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Maximizing Synergies between Maternal, Infant and Young Child Nutrition and Pregnancy Prevention

**A Discussion Paper Prepared for
the Maternal, Infant and Young Child Nutrition (MIYCN)
and Family Planning (FP) Integration Technical Meeting
May 14, 2010**

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The objective of this technical meeting is to recognize and take advantage of the natural synergies that exist between family planning (FP) and maternal infant young child nutrition (MIYCN) to achieve optimal maternal and child nutritional status and health. To this end, this position paper was prepared to highlight the rationale, strategic alignment and potential for maximizing opportunities between the two technical areas in order to facilitate further discussion and action.

1. Rationale

Lactational Amenorrhea Method became the hinge between MIYCN and FP that provided the initial impetus for examining ways to align the two fields of MIYCN and FP. In this paper, we explore how to harmonize our efforts through the continuum of pregnancy through the postpartum period, in the following key areas: birth to pregnancy intervals and related pregnancy outcomes, prevention of unintended pregnancy, maternal nutrition and health, as well as infant and young child nutrition.

a) Birth-to-next-pregnancy intervals and poor peri-natal outcomes

Healthy spacing of pregnancies results in lower risk for poor nutritional outcomes (stunted or underweight child), lower rates of neonatal, child and maternal mortality, as well as lower risk for poor pregnancy outcomes, such as small for gestational age (SGA), pre-term delivery and delivery of a low birth weight (LBW) baby.

Research studies show an increased risk of poor pregnancy outcomes for both short and long intervals between births, although in this paper, we will focus on short intervals. In a study in Latin America, infants conceived less than six months after a birth, compared to infants conceived 18–23 months after a previous birth, had ~50% increase in risk of both early neonatal and fetal death, 80–100% increased risk for LBW, very LBW, preterm birth, and very preterm birth, and 30% increase in risk of SGA, following adjustment for 16 confounding factors¹. Moreover, infants conceived 6–11 months after a birth were 15–33% more likely to suffer any of these adverse outcomes. Similar results were found following a meta-analysis of 67 research studies². Infants born to women with inter-pregnancy intervals shorter than six months had pooled adjusted odds ratios (ORs) (95% CIs) of 1.40 (1.24-1.58), 1.61 (1.39 – 1.86), and 1.26 (1.18-1.33) for preterm birth, LBW, and SGA, respectively, compared with infants born to women with intervals of 18 to 23 months. In addition, compared with infants with inter-pregnancy intervals of 18–23 months, those born to women with intervals shorter than six months had an increased risk of early neonatal death (adjusted OR 1.49, 95% confidence interval [CI] 1.06–1.96) and fetal death (adjusted OR 1.54, 95% CI 1.28–1.83).

b) Birth intervals and infant and child health

In an analysis of Demographic Health Survey (DHS) from 52 developing countries, it was found that children conceived less than 24 months before their next oldest sibling, have significantly higher risks of infant mortality, in particular, children conceived within six months of a prior birth have 127 % higher risk, compared with children conceived within 36 to 47 months of a prior birth³. Findings from this

¹ Conde-Agudelo, A., Belizan, JM, Norton, M.H. Rosas-Bermudez , A. (2005) Effect of the Interpregnancy Interval on Perinatal Outcomes in Latin America. *Obstet Gynecol*;106:359–66.

² Conde-Agudelo, A, Rosas-Bermudez A. and Kafury-Goeta A. (2006) Birth spacing and risk of adverse perinatal outcomes: A meta-analysis. *JAMA* 295(15)1809-1822.

³ Rutstein, S.O. (2008) 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*, Macro International, Demographic and Health Research Division, Calverton, MD

analysis show that children conceived 24 to 59 months after a prior birth have the lowest risk of dying in infancy.

The same study also demonstrates that chronic and overall undernutrition decline substantially with longer birth intervals. Children conceived after an interval of 12 to 17 months are 25% more likely to be stunted and 25% more likely to be underweight than children conceived after an interval of 36 to 47 months. For, stunting and underweight (chronic and overall undernutrition), it has been proposed that these data indicate that the ability to properly care for closely spaced children is a key factor in contributing to poor nutritional status.

c) Maternal health and nutrition

Maternal nutrient depletion has been proposed to contribute to poor pregnancy outcomes due to short intervals between pregnancies.⁴⁵ Nutrients mobilized from the mother's reserves to meet the needs of pregnancy and lactation (e.g. iron, folate), must be replaced during the inter-pregnancy interval.⁶ If the interval is too short, a deficiency of micronutrients could arise and thus influence pregnancy outcomes. Poor maternal micronutrient status – specifically, poor maternal iron and folate status has been associated with preterm births and intrauterine growth retardation (IUGR). These outcomes are associated with greater risk of neonatal mortality. Therefore, women with early or closely spaced pregnancies are at high risk of these pregnancy outcomes and thus, their infants at higher risk of death. FP as a means to increase pregnancy-to-birth intervals could decrease neonatal mortality, IUGR, premature births, and other poor pregnancy outcomes as well as contribute to maternal health status by decreasing the risk of anemia and micronutrient deficiencies.

d) Maternal health and unintended pregnancy

In addition to the health impact of pregnancy spacing, it is also important to also mention the health impact of unintended pregnancy on maternal health. Of the 210 million pregnancies occurring each year, nearly 80 million are unintended⁷. About half of women experiencing unintended pregnancies seek abortions. Each year, an estimated 20 million women undergo unsafe abortions, resulting in 67,000 deaths. In addition, another five million women suffer associated morbidities from these procedures.

It was estimated that in 2000, 90% of abortion related and 20% of obstetric-related mortality and morbidity could have been averted through the use of modern contraception. This represented 32% of all maternal deaths⁸. Maternal survival has an important impact on infant survival; a study from Bangladesh indicated that a motherless child is ten times more likely to die in the first two years.⁹

4 Winkvist, A, Rasmussen, K. M. & Habicht, J. P. (1992) A new definition of maternal depletion syndrome. *Am. J. Public Health* 82: 691–694 J

5 DaVanzo, J, Hale, L. Razaque, A & Rahman, M. (2008) 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*, 62(2):131-154.

6 King J.C. (2003) The Risk of Maternal Nutritional Depletion and Poor Outcomes Increases in Early or Closely Spaced Pregnancies *J. Nutr.* 133: 1732S–1736S.

7 World Health Organization (2003) *Unsafe Abortion-Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2003*, 5th ed.(Geneva:WHO, 2007)

8 Cleland, J, Bernstein, S. Ezech, A, Faundes, A, Glasier, A and J. Innis (2006) Family planning: the unfinished agenda. *The Lancet*. Sexual and Reproductive Health. October 2006.

9 Strong, M.A. (1992) The health of adults in the developing world: The view from Bangladesh. *Health Transition Review* 2(2): 215–224.

Globally approximately 200 million women have an unmet need for FP. This period, from pregnancy through 24 months postpartum is also a critical period for pregnancy prevention. According to a 2001 analysis of DHS information from 27 countries¹⁰ for women in the first year postpartum, few women (3-8%) desire another pregnancy within two years and 60% of those women had an unmet need for FP.

While for breastfeeding women, lactational amenorrhea affords some protection, this protection is short-lived. For non-breastfeeding women, fecundity can return as early as 28 days postpartum. Research demonstrates that there is often confusion about fertility return and many women, as well as providers, underestimate their risk and thus are at risk of unintended pregnancy.

e) Infant and young child nutrition

Undernutrition¹¹ continues to be one of the world's most serious health problems and one of the largest contributors to child mortality.^{12 13} It is an underlying factor in 35% of the mortality in children under five (some 3.2 million deaths a year) and globally, an estimated 178 million children under five are chronically undernourished (stunted) and another 18 million are severely wasted.¹⁴

The period from pregnancy to 24 months of age is a critical window of opportunity for reducing undernutrition and its life-time adverse effects. The impediment to physical growth, brain development, and human capital formation that occurs during this critical period is extensive and largely irreversible.¹⁵ Growth faltering generally starts about six months after birth when complementary foods (in addition to breast milk) are introduced and age-specific malnutrition rates increase until approximately two years of age before leveling off.¹⁶ Low birth weight babies begin life in a malnourished state and are an indicator of poor nutrition during pregnancy. Deficiencies in micronutrients also play a critical role in these early years and have similar long-term effects on physical and mental development.

Evidence-based interventions that affect maternal and child undernutrition and nutrition-related outcomes include breastfeeding (early initiation, exclusive up to six months and continued up to 24 months) and complementary feeding, micronutrient interventions including fortification and supplementation, reductions in family and household disease burden, and treatment of severe acute malnutrition.¹⁷ The WHO, UNICEF, the World Bank and academics across the globe advocate that program efforts, as well as monitoring and assessment, should focus on the period from pregnancy through 24 months of age.

¹⁰ Ross, J. and W. Winfrey (2001) Contraceptive use, intention to use and unmet needs during the extended postpartum period. *International FP Perspectives* 27:20-27.

¹¹ *Author's Note:* 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.

¹² Repositioning Nutrition as Central to Development: A Strategy for Large-Scale Action. The World Bank, 2006

¹³ Bryce J, Coitinho D, Darnton-Hill I, et al, for the Maternal and Child Undernutrition Study Group. Maternal and child undernutrition: effective action at national level. *The Lancet* 2008, published online Jan 17.

DOI:10.1016/S0140-6736(07)61694-8.

¹⁴ Black R, Allen LH, Bhutta ZA, et al, for the Maternal and Child Undernutrition Study Group. Maternal and child undernutrition: Global and regional exposures and health consequences. *The Lancet* 2008 published online Jan 17.

DOI:10.1016/S0140-6736(07)61694-8.

¹⁵ Victora CG, Adair L, Fall C, et al, for the Maternal and Child Undernutrition Study Group. Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet* 2008, published online Jan 17.

DOI:10.1016/S0140-6736(07)61692-4.

¹⁶ Shrimpton, R., Victora, C. G., Onis, M., Lima, R., Blossner, M. & Clugston, G. (2001) Worldwide timing of growth faltering: implications for nutritional interventions. *Pediatrics* 107:e75

¹⁷ Bhutta ZA, Ahmed T, Black RE, et al, for the Maternal and Child Undernutrition Study Group. What works? Interventions for maternal and child undernutrition and survival. *The Lancet* 2008 published online Jan 17.

DOI:10.1016/S0140-6736(07)61694-8.

2. Potential mutual benefits

MIYCN and PFP are mutually beneficial for the mother and infant/child. Exclusive breastfeeding addresses the infant's nutritional needs as well as the mother's contraceptive needs if she practices the lactational amenorrhea method (LAM). Similarly, to ensure optimal health of the infant and young child, most countries recommend the infant be seen five times (including at birth) for immunization, and monthly for growth monitoring. A child who is faltering in weight gain may require additional visits. Each of these contacts provides an opportunity to provide and integrate FP information and services. As the rationale above shows us, the health of this infant's/child's mother is also benefited when the child is healthy and survives and the mother does not need to "replace" a child with yet another pregnancy.

Likewise, to ensure optimum health during the first year postpartum, a mother should be seen three or more times to monitor recovery from the birth and to address her FP needs. Each of these contacts also provides opportunity for education and counseling concerning MIYCN. Community health workers may be able to conduct only a limited number of visits to the postpartum mother. Therefore, it is essential that no opportunities are missed to provide for the comprehensive health needs of both mother and baby. Likewise, travel to a health facility may require substantial expense in time and money for the mother and family. Therefore, the benefit of each visit should be maximized to ensure that the mother and baby have all FP and MIYCN needs met. And as discussed earlier, this mother's infant/young child is also benefited by adequate breastfeeding and birth spacing by the mother.

3. Strategic Alignment

Exposure to messages prior to pregnancy can be an opportune time to reinforce the importance of MIYCN, pregnancy spacing, and prevention of unintended pregnancy. In addition, critical points of contact for counseling, providing support and services for essential nutrition actions and FP occur during pregnancy, delivery, and the postpartum period through two years. MIYCN and FP counseling overlap at several of these points of contact. While not exhaustive, the following section outlines key points in time with accompanying messages and services. This list is intended to be illustrative in order to initiate discussion.

Pre-pregnancy: During the pre-pregnancy period, programs have introduced messages during marriage registration. Marriage serves as a strategic entry point for family health messages. At this time, married couples are beginning to think about many health and behavior decisions that will have life-long effects on family health. Messages can include:

- Delay of first pregnancy until 18 years
- Spacing of subsequent pregnancies
- Maternal nutrition during pregnancy and breastfeeding
- Immediate and exclusive breastfeeding for six months
- Continued breastfeeding with complementary foods from 6-23 months
- Return to fertility after a birth
- timing of initiation of FP after a birth

Pregnancy contacts (FANC visits; at home - within first 5 months and at 7-8 months): Counseling during pregnancy can serve to prepare the mother to think about the nutrition and FP actions to initiate immediately after the birth. FP is often addressed during ANC in national policies, although it is not consistently carried out on a programmatic level. However evidence indicates that counseling during this

period only does not necessarily lead to FP uptake. Services and counseling content for MIYCN and PFP can include:

- Early use of iron/folate, use of iodized salt during pregnancy
- Maternal nutrition and adequate weight gain during pregnancy
- Provide intermittent preventive treatment in malaria endemic areas
- TT immunization
- Information on benefits of spacing of subsequent pregnancies
- Vitamin A within 8 weeks after the birth for the mother
- Immediate and exclusive breastfeeding for six months; and continued breastfeeding and complementary feeding from 6-23 months
- Information on return to fertility after a birth based on breastfeeding status
- Timing of initiation of FP during the postpartum period based on breastfeeding status, particularly LAM and ensuring consent for long acting or permanent methods as appropriate

Delivery/Discharge: For women delivering in a health facility, opportunities exist for PFP counseling and providing selected FP methods, including LAM, postpartum IUCD, and postpartum tubal ligation.

- Counsel on vitamin A for mother within 8 weeks after birth
- Support for immediate breastfeeding
- Counsel on exclusive breastfeeding (including counseling for HIV-infected mother and HIV exposed infant based on country guidelines)
- Counsel on return to fertility after a birth based in breastfeeding status
- Immunizations

Postpartum/postnatal visits contacts: Contacts during the postpartum period reinforce previous counseling and can help to ensure that essential MIYCN and FP actions are taken in a timely manner.

Birth – 7 days: support for immediate and exclusive breastfeeding; how to manage breastfeeding problems; counsel on nutrition for breastfeeding mothers; provide iron/folate for mother; counsel on/provide Vitamin A for mother within 8 weeks after birth; counsel on - healthy spacing, return to fertility, when need to initiate PFP methods based on breastfeeding status, LAM and immunizations as indicated.

6 - 8 weeks: support for exclusive breastfeeding and LAM use; counsel on nutrition for breastfeeding mothers; ensure mother received Vitamin A by eight weeks after birth; provide iron/folate for anemic mothers and where prevalence of maternal anemia is 40% or greater; counsel on - healthy spacing, return to fertility based on breastfeeding status, modern PFP methods based on breastfeeding status including LAM; refer/provide methods for mothers not practicing LAM and immunizations as indicated.

3-4 months: support for exclusive breastfeeding and LAM use; counsel on nutrition for breastfeeding mothers; provide iron/folate for anemic mothers and where prevalence of maternal anemia 40% or greater; counsel on - healthy spacing, return to fertility based on breastfeeding status, other modern PFP methods based on breastfeeding status, LAM transition; refer/provide methods for mothers not practicing LAM and immunizations as indicated.

6 – 9 months (ensure intro food and FP methods): Counsel on providing energy and nutrient-dense complementary foods and continuing to breastfeeding for 2 years; counsel on nutrition for breastfeeding mothers; reminder on healthy spacing and fertility return; screen for LAM transition; counsel on PFP modern methods other than LAM; and refer for/provide methods, and immunizations as indicated.

9 – 12 months: support optimal complementary feeding; provide vitamin A at 12 months and every six months thereafter; counsel on and provide support for continuing BF for 2 years; counsel on nutrition for breastfeeding mothers; reminder on healthy spacing and fertility return; screen for LAM transition; counsel on PFFP modern methods; and refer for/provide methods.

12 – 24 months: support optimal complementary feeding; provide ORS with zinc for use if diarrheal episode; vitamin A supplements every six months; counsel on and provide support for continuing BF for 2 years; counsel on nutrition for breastfeeding mothers; reminder on healthy spacing and fertility return; and refer for/provide methods.

Other potential points of contact: There are other multiple interventions which should be considered. Some of these include:

Well child/growth monitoring visits: Monitor growth, counsel on return to fertility after a birth based on breastfeeding status, support breastfeeding and complementary feeding, iodized salt, Vitamin A

Sick child contacts: Monitor growth, support breastfeeding and complementary feeding for sick child and after recovery, assess and treat anemia, check and complete Vitamin A; counsel and provide FP services as indicated.

PMTCT and care for HIV infected mothers and HIV exposed infants and young children: counsel on special nutritional needs; provide appropriate ARVs; counsel and provide FP services as indicated.

In conclusion, the fields of FP and MIYCN are often perceived to be distinctly separate, yet it is clear that there is much in common. We have an opportunity to capitalize on existing momentum. The challenge is how to best enhance collaboration to maximize the potential impacts of both areas of intervention for the benefit of the mother, infant and child.

This work is made possible by the generous support of the United States Agency for International Development (USAID). The author's views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.