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Technical Brief

**Indonesia Minimum Service Standards for Nutrition:
Technical Brief for Governors and Heads of Districts**

May 2017

These guidelines are made possible by the generous support of the American people through the support of the Office of Health, Infectious Diseases, and Nutrition, Bureau for Global Health, U.S. Agency for International Development (USAID), and the USAID Bureau for Asia, under terms of Cooperative Agreement No. AID-OAA-A-12-00005, through the Food and Nutrition Technical Assistance III Project (FANTA), managed by FHI 360.

The contents are the responsibility of FHI 360 and do not necessarily reflect the views of USAID or the United States Government.

Recommended Citation

Indonesia Ministry of Health. 2017. *Indonesia Minimum Service Standards for Nutrition: Technical Brief for Governors and Heads of Districts*. Jakarta, Indonesia, and Washington, DC: Indonesia Ministry of Health and FHI 360/Food and Nutrition Technical Assistance III Project.

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1 Introduction

Background

The Government of Indonesia has recently updated its package of Minimum Service Standards (MSS, or *Standar Pelayanan Minimum* in Bahasa) for health services at the district level. These standards define the services that must be provided to all citizens at primary and secondary health care centers and are the mechanism by which provinces and districts are held accountable against the target indicators set for each standard. Local governments are responsible for providing the infrastructure, equipment, human resources, and budget to reach 100 percent of target indicators for each standard in the MSS. The district-level target indicators in the MSS are categorized into 12 population groups (shown in Box 1). In order to fully achieve the target indicators, provinces and districts must work closely with private service providers, verify services from reports and health records, and conduct monitoring visits to ensure that quality services are delivered. (For more information on the targets and steps, please see the Indonesian Ministry of Health Decree No. 43/2016 on Minimum Service Standards for Health.)

For provinces and districts to achieve the target indicators set for the MSS for health, improving nutrition is key. Indonesia continues to have widely prevalent nutrition problems that affect several key segments of the population, especially adolescents, women, and children. These persistent nutrition problems are holding Indonesia back from achieving its health and economic development objectives. Both nutrition and health must be addressed together to enable the country to achieve its national targets for nutrition and health.

Box 1. Categories for Minimum Service Standards District Indicators

1. Pregnant women
2. Women during delivery
3. Newborn babies (up to 28 days)
4. Children under 5 years of age
5. Students in elementary school
6. Women of reproductive age (15–49 years)
7. Elderly (60 years of age and older)
8. People with hypertension
9. People with diabetes mellitus
10. People with psychosocial health issues (severe cases)
11. People with tuberculosis
12. People at high risk of HIV infection

Purpose of Technical Brief and Role of Governors and Heads of Districts

The purpose of this technical brief is to orient governors and heads of districts who oversee local health service delivery on (1) why nutrition is important in addressing the MSS district health indicators and how it fits within the health sector MSS; (2) the nutrition situation in Indonesia; and (3) the specific nutrition interventions and services that aim to improve health and nutrition outcomes in Indonesia and achieve the MSS district health indicators. This technical brief focuses on 5 of the 12 categories identified by the MSS, as noted in Box 1, namely:

- Pregnant women
- Women during delivery
- Newborn babies (up to 28 days)
- Children under the age of 5 years
- Women of reproductive age (15–49 years)

Governors and heads of districts can play a pivotal role in improving nutrition because they oversee District Health Administrators (DHAs) and local health service delivery. Governors and heads of districts are responsible for:

- Ensuring 100 percent of indicators related to nutrition in the MSS are met
- Holding DHAs accountable for nutrition service delivery
- Ensuring that adequate funding is requested and allocated for nutrition in annual budgets, specifically ensuring that there is funding for training midwives and nutritionists on growth monitoring and promotion (GMP), infant and young child feeding (IYCF), and breastfeeding counseling at the district and village levels
- Ensuring adequate staffing for nutrition services at the *puskesmas* and *posyandu* levels as well as payment for *kaders*
- Developing and strengthening the capacities and competencies of the staff in charge of nutrition activities at the *puskesmas* and *posyandu* levels, clearly defining their roles and duties
- Strengthening the supervision, monitoring, and evaluation of nutrition activities at the *puskesmas* and *posyandu* levels, as well as in private practice, to ensure compliance with service and quality standards and protocols

2 Overview of Nutrition Situation in Indonesia

Today in Indonesia, more than 9 million children under the age of 5 are malnourished. Malnutrition in Indonesia comes in many forms, including stunting (low height-for-age), underweight (low weight-for-age), wasting (low weight-for-height), anemia, vitamin A deficiency, and low birth weight (LBW) (<2.5 kg) (Statistics Indonesia et al. 2013). Nearly one-quarter of children under 6 months are already stunted, and nearly 20 percent are wasted (MOH 2013). In addition, LBW affects as many as 25 percent of newborns in some regions (Dickey et al. 2010). These data indicate that both wasting and stunting are influenced by poor nutrition before and during pregnancy, which is compounded by high rates of disease, poor water and sanitation infrastructure, and poor IYCF practices, particularly delayed initiation of breastfeeding and low rates of exclusive breastfeeding.

Overnutrition in children under the age of 5 years is also increasing in Indonesia. The prevalence of overweight of children under the age of 2 years is 5.6 percent, and in children ages 23–59 months is 4.9 percent (MOH 2016).

Why does this matter?

Malnutrition in children has far-reaching consequences for human capital, economic productivity, and overall national development (Black et al. 2013; Chaparro et al. 2014).

- Malnourished children are more likely to experience repeated illnesses and infections, which can result in significant financial burdens, especially among poor families (Black et al. 2013).
- Malnourished children face an increased risk of chronic diseases, such as heart disease, in adulthood (Black et al. 2013).
- Malnutrition in childhood impairs physical, motor, and mental development, undermining learning potential (Black et al. 2013, Grantham-McGregor et al. 2007, Grantham-McGregor et al. 2005, Kulkarni et al. 2012, Miller et al. 2015, Mendez and Adair 1999, and Walker et al. 2007).
- Children who are stunted learn to sit, stand, crawl, and walk later than well-nourished children (Kulkarni et al. 2012, Gibson et al. 2009).
- Stunted children perform worse in school and are more likely to repeat classes, miss school due to illness, and drop out than well-nourished children (Grantham-McGregor et al. 2007, Grantham-McGregor et al. 2005, Mendez and Adair 1999).
- In adulthood, malnourished children earn less than their well-nourished and better-educated peers (Grantham-McGregor et al. 2007, Grantham-McGregor et al. 2005).

The benefits of improving nutrition in Indonesia are far-reaching (Black et al. 2013, Chaparro et al. 2014, Grantham-McGregor et al. 2007, Grantham-McGregor et al. 2005, Mendez and Adair 1999). Improved nutrition would do the following.

- Save women's and children's lives
- Improve children's cognitive and physical development
- Result in earlier school enrollment, children staying in school longer, and performing better in school
- Lead to economic gains through increased productivity

Moreover, nutrition is a smart investment: For every US\$1 spent on nutrition, there is a US\$16 return in health and economic benefits (International Food Policy Research Institute 2015).

3 Guidance on Nutrition-Related Minimum Service Standards

Nutrition is an important component in the five categories of population groups for which there are indicators in the MSS for health services. For each of these categories, the following guidance explains how it relates to nutrition, why it is important to improve nutrition, and what interventions can be implemented in each district to help Indonesia achieve its national targets and commitments for nutrition. Governors and heads of districts have an instrumental role in this process: to ensure that DHAs are adequately trained and are held accountable for delivering nutrition services at the *puskesmas* and *posyandu* levels. Additional information on the specific services discussed below can be found in the Indonesia Ministry of Health's *Maternal and Child Health Book (Buku Kesehatan Ibu Dan Anak* in Bahasa).

Category 1: Pregnant Women

Rationale for Services and Interventions

In Indonesia, LBW, which is a risk factor for neonatal deaths, is widely prevalent and continues to affect 24–27 percent of births in regions such as Papua and Papua Barat (Dickey et al. 2010). Between 1997 and 2012, reductions in overall under-5 child mortality far outpaced reductions in neonatal deaths. LBW in Indonesia is a result not only of young maternal age and poor pre-pregnancy nutritional status, but also of poor birth spacing, poor dietary intake (quality, quantity, and diversity), inadequate weight gain, high workload, and inadequate rest during pregnancy. Improved maternal nutrition during pregnancy will improve birth outcomes and reduce the prevalence of LBW.

During pregnancy, it is also important to strengthen water, sanitation, and hygiene (WASH) behaviors (see Figure 1). These are permanent behaviors that mothers and families must practice consistently every day over the long term to mitigate the risk of infections and promote well-being, particularly for newborns and the youngest children in a household. It is important to begin communicating about WASH practices during pregnancy so that mothers, their partners, and their family members have sufficient time to master these behaviors and practice them consistently before the arrival of a newborn.

Category 2: Women during Delivery

Rationale for Services and Interventions

Standard delivery services must include counseling for new mothers on early initiation of and exclusive

To improve maternal nutrition during the postpartum period and decrease infant and maternal mortality, health workers at the *puskesmas* and *posyandu* levels, as well as in private practice, would need to be trained regularly on the following services and interventions.

- Ensuring that standard delivery services include counseling on and support for early initiation of and exclusive breastfeeding, postpartum nutrition, family planning, and healthy birth spacing
- Improving postpartum dietary intake, emphasizing increased quantities and improved quality, and dietary diversity to support optimal breastfeeding
- Improving postpartum iron-folate status through intake of iron-folate supplements
- Promoting adequate rest and reduced workload during the postpartum period
- Promoting adequate birth spacing through postpartum use of contraception
- Involving men and families to ensure that mothers get adequate delivery services and postpartum care

breastfeeding, postpartum nutrition, family planning, and healthy birth spacing. Ensuring good maternal nutrition during the postpartum period is critical to supporting optimal breastfeeding and helping the mother restore her nutritional status, which is depleted during pregnancy and lactation.

Family planning interventions, through adequate birth spacing, have been shown to reduce the risk of low birth weight and stunting and to decrease infant and maternal mortality. As birth weights increase in a population, nutritional status improves and mortality decreases. As children's nutritional status improves, so do their cognitive development and performance in school, leading to higher educational attainment and improved earning capacity in adulthood. Those who attain a higher level of education are more likely to use family planning and often marry later and delay childbearing, thus continuing the cycle.

In addition, family planning counseling with older mothers and women is an opportunity to counsel them on improving the nutritional status of their adolescent girls and delaying their teen daughters' marriage and first pregnancy past the age of 19. This will have a huge impact on improving nutrition and survival for young children.

Category 3: Newborn Babies (Up to 28 Days)

Rationale for Services and Interventions

Early initiation of breastfeeding (within 1 hour of birth) is a lifesaving practice for newborns, but in Indonesia only one-half of infants are put to the breast within that time frame according to the Nutrition Surveillance 2015, and 45 percent of newborns receive other liquids (pre-lacteals) before receiving breast milk (Risksdas 2013). More than 66 percent of mothers begin breastfeeding within 1 day of birth, which increases the risk of neonatal mortality. Delaying the initiation of breastfeeding and introducing other liquids before 6 months of age (including pre-lacteals) increases the risk of disease and death. Research shows that initiating breastfeeding after the first 24 hours can increase the risk of death by 78 percent (Garcia et al. 2011). Importantly, the practice of breastfeeding itself has been shown to protect children from obesity. A 2014 meta-analysis found the risk of childhood obesity was 22 percent lower in breastfed children compared to children who were never breastfed (Yan et al. 2014).

LBW and preterm babies are at higher risk of neonatal and infant mortality and morbidity. Studies have shown that kangaroo care—early, continuous, and prolonged skin-to-skin contact between mother and baby—is effective for thermal control, breastfeeding, and bonding in all newborn infants, irrespective of setting, weight, gestational age, and clinical conditions (WHO 2003).

To improve neonatal nutrition and decrease mortality, health workers at the *puskesmas* and *posyandu* levels, as well as in private practice, would need to be trained regularly on the following services and interventions.

- Promoting the Baby-Friendly Hospital Initiative throughout Indonesia
- Promoting early initiation of exclusive breastfeeding within 1 hour of birth
- Providing continued support to mothers to maintain exclusive breastfeeding for 6 months
- Discouraging caregivers from giving other liquids (“pre-lacteals”) to newborns before receiving breast milk
- Promoting early, continuous, and prolonged skin-to-skin contact (kangaroo care) between mother and baby (as well as father and baby) at the birth facility and continuing at home
- Promoting optimal hygiene, sanitation, and food safety practices (see Figure 1 for more details) with caregivers and families of newborns

Category 4: Children under 5 Years of Age

Rationale for Services and Interventions

Infant and Young Child Feeding

Adequate feeding practices during infancy are critical to ensure optimal nutritional status during the first 2 years of life and are essential to prevent stunting and its long-term impacts. Breastfeeding in particular provides nutritional, immunological, and cognitive benefits. The World Health Organization recommends exclusive breastfeeding for children under 6 months of age and appropriate feeding for children 6–23 months, including continued breastfeeding, feeding solid/semi-solid food a minimum number of times per day, feeding a minimum number of food groups per day, continued feeding during and after illness, feeding appropriate quantities of food, providing food with appropriate consistency, and feeding nutrient-dense foods (Pan American Health Organization 2003). While almost every child in Indonesia is breastfed (96 percent), exclusive breastfeeding throughout the first 6 months drops to 65 percent, according to Nutrition Surveillance 2015. This is especially important because of the benefits of breastfeeding in reducing the risk of infection, improving growth, and reducing the risk of childhood obesity.

The complementary feeding period, when food and liquids other than breast milk are introduced into the infant's diet, constitutes a high-risk period for development of malnutrition and disease, particularly diarrhea. Many aspects of complementary feeding in Indonesia are inadequate—the timing of introduction of solid/semi-solid food, the frequency of feeding, the choice of foods, and the way in which they are prepared. Although most infants have begun complementary feeding by 6–8 months of age, the 2012 Indonesia Demographic and Health Survey (IDHS) indicates that only 58 percent of children 6–23 months consume a diverse diet (minimum dietary diversity) and 37 percent have a minimally acceptable diet, which includes breastfeeding or providing formula or milk; providing foods from four or more groups; and feeding the minimum number of times per day according to age and breastfeeding status. Children in rural areas and in the lowest wealth quintile are less likely than their urban and higher-socioeconomic-status peers to have adequate dietary diversity and minimum acceptable diets. There are also important regional variations in infant feeding practices; for example, a low of 14 percent of breastfed children 6–23 months of age in West Papua receive the minimum acceptable diet, compared with a high of 45 percent in West Sumatra. (See Appendix 1 for more information on child dietary indicators by province.)

Optimal Hygiene, Sanitation, and Food Safety

One of the most significant pathways to repeated infection, particularly in young children, is the exposure to environmental pathogens as a result of poor hygiene and sanitation. Poor access to and use of sanitation facilities and clean water as well as poor hygiene practices can substantially impact a child's growth, by causing increased infection and illness (e.g., diarrhea) but also through reduced absorption of nutrients due to chronic inflammation of a child's gut. Emerging global evidence indicates that environmental enteric dysfunction (EED), a subclinical disorder of the small intestine that causes inflammation in the gut and reduces absorption of nutrients, could be a significant contributor to stunting (Prendergast and Humphrey 2014). EED is caused by fecal bacteria ingested in large quantities by young children living in conditions of poor sanitation and hygiene (Humphrey 2009). Poor sanitation and hygiene, tropical enteropathy, and child undernutrition impact childhood development and survival, with several critical points at which interventions must occur to break the cycle. One program that is testing aspects of this hypothesis in Asia found that rural Bangladeshi children who had cleaner water, better toilets, and better equipped handwashing stations had a lower incidence of environmental enteropathy and better linear growth (height for age) (Lin et al. 2013). A recent analysis of three systematic reviews found that the risk of diarrhea was reduced by

48 percent from handwashing with soap, by 17 percent from improved water quality, and 36 percent from safe feces disposal (effects are not additive as each overlaps with the other) (Cairncross 2010).

Iron-Folic Acid Supplementation, Consumption of Iron-Rich/Fortified Foods, Deworming, and Vitamin A Supplementation

Preventing iron deficiency anemia is critical in young children through consumption of iron-rich foods, and iron-folic acid and/or multiple-micronutrient supplementation (including multiple-micronutrient powders such as “sprinkles”) (FANTA 2016). In settings where the prevalence of anemia in children under 2 years or under 5 years of age is 20 percent or higher, WHO recommends home fortification of complementary foods with multiple-micronutrient powders to improve iron status and reduce anemia among infants and children 6–23 months of age (WHO 2011). Providing children with deworming drugs every 6 months as a preventive measure could reduce both worm infestations and iron deficiency anemia. Vitamin A supplementation has been found to reduce all-cause mortality in children 6–59 months of age by 24 percent and diarrhea-related mortality by 28 percent (Imdad et al. 2010).

Growth Monitoring and Promotion with a Focus on Children Under 2 Up to Children Under 5

Growth monitoring and promotion (GMP) is a process of following the growth of a child compared with a standard through periodic, frequent anthropometric measurements and assessments over time, and providing tailored counseling and follow-up problem solving with caregivers based on growth monitoring results. An undernourished or sick child will have a slower rate of weight gain than a well-nourished, healthy child, and early detection of growth faltering provides a warning sign and trigger for early action. GMP is designed to assess growth adequacy and identify faltering before a child reaches the status of undernutrition. Based on the results of the growth assessment, health workers encourage good care practices, identify possible problems if growth is not optimal, suggest doable actions/improved practices and negotiate with caregivers the doable actions that they will try, reinforce participation in community-based health and nutrition activities, and refer the family to health providers if needed. GMP at the community level can also foster community mobilization and social action, particularly when growth monitoring data are aggregated and used for community-level assessment and analysis of child malnutrition. Community participation in GMP has the potential to increase community awareness of factors that negatively affect child nutrition and health, and result in collective action to address these causes. GMP is also perceived as beneficial because it can provide an entry point for preventive and curative services, and can be an integral part of programs that have been associated with significant reductions in malnutrition and mortality (Ashworth et al 2008).

Identification and Treatment of Acute Malnutrition in Children in High-Risk Areas

Providing inpatient treatment for children with severe acute malnutrition (SAM) with medical complications and using community-based approaches to identify and treat moderate acute malnutrition (MAM) and cases of SAM without medical complications have proven effective. The use of specialized food, in the form of locally fortified corn-soy blended flours and lipid-based nutrient supplements, has proven effective for the treatment of MAM. Similarly, the use of ready-to-use-therapeutic food (RUTF) has proven effective for the treatment of SAM. Key considerations in the types of foods that should be used to treat acute malnutrition center not only on nutrient composition, but also on whether the food is ready for consumption and carries minimal risk of infection. Particularly in the case of severely wasted children, infections can substantially heighten and precipitate the risk of mortality. For this reason, foods that are ready to use and pre-packaged carry significant

benefits in treating severely wasted children. Lack of hygiene and sanitation within households, especially with regard to food preparation, are significant risk factors in the prevalence of acute malnutrition generally, and SAM in particular. In addition, severely wasted children cannot digest home-cooked foods easily, as their physiological ability to absorb nutrients and digest food is severely impaired (FANTA 2014).

Promoting Optimal Nutrition Care of Sick Children

Optimal nutrition care for sick children includes continued feeding and increased fluids during illness; increased feeding after illness; and providing effective treatments for the clinical management of acute diarrhea, including oral rehydration therapy (ORT) (using low concentration oral rehydration salts) and routine use of zinc supplementation (at a dosage of 20 mg/day for children older than 6 months or 10 mg/day for those younger than 6 months) for 10–14 days (WHO 2004). Oral rehydration is a well-known and relatively simple treatment approach for managing acute diarrhea by preventing dehydration (Cash et al. 1970). Zinc supplementation has been found to reduce the duration and severity of diarrheal episodes and likelihood of subsequent infections for 2–3 months (Bhutta et al. 2000). Zinc is an important micronutrient for normal growth and development of children both with and without diarrheal disease as it aids in cell growth, immune function, and intestinal transport of water and electrolytes. Children deficient in zinc are at increased risk of gastrointestinal infections, adverse effects on the structure and function of the gastrointestinal tract, and impaired immune function (WHO 2004). Zinc supplementation was found to reduce all-cause mortality in children 12–59 months by 18 percent, diarrhea incidence by 13 percent, and pneumonia incidence by 19 percent (Imdad et al. 2010). According to the 2012 IDHS, among children under 5 with diarrhea, 65 percent of caregivers sought treatment during an episode; however, only 47 percent used ORT and the use of zinc supplements was only 1.1 percent nationally, signaling an important opportunity to expand access to both.

Early Childhood Development

Recent evidence suggests that integrated nutrition and early childhood development programs can help improve both child development and nutrition outcomes, laying the best foundation for children to achieve their full potential as adults. However, most programs do not yet effectively integrate early childhood development interventions within nutrition and health services targeting children under 2 years of age, resulting in a missed opportunity. In addition to adequate nutrition, children need a stimulating environment and social interaction with attentive caregivers to develop sufficiently in all four domains of early childhood development (physical, social, emotional, and cognitive development) to reach their potential (FANTA 2016).

To improve health (and specifically nutrition outcomes) among children under 5, health workers at the *puskesmas* and *posyandu* levels, as well as in private practice, would need to be trained regularly on the following services and interventions.

Infant and Young Child Feeding

- Promoting exclusive breastfeeding on demand for the first 6 months of a child's life
- Discouraging introducing other liquids prior to 6 months of age
- Promoting adequate dietary intake for lactating women, with an emphasis on increased quantities and improved quality and diet diversity to support optimal breastfeeding
- Promoting timely and appropriate introduction of complementary foods beginning at 6 months, emphasizing diversity, quality, quantity, and frequency of foods; for example, children 6–8 months should have 2–3 meals a day with 1–2 nutritious snacks, while children 9–24 months should have 3–4 meals a day with 1–2 nutritious snacks (see Figure 1 for more details)
- Promoting responsive feeding by minimizing distractions during mealtimes, staying with children until they are done eating, and feeding them until they no longer show interest in a meal (see Figure 1 for more details)
- Involving men and families to promote shared responsibility for young child nutrition at the family and community levels
- Promoting family support for the mother, with an emphasis on time and resources to feed the child

Optimal Hygiene, Sanitation, and Food Safety

- Promoting optimal hygiene, sanitation, and food safety practices (see Figure 1 for more details)

Iron-Folic Acid Supplementation, Consumption of Iron-Rich/Fortified Foods, Deworming, and Vitamin A Supplementation

- Promoting the consumption of iron-rich foods, and iron-folic acid and/or multiple-micronutrient supplementation (including multiple-micronutrient powders such as “sprinkles”) for children under 5
- Providing children with deworming drugs every 6 months as a preventive measure to reduce both worm infestations and iron deficiency anemia
- Providing children under 5 with vitamin A supplementation to reduce all-cause mortality and diarrhea-related mortality

Growth Monitoring and Promotion with a Focus on Children Under 2 Up to Children Under 5

- Undertaking regular screening and tracking of infant growth (each month for children under 2 and less frequently for children 2–5 years of age) for both underweight and overweight
- Counseling mothers and families on optimal infant feeding practices

Identification and Treatment of Acute Malnutrition in Children in High-Risk Areas

- Providing inpatient treatment for children with SAM with medical complications and using community-based approaches to identify and treat MAM and cases of SAM without medical complications
- Providing RUTF for the treatment of SAM in children under 5
- Providing specialized food, in the form of locally fortified corn-soy blended flours and lipid-based nutrient supplements, for the treatment of MAM in children under 5

Promoting Optimal Nutrition Care of Sick Children

- Continued feeding and increased fluids during illness; increased feeding after illness; and appropriate treatments, such as zinc and ORT for diarrhea

Early Childhood Development

- Integrating nutrition and early childhood development programs (which track children's developmental milestones before the age of 2) to improve both child development and nutrition outcomes

Category 5: Women of Reproductive Age (15–49 Years of Age)

Rationale for Services and Interventions

Adolescent pregnancy is associated with a 50 percent increased risk of stillbirth and neonatal death, and an increased risk of low birth weight, premature birth, and asphyxia (Bhutta et al. 2013). Adolescence also increases the risk of mortality during pregnancy by 17–28 percent (Nove et al. 2014; Blanc et al. 2013). This is because, relative to their older peers, adolescent girls are persistently more undernourished, further contributing to the high prevalence of maternal malnutrition, poor pregnancy outcomes, and LBW, ultimately leading to young child malnutrition. Data also show that adolescent mothers struggle to provide optimum care for their infants relative to their older peers and that they need more support from family. Enabling adolescent girls to complete secondary education carries multiple benefits, including delaying marriage and first pregnancy, ensuring better nutritional status for them at the onset of pregnancy, and reducing malnutrition in their children in part through greater knowledge, capabilities, and caring capacity.

Iron-folate supplementation during pregnancy (for all ages) and deworming have been shown to reduce the risk of maternal, neonatal, and child mortality by decreasing the prevalence of anemia, a leading cause of preventable maternal deaths. Providing women with calcium supplementation could also substantively reduce the risk of maternal mortality resulting from pre-eclampsia (Nove 2014; Blanc et al. 2013; Dibley et al. 2011; Imdad and Bhutta 2012).

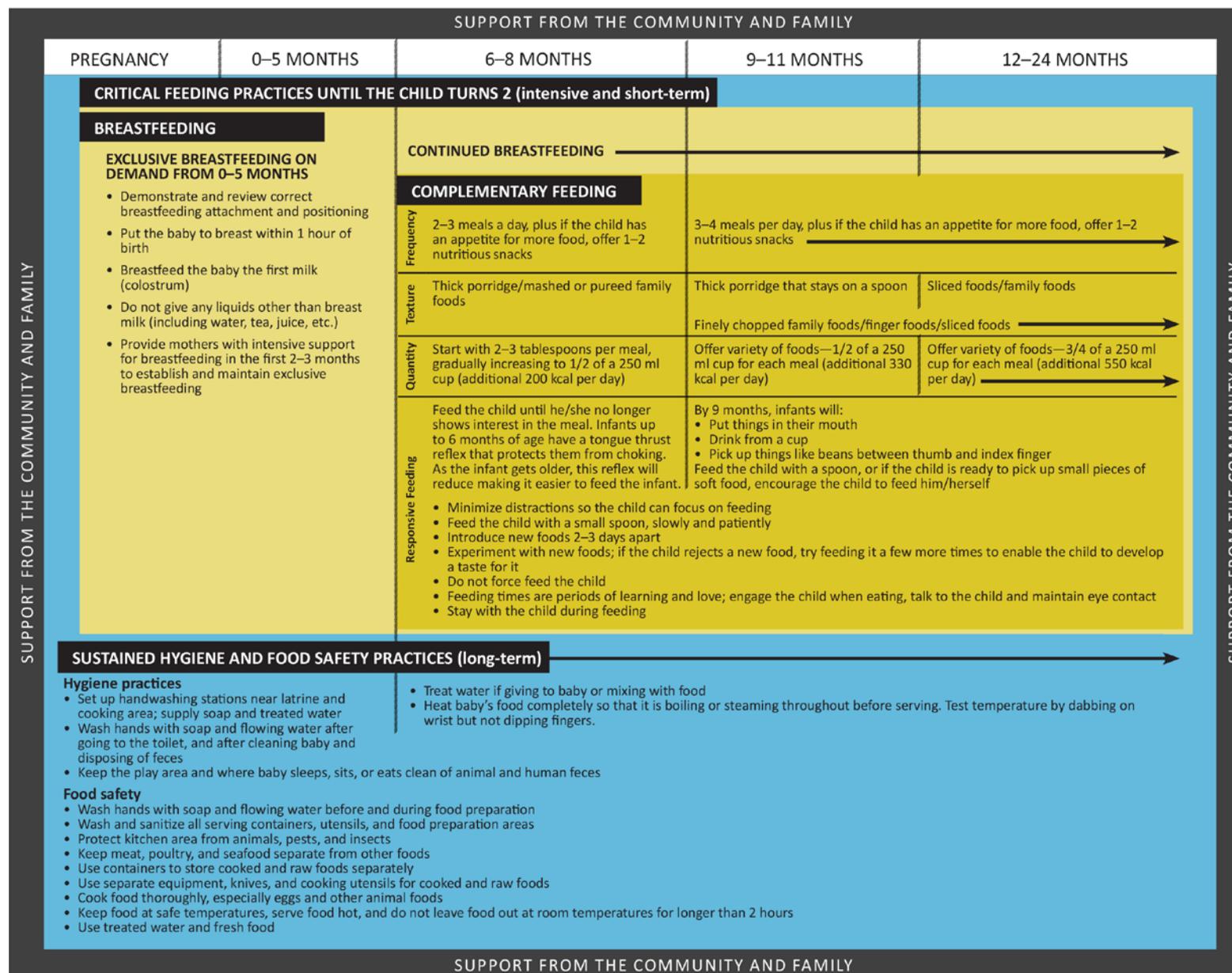
Close child spacing also contributes to mortality and malnutrition among children under 5. Children conceived fewer than 24 months after the birth of the next-older sibling have a greater risk of dying and becoming malnourished than children born farther apart (Rutstein 2008). High parity is not only a biological risk for every subsequent birth; it also means young mothers have very little time and resources to provide children under age 2 with optimum care and feeding, resulting in stunting. Family planning interventions, through adequate birth spacing and limiting family size, have been shown to reduce risk of low birth weight and stunting as well as decrease infant and maternal mortality. As birth weights increase in a population, nutritional status improves and mortality decreases. As children's nutritional status improves, so do their cognitive development and performance in school, leading to higher educational attainment and improved earning capacity in adulthood. Those who attain a higher level of education are more likely to use family planning and often marry later and delay childbearing, thus continuing the cycle.

To improve nutrition for women of reproductive age, especially in the critical adolescent years, health workers at the *puskesmas* and *posyandu* levels, as well as in private practice, would need to be trained regularly on the following services and interventions.

- Improving pre-pregnant weight and iron-folate status among women of reproductive age, especially adolescents
- Working with overweight and obese women of reproductive age to attain an optimal weight and working with all women of reproductive age to limit the consumption of carbohydrates, sugar, salt, and fat and ensure a diverse diet of protein-rich and nutrient-dense foods
- Providing deworming medicines and calcium supplementation to women of reproductive age, especially adolescents
- Delaying marriage and first pregnancy past the age of 19
- Promoting secondary education completion for girls and boys
- Increasing use of contraception among married couples, especially adolescents
- Increasing knowledge of modern contraceptive methods among married and unmarried adolescent girls and their families

Working with overweight and obese women to obtain an optimal weight prior to pregnancy has been shown to decrease gestational diabetes mellitus, pre-eclampsia, maternal mortality, and complications from childbirth, as well as neonatal and infant mortality and risk of childhood obesity that continues into adolescence and early adulthood (Torlini et al. 2009; Sohlberg et al. 2012; Aviram et al. 2011; Norman et al. 2011; Chen et al. 2009; McGuire et al. 2010; Catalano et al. 2003). Limiting the consumption of carbohydrates, sugar, salt, and fat and attaining optimal weight decrease the risk of chronic diseases such as diabetes and cardiovascular disease (WHO 2016).

Figure 1. Nutrition and WASH during the First 1,000 Days



4 Conclusion

In summary, to meet 100 percent of indicators outlined in the MSS for pregnant women, women during delivery, newborn babies (up to 28 days), children under the age of 5 years, and women of reproductive age (15–49 years of age), nutrition must be an integral part of health services at the *puskesmas* and *posyandu* levels. Governors and heads of districts play a pivotal role in improving nutrition because they oversee local health service delivery and can ensure that DHAs work closely with private sector providers to achieve the targets set by the government.

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