

Maximizing synergies between maternal, infant, and young child nutrition and family planning

Maternal, infant, and young child nutrition (MIYCN) and family planning (FP) programs and services are often perceived as distinct, yet integration of these interventions can be mutually beneficial for mothers and their children. For example, exclusive breastfeeding in the first six months after birth not only protects the infant from becoming malnourished but also meets the mother's contraceptive needs if she practices the lactational amenorrhea method (LAM).

This technical brief outlines the rationale for aligning MIYCN and FP interventions, summarizes evidence on the relationship between these two areas, and provides an overview of opportunities to identify linkages and better integrate counseling and services across multiple interventions.

EVIDENCE ON THE RELATIONSHIP BETWEEN MATERNAL, INFANT, AND YOUNG CHILD NUTRITION AND FAMILY PLANNING

Birth-to-pregnancy intervals less than 24 months increases risks

Recent research demonstrates that short birth-to-next-pregnancy intervals increases the risk of neonatal, child, and maternal mortality; stunting in children (the most prevalent form of undernutrition); and poor pregnancy outcomes, such as small for gestational age (SGA), preterm delivery, and delivery of a low-birthweight (LBW) baby.

- A study in Latin America found that infants conceived less than six months after a previous birth, compared to those conceived 18 to 23 months after a birth, had a 50 percent increase in risk of both fetal and early neonatal death, an 80 percent to 100 percent increase in risk for LBW and

preterm birth, and a 30 percent increase in risk of SGA, following adjustment for 16 confounding factors.¹ Infants conceived six to 11 months after a birth were 15 percent to 33 percent more likely than those conceived later to suffer these adverse outcomes. A meta-analysis of 67 research studies found similar results.²

- An analysis of Demographic and Health Survey (DHS) data from 52 developing countries revealed that children conceived less than 24 months after the birth of the next oldest sibling had a one to two times (1.1–2.3) higher risk of dying within the first year of life than children conceived 36 to 47 months apart.³
- The DHS analysis also demonstrated that the likelihood of a child becoming stunted or chronically undernourished increases substantially with decreasing birth intervals. Children conceived after an interval of only 12 to 17 months, for example, are 25 percent more likely to be stunted and 25 percent more likely to be underweight than those conceived after an interval of 36 to 47 months.



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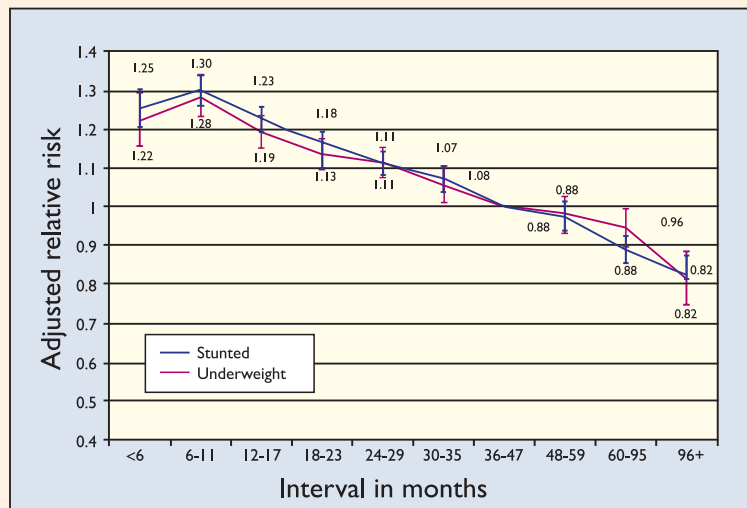
¹ Conde-Agudelo A, Belizan JM, Norton MH, Rosas-Bermudez A. Effect of the interpregnancy interval on perinatal outcomes in Latin America. *Obstetrics and Gynecology*. 2005;106(2):359–366.

² Conde-Agudelo A, Rosas-Bermudez A, Kafury-Goeta A. Birth spacing and risk of adverse perinatal outcomes: a meta-analysis. *Journal of the American Medical Association*. 2006;295(15):1809–1822.

³ Rutstein SO. *Further Evidence of the Effects of Preceding Birth Intervals on Neonatal, Infant, and Under-Five-Years Mortality and Nutritional Status in Developing Countries: Evidence from the Demographic and Health Surveys DHS Working Papers*. Calverton, MD: Macro International, Demographic and Health Research Division; 2008.



Figure 1. Child malnutrition by birth-to-pregnancy interval.³



- Short durations of preceding birth-to-pregnancy intervals are associated with low height for age (stunting) and low weight for age (underweight), even after controlling for a host of potentially confounding factors.
- Highest relative risk when intervals less than 12 months, risk continues even with intervals 12-24 months and falls to zero at greater than 36 months
- From 52 DHS in Africa, Latin American and the Caribbean, and Southeast Asia.
- N=454,409 children.

Maternal nutrition, unintended pregnancy, and effects on child health

Nutrients mobilized from the mother's reserves to meet the needs of pregnancy and lactation must be replaced during the inter-pregnancy interval.⁴ Yet, this often does not occur, as short intervals between pregnancies can result in maternal nutrient depletion and poor pregnancy outcomes.^{5,6} Poor maternal iron and folate status has been associated with preterm births and intrauterine growth retardation (IUGR), which are associated with greater risk of neonatal death. Family planning is a lifesaving intervention that can lengthen the time between pregnancies and therefore decrease the risk of neonatal mortality, IUGR, premature births, and other poor pregnancy outcomes, as well as decrease the risk of anemia and micronutrient deficiencies to improve maternal health.

Unintended pregnancy may also have a profound effect on maternal health. Of the 210 million pregnancies each year, nearly 80 million are unintended, and about half of these end in abortion.⁷

- Each year, an estimated 20 million women undergo unsafe abortions, resulting in 67,000 deaths. Another 5 million suffer associated morbidities.

- Experts have estimated that promotion of family planning in countries with high birth rates has the potential to avert 32 percent of maternal deaths.⁸ A study from Bangladesh found that a motherless child is ten times more likely to die in the first two years.⁹

Infant and young child nutrition and the role of family planning

Undernutrition* remains one of the largest contributors to child mortality.^{10,11} Globally, an estimated 178 million children younger than 5 years are chronically undernourished (stunted), and another 18 million are severely wasted. Undernutrition is an underlying factor in 35 percent of the deaths among children younger than 5 (some 3.2 million deaths a year).¹²

The period from pregnancy to 24 months of age, often called the first 1,000 days, is a critical time to prevent undernutrition. The lifetime adverse effects on physical growth and brain development during this period are extensive and largely irreversible.¹³ Most growth faltering in developing countries occurs between 6 and 24 months, when infants and young children should receive foods to complement the nutrients in breastmilk. This is also the period when mothers who do not

*Undernutrition encompasses stunting, wasting, and deficiencies of essential vitamins and minerals (collectively referred to as micronutrients) as one form of the condition known as malnutrition.

⁴ King JC. The risk of maternal nutritional depletion and poor outcomes increases in early or closely spaced pregnancies. *The Journal of Nutrition*. 2003;133(5 Suppl 2):1732S-1736S.

⁵ Winkvist A, Rasmussen KM, Habicht JP. A new definition of maternal depletion syndrome. *American Journal of Public Health*. 1992;82(5):691-694.

⁶ DaVanzo J, Hale L, Razaque A, Rahman M. The effects of pregnancy spacing on infant and child mortality in Matlab, Bangladesh: how they vary by the type of pregnancy outcome that began the interval. *Population Studies*. 2008;62(2):131-154.

⁷ World Health Organization (WHO). *Unsafe Abortion: Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2003, Fifth Edition*. Geneva: WHO; 2007.

⁸ Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: the unfinished agenda. *The Lancet*. 2006;368(9549):1810-1827.

⁹ Strong MA. The health of adults in the developing world: the view from Bangladesh. *Health Transition Review*. 1992;2(2):215-224.

¹⁰ The International Bank for Reconstruction and Development/The World Bank. *Repositioning Nutrition as Central to Development: A Strategy for Large-Scale Action*. Washington, DC: The World Bank; 2006.

¹¹ Bryce J, Coitinho D, Darnton-Hill I, Pelletier D, Pinstrip-Andersen P, for the Maternal and Child Undernutrition Study Group. Maternal and child undernutrition: effective action at national level. *The Lancet*. 2008;DOI:10.1016/S0140-6736(07)61694-8.

¹² Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, Mathers C, Rivera J, for the Maternal and Child Undernutrition Study Group. Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet*. 2008;DOI:10.1016/S0140-6736(07)61694-8.

¹³ Victora CG, Adair L, Fall C, Hallal PC, Martorell R, Richter L, Sachdev HS, for the Maternal and Child Undernutrition Study Group. Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet*. 2008;DOI:10.1016/S0140-6736(07)61692-4.

use modern methods of family planning will get pregnant again, which may affect breastfeeding practices for current children and lead to malnutrition.¹⁴ Closely spaced pregnancy after the last birth, added to poor maternal nutrition during pregnancy, can result in stunted and LBW babies. These babies begin life in a malnourished state. If they do not have adequate nutrition and health care, they may never be able to recover.

Evidence-based interventions that prevent or address maternal and child undernutrition and poor nutrition-related outcomes include exclusive breastfeeding and timely complementary feeding, micronutrient interventions such as fortification and supplementation, treatment of severe acute malnutrition,¹⁵ and healthy timing and spacing of pregnancy achieved through family planning. Postponing pregnancy among adolescents allows young women to fully grow into adulthood. Offering permanent methods for couples who choose this option is particularly relevant among high parous and older women who are at higher risk for adverse maternal and neonatal outcomes. Because the first two years are critical for infant and young child nutrition, prevention of pregnancy during this time can be lifesaving.

OPPORTUNITIES FOR ALIGNING AND INTEGRATING NUTRITION AND FAMILY PLANNING SERVICES

Before and immediately after birth

There are many opportunities before and during pregnancy and immediately after birth to integrate counseling and services for MIYCN and FP. Registration for marriage, for example, is a strategic entry point for communication about health and family planning issues. Antenatal care visits provide another opportunity to prepare the mother to receive iron folate during pregnancy, counseling about nutrition after birth, and family planning immediately after birth.

Birth represents another major opportunity for linking counseling and services. Immediate and exclusive breastfeeding is key to neonatal survival and a wonderful start to LAM. Women who deliver in a health facility can start using selected family planning methods, including LAM, postpartum insertion of an intrauterine device, or tubal ligation.

From birth to 2 years of age

To ensure optimal health of the infant and young child, most countries recommend that neonates are assessed several times during the first month. In addition, infants are seen five times for immunization and monthly for growth monitoring. Likewise, mothers need to be assessed and counseled on family planning options. Each of these contacts provides an opportunity for education and counseling concerning MIYCN and FP.

Because community health workers may be able to make only a limited number of visits to the postpartum mother,



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it is essential that no opportunities are missed to meet the comprehensive health needs of both mother and baby. Community health workers need to maximize home visits to address the health, nutrition, and family planning needs of mothers and babies, and should also encourage mothers to take their babies for growth monitoring and immunizations. Travel to a health facility may require substantial expense for the mother and family, reducing the total number of visits made. The benefits of each visit should be maximized to ensure that all health needs of the mother and baby are met.

Other potential points of contact for integrated MIYCN and FP counseling and services include well-child/growth monitoring visits and sick child visits. Care for HIV-infected mothers and HIV-exposed children presents additional opportunities for counseling and services related to nutrition and family planning. All infants benefit from exclusive breastfeeding, particularly in low-resource settings, and exclusive breastfeeding is life-saving for those infants exposed to HIV.

Examples of integrated MIYCN and FP counseling and services at various times from adolescence, before pregnancy, during pregnancy, at birth, and through 24 months are outlined in Table 1 on the following page.

CONCLUSION

There is growing recognition that MIYCN and FP are closely intertwined health needs and that interventions in these areas can have positive synergistic effects on maternal and child health. Harmonizing counseling and services for MIYCN and FP throughout the continuum from before pregnancy to early childhood will help to improve outcomes.

The global health community now has an opportunity to capitalize on existing momentum in integrating counseling and services in these areas. The challenge is how to best coordinate service delivery to maximize the potential impact of both areas for the benefit of the mother and child.

¹⁴ Shrimpton R, Victora CG, Onis M, Lima R, Blossner M, Clugston G. Worldwide timing of growth faltering: implications for nutritional interventions. *Pediatrics*. 2001;107(5):e75.

¹⁵ Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E, Haider BA, Kirkwood B, Morris SS, Sachdev HP, Shekar M, for the Maternal and Child Undernutrition Study Group. What works? Interventions for maternal and child undernutrition and survival. *The Lancet*. 2008;DOI:10.1016/S0140-6736(07)61694-8.

Table 1. Examples of integrated MIYCN and FP counseling and services*

Time	Family planning counseling and messages	Nutrition counseling and messages
Adolescence	Advise young girls to wait until at least 18 years of age before becoming pregnant, for the healthiest outcome for themselves, their pregnancies, and their babies. Encourage the delay of early marriage and/or the use of family planning to prevent pregnancy too young. Counsel on and offer a range of FP methods.	Educate youth on the importance of good nutrition, especially girls.
Before pregnancy	Counsel on the benefits of healthy timing and spacing of pregnancies. For women living with HIV who want to get pregnant, encourage them to seek services at a health facility to learn about how to keep viral load low, track fertility, and adhere to treatment for a healthy pregnancy. Counsel on and offer a range of FP methods.	Counsel on the need to take iron/folate and use iodized salt for women who are trying to get pregnant or who think they are pregnant; the importance of maternal nutrition during pregnancy and breastfeeding; and the value of immediate and exclusive breastfeeding for six months. For women living with HIV, counsel on additional nutritional considerations.
During pregnancy	Counsel on family planning methods that can be initiated immediately after birth, such as LAM, a postpartum intrauterine device, or sterilization (postpartum tubal ligation or vasectomy) for couples who want to limit future pregnancies. Encourage giving birth with a skilled birth attendant.	Counsel on the importance of early use of iron/folate supplements and use of iodized salt during pregnancy; maternal nutrition and adequate weight gain during pregnancy; immediate and exclusive breastfeeding for six months; and continued breastfeeding while giving complementary foods from 6 to 24 months. For women living with HIV, counsel to exclusively breastfeed, which promotes HIV-free survival as compared to nonexclusive breastfeeding/mixed feeding.
Birth through 7 days	Counsel on LAM and the benefits of healthy spacing of pregnancies.	Encourage giving colostrum; provide support for immediate breastfeeding; and counsel on the benefits of exclusive breastfeeding for all mothers and children, including those living with HIV. Provide counseling on management of breastfeeding problems and nutrition for breastfeeding mothers; provide iron/folate supplements for mothers and counseling on vitamin A intake for mothers within eight weeks after birth in countries where it is policy to give vitamin A postpartum. In all countries, mothers should be encouraged to consume food that is rich in vitamin A on a daily basis.
6 to 8 weeks	Encourage postnatal care; remind women of the three LAM conditions; advise that return to fertility can occur prior to onset of menses in women who are not exclusively breastfeeding; and counsel on family planning methods compatible with breastfeeding if not using LAM (progestin-only hormonal contraception, intrauterine device, tubal ligation, vasectomy, condoms).	Continue to support exclusive breastfeeding to 6 months (baby does not need any other fluids, not even water); address any breastfeeding problems the mother may have and reassure her that she can produce enough milk. Ensure that mothers receive a vitamin A supplement by eight weeks after birth (if consistent with national policy), and provide iron/folate supplements for anemic mothers.
3 to 6 months	Counsel on healthy birth spacing, return to fertility, and family planning methods based on breastfeeding status; screen for LAM transition; provide family planning methods (see above); or refer mothers not practicing LAM.	Counsel on maternal nutrition and provide iron/folate supplements as needed. Continue to support exclusive breastfeeding.
6 to 9 months	Counsel on the need to initiate another modern family planning method even if menses has not yet started, and provide or refer for family planning methods.	Ensure introduction of complementary foods at 6 months, and counsel on providing energy- and nutrient-dense complementary foods and continuing breastfeeding for two years or beyond.
9 to 12 months	Counsel on family planning, and provide family planning methods or refer.	Counsel on nutrition for breastfeeding mothers optimal complementary feeding, and counsel on and provide support for continuing breastfeeding for two years or beyond.
12 to 24 months	Remind mothers about healthy birth spacing, and provide family planning methods or refer.	Support optimal complementary feeding and continued breastfeeding for two years or beyond, and counsel on the benefits of extended breastfeeding for the mother's health, such as reduced risk for some cancers and heart disease.

Note: This table focuses on infant and young child feeding and maternal nutrition and family planning because they are so interdependent. Other important nutrition and health-related interventions, such as giving vitamin A twice yearly for 6 to 59 months, are not included in this table.