The Role of Nutrition in Infant Mortality
A Public Health Perspective

MCH Nutrition Council
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Infant Mortality Brief

• Summarizes the impact of nutrition on infant mortality

• Identifies areas where nutrition interventions can make a difference

• Describes the critical role that public health nutritionists play in preventing infant mortality
Nutrition and Infant Mortality

• While nutrition is not the only factor in infant mortality reduction, it is part of a complex whole of interventions necessary to make a sustained difference.

• A focus on nutrition is not a new approach to reducing infant mortality.

• However, nutrition is often inadequately addressed and must be integrated into all reduction and prevention activities.
Infant Mortality in the US

• Infant mortality refers to deaths that occur during the first year of life after a live birth and is measured in deaths per 1,000 live births.

• OECD data ranks the US as 31st in most recent data. In 1960, the US ranked 13th.
Infant Mortality in the US

- Varies by racial and ethnic group, with infants born to black mothers dying at twice the rate of those born to white mothers.

- Influenced by maternal characteristics, including race, education, and age.

- Affected by maternal health behaviors.

- Health system characteristics such as whether a woman receives prenatal care.

Source - The Congressional Research Service
Infant mortality is a multi-factorial phenomenon, with rates reflecting a society’s commitment to the provision of high quality health care, adequate food and good nutrition, safe and stable housing, a healthy psychosocial and physical environment, and sufficient income to prevent impoverishment.

Recommendations for HHS Action and Framework for a National Strategy; 2013
“Every single cell, organ, and system inside a newborn baby comes mostly from her mother’s food intake before or during pregnancy. Maternal nutrition is a critical determinant of infant health; thus, it is not hard to see that poor maternal nutrition can contribute, directly or indirectly, to infant mortality.”

— Michael C Lu and Jessica S Lu, *Maternal Nutrition and Infant Mortality in the Context of Relationality*
Four Leading Causes of Infant Mortality

- Birth defects
- Low birth weight
- Sudden Infant Death Syndrome (SIDS)
- Maternal complications during pregnancy, including preeclampsia, anemia, infection or inflammation.
Nutrition and Infant Mortality

Solid evidence exists linking poor maternal nutrition to birth defects, low birthweight and maternal complications. Breastfeeding is associated with SIDS reduction and reduced rates of postneonatal death.
Nutrition and Birth Defects

- Inadequate folic acid is linked to many problems.

- Some nutritional excesses are linked to birth defects.

- Maternal obesity is associated with increased risk for congenital heart defects, the most common type of birth defect.

- Maternal diabetes can cause fetal death and congenital anomalies. Pregestational diabetes significantly increases the risk of birth defects.

- Congenital malformations are reduced among pregnant women with phenylketonuria (PKU) if they comply with dietary restrictions.
How Public Health Nutritionists Can Make a Difference

- Campaigns and interventions that address healthy weight maintenance or folic acid consumption.

- Medical nutrition therapy is also important for women entering pregnancy with PKU, diabetes or when gestational diabetes is identified.
Nutrition and Low Birth Weight

- Preterm delivery is still not fully understood.

- Factors associated with low birth weight include low maternal prepregnancy weight, total pregnancy weight gain less than 22 pounds or poor nutrition, hypertension or diabetes.

- Low prepregnancy body mass index and poor gestational weight gain are associated with greater risk for preterm birth and fetal growth restriction.

- Nutritional deficiencies cause anemia which is linked with birthweight and preterm birth.

- Maternal nutrition may impact inflammation that could trigger spontaneous preterm birth.
How Public Health Nutritionists Can Make a Difference

- Preconception and prenatal care with a strong nutrition component helps reduce low birth weight births.

- WIC and community-based efforts to promote making healthy eating the easy choice are vital interventions.

- Medical nutrition therapy assists women who are gaining inadequately or experience medical conditions with a nutritional component.
Nutrition and Complications of Pregnancy

- Nutritional deficiencies can cause anemia. Maternal anemia can also contribute to maternal and fetal/infant death and disabilities associated with obstetrical hemorrhage.

- Maternal nutrition may impact inflammation that may lead to spontaneous preterm birth.

- Obesity among pregnant women is associated with increased risk for multiple pregnancy complications.

- Women who gain more weight than the recommended IOM guidelines (1990) range have increased risks of adverse pregnancy outcomes, including gestational diabetes, prolonged labor, preeclampsia, and cesarean birth.

- Gestational diabetes can increase the risk of fetal macrosomia, birth trauma, newborn hypoglycemia and hyperbilirubinemia.
How Public Health Nutritionists Can Make a Difference

- Again, preconception and prenatal care with a strong nutrition focus are essential.

- Medical nutrition therapy is critical for women with specific health concerns.
Nutrition and Sudden Infant Death Syndrome (SIDS)

• The risk of sudden infant death syndrome is 56 percent higher among infants who have never breastfed.

• Breastfeeding is associated with a reduction in risk for postneonatal death.

• Exclusive breastfeeding reduces infant mortality from common childhood illnesses such as diarrhea or pneumonia and helps promote a faster recovery from illnesses.

• Breastfeeding is also associated with the development of a preterm infant’s immature host defense.
How Public Health Nutritionists Can Make a Difference

• Partner in breastfeeding promotion and support through efforts within WIC, MCH programs and breastfeeding coalitions.

• Breastfeeding promotion campaigns, workplace lactation accommodation efforts, implementation of evidence-based maternity care practices such as the Baby Friendly Hospital initiative.

• Innovative efforts such as state programs that pay for donor breast milk.
Nutrition Topics to Address

• Dietary quality
• Healthy weight entering pregnancy
• Appropriate weight gain during pregnancy
• Medical nutrition therapy for chronic conditions
• Breastfeeding
Use a Systems Approach

Removes critical barriers to women receiving adequate nutrition, such as:

• Access to health care

• Access to healthy foods and nutrition education

• Stronger referral and care coordination systems

• An overall integration of nutrition into a life course perspective within health and public health systems.
Clinical and Public Health Nutrition Efforts are Needed

- Clinical interventions include working as part of the health care team to assist a woman.

- Some efforts such as supporting use of folic acid prior to conception may be accomplished in both settings.

- Public health nutrition efforts such as community and environmental change strategies, campaigns to educate professionals and women about the IOM weight gain guidelines or creating environments where healthy eating is the easy choice are all important.
4 Ways to Integrate Nutrition into Infant Mortality Efforts

1. Public health nutritionists are included in all levels of infant mortality prevention efforts.

2. Environments exist that support breastfeeding and where healthy eating is the easy choice for women, especially those who are or are contemplating becoming pregnant.

3. Life course and preconception care address maintaining or achieving a healthy weight and eating well.

4. Prenatal care addresses appropriate weight gain, healthy eating, medical nutrition therapy as needed and referrals to WIC, if appropriate.
Nutrition Focus Areas

1. Nutrition through the Life Course
2. Preconception Care and Pregnancy
3. Healthy Weight and Weight Gain During Pregnancy
4. Dietary Quality
5. WIC
6. Affordable Care Act
Nutrition through the Life Course

• Women need community environments that support active living and healthy eating and women may need guidance to develop this essential skill.

• Healthy eating behaviors require the ability to access, select and prepare food and beverages.

• People typically learn these behaviors in families, so it is important that parents know and can transfer these skills. Educators and practitioners assist families in learning about choosing and eating healthy foods.

• Additionally, some women need access to well-trained health care professionals for counseling to address nutrition-related conditions such as obesity or diabetes.
Preconception Care and Pregnancy

- Preconception nutrition topics include entering pregnancy at a healthy weight, dietary quality and the use of folic acid.

- During the prenatal period, women need to learn about breastfeeding and appropriate weight gain.

- Access to the nutrition counseling and the foods offered through the WIC program will benefit pregnant and breastfeeding women with limited incomes.

- Health care providers and others need to be aware of and make referrals to programs within the community that assist families with limited resources.

- Post-partum nutrition efforts include returning to a healthy weight, healthy eating and support for breastfeeding.
Healthy Weight and Weight Gain During Pregnancy

• More women are entering pregnancy obese and overweight, conditions associated with poor birth outcomes.

• Evidence shows that counseling about diet, exercise, and weight gain may currently be inadequate in prenatal and primary care settings.

• Many opportunities exist for public health nutrition in addressing this area.
Dietary Quality

- Diet matters.
- Women eat food not nutrients.
- Policies that support a healthy eating environment, healthy eating campaigns and individual nutrition counseling all help to improve dietary quality.
Special Supplemental Food Program for
Women, Infants and Children (WIC)

• The recognition that nutrition impacts infant mortality led to the development WIC.

• WIC does reduce conditions associated with infant mortality such as low birthweight.

• Infants born to mothers enrolled in WIC are also less likely to die from genetic conditions or delivery complications.

• Women who are not eligible for WIC will rely more on their health care providers to provide support for appropriate weight gain and dietary quality.
Affordable Care Act (ACA)

- Expands health care access
- Opportunity to reduce fragmentation of care and enhance systems of care
- Focus on quality improvement
- Medical home for women is a promising idea
- Opportunities to train health professionals on nutrition
Call to Action

- Ensure that nutrition is an integral component of all federal, state and community infant mortality prevention interventions.

- Engage in program development, policy, systems and environmental change activities that support the health of women.

- Support access to healthy foods for girls and women during the life course and education on eating well and maintaining a healthy weight.
Call to Action

• Provide preconception care that specifically addresses healthy weight, eating well, chronic conditions and nutrition related risk factors.

• Address appropriate weight gain during pregnancy, provide any necessary medical nutrition therapy, refer eligible women to WIC, and support breastfeeding initiation.

• Encourage the development of positive feeding behaviors for infants and children throughout the life course.

• Seek solutions to hunger, food insecurity and other factors that reduce women’s ability to eat well.
Summary

• Nutrition is an essential component of efforts to reduce infant mortality and should be integrated into activities directed at reducing infant mortality.

• While a focus on nutrition alone is insufficient to eliminate infant mortality, efforts to reduce infant mortality will only be effective if nutrition is part of a comprehensive effort.

• Available data and current practice reinforces the importance of nutrition prior to and during pregnancy.

• However, evidence also indicates that supporting healthy eating and appropriate weight gain during pregnancy is not being done consistently.
Questions

• How can you use this paper in your work?

• Who could you share it with?

• What other opportunities do you envision?
Thank You!