reserved for patients with class III obesity and for patients with class II obesity who have at least 1 other obesity-related illness. The National Heart, Lung and Blood Institute define a BMI of 30 to 34.9 as class I obesity, 35–39.9 as class II obesity, and 40 or more as class III or extreme obesity.⁷⁴

Data supporting the effectiveness of interventions to promote weight loss are derived mostly from studies of white women. The effectiveness of the interventions is less well established in other populations, including the elderly. Although the data are limited, USPSTF believes that these interventions may be used with obese men, physiologically mature older adolescents and diverse populations, provided cultural and other individual factors are taken into account.

Evidence-based Guidelines on Weight Loss

Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults⁷⁵

In 1995, the National Obesity Education Initiative of the National

Heart, Lung and Blood Institute, in cooperation with the National Institute of Diabetes and Digestive and Kidney Diseases, convened the first expert panel to develop clinical practice guidelines on the identification, evaluation and treatment of overweight and obesity in adults for primary care practitioners. The guidelines indicate that there are a variety of effective options for the management of overweight and obese patients, including dietary therapy such as low-calorie diets and lower-fat diets, altering physical activity patterns, behavior therapy techniques, pharmacotherapy, surgery and combinations of these techniques.

Other

The National Guidelines Clearinghouse at USDHHS, Agency for Health Care Research and Quality, lists 22 guidelines for obesity. Recommendations are also available from many organizations regarding the identification and treatment of overweight and obese individuals, such as the American Academy of Pediatrics, American Association of Clinical Endocrinologists/American College of Endocrinology, American Obesity Association, U.S. Clinical Preventive Services Task Force, Institute of Medicine, and the World Health Organization.

Community-based Interventions to Maintain Healthy Weight

The scientific research contains little information regarding specific community-based weight maintenance strategies targeted at women of childbearing age. It is expected that a number of projects are underway that have not yet been reported upon. Or, as is often the case in public health, interventions are underway that are unlikely to be documented in the scientific literature. Efforts to identify these promising practices should be encouraged.

An extensive research base supports obesity treatment and confirms the health benefits of weight loss, but relatively little research has focused on obesity prevention.⁷⁶ However, many researchers in this arena agree that a well-researched, comprehensive, population-based set of strategies is needed to reverse the current trends of increasing obesity.⁷⁷ There are many environmental strategies suitable to public health interventions that can influence the physical, economic, policy or socio-cultural environments.⁷⁸ However, only a few have been evaluated in depth. A number of promising approaches are available for state and community-level MCH programs to adapt to address overweight and obesity in women of reproductive age.

The following are resources developed by public health experts that provide evidence-based recommendations. These recommendations can be adapted to develop strategies and intervention to help women of reproductive age maintain a healthy weight. Evaluation should be built into any intervention developed from these resources. Additionally, the partnership will need strategies that take into account the health beliefs, knowledge, attitudes and behaviors of women. Effective interventions need to be targeted based upon race,

socioeconomic status or other distinguishing characteristics.

One group that demands particular attention is low-income, urban, African-American women. These women experience high levels of obesity and a corresponding excess burden of obesity-related diseases. Distinct physiological, societal, cultural and environmental factors have been shown to promote weight gain and prevent weight loss in these women.⁷⁹ Since health beliefs, attitudes and behaviors are developed within social systems, the facilitation of healthy lifestyle behaviors may be best assessed and influenced within community groups such as churches, social clubs or other institutions.⁸⁰ The better we understand these factors, the better able the partnership will be to design and tailor interventions.

Another consideration for this project is that the target population for these interventions needs to be clearly segmented, since women of childbearing age range from approximately the onset of menstruation to menopause. The lifespan approach embraced by AMCHP and CityMatCH recognizes the benefits of starting interventions early in life. However, a number of weight control interventions are now targeting children and youth, but few interventions are specific to women in their childbearing years. Other groups of women who may be prioritized include adolescents and women from specific racial and ethnic groups at risk for obesity, women actively planning their pregnancies, pregnant women who may be gaining weight inadequately, and post-partum women who gained excess weight.

Theoretical Models

Each of the following models offers useful ideas to consider when developing possible interventions.

An ecological model focused on the physical and social environments has been proposed for understanding overweight and obesity. One study using this model showed that that negative perceptions of the physical environment and the absence of enabling infrastructure are modestly associated with overweight in comparison with other known risk factors. Environmental and policy interventions that promote healthier lifestyles by encouraging physical activity and healthy eating may have an effect on reducing the prevalence of overweight and obesity.⁸¹ An ecological model is consistent with both the Misra and Lu frameworks previously discussed. An example of this type of model is presented on page 16.

Swinburn proposes that the traditional epidemiological triad (host, vector and environment) be applied to obesity. Host-based strategies are primarily educational. Main vectors are high-energy intake (e.g., energy-dense foods and drinks and large portion sizes) and low energy expenditure (e.g., machines that promote physical inactivity). He claims that increasingly 'obesogenic' environments are probably the main driving forces for the obesity epidemic.

Bray also offers an epidemiological model that identifies food, drugs, viruses, toxins and low physical activity as the

environmental agents that facilitate the development of obesity. One or more of these factors acting on an individual (i.e., the susceptible host) can produce obesity. The genetic and physiologic responses of a host determine whether or not this “toxic environment” will produce obesity. To influence weight, changes must be made to the host, the environment or both.⁸²

Principles, Assumptions and Possible Strategies

An intended outcome of the Women’s Health Partnership is to identify, investigate and recommend promising strategies, tools and approaches supported by research that state and local MCH programs could implement to address the issue of healthy weight among women of childbearing age. The partnership has developed a set of principles and assumptions based upon members’ guidance. The recommended strategies that emerge from this meeting should be consistent with these assumptions and principles.

We have also collected possible strategies for action derived from research, experience and the previously described theoretical frameworks. These strategies are offered as a starting point for the discussion that will occur at the meeting regarding what our members could do to promote healthy weight among women of childbearing age. Meeting participants are asked to review the possible strategies prior to the meeting to get a sense of the types of activities that are possible. Naturally, not all of the following strategies could or should be implemented by the partnership alone, they are offered to catalyze thinking and creativity.

Types of strategies that result from this meeting may include: training and technical assistance for members; national advocacy to increase availability of resources for promoting healthy weight among women; collection of promising practices already being used by our member organizations; development of resources and products that assist members in implementing programs and services targeting this subject area; or a number of other ideas.

Guiding Principles are critical elements that the partnership must consider when planning, implementing or evaluating our women’s health preventive initiatives.

- Women’s health is defined broadly as biophysical, emotional, socioeconomic, political, cultural and spiritual well-being. Health occurs within a context of highly interrelated factors.
- Women should be involved in the design and evaluation of policies and programs that serve them.
- Women’s health policies and programs need to take into account women’s relationships, roles and responsibilities across the lifespan.
- Cultural competence should drive the design of women’s health systems and reduction of health disparities should be a key goal of women’s health policies and programs.

- Programs emphasizing good pregnancy outcomes should include a focus on health literacy, health promotion and primary prevention, in addition to screening and treatment.

Assumptions are evidence-based values held by the partnership that must be taken into account when planning any women’s health preventive initiatives.

- The health status of women in and of itself is valuable. Although the role of motherhood is an extremely important aspect of many women’s lives, it is not the only aspect of a woman’s health that is important.
- Pregnancies should be intended — that is they should be consciously and clearly desired at the time of conception. (From the National Academy of Sciences, Institute of Medicine’s report *The Best Intentions - Unintended Pregnancy and the Well-Being of Children and Families*.⁸³)
- Pregnancy is best addressed within a lifespan perspective. All women experience a preconceptional period beginning in childhood and ending with either menopause or the first pregnancy. A woman will spend the majority of her reproductive years in either the preconception or interconception period, with some women not choosing or being unable to be pregnant. Each cycle of pregnancy includes a prenatal, intrapartum, postpartum and interconception period. The length of the interconceptional periods and number of cycles varies for each woman. (Misra)
- Powerful influences on outcomes occur long before pregnancy begins. (Misra, Lu)
- Social, psychological, behavioral, environmental and biological forces shape pregnancy outcome. (Misra, Lu)
- The primary influence on perinatal outcomes is the interrelationship between a women’s health status prior to conception, and the changes and demands of pregnancy. (Misra)
- We should move beyond considering simply pregnancy risk factors to examining the sum of a woman’s life experiences. (Lu)
- We should move beyond looking for quick fixes during pregnancy to making long-term investments in women’s life-course.

Possible Strategies to Improve Healthy Weight Among Women

These strategies are offered to stimulate thinking and to generate ideas about what sorts of work the partnership and affiliated members can do to assist women in maintaining a healthy weight. The suggestions were culled from many articles referenced within this paper, as well as other resources offered by organizations concerned about the health status of women and infants.

Policy and Community-Based Interventions

- Engage in legislative and policy changes, when necessary, to improve the physical and social environment.
- Create environments that make it easier to engage in physical activity and to eat a healthy diet.
- Promote healthier choices including at least five servings of

fruits and vegetables a day, and reasonable portion sizes.

- Work with local grocery stores, farmers markets, etc., to make fruits and vegetables more affordable and available.
- Develop, fund and initiate public campaigns on healthy eating and lifestyle for women.
- Increase physical activity opportunities by focusing on the built environment, transportation, physical activity in the workplace and how we spend our leisure time.
- Work with public health officials and city planners to promote changes in the built environment at the neighborhood level. The built environment includes the design, land use and the available public transportation in an area, as well as the available activity options for people within the space. Possible policy changes include influencing urban environments and transport systems to promote physical activity, developing community-wide programs for safe streets and parks and creating more bike paths and public swimming pools.
- Create mechanisms for appropriate reimbursement for the prevention and treatment of overweight and obesity through public and private insurers.
- Increase access to health care and reliable health promotion resources for low-income and uninsured individuals.
- Develop state or citywide taskforces, commissions or studies on the impact of obesity among citizens including women. Follow-up should include implementation of recommendations.
- Promote partnerships with community-based organizations and businesses to promote healthy lifestyles among adults and youth.
- Create community-based interventions targeting mothers of young children through recreation centers, religious institutions, self-affiliated groups like MOPS (Mothers of Preschool Children) etc.

Education

- Increase awareness that obesity is about health and not appearance.
- Provide clear, focused and culturally sensitive messages based upon the needs of the defined target groups.
- Educate consumers about how to achieve a healthy weight for a lifetime. Provide targeted, evidence-based and easy to understand messages to groups at higher risk for obesity.
- Ensure health literacy, the ability of an individual to access, understand and use health-related information and services to make appropriate health decisions.
- Continue educating prenatal care providers regarding expected weight gains during pregnancy and the benefits of breastfeeding on healthy weight.
- Educate women about the adequate amount of weight to gain during pregnancy and provide education and advice regarding effective postpartum weight loss. Also, provide education regarding the benefits of breastfeeding on healthy weight for the mother and child.
- Emphasize the importance of maintaining a healthy weight in the preconception period.

- Create an awareness of the importance of a postpartum woman returning to a healthy weight prior to becoming pregnant again.
- Educate policymakers about the long-term health and cost benefits of eating healthy and being physically active.

Research and Evaluation

- Increase research on behavioral and environmental causes of overweight and obesity.
- Increase research and evaluation on prevention and treatment interventions for overweight and obesity and develop and disseminate best practice guidelines.
- Increase research on disparities in the prevalence of overweight and obesity among racial and ethnic, gender, socioeconomic and age groups and use this research to identify effective and culturally appropriate interventions.
- Increase research on diet quality, associated food costs and obesity as they influence nutrition interventions and fiscal food policy.
- Engage in research regarding adequate weight gain during pregnancy.
- Identify individuals and community factors that foster the development of healthy eating and physical activity patterns.

Alliances

- Develop population-based efforts that involve full cooperation of the entire health care community. Create alliances between stakeholders including academia, industry, government, parents, schools and health care professionals.
- Work with non-traditional partners to foster an environment that supports healthy eating and provides physical activity opportunities.
- Identify policies in worksites, schools and communities that may make it difficult for an individual to maintain a healthy weight.

Food Supply

- Influence consumers to make healthy choices by providing better nutrition labeling and information about meals and foods at the point of purchase.
- Encourage the food industry to provide reasonable food and beverage portion sizes.
- Work with food outlets to increase the availability of low-calorie and nutritious food.
- Encourage the use of community gardens, access to farmers markets and other activities that increase availability of fruits and vegetables.

Worksite (from the National Business Group on Health)

- Provide healthy food at work.
- Provide user-friendly nutritional information for cafeteria selections.
- Offer on-site classes related to nutrition and exercise.
- Offer reputable weight loss programs at work to support employees' efforts.

- Offer healthy weight programs via the web, by telephone or in print to reach dispersed employees.
- Create safe walking paths and encourage the use of stairs instead of elevators.
- Provide employees with pedometers at a discounted rate to encourage walking.
- Share information about reputable web-based health education.
- Sponsor “lunch and learn” sessions on fitness, healthy lifestyles, stress management and other weight-related triggers.
- Consider giving an allowance or providing an incentive to join a health club.
- Redesign benefit programs to promote wellness.

Schools

- Ensure that the school breakfast and lunch programs meet nutrition standards.
- Provide food options that are low in fat, calories and added sugars.
- Provide all youth with quality daily physical education.

Individual Behaviors

- Aim for a healthy weight.
- Build physical activity into regular routines and reduce time spent watching television and in other sedentary behaviors.
- Avoid large portion sizes and lower energy-dense food, and chose lower-calorie choices. Reduce indiscriminate snacking, high intake of caloric beverages and empty calories.

Communication

- At all levels, communicate clear, culturally sensitive, evidenced-based messages about healthy eating and physical activity.

Health services

- Improve access among women of childbearing age to appropriate health services.
- Promote breastfeeding, which is positively associated with healthy weights later in life. Encourage adequate weight gain during pregnancy.
- Provide support, education and resources to maintain healthy weights among individuals.
- Engage in evidence-based weight management practices with patients seeking to lose weight.

Appendix

Resources to Improve Healthy Weight Among Women

The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity⁸⁴

In 2001, this report from the Surgeon General identified the following 15 activities listed below as national priorities for immediate action. The Surgeon General called upon individuals, families, communities, schools, worksites, health care, media, industry, organizations and government to determine their role and take action to prevent and decrease overweight and obesity.

Communication

The nation must take an informed, sensitive approach to communicate with and educate the American people about health issues related to overweight and obesity. Everyone must work together to:

1. Change the perception of overweight and obesity at all ages. The primary concern should be one of health and not appearance.
2. Educate all expectant parents about the many benefits of breastfeeding.
 - Breastfed infants may be less likely to become overweight as they grow older.
 - Mothers who breastfeed may return to pre-pregnancy weight more quickly.
3. Educate health care providers and health profession students in the prevention and treatment of overweight and obesity across the lifespan.
4. Provide culturally appropriate education in schools and communities about healthy eating habits and regular physical activity, based on the Dietary Guidelines for Americans, for people of all ages. Emphasize the consumer's role in making wise food and physical activity choices.

Action

The nation must take action to assist Americans in balancing healthful eating with regular physical activity. Individuals and groups across all settings must work in concert to:

1. Ensure daily, quality physical education in all school grades. Such education can develop the knowledge, attitudes, skills, behaviors and confidence needed to be physically active for life.
2. Reduce time spent watching television and in other similar sedentary behaviors.
3. Build physical activity into regular routines and playtime for children and their families. Ensure that adults get at least 30 minutes of moderate physical activity on most days of the week. Children should aim for at least 60 minutes.
4. Create more opportunities for physical activity at worksites. Encourage all employers to make facilities and opportunities available for physical activity for all employees.
5. Make community facilities available and accessible for physical activity for all people, including the elderly.

6. Promote healthier food choices, including at least five servings of fruits and vegetables each day, and reasonable portion sizes at home, in schools, at worksites and in communities.
7. Ensure that schools provide healthful foods and beverages on school campuses and at school events by:
 - Enforcing existing U.S. Department of Agriculture regulations that prohibit serving foods of minimal nutritional value during mealtimes in school food service areas, including in vending machines.
 - Adopting policies specifying that all foods and beverages available at school contribute toward eating patterns that are consistent with the Dietary Guidelines for Americans.
 - Providing more food options such as fruits, vegetables, whole grains, and low-fat or nonfat dairy foods that are low in fat, calories and added sugars.
 - Reducing access to foods high in fat, calories, and added sugars and to excessive portion sizes.
8. Create mechanisms for appropriate reimbursement for the prevention and treatment of overweight and obesity.

Research and Evaluation

The Nation must invest in research that improves our understanding of the causes, prevention and treatment of overweight and obesity. A concerted effort should be made to:

1. Increase research on behavioral and environmental causes of overweight and obesity.
2. Increase research and evaluation on prevention and treatment interventions for overweight and obesity and develop and disseminate best practice guidelines.
3. Increase research on disparities in the prevalence of overweight and obesity among racial and ethnic, gender, socioeconomic and age groups and use this research to identify effective and culturally appropriate interventions.

Surgeon General's Healthy Weight Advice for Consumers

Aim for a Healthy Weight

- Find your Body Mass Index (BMI) on the chart below.
- If you are overweight or obese, losing just 10% of your body weight can improve your health.
- If you need to lose weight, do so gradually— one-half to two pounds per week.

Be Active

- Keep physically active to balance the calories you consume.
- Be physically active for at least 30 minutes (adults) or 60 minutes (children) on most days of the week.
- Limit TV time to less than two hours per day.

Eat Well

- Select sensible portion sizes.
- Follow the *Dietary Guidelines for Americans* (www.health.gov/dietaryguidelines).

The Dietary Guidelines for Americans⁸⁵

The *Dietary Guidelines for Americans* provides science-based advice to promote health and reduce risk for chronic

diseases through diet and physical activity. The *Guidelines*' recommendations are targeted to the general public over two years of age, living in the United States. Because of its focus on health promotion and risk reduction, the *Guidelines* form the basis of federal food, nutrition education and information programs.

Weight Management - Key Recommendations

- To maintain body weight in a healthy range, balance calories from foods and beverages with calories expended.
- To prevent gradual weight gain over time, make small decreases in food and beverage calories and increase physical activity.

Physical Activity - Key Recommendations

- Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being and a healthy body weight.
- To reduce the risk of chronic disease in adulthood, engage in at least 30 minutes of moderate-intensity physical activity, above usual activity on most days of the week.
- For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or longer duration.
- To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements.
- To sustain weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements. Some people may need to consult with a healthcare provider before participating in this level of activity.
- Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance.

Steps to a Healthier US

Steps to a Healthier US (Steps) is an initiative from the U.S. Department of Health and Human Services that advances the goal of helping Americans live longer, better and healthier lives. The Steps initiative is built upon the premise that small changes over time can yield dramatic results. The Steps initiative is committed to identifying and promoting programs that encourage small behavior changes. More information is available at www.healthierus.gov/steps/index.html.

Steps promotes:

- Health promotion programs to motivate and support responsible health choices.
- Community initiatives to promote and enable healthy choices.
- Health care and insurance systems that put prevention first by reducing risk factors and complications of chronic disease.

- State and federal policies that invest in the promise of prevention for all Americans.
- Cooperation among policy makers, local health agencies and the public to invest in disease prevention instead of spending our resources to treat diseases after they occur.

Guidelines for Comprehensive Programs to Promote Healthy Eating and Physical Activity⁸⁶

The Association of State and Territorial Nutrition Directors, through the Nutrition and Physical Activity Work Group (NUPAWG) have developed *Guidelines for Comprehensive Programs to Promote Healthy Eating and Physical Activity*.

This resource takes a population approach and states that prevention of obesity will require coordinated policy and environmental changes that affect large populations simultaneously. This document uses a socio-ecological model for levels of influence associated with developing programs to promote healthy eating and physical activity, which is reproduced on page 16. The guidelines lists the following goals for a comprehensive approach to nutrition and physical activity:

- Promote healthy eating that follows national dietary guidance policy;
- Maintain recommended levels of moderate and vigorous physical activity from childhood through adolescence into adulthood;
- Eliminate disparities in diet, physical activity and overweight among disadvantaged population groups;
- Increase access to healthy foods and opportunities to be active for every age and population group; and
- Promote healthy weight among adults and children.

Review a portion of the document on page 16 or visit http://www.astphnd.org/resource_files/6/6_resource_file1.pdf.

Task Force on Community Preventive Services - The Community Guide

The Task Force on Community Preventive Services is in the process of working with a group of experts to conduct a systematic review of studies regarding population-based interventions focusing on the following areas of nutrition and community health: physical activity, school-based nutrition programs; community approaches to increase fruit and vegetable intake; food and beverage advertising to children; and food and beverage availability, price, portion size and labeling in restaurants. A useful logic model from the Community Guide is reproduced on page 17.

Guide to Community Preventive Services

<http://www.thecommunityguide.org/about/default.htm>

Centers for Disease Control and Prevention CDC Resource Guide for Nutrition and Physical Activity Interventions to Prevent Obesity and Other Chronic Diseases

A resource guide is at <http://www.cdc.gov/nccdphp/dnpa/obesityprevention.htm>. It provides information about nutrition and physical activity programs to prevent and control obesity

THEORETICAL MODEL

The foundation for these guidelines is based on the understanding that health promotion includes not only educational activities but also advocacy, organizational change efforts, policy development, economic supports, environmental change, and multimethod strategies (*Theory at a Glance*). This ecological perspective highlights the importance of approaching public health problems at multiple levels and stressing interaction and integration of factors within and across levels. When developing this document, NUPAWG members used the social-ecological model as a guide, which has five successively more complex levels (or spheres) of influence:

- **Intrapersonal or individual factors**—Individual characteristics that influence behavior

such as knowledge, attitudes, beliefs, and personality traits.

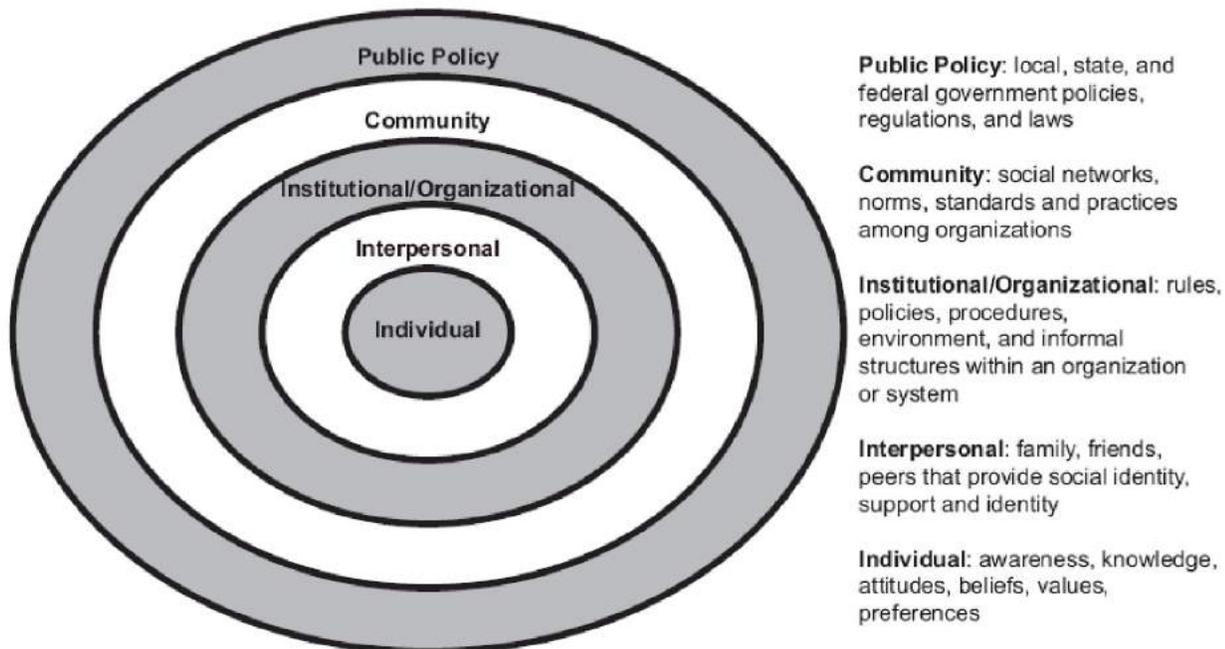
- **Interpersonal factors**—Interpersonal processes and primary groups that include family, friends, and peers, all of which provide social identity, support, and role definition.

- **Institutional factors**—Rules, regulations, policies, and informal structures, which may constrain or promote recommended behaviors.

- **Community factors**—Social networks and norms (or standards), which exist formally or informally among individuals, groups, and organizations.

- **Public policy**—Local, state, and federal policies and laws that regulate or support healthy actions and practices for disease prevention, early detection, control, and management.

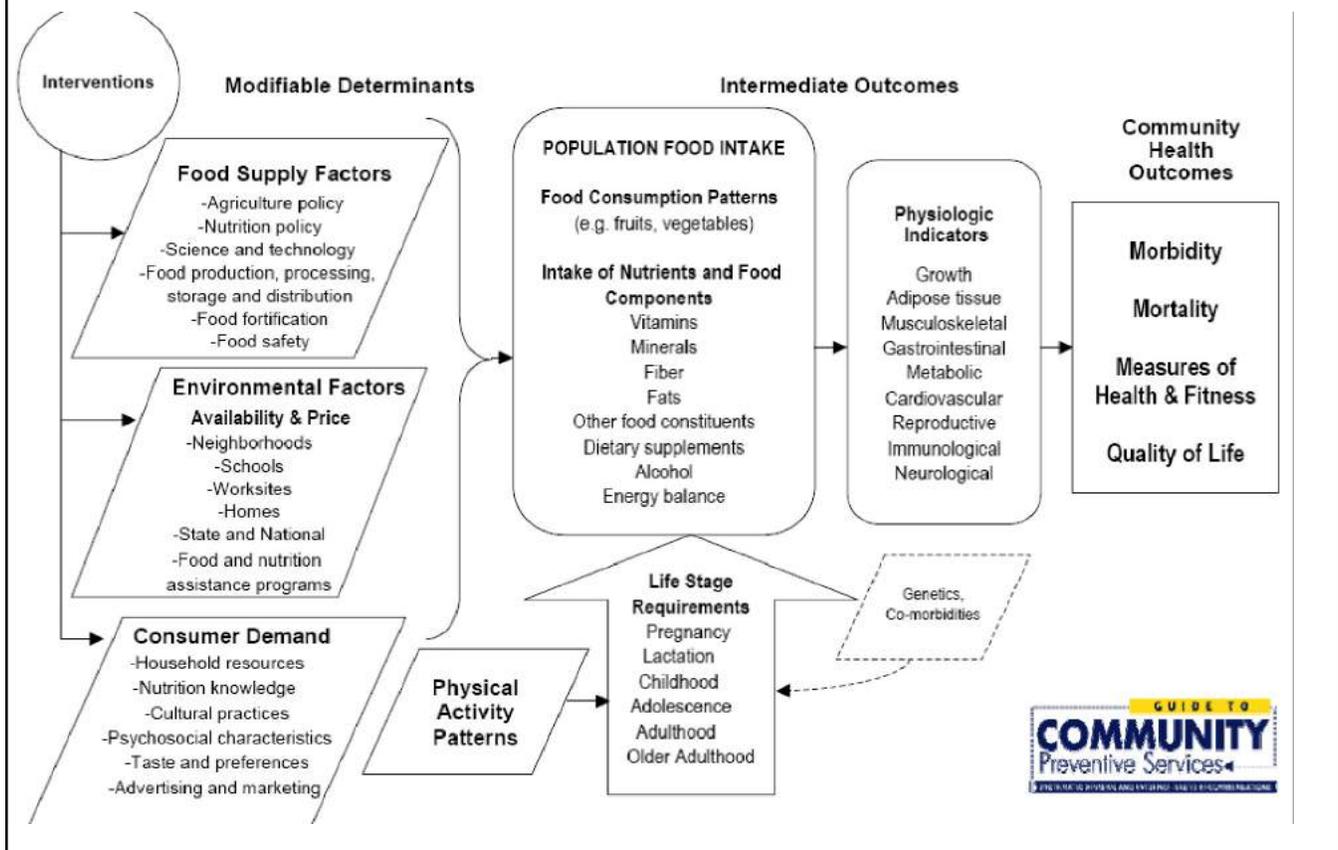
A Social-Ecological Model for Levels of Influence



Based on data from McElroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Education Quarterly* 15:351-377, 1988.

Developed by the Nutrition and Physical Activity Work Group of the Association of State and Territorial Nutrition Directors.

Guide from the Task Force on Community Preventive Services



and other chronic diseases. The following goals are from this guide:

Nutrition and Physical Activity Goals

To prevent and control obesity and other chronic diseases, nutrition and physical activity program should include obesity prevention and control (including caloric intake and expenditure), increased physical activity, improved nutrition (including increased breastfeeding and increased consumption of fruits and vegetables), and reduced television time.

Nutrition and physical activity goals of the program are to

- Decrease levels of obesity or reduce the rate of growth of obesity in communities reached through interventions.
- Increase physical activity and better dietary behaviors in communities reached through interventions.
- Increase the number of state or community nutrition and physical activity policies and environmental supports that are planned, initiated or modified for preventing or controlling obesity and other chronic diseases.
- Increase the number of interventions for nutrition and physical activity that are implemented and evaluated.
- Increase the number of communities that implement a nutrition and physical activity plan for preventing and controlling obesity and other chronic diseases.

Community-based nutrition and physical activity program development and implementation includes a collaborative

approach with local public and private partners and state government partners to describe the obesity epidemic and other chronic diseases in the community;

- describe the nutrition and physical activity risk factors associated with obesity and other chronic diseases;
- describe the population subgroups affected by obesity;
- set priorities with and for the subgroups;
- identify the behaviors of the population subgroups which are priorities for intervention;
- use the social-ecological model to guide planning to address obesity and other chronic diseases in these populations; and
- select and implement interventions from proven resources (see Attachments 3–7) so that multiple levels of influence in the social-ecological model (Attachment 8) are addressed. Consider using a social marketing approach in the intervention (Attachment 9).

CDC - State Programs in Action: Physical Activity and Nutrition is at http://www.cdc.gov/nccdphp/exemplary/pdfs/Nutrition_PA.pdf. It provides a brief overview of six state projects designed to improve physical activity and nutrition.

CDC - The State-Based Nutrition and Physical Activity Program to Prevent Obesity and Other Chronic Diseases The program supports states with developing and implementing science-based nutrition and physical activity interventions. In

2004–2005, 23 states are funded at \$300,000 to \$450,000 for capacity building. Go to www.cdc.gov/nccdphp/dnpa/obesity/state_programs/index.htm.

Other Resources

America On the Move

America On the Move (AOM) is a national initiative dedicated to helping individuals and communities across the nation make positive changes to improve health and quality of life. By focusing on individuals and communities AOM strives to support healthy eating and active living habits in our society. Go to www.americaonthemove.org.

AOM:

- Inspires Americans to engage in fun, simple ways to become more active and eat more healthfully to achieve and maintain a healthy weight
- Creates and supports an integrated grassroots network of state Affiliates to build communities that support individual behavior changes
- Encourages public and private partnerships at the national, state and local level to build the capacity, reach and support needed for individual and community behavior change.

The March of Dimes⁸⁷ report *Nutrition Today Matters Tomorrow* is found at http://www.marchofdimes.com/professionals/14480_1926.asp. The report focuses on promoting healthy lifestyles, prevention and targeting the preconceptional female, as a way to achieve significant improvements in health. The key strategies are:

1. Interventions must now focus on strategies to promote healthful living by concentrating primarily on diet and physical activity. Interventions will need to build on past successes but go beyond a direct service model; it is not enough to provide a meal or a pill. Models of successful, sustainable interventions for healthy lifestyles will need to draw heavily on social marketing and the health communications fields to mount interventions that are effective in promoting behavior change.
2. The new nutrition paradigms will need to focus on prevention rather than cure. Most of the earlier successes in nutrition focused on an underlying therapeutic model. Stunted children or children with low weight for age were the targets for nutrition services. We now know from vast scientific literature summarized in this report that dramatic improvements in nutritional status worldwide will occur from preventive nutrition efforts.
3. If policymakers and implementers are truly interested in preventive nutrition, the target of interventions needs to shift to a different part of the life cycle. Investment in the preconceptional female will yield enormous nutritional benefits in other parts of the life cycle. We know unequivocally that healthier females — before pregnancy — are more likely to produce healthier babies, who develop into healthier children. This last point is critical. Most previous interventions have not effectively reached preconceptional females.

The report builds on work done by researchers and providers around the world and conveys the following major nutrition and implementation messages:

- *Nutritious and safe food matters*: Food-based dietary guidelines that address women's and young children's nutritional needs, combined with food safety messages and policies, are critically important to improve health outcomes.
- *Diet quality matters*: Sufficient intake of important vitamins and minerals support growth and development, both today and in the future.
- *Healthy weight matters*: Maintaining a healthy weight can benefit women and their potential offspring.
- *Early nutrition matters*: Adequate nutrition very early in life can help to avoid adverse consequences now and in the future.
- *Sustainable action plans*: These plans require involvement from the target population, community leaders, health care providers, and policymakers; review of existing nutrition interventions; constructive partnerships; and tailored project plans to address local needs.

ACOG, Committee Opinion number 315, September 2005. Obesity in pregnancy. *Obstetrics and Gynecology*. 2005 Sep; 106(3): 671-5. This paper provides current information and recommendations.

HRSA, Bright Futures for Women's Health and Wellness Community Toolkit. <http://www.hrsa.gov/womenshealth/toolkit/menu.html> This toolkit from the Bright Futures for Women's Health and Wellness Initiative was developed to help women improve the health of their communities. The Healthy Women Build Healthy Communities Toolkit is meant to be fun and useful. It provides ten building blocks, which are ideas and tools to use.

March of Dimes, Maternal Obesity and Pregnancy: Weight Matters, Medical Perspectives on Prematurity. Office of the Medical Director. 4/6/05. http://www.marchofdimes.com/files/MP_MaternalObesity040605.pdf This paper discusses the impact of obesity during pregnancy.

Obesity: An American Public Health Epidemic: Strategies exist to better understand it and change Americans' behaviors. By J. Michael McGinnis, MD, MPP. This informative and short article from the National Institute for Health Care Management lists ten ways to understand and change American's behaviors. It is found at <http://www.nihcm.org/ExpertV6.pdf>.

State Policies for Shaping Healthy, Active Communities: A Michigan Case Study

This recently released *Issue Brief* from the National Governors' Association's Center for Best Practices a case study from Michigan to illustrate the types of policies that states are implementing to help people become more physically active. It can be found at www.nga.org/cda/files/05ACTIVELIVING.pdf.

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Acknowledgments:

This publication was prepared by Helene Kent, R.D., M.P.H., of HM Kent Consulting, Jennifer Skala, M.Ed., Managing Coordinator of Education and Training at CityMatCH, and Justine Desmarais, M.P.H., AMCHP Women's Health Program Director. It was supported by Cooperative Agreement U58-CCU324963-01 from the Centers for Disease Control and Prevention (CDC), Division of Reproductive Health, and Grant # 1G97 MCO4442-01-00 from the Maternal and Child Health Bureau (Title V, Social Security Act), Health Resources and Services Administration, Department of Health and Human Services. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC or MCHB. For more information contact AMCHP at 202-775-0436 or CityMatCH at 402-561-7500.