

# Child food and nutrition security<sup>1</sup>

*This is one in a series of topical guides developed for PAN:Children that provides key information on the current state of affairs in South Africa related to the topic and highlight practical guidance, lessons learned and case studies (both national and international) that will be helpful in policy development dialogue and knowledge sharing.*

## 1. International, African and national instruments guaranteeing children's right to food and nutrition security

State obligations to protect, respect and promote the rights of children to food and nutrition security are governed by international, African and national legal instruments, including:

- The United Nations Convention on the Rights of the Child (United Nations, 1990);
- The African Charter on the Rights and Welfare of the Child (African Union, 1999);
- The United Nations Millennium Development Declaration (UN General Assembly, 2000);
- International Code of Marketing of Breast-Milk Substitutes (World Health Organisation, 1981);
- Innocenti Declaration on Infant and Young Child Feeding (Unicef; WHO; IBFAN; The Academy of Breastfeeding Medicine and others, 2005);
- Comprehensive Africa Agriculture Development Programme (NEPAD)
- Framework for African Food Security (CAADP )
- Constitution of the Republic of South Africa (Republic of South Africa, Act 108 of 1996);
- Tshwane Declaration of Support<sup>2</sup> (National Breastfeeding Consultative Meeting, 2011).

The obligations on the state are shaped by the recognition that the nutritional status of children is critical to their survival, health, growth and development, as well as to broader national development goals.

Malnutrition is a leading cause of child morbidity and death, especially in developing countries (Black, et al., 2008). It also impacts on the cognitive, physical, and immune system-development of children. Ultimately it is associated with poorer school performance, lower earnings later in life and poor health during childhood and adult years. More fundamentally, it heralds a negative development cycle, as stunted malnourished children are more likely to give birth to low birth-weight infants who in turn are at risk of stunting and its consequences (Bhutta, et al., 2008) (Victora, et al., 2008).

The immediate causes of under- and malnutrition are illness and poor feeding and care ( United Nations Children's Fund, November 2009) (Black, et al., 2008) (Bhutta, et al., 2008). The underlying causes are poverty, poor household food security, lack of access to resources, inadequate access to maternal and child health services and lack of access to adequate water, sanitation and refuse removal ( United Nations Children's Fund, November 2009) (Hendricks & Bourne, 2010) (The World Bank, 2008).

There is international agreement that the solution lies in the development and implementation of a core set of proven nutrition interventions. The most critical time for the implementation of the interventions is the first 1,000 days of a child's life, from conception to 24 months old. Thus, there is a growing recognition of the need to implement the following interventions, focusing on this period (Bhutta, et al., 2008) (Victora, Onis, Hallal, Blossner, Troph, & Shrimpton, 2010) (Vaidya, Saville, Shrestha, Costello, Manandhar, & Osrin, 2008):

- The promotion of timely initiation of breastfeeding and exclusive breastfeeding for six months;

<sup>1</sup> This topical guide was prepared for PAN:Children by Patricia Martin (Advocacy Aid)

<sup>2</sup> As at 27 August 2012 this declaration had not yet been drafted into a national policy, but it is expected that this will happen during September 2012.

- Strategies to promote appropriate complementary feeding from the age of 6-24 months;
- Micronutrient supplementation of pregnant women, infants and children;
- Health centre and community-based management of severe acute malnutrition;
- Promotion of hygienic practices such as hand-washing to prevent diseases (Bhutta, et al., 2008) (Caulfield, Huffman, & Piwotz, 1999) (Center for Global Development, International Conference on Nutrition, 2010) (Hoddonott, Rosegrant, & Torero, 2012) ( United Nations Children's Fund, November 2009).

In addition, poverty alleviation measures, water and sanitation programmes, agricultural support programmes and education programmes must be in place to address the underlying causes of malnutrition. Thus, the preceding nutrition-specific interventions must be located within a broader multi-sectoral national nutrition strategy which is managed by one coordinating body, and progress must be assessed according to one national monitoring and evaluation system (Center for Global Development, International Conference on Nutrition, 2010) (Bhagowalia, Headey, & Kadiyala, 2012) ( United Nations Children's Fund, November 2009) (Hendricks & Bourne, 2010).

## **2. National policies, laws, and strategies promoting and protecting children's rights to food and nutrition**

The South African response to these imperatives has been to develop a multiplicity of multi-sectoral policies, laws and strategies that provide a host of preventative and curative nutritional and food security interventions. These include:

**The Integrated Nutrition Programme (INP)** (Department of Health, 1995) targets nutritionally vulnerable communities and groups and requires the provision of appropriate nutrition education and promotion to all people. The INP makes provision for the **Nutrition Supplementation Programme (NSP)**, the objective of which is to identify and treat undernourished adults and children through the primary health care system. It makes further provision for a number of additional programmes, including breastfeeding support, growth monitoring, Vitamin A supplementation, and others. A comprehensive list is provided at the end of this section as part of a consolidated statement of food and nutrition security interventions provided in terms of the current policy and legal framework.

**The White Paper for the Transformation of the Health System in South Africa** (Department of Health, 1997) which calls for integrated, sustainable, environmentally sound, people- and community-driven nutrition programmes that target the most vulnerable groups, especially children and women.

The **South African Breastfeeding Guidelines for Health Workers** (Department of Health, 2000) and the **Strategy for the Implementation of the Baby Friendly Hospital Initiative** (Department of Health, 2001) call for the promotion and the provision of breastfeeding support in the health-care setting.

**The Free Basic Water Policy and the Free Basic Water Implementation Strategy** (*Department of Water Affairs and Forestry, August 2002*) make provision for the delivery of free basic water supplies to households living in poverty.

The **Integrated Food Security Strategy for South Africa** (*Department of Agriculture, 2002*) is a strategy to streamline, harmonise and integrate the diverse food security programmes into one Integrated Food Security Strategy. It establishes coordinating structures from national to local level.

The **Regulations relating to the fortification of foodstuffs** (*Department of Health, 2002*) prescribes the minimum levels of micronutrient fortification of wheat and maize meal in South Africa.

**The Operational Plan for Comprehensive HIV and AIDS Care, Management and Treatment for SA** (Department of Health, 2003) regulates the provision of nutritional support to HIV-positive infants and children.

**The Social Assistance Act, No. 13 of 2004** (as amended) makes provision for the rendering of social assistance to vulnerable groups of people, including children, people with disabilities and older persons (Department of Social Development, No. 13 of 2004).

**The National Integrated Plan for ECD 2005-2010** (Republic of South Africa, 2005) is a national multi-sectoral plan for the realisation of a comprehensive early childhood development package, and includes the promotion of breastfeeding and supplementation, as well as the provision of daily balanced nutrition to all children.

The **Infant and Young Child Feeding Policy** (Department of Health, 2007(a)) regulates safe nutritional and feeding practices for infants and young children.

The **Policy and Guidelines for the Implementation of the PMTCT Programme** (Department of Health, 2008) calls for appropriate feeding counselling, support and treatment of HIV-positive women and HIV-exposed infants.

The **National Action Plan for Orphans and Other Children Made Vulnerable by HIV and AIDS, South Africa 2009-2012** (Department of Social Development, 2009) is a multi-sectoral plan to provide support to orphans and vulnerable children (OVC). Key interventions include the school nutrition programme, food security pilot projects and food security programmes.

**Delivery Agreement for Outcome 2: A long and healthy life for all South Africans** (Department of Health and the Presidency, 2010) documents key health (including nutritional) outcomes to which the Department of Health has committed itself.

The **Clinical Guidelines: PMTCT (Prevention of Mother-to-Child Transmission)** (Department of Health and SANAC, 2010) document the strengthened antiretroviral drugs (ARV) regimen for pregnant and breastfeeding women and infants.

**The National Strategic Plan on HIV, STIs and TB 2012-2016** (SANAC, 2012) is the national plan to address HIV and AIDS. It prioritises infant feeding, counselling and support and early identification of nutrition and HIV-related stunting.

**The National School Nutrition Programme** (Department of Basic Education) makes provision for daily meals for children in schools serving the poorest communities in South Africa.

**South Africa's National Strategic Plan for a Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa (CARMMA)** (Department of Health, 2012) describes the national strategic plan to reduce maternal, perinatal and under-5 mortality rates.

**The Strategic Plan for Maternal, Newborn, Child and Women's Health (MNCWH) and Nutrition in South Africa 2012-2016** documents the State's priority strategies for improving women and children's health and reducing maternal, child and infant mortality rates. Priority interventions include: 1) the provision of iron, folate and calcium supplementation for all pregnant women; 2) the promotion of early and exclusive breastfeeding until six months of age through breastfeeding counselling and a supportive post-natal visit for all within six days of birth; 3) continued breastfeeding until the age of two years, with the introduction of appropriate complementary foods from the age of six months; and 4) interventions at community level to strengthen knowledge and practices of infant and young child feeding (Department of Health's MNCWH Strategic Plan, 2012 (a)).

**Regulations relating to Foodstuffs for Infants and Young Children (draft for public comment)** (Department of Health, 2012) limits the marketing and provision of complementary infant foods.

Accumulatively, the preceding policies, laws and strategies provide the following interventions:

1. Micronutrient supplementation for pregnant women (iron, folate and calcium), infants and children (vitamin A, thiamine, niacin, riboflavin and pyridoxine) through the primary health care system in the form of supplements and the fortification of maize and iodised salt in terms of the national food fortification programme.
2. Health facility and community-based promotion, counselling and support for exclusive breastfeeding for six months and continued breastfeeding until the age of two years, complemented by appropriate complementary feeding from the age of six months.
3. Support and counselling to pregnant and breastfeeding mothers on safe infant feeding practices for infants born to HIV-positive mothers to prevent the post-partum transmission of HIV from mother to child through breastfeeding, along with the provision of antiretroviral therapy (ART) for HIV-positive breastfeeding women and the prophylaxis Nevirapine for their infants.
4. Infant and child feeding education and support provided to mothers and caregivers through the primary health care system, such education and support being focused on good nutritional practices.
5. Growth monitoring and promotion for children from birth to the age of five years through primary health clinics and through community-based growth monitoring and nutritional support.
6. Nutritional/food supplementation in the form of fortified maize meal, high-energy drinks, milk formula and porridge for children that are failing to thrive and for HIV-positive children.
7. Deworming of children between the ages of 1 and 5 years.
8. Hospitalisation and treatment in cases of severe malnutrition.
9. School health services, including nutritional screening and education.
10. School feeding in the form of one meal per day in every school day in all primary schools in quintiles 1-3 and all quintile 1 secondary schools.
11. Household food production/small-scale farming support in the form of agricultural starter packs, start-up grants, food production information and agricultural support services.
12. Free basic water supplies to poor households.
13. Social assistance in the form of a Child Support Grant for children living in poverty between the ages of 0-18 years and an unemployment maternity insurance benefit.

### **3. Situation assessment of child nutrition in South Africa**

Assessing the impact of the preceding interventions is problematic because of the lack of reliable, timely, accurate and routinely collected nutrition data (Nicol & Bradshaw, 2010) (Harrison, 2009) (National Perinatal

Mortality and Morbidity Committee, 2011).

The data that is available does show an improvement in the state of child nutrition since 2002. However, it also shows that malnutrition remains a problem of significant and alarming proportions, and that rates of overweight and obesity are on the rise. Moreover, it shows that the prevalence of under- and malnutrition, overweight and obesity follow historical poverty, racial, gendered and geographical equity faultlines (National Perinatal Mortality and Morbidity Committee, 2011) (Labadarios D, (Ed.), 2007) (Hendricks & Bourne, 2010) (Chopra, Whitten, & Drimmie, 2009).

The immediate causes of malnutrition globally and in South Africa are illness and insufficient food intake. In terms of food intake, the low rates of breastfeeding in South Africa contribute significantly to the problem. While there was a 90% breastfeeding initiation rate in 2003, by four months only 12% of mothers practised exclusive breastfeeding, and by six months, the rate dropped to 1.5% (Department of Health, 2007). Only 20% of HIV-positive women practise exclusive breastfeeding; 62% formula feed and 18% practise high-risk mixed feeding (Goga AE, Dinh AH, Jackson DJ, for the SAPMTCTE study group, 2012). This highlights the fact that in South Africa, mixed-feeding is the norm which displaces optimum breastmilk and introduces inferior food quality and possible contaminants.

Illnesses such as diarrhoea cause malnutrition. Children that are malnourished are at a greater risk of infection and the co-occurrence of malnutrition and infection increases the risk of child mortality (Hendricks & Bourne, 2010) (Medical Research Council, 2009). Malnutrition is a leading primary and underlying cause of child mortality in South Africa. A third of all children that died in 2008 were severely malnourished, and 60% of deaths that were recorded in 2008 were associated with malnutrition (National Perinatal Mortality and Morbidity Committee, 2011) (Medical Research Council, 2009).

The underlying causes of malnutrition are poverty, poor household food security, inadequate maternal and child care and poor access to basic health services and adequate sanitation, clean water and refuse removal (Hendricks & Bourne, 2010). In 2008, a third to half of children under the age of 5 years (the majority of whom live in under-serviced rural areas) lacked access to adequate housing and basic services, especially adequate sanitation. By 2010, the rate of access had not improved significantly, with 30% of households with young children lacking access to hygienic sanitation and 10% using unsafe water supplies. Access varies significantly between urban and rural areas, provinces and racial groups. For example, in the predominantly rural Limpopo province, almost 40% of all households lack access to this essential basic service. The majority of the 7 million children who lived in households without access to clean water on site in 2009 lived in the predominantly rural provinces of KwaZulu-Natal, Limpopo and the Eastern Cape – where 46%, 44% and 32% of children respectively lack access to adequate water services. Access to adequate water is marked by inequitable racial patterns, with only 55% of black African children, compared to over 95% of all other population groups, enjoying access. Access to sanitation for black African children is also much lower (61%) compared to Asian, coloured and white children (over 95%) (National Perinatal Mortality and Morbidity Committee, 2011) (Burns, 2012) (Lori Lake; Katharine Hall, 2012) (Katharine Hall, 2012). Similarly, children living in poverty, and especially in rural areas, have far less access to health services (National Perinatal Mortality and Morbidity Committee, 2011) (Katharine Hall, 2012).

The percentage of children living in food insecure households or households experiencing hunger dropped from 35% in 2002 to 16% in 2006, where after it increased to almost 20% in 2008, dropping again to 18.5% in 2010 (Statistics South Africa, 2011) (Hall, 2012). It is estimated that in 2009, only one in five households could meet their average dietary energy cost (Jacobs P., 2009). Food insecurity in the country is aggravated by increasing food prices (Hendricks & Bourne, 2010). Women-headed households and households with children, especially those living in traditional homesteads in rural areas, are the most vulnerable to increased levels of food insecurity in times of economic stress and increasing food prices (Jacobs P., 2012).

Child hunger is higher among children living in poverty. A total of 28% of children in quintile 1 experienced

hunger in 2010 compared to 3% in the wealthiest quintile. Likewise, hunger is more prevalent in certain provinces, most notably the rural provinces of the Northern Cape (36%), KwaZulu-Natal (25%), the Eastern Cape (22%) and the North West (22%). In addition, it is higher among black African children, 20% of whom experienced hunger in 2010 compared to 13% of coloured children, 5% Asian and 0% white children (Statistics South Africa, 2011) (Hall, 2012).

Stunting, a definitive sign of early onset and chronic malnutrition, is consistently prevalent among South Africa's most vulnerable children. In 2005, 18% of children between the ages of 1 and 9 years were stunted, with 5% being severely stunted. Poor children, younger children aged 0–3 years and those living in rural areas and in informal urban areas exhibit the highest levels of stunting (Labadarios D, (Ed.), 2007) (Berry & Hall, 2010).

In 2005, 5% of children between the ages of 1 and 9 years were wasted and 1% was severely wasted. Following a similar pattern to other indicators, these statistics are marked by provincial variations, and prevalence was higher in formal rural areas than in urban areas (Labadarios D, (Ed.), 2007) (Berry, Hall, & Hendricks, 2010) (Chopra, Whitten, & Drimmie, 2009).

Children in South Africa exhibit high levels of micronutrient deficiencies. In 2005, 17% of children between the ages of 1 and 3 years were iron-deficient, with children in urban areas most affected. Of significant concern are the high levels of Vitamin A deficiency. In 2005, 64% of children between the ages of 1 and 9 years were Vitamin A deficient, with 14% being severely deficient. Very high numbers of children in the rural Limpopo, KwaZulu-Natal and the Eastern Cape provinces and in Gauteng experienced high levels of deficiency (Labadarios D, (Ed.), 2007) (Lizette Berry; Katharine Hall; Michael Hendricks, 2010(a)) (L Berry, K Hall, M Hendricks, 2010(b)) (Chopra, Whitten, & Drimmie, 2009).

### **3a. A selection of policy and implementation gaps and innovations necessary to improve children's nutritional status**

Most commentators agree that South Africa has sufficient nutrition policies, subject to a few remaining gaps. However, there is also agreement that resourcing, capacity, management, targeting and delivery mechanisms are inadequate and/or ineffective to ensure their implementation at the necessary scale, and/or in marginalised vulnerable communities and households where the need is the greatest. Also lacking is a high level central coordinating national body and one national monitoring and evaluation system (Center for Global Development, International Conference on Nutrition, 2010) (Bhagowalia, Headey, & Kadiyala, 2012) (United Nations Children's Fund, November 2009) (Hendricks & Bourne, 2010).

#### ***Policy gaps***

On the policy front, the main concerns relate to the inadequacy of the current framework to address food and nutrition insecurity, the inadequacy of the targeting, and the inadequate levels of integration and mainstreaming of nutritional interventions at all levels of government and within all sectors.

The Integrated Food and Nutrition Security Strategy has been criticised for its failure to focus on food security for the most vulnerable and to protect vulnerable households in particular against increasing food prices and other determinants of food insecurity. A core concern is the lack of a national food security policy which is adequately resourced to recognise and respond to drops in food security levels in the country. Remedying the problem requires the development of a national Food Security Policy that is adequately resourced and which includes measures to stabilise the cost of basic staple foods. In addition, it requires the introduction of an appropriate monitoring system for early detection of increasing levels of food insecurity and effective support to the most vulnerable women-headed households – those with young children, and those in rural areas (Jacobs P., 2012) (Labadarios, Davids, Mchiza, & Weir-Smith, 2009) (Chopra, Whitten, & Drimmie, 2009) (Hall, 2012).

The current institutional arrangements supporting the integrated food security and nutrition strategy are

inadequate to facilitate effective integration and coordination. The coordinating structures must be strengthened, resourced and authorised to develop, pursue and monitor a national plan of action to secure food security and address malnutrition in South Africa (Chopra, Whitten, & Drimmie, 2009).

The monitoring of progress will remain a challenge until the inadequacy of current data and information management systems is improved. There is a need for one coordinated food security and nutrition monitoring and evaluation framework so as to secure quality, regular and reliable food security and nutritional data (Harrison, 2009) (Center for Global Development, International Conference on Nutrition, 2010) (Nicol & Bradshaw, 2010).

There is currently insufficient prioritisation of the first 1,000 days within national food security and nutrition policies and programmes. In addition, current policies do not require or secure sufficient levels of mainstreaming or integration of nutrition interventions into all health and other sectoral policies and programmes. Thus, for example, deworming, Vitamin A supplementation, growth monitoring and nutritional education have not been integrated into all health facility-based and community-based policies and programmes, or into complementary child well-being programmes such as ECD programmes. This creates an access/coverage gap, especially for the many vulnerable poor and rural children who live far from health services, who drop out of the immunisation programmes and hence discontinue their visits to health clinics after 12-18 months of age (Saloojee & Slemming, 2012) (Richter, et al., 2012) (Medical Research Council, 2009).

### ***Implementation gaps***

The design of the current nutrition policies and programmes largely matches the priority interventions recognised as effective and essential to addressing malnutrition in developing countries. However, inadequate implementation, brought about through the poor supply and demand of related services, results in patchy coverage which persistently excludes the most vulnerable households and communities.

On the supply side, coverage is poor because of health system failures, especially a lack of a competent cadre of health personnel to implement nutrition programmes, management failures (resulting in stock outs of nutritional supplements and food), and poor clinical capacity to implement the different components of the INP. The resolution of the problem requires the procurement and training of sufficient staff and strengthened management of child nutrition interventions in the health system (Medical Research Council, 2009) (Chopra, Whitten, & Drimmie, 2009) (Puoane, Sanders, & Ashworth, 2006) (Puoane, T; Cuming, K; Sanders, D, 2008) (Hendricks, Beardsley, Bourne, Mzamo, & Golden, 2007) (Hedricks, Roux, Fernandes, & Irlam, 2003) (National Perinatal Mortality and Morbidity Committee, 2011) (Schoeman, Hendricks, & Hattingh, 2006) (Karaolis, Jackson, & Ashworth, 2007) (Heikens, Amadi, Manary, Rollins, & Tomkins, 2008).

In addition, there is scope for targeted and increased supply of enriched complementary foods for children aged 6-24 months in households and communities that need these most, that is, those living in poverty and in geographically hard-to-reach places (Chopra, Whitten, & Drimmie, 2009).

Implementation is frustrated on the demand side, too. Many cases of malnutrition are caused by delayed and insufficient care at home. This is in turn caused by, inter alia, lack of knowledge and lack of access to resources and health care facilities, especially by caregivers living in poverty and in rural areas. This can and should be addressed through the provision of better community-based care and empowerment of caregivers through education on childhood nutrition and on the prevention, identification and measures to address malnutrition (Medical Research Council, 2009) (Hedricks, Roux, Fernandes, & Irlam, 2003) (Hendricks, Beardsley, Bourne, Mzamo, & Golden, 2007) (National Perinatal Mortality and Morbidity Committee, 2011).

Of particular note is the lack of knowledge and practice of exclusive and safe breastfeeding, brought about by insufficient breastfeeding support and the provision of poor quality and confusing breastfeeding advice and counselling (Chopra, Whitten, & Drimmie, 2009) (Kuhn, Sinkala, Thea, Kankasa, & Aldrovandi, 2009) (Shah,

Rollins, & Bland, 2005) (Doherty, 2007) (Marais, et al., 2010).

Two of the overarching recommendations to address supply and demand problems are the development and implementation at scale, especially in targeted marginalised communities, of community-based prevention, education and support interventions and massive education and awareness-raising campaigns regarding the value of correct feeding options (Chopra, Whitten, & Drimmie, 2009) (Faber, Schoeman, Smuts, Adams, & Ford-Ngomane, 2009) (Kuhn, Sinkala, Thea, Kankasa, & Aldrovandi, 2009) (Schoeman, et al., 2010). With regard to the latter, there is widespread concern at the lack of national communication interventions using pre-tested messaging related to breastfeeding, complementary feeding and the value and importance of micronutrient supplementation (Chopra, Whitten, & Drimmie, 2009) (Richter, et al., 2012).

#### **4. Guidelines and advice on the design, implementation, monitoring and evaluation of child nutrition policies and programmes**

**Combating Malnutrition in South Africa** provides a comprehensive review of national nutrition policies and programmes and the state of children and women's nutrition. It provides a series of recommendations for an improved policy, programmatic and institutional framework to remedy the current gaps so as to address malnutrition in South Africa (Chopra, Whitten, & Drimmie, 2009).

**What works? Interventions for maternal and child undernutrition and survival** documents the results of an analysis of the efficacy of common interventions that affect maternal and child undernutrition. The authors estimate the effects of undernutrition, and then, using a cohort model, determine the effect of selected interventions at high coverage to populations in 36 of the worst affected sub-Saharan and Asian countries (including South Africa) to reduce the impact of undernutrition. The results provide a coherent, credible body of evidence to guide policy-makers in the development and prioritisation of maternal and child-nutrition interventions to achieve optimal results (Bhutta, et al., 2008).

The 2012 **Copenhagen Consensus challenge paper: Hunger and Malnutrition** provides guidance to countries on priority investments and steps that ought to be taken to address hunger and malnutrition. These include: 1) accelerating global food production; 2) market innovations that reduce hunger; and 3) interventions to reduce micronutrient malnutrition and stunting (Hoddonott, Rosegrant, & Torero, 2012).

**Scaling up Nutrition: A Framework for Action** (SUN Framework) consolidates the internationally and regionally accepted emerging framework of key considerations, principles and priorities to address undernutrition and to mobilise increased investments in nutrition at a national level. The documents provide guidance on the necessary steps forward, including: 1) scaling up evidence-based cost effective interventions to prevent and treat undernutrition, with the highest priority given to the first 1,000 days; b) the adoption of a multi-sectoral approach; and c) scaled-up financial investments in nutrition (Center for Global Development, International Conference on Nutrition, 2010).

**A Montpellier Panel Briefing – Scaling Up Nutrition** provides guidance to countries on the steps that should be taken to action the SUN Framework (Montpellier Panel, 2011).

**Scaling Up Nutrition: What will it cost?** Provides an indication of the programme feasibility and what it will cost to develop and implement 13 proven highly cost-effective interventions in the high-risk countries (including South Africa) which formed the focus of Bhutta's review of what works in the 2008 Lancet's series on nutrition (Horton, Shakar, McDonald, Mahal, & Brooks, 2009).

UNICEF's **Tracking progress on child and maternal nutrition: A survival and development priority** provides an overview of the causes of malnutrition in the developing world and a synopsis of successful

interventions. It calls for government-led scaled-up implementation of successful interventions and provides guidance to policy-makers on the development of successful programmes extrapolated from a review of successful case studies ( United Nations Children's Fund, November 2009).

**ProPan: Process for the Promotion of Child Feeding** is an aid for the development of evidence-based food and nutrition policies and programmes for infants and young children to prevent early childhood malnutrition. It provides step-by-step guidance on the collection of data, the quantitative identification of nutritional and dietary problems and the collection of qualitative information on why these problems occur, and ends with a design and evaluation plan for interventions to address the problems (Pan American Health Organization, 2004).

**Understanding the impact of Food Prices on Children: How rising prices affect poor families: What can be done to protect children in the developing world** maps out the possible implications of rising food prices on children and provides guidance to policy-makers on the measures that can be implemented to reduce the impact (ODI, 2008).

**Micronutrient supplements for child survival (Vitamin A and Zinc)** documents a series of case studies of successful initiatives to ensure the reach of Vitamin A and Zinc supplementation for all children under the age of 5 years, including those lacking access to formal health-care settings. For example, in Bangladesh, the routine provision of supplements through the health system's immunisation programme is complemented by a twice-yearly Child Health Day approach. Similarly, Ghana uses Child Health Days – a combination of fixed site, outreach and community-based health days – to reach 80% of children aged 6-59 months with supplementation, deworming and other essential nutritional services (Horton, Begin, Greig, & Lakshman, 2008).

**Environmental Health and Child Survival** provides policy-makers with a review of the evidence between poor environmental health – poor sanitation, lack of access to clean water and hygiene practices – and malnutrition, morbidity and death in children. The report offers experiential guidance on the most expedient and cost-effective environmental health interventions that should be implemented to secure the nutritional status of pregnant women, infants and children, with a focus on the window of opportunity in the first 1,000 days from conception to 24 months old (The World Bank, 2008).

**WHO child growth standards and the identification of severe acute malnutrition in infants and children** provide a set of guidelines for the identification and management of severe acute malnutrition based on children's height-for-weight ratio (WHO and UNICEF, 2009).

**The Global Strategy for Infant and Young Child Feeding** is a guide for state action on appropriate and proven interventions to promote and support infant and young child feeding (World Health Organization and Unicef, 2003).

**Guiding Principles for Complementary Feeding of the Breastfed Child** provides guidance for the development of complementary feeding policies and programmes for breastfed children between the ages of 6 and 32 months (PAHO, 2003).

The **Guidelines on food fortification with micronutrients** assist countries to design and implement appropriate food fortification programmes (World Health Organization and the Food and Agricultural Organization of the United Nations, 2006).

**WHO Guidelines on HIV and infant feeding 2010: Principles and recommendations for infant feeding in the context of HIV and a summary of evidence** provide evidence-based guidance to policy-makers on which infant feeding practices to promote in the context of HIV (WHO Guidelines on HIV and Infant Feeding, 2010).

**WHO Guidelines on HIV and Infant Feeding 2010: An Updated Framework for Priority Action** provide guidance for the operationalisation of exclusive breastfeeding for six months, the promotion of timely, safe and appropriate complementary feeding, and the provision of feeding support and counselling for infants born to HIV-positive women (WHO Guidelines on HIV and Infant Feeding, 2012).

The WHO's new 2011 **Guideline: Vitamin A supplementation in infants and children 6–59 months of age** provides “global, evidence-informed recommendations on the use of Vitamin A supplements in infants and children 6-59 months of age for the reduction of morbidity and mortality” (World Health Organization's Vitamin A supplementation guidelines, 2011).

**Packaged Foods for Complementary Feeding: Marketing Challenges and Opportunities** provides experience-based guidelines on when government agencies and donors should consider support for the development and marketing of a packaged complementary food for children aged 6-24 months to enhance their nutritional intake and status (Porter & Shafritz, 1999).

## 5. Case studies

**Assessment of USAIDS/BASICS' Community Essential Nutrition Actions Program in Malawi** documents and reviews the implementation of an integrated package of cost-effective nutrition actions that are proven to reduce maternal and child undernutrition and associated mortality and morbidity in 31 villages in Malawi (Mary Ann Anderson et al, 2009).

**Training nurses to save lives of malnourished children** documents a qualitative case study of the impact of in-service training on the ability of nurses to detect and manage malnutrition, and their perceptions and attitudes towards severely malnourished children and their caregivers (Puoane, Sanders, & Ashworth, 2006).

**Why do some hospitals achieve better care of severely malnourished children than others? Five-year follow-up of rural hospitals in the Eastern Cape, South Africa** documents the different outcomes, and the reasons behind these, in 11 rural hospitals in the Eastern Cape after initiation of similar interventions to improve the quality of care of severely malnourished children. Despite the similarity of interventions, some of the hospitals reduced their case-fatality rates by half, and others did not. This study explores why there was such a difference (Puoane, T; Cuming, K; Sanders, D, 2008).

**Evaluation of community-based growth monitoring in rural districts of the Eastern Cape and KwaZulu-Natal provinces of South Africa** documents the results of an evaluation of a community-based growth monitoring intervention implemented by the Health Systems Trust (HST) as part of the Integrated Nutrition Programme. Overall, the report concludes that community-based growth monitoring provides access to services for marginalised communities, but urges that these interventions will only be effective if they receive systemic funding and support, and are appropriately staffed by adequately trained volunteers (Faber, Schoeman, Smuts, Adams, & Ford-Ngomane, 2009).

**Evaluation of the Growth Monitoring and Promotion Component of the Integrated Care for Children and Women at the Community Level project** documents the results of an evaluation of a community-based growth monitoring and promotion project targeting remote socio-economically deprived children under the age of two years and their caregivers in Guatemala. The authors conclude that these programmes should be strengthened as part of an integrated preventive health and nutrition programme in indigenous, poor and excluded communities (Hurtado, Bixcul, Bustamante, & Santizo, 2008).

Bland et al's **Intervention to promote exclusive breast-feeding for the first six months of life in a high HIV prevalence area** documents the results of a non-randomised intervention cohort study to increase exclusive breastfeeding rates for six months after delivery in both HIV- positive and negative women in KwaZulu-Natal, South Africa. The study concludes that "it is feasible to promote and sustain exclusive breastfeeding for six months in both HIV-positive and HIV-negative women, with home support from well trained lay counsellors" (Bland, Coutsooudis, & Newell, 2008).

**Interventions to improve intake of complementary foods by infants 6 to 12 months of age in developing countries** reviews the impact of 16 programmes in 14 countries to improve the quality and quantity of complementary food intake of children between the ages of 6 and 24 months. The countries that were included were Peru, the Dominican Republic, Indonesia, the Phillipines, Mali, Burkina Faso, Nigeria, the Gambia, Cameroon, Tanzania, Swaziland, Ghana, Niger and Senegal. The results of the study confirm that increasing complementary food intake in children between the ages of 6-12 months in developing countries reduces early childhood malnutrition during this crucial window of opportunity (Caulfield, Huffman, & Piwotz, 1999).

A further study – **Impact of maternal education about complementary feeding and provision of complementary foods on child growth in developing countries** – confirms, after a review of programmes in developing countries, that complementary feeding, together with parental/caregiver education and counselling on appropriate complementary feeding, food choices and preparation in developing countries, enhances the impact of comprehensive complementary feeding programmes (Imdad, Yakoob, & Bhutta, 2011).

**Agriculture, Income and Nutrition Linkages in India: Insights from a Nationally Representative Survey** explores the impact of nutrition-sensitive, as opposed to nutrition-specific, interventions on reducing child hunger and malnutrition in India. Nutrition-specific interventions address the direct causes of malnutrition, such as micronutrient supplementation, supplementary feeding and breastfeeding counselling. Nutrition-sensitive interventions address the underlying causes of malnutrition and can include food availability, water, sanitation, hygiene and gender issues. The results provide direction about the shape and scope of agricultural support most likely to impact positively on child nutrition (Bhagowalia, Headey, & Kadiyala, 2012).

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