Preconception and Interconception Health refer to the state of a woman’s health before and between pregnancies. Preconception and interconception health care is a set of interventions to identify and modify biomedical, behavioral and social risks to a woman’s health or pregnancy outcome through prevention and management. The goal of the care is to promote the current and future wellbeing of the woman and enhance the health of any future pregnancy and child.

Why Preconception/Interconception Care and Health Matter

• A woman’s health during her reproductive years influences her overall wellbeing.
• A woman’s health and wellness habits will directly influence those of her family.
• A woman’s health directly affects the wellbeing of any children she may have.
• A woman who enters pregnancy at a healthy weight may have a reduction in poor maternal-fetal outcomes and decreased lifelong risk for chronic diseases for both the mother and child.
• A woman who retains weight gained during pregnancy is at increased risk of obesity, chronic diseases including diabetes or insulin resistance, and has a higher risk of postpartum depression.
• Babies born at either low or high birth weights are at risk for lifelong chronic disease and obesity.
• Babies born to women who experience preconception health care should be less likely to be premature, low or high birthweight, have a birth defect or other disabling condition.
About 30 years ago, concerned professionals began looking at improving poor pregnancy outcomes by addressing the health status of women prior to pregnancy. This framework, known as preconception care, consists of related activities that focus on the primary prevention of many poor pregnancy outcomes, such as congenital anomalies, which are difficult or impossible to alter once a woman is pregnant. Preconception care also provides a timely opportunity to positively influence factors associated with poor pregnancy outcomes, such as interconception length, chronic disease control and unintended conception. 

Over time, this approach has become more common. The Centers for Disease Control and Prevention (CDC) considers preconception health as the health of women (and men) within their reproductive years encompassing high levels of wellness. This approach includes taking steps now to protect the health of a baby a woman might have sometime in the future. However, all women can benefit from preconception health, regardless of pregnancy intention.
and make it widely available, so that women ask for this care, providers offer it and insurers reimburse for services. Preconception care is the clinical care a woman receives that addresses those factors known to increase the chances of having a healthy baby, tailored to her specific needs. This care includes health assessment and maintenance across the life span addressing childbearing and contraceptive considerations along with women's general health concerns. An important component is reproductive life planning that involves activities to help a woman plan, based on her values and resources, how to achieve personal goals about whether or when to have children.4

A challenge associated with preconception care is unintended pregnancy. According to the Guttmacher Institute,5 in the United States, about 51 percent or 3.4 million pregnancies each year are unintended. Most American families want two children and to achieve this, the average woman spends about five years pregnant, postpartum or trying to become pregnant. More than three-quarters of her reproductive life is spent trying to avoid an unintended pregnancy.

If a woman is unaware she is pregnant she cannot attend to the critical needs of the very early prenatal period. Unintended births are associated with adverse maternal and child health outcomes, such as delayed prenatal care, premature birth and negative physical and mental health effects for children. Low-income, cohabiting and minority women aged 18–24 are the most likely to experience an unintended pregnancy6 and these are the women least likely to receive preconception care.

Resources

The National Preconception Health and Healthcare Initiative is a leader in promoting preconception health. The Initiative is a public-private partnership which engages the United States Department of Health and Human Services, Centers for Disease Control and Prevention (CDC) and the Health Resources Services Agency (HRSA), and other government agencies, nonprofit organizations, professional organizations and hundreds of individuals. This site offers information for women and men, tools for health professionals, reproductive life planning, surveillance indicators and more. This group has led the effort to create policy, guidelines, tools and resources.

As part of the National Preconception Health and Healthcare Initiative, the Before, Between and Beyond Pregnancy website was established as a comprehensive clinical resource.
There is an intergenerational effect where the health of one generation affects the health of the next. Maintaining a woman’s health prior to and between pregnancies is entirely consistent with this approach, recognizing that the health of the mother and child cannot totally be separated. While interconception care is traditionally viewed as short-term, LCT treats this time frame as open-ended beginning with the end of one pregnancy and ending only after the next conception has been diagnosed or the woman is no longer able to conceive.

Fetal Origins Hypothesis

The Fetal Origins Hypothesis (also known as the Barker Hypothesis) amplifies the importance of nutrition throughout the life course of a woman and her child. Evidence links adverse exposures in early life to chronic disease susceptibility in adulthood. Nutrition is a major intrauterine environmental factor that alters expression of the fetal genome and may have lifelong consequences. These changes may result in increased incidence of certain diseases such as obesity, high blood pressure and heart disease in adulthood. Promoting optimal nutrition not only ensures optimal fetal development, but will also reduce the risk of chronic diseases in adults. Studies show that both over and under nutrition have detrimental effects on the child’s risk of adult diseases including propensity for obesity. Also, too much and too little intake of nutrients can alter fetal programming.
The role of nutrition as part of good health, chronic disease and pregnancy outcomes is well established. Thus nutrition is recognized as a component of preconception health and health care. Nutrition has both clinical and public health aspects. The clinical aspect requires working with individuals about their diet, habits, weight and overall health. The public health aspect addresses creating environments where healthy eating is the easy choice. Creating these environments is built on policy, systems and environmental change efforts.

Three areas emerge when considering the role of nutrition as part of preconception health. They are: dietary adequacy; achieving and maintaining a healthy weight; and nutrition as part of existing health care conditions.

**Dietary Adequacy**

All women should be encouraged to consume nutrient-dense foods and beverages. Healthy eating has a two-fold aspect. It is important for a woman's health today and into the future. It is important for the health of the children as mothers are essential role models who purchase food, provide meals and model positive eating behavior.

Many women need assistance in improving some aspect of their diet and need the knowledge and skills to make healthier choices. A 2014 CDC, Morbidity and Mortality Weekly Report\(^\text{10}\) on preconception health indicated that the reported average consumption of adequate fruit and vegetable intake was 25 percent.

Other social and physical factors that influence an individual's eating behaviors include: social support; societal and cultural norms; food and agricultural policies, food assistance programs; economic price systems; and access to and availability of healthier foods.\(^\text{11}\) From an environmental perspective, communities often need assistance making healthy food options available and affordable, especially for vulnerable populations. Food security and eliminating hunger are important aspects.

One noted nutrient during the preconception period is folic acid. It has proven preventative properties against neural tube defects such as anencephaly and spina bifida, which are among most common congenital anomalies. However, this protective effect is needed in the early weeks of pregnancy, long before many women know they are pregnant. A recent study of reproductive aged women\(^\text{12}\) reported only 30 percent of women reported consuming a folic acid supplement during the month prior to pregnancy. It is difficult to consume the RDA for folate during pregnancy from diet alone thus supplementation and consumption of foods fortified with folic acid are recommended prior to and during pregnancy. Women are also encouraged to consume foods rich in this nutrient.
Achieve and Maintain a Healthy Weight

Maintaining a healthy weight is an important recommendation for all women of reproductive age. For the individual woman, interventions to improve weight are based on efforts to support a healthy lifestyle including healthy eating and physical activity. Again, factors associated with these efforts include: addressing individuals’ knowledge and skills; reducing exposure to foods low in nutritional value and high in calories; and increasing opportunities for physical activity. Community level activities include those that support efforts to maintain physical activity, consume a healthy diet and provide interventions when weight status is no longer at a healthy level.

Deviations from a healthy weight are of concern for both a woman and her future children. Pregnancy Nutrition Surveillance System data indicate that one third of all pregnant women in America are obese. Half of non-pregnant women of child-bearing age (20-39) are either overweight or obese and 30 percent of girls between 12-19 years of age are overweight or obese. Underweight also has health consequences. The highest prevalence of underweight is among Asians and the highest prevalence of overweight and obesity is among Black, American Indian and Hispanic mothers. The following are some of the concerns associated with under and overweight, especially during pregnancy.

- Chronic health conditions associated with being overweight or obese are diabetes, coronary heart disease, high blood cholesterol, stroke, hypertension, gallbladder disease, osteoarthritis, sleep apnea and other breathing problems and some cancers (endometrial, breast, colon).
- Being overweight or obese prior to pregnancy carries risks for both the mother and the fetus. Prepregnancy obesity is associated with infertility and miscarriage, as well as an increased risk of poor outcomes such as prematurity, stillbirths and need for assisted delivery.
- Obese women are less likely to initiate and sustain breastfeeding.
- Overweight and obesity prior to pregnancy is a risk factor for spina bifida and cardiac defects.

- Underweight women are at increased risk of infertility. If pregnancy is achieved, their infants are at higher risk for low birthweight, fetal growth problems, cleft lip, perinatal mortality and other pregnancy complications.

It is best to support achieving a healthy weight prior to pregnancy. Adherence to the Institute of Medicine’s pregnancy weight gain recommendations is encouraged once a pregnancy is underway. After pregnancy, addressing postpartum weight reduction is an important aspect of interconception care. Women often retain excess weight gained during pregnancy thus increasing the risk for entering a subsequent pregnancy at a higher weight. This may lead to an ongoing cycle resulting in obesity. Nearly half of normal weight and two thirds of overweight women have been found to exceed the 1990 IOM gestational weight gain guidelines.

Women exceeding the guidelines have
been shown in several studies to be at increased risk for adverse maternal and neonatal outcomes, and association with excessive gestational weight gain and postpartum weight retention. This is particularly true among women who are Black as well as from low socio-economic status backgrounds. Short interconception spacing, combined with high gestational weight gain, and four or more births are associated with risk of obesity. 25, 26, 27, 29, 29

**Nutrition and Existing Health Conditions**

The role of nutrition in chronic illness such as diabetes or hypertension must also be addressed. Women under medical care for chronic conditions such as diabetes, hypertension and metabolic syndrome often require medical nutrition therapy as part of their preconception and pregnancy clinical care. Acute conditions such as anemia are treated with diet and medication. Other conditions, like epilepsy and HIV infection, require medications that may alter nutritional status. Some high-risk pregnancy conditions like preterm birth, gestational diabetes or hypertension may reoccur in subsequent pregnancies. Several of these adverse health conditions have a nutrition component, which should be addressed between subsequent pregnancies.

**Summary**

Dietary quality, healthy weight and medical nutrition therapy (for women with existing health conditions) are important components of preconception care, as they affect women’s short and long-term health and future prenatal outcomes. Preconception nutrition topics include: entering pregnancy at a healthy weight, dietary quality and the use of folic acid. Post-partum nutrition efforts include: returning to a healthy weight, dietary quality and support for breastfeeding. Medical nutrition therapy must also be provided as part of the treatment for certain health conditions.
What Public Health Nutritionists Can Do to Support Preconception Care

- Support and participate in the development of preconception services for at-risk women and encourage women to use these services.
- Include interventions and services that address the nutritional aspects of preconception health.
- Ensure that interventions address health equity and are culturally competent.
- Use a policy, systems and environmental change framework to support preconception care as a component of women’s and children’s health promotion.
- Address overall dietary quality, weight status including postpartum weight loss and encourage the consumption of folic acid in fortified foods and supplements.
- Provide medical nutrition therapy as part of treatment of relevant health concerns.
- Encourage attendance at postpartum and other medical visits and asking providers about preconception/interconception health care.
WIC services can be adapted to reflect an interconception approach that is culturally appropriate. Postpartum care is routine in WIC and by adopting a broader interpretation, an interconception approach may be incorporated. By more effectively assisting a woman to achieve high levels of nutritional wellness WIC staff can influence her short and long term health and the health of any future children.

- Consider using an interconception based approach to postpartum visits for every woman, regardless of her breastfeeding status. Center education on the woman's concern about her health and possible subsequent pregnancies.
- Given the challenges associated with losing weight postpartum, consider interventions in this area.
- Reinforce the importance of positive maternal health habits as she is the role model for family health.

The following are some specific interventions:
- Integrate relevant elements of interconception care into existing programs and services.
- Highlight nutrition-related factors to address prior to next pregnancy.
- Ensure services are culturally appropriate.
- Assist the woman with prioritizing her interconception needs.
- Discuss reproductive life planning and advise women to seek preconception care and contraception from health care provider; offer needed referrals.
- Discuss nutrition-related factors to address prior to next pregnancy.
- Address ongoing medical nutrition therapy needs.
- Reinforce the need for being physically active every day.
- Emphasize avoiding smoking, alcohol and harmful substances when planning next pregnancy.
Notes


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