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**UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
BUREAU FOR GLOBAL HEALTH
OFFICE OF HEALTH, DISEASE, AND NUTRITION USAID/GH/HIDN**

**CHILD SURVIVAL AND HEALTH GRANTS
PROGRAM (CSHGP)**

**TECHNICAL REFERENCE MATERIALS
2007**

Nutrition

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Abbreviations and Acronyms

ACTs	Artemisinin-Based Combination Therapies
AFP	Acute Flaccid Paralysis
AI	Appreciative Inquiry
AIDS	Acquired Immuno-Deficiency Syndrome
AIN-C	Atención Integral a la Niñez-Comunitaria
AMTSL	Active Management of the Third Stage of Labor
ANC	Antenatal Care
ARI	Acute Respiratory Infection
ART	Antiretroviral therapy
ARVs	Antiretroviral drugs
BCG	Bacille Calmette-Guerin
BCI	Behavior Change Interventions
BHR	Bureau for Humanitarian Response
CA	Collaborating Agency
CBD	Community-Based Distributor
CDC	Centers for Disease Control
CDD	Control of Diarrheal Disease
CHW	Community Health Worker
CIDA	Canadian International Development Agency
CORE	Child Survival Collaborations and Resources Group
CORPS	Community Oriented Resource Persons
CQ	Chloroquine
CSHGP	Child Survival and Health Grant Program
CSTS+	Child Survival Technical Support
CYP	Couple-Years of Protection
DHS	Demographic and Health Survey
DIP	Detailed Implementation Plan
DOSA	Discussion-Oriented Self-Assessment
DOT	Directly Observed Therapy/Direct Observation of Treatment or Therapy
DOTS	Internationally recommended strategy for TB control consisting of 5 components (originally Directly Observed Therapy, Short-course, although current DOTS strategy is much broader now than these two concepts)
DPT	Diphtheria-Pertussis-Tetanus
DST	Drug susceptibility testing
DTP	Diphtheria-Tetanus-Pertussis vaccine [N.B. International terminology has now shifted so that the convention is to use DTP rather than DPT.]
EBF	Exclusive Breastfeeding
EMNC	Essential Maternal and Newborn Care
EmOC	Emergency Obstetric Care
EOC	Essential Obstetric Care
EPI	Expanded Program on Immunization
FAO	Food and Agriculture Office (a UN body)
FE	Final Evaluation

FP	Family Planning
GAVI	Global Alliance for Vaccines and Immunization
GDF	Global Drug Facility
GEM	Global Excellence in Management
GFATM	Global Fund for AIDS, Tuberculosis, and Malaria
GIVS	Global Immunization Vision and Strategy
GLC	Green Light Committee
HB	Hepatitis B
HI	Hygiene Improvement
Hib	Haemophilus influenzae type b
HIF	Hygiene Improvement Framework
HFA	Health Facility Assessment
HIS	Health Information System
HIV	Human Immuno-deficiency Virus
HKI	Helen Keller International
HQ	Headquarters
HR	Human Resources
ICCIDD	International Council for the Control of Iodine Deficiency Disorders
ID	Intravenous Drug
IEC	Information, Education and Communication
IMCI	Integrated Management of Childhood Illnesses
IMPAC	Integrated Management of Pregnancy and Childbirth
IPT	Intermittent Preventive Treatment
IPTp	Intermittent Preventive Treatment in pregnancy
IR	Intermediate Results
IRC	International Rescue Committee
IRS	Indoor Residual Spraying
ISA	Institutional Strengths Assessment
ITM	Insecticide-Treated Material
ITN	Insecticide-Treated Nets
IUATLD	International Union Against Tuberculosis and Lung Diseases
IUD	Intrauterine Device
IYCF	Infant and Young Child Feeding
KPC	Knowledge, Practice, and Coverage Survey
LAM	Lactational Amenorrhea Method
LBW	Low Birth Weight
LQAS	Lot Quality Assurance Sampling
M&E	Monitoring and Evaluation
MCE	Multi-Country Evaluation
MCH	Mother and Child Health
MDR-TB	Multidrug-Resistant Tuberculosis (resistance to at least rifampin and isoniazid)
MIS	Management Information System
MNHP	The Maternal Neonatal Health Program
MOH	Ministry of Health
MPS	Making Pregnancy Safer
MSDSP	Mountain Society Development Support Program

MTCT	Mother-to-Child Transmission
MTCT/HIV	Mother-to-Child Transmission of HIV
MTE	Mid-Term Evaluation
MUAC	Mid-upper arm circumference
NACP	National AIDS Control Program
NGO	Non-Governmental Organization
NIDS	National Immunization Days
NMCP	National Malaria Control Programs
NMR	Neonatal Mortality Rate
NTP	National Tuberculosis Program
OPV	Oral Polio Vaccine
OR	Operations Research
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
PAHO	Pan American Health Organization
PEPFAR	President's Emergency Plan for Aids Relief
PHC	Primary Health Care
PLA	Participatory Learning and Action
PMTCT	Prevention of Mother-to-Child Transmission
PVC	Office of Private and Voluntary Cooperation
PVO	Private Voluntary Organization
QA	Quality Assurance
QI	Quality Improvement
RED	Reaching Every District
RBM	Roll Back Malaria
RDT	Rapid Diagnostic Test
RFA	Request for Applications
RTI	Reproductive Tract Infection
SBA	Skilled Birth Attendance
SCM	Standard Case Management
SDM	Standard Days Method
SIAs •	Supplementary Immunization Activities
SNL	Saving Newborn Lives Initiative
SP	Sulfadoxine-Pyrimethamine
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
TB	Tuberculosis
TBA	Traditional Birth Attendant
Td	combination of Tetanus toxoid and a reduced dosage of diphtheria
TRM	Technical Reference Materials
TT	Tetanus Toxoid
UNICEF	United Nations Children's Emergency Fund
USAID	United States Agency for International Development
VA	Vitamin A
VAD	Vitamin A Deficiency
VCT	Voluntary Counseling and Testing

VVM	Vaccine Vial Monitor
WHM	Weight for Height Measurement
WHO	World Health Organization
WRA	Women of Reproductive Age

Caretaker or caregiver: An individual who has primary responsibility for the care of a child. Usually, it is the child's mother, but could also be his or her father, grandparent, older sibling, or other member of the community.

Introduction to the Technical Reference Materials

The Technical Reference Materials (TRMs) are a product of the Bureau for Global Health, Office of Health, Infectious Disease, and Nutrition Child Survival and Health Grants Program USAID/GH/HIDN/CSHGP. This document is a guide (not an authority) to help you think through your ability and needs in choosing to implement any one technical area of the Child Survival and Health Grants Program. An attempt has been made to keep the language simple to encourage translation for use as a field document.

The TRMs are organized into modules that correspond to the primary technical areas and key cross-cutting areas that are central to the Child Survival and Health Grants Program. Each module is designed to reflect the essential elements to be considered when implementing the given intervention or strategy, important resources that grantees should consult when planning their interventions. Grantees are encouraged to download the specific modules that are most relevant to their proposed programs, or to download the entire package of TRM modules as a zipped file. The TRMs presently include the following modules:

Technical Areas

- Family Planning and Reproductive Health
- Maternal and Newborn Care
- Nutrition
- Immunization
- Pneumonia
- Diarrheal Disease Prevention and Control
- Malaria
- Tuberculosis
- Childhood Injury and Prevention

Cross-cutting Areas

- Capacity Building
- Sustainability
- Program and Supply Management
- Behavior Change Interventions
- Quality Assurance
- Monitoring and Evaluation
- Integrated Management of Childhood Illness (IMCI)
- Health System Strengthening

The present TRMs are regularly reviewed and updated with input from technical specialists in the USAID Collaborating Agency (CA) community, CORE Working Groups, and USAID technical staff. The date of revision of each specific TRM module can be found at the bottom of each page of the module. The TRMs are updated regularly to ensure that they remain up to date and reflect current standards relevant, and useful to the PVO community. With this in mind, we ask that each user of this document over the next year please keep notes and inform us on the usefulness of these references, information that should be amended or changed, additions and subtractions, and general comments. This will help us keep this document alive and responsive to your needs throughout the life of your programs. Please share comments and any (electronic) translated copies with Michel Pacqué at CSTS+, michel.c.pacque@macrointernational.com.

CSTS is grateful for the many contributions and reviews by staff of the different Offices of the Bureau of Global Health, and many of their collaborating agencies, the CORE working groups and most of all to our PVO partners who continue to use this guide and provide valuable insight on how to improve it.

New Additions to the Nutrition Module:

The 2007 edition of the Nutrition Technical Reference Material was updated slightly, utilizing the most recent research and guidance on strategies to improve nutritional status within Child Survival and Health projects. Updates include:

- Guidelines for Vitamin A supplementation
- Nutritional Issues for Pregnant Adolescents
- Infant feeding and HIV/AIDS
- Updated Reference Materials
- Updated section on Breastfeeding Support Groups
- Infant feeding definitions

Executive Summary

The Nutrition Module of the Child Survival and Health Grants Technical Reference Materials describes the Essential Nutrition Actions (ENA) approach and outlines the “why,” “what” and “how” for improved nutrition of vulnerable populations, including children under two years of age, and pregnant and lactating women.

Why the ENA approach? The ENA approach provides nutrition program managers with a holistic framework for preventing malnutrition. For years, health workers were given the task of improving nutrition with little guidance on what specific actions should be taken, on which groups to focus, and when the actions should be taken. Often the health workers had limited contacts with caregivers at health facilities and coverage of the target population was limited. The evidence-based ENA approach, derived directly from programmatic field experience, provides guidance on key actions to promote nutrition of women and children and attempts to improve the quality of services and the coverage of the priority target groups. Its major focus is on promoting seven key messages with the goal of preventing malnutrition, whereas earlier nutrition programs have often been curative.

The ENA approach integrates proven nutrition actions to improve Infant and Young Child Feeding (IYCF), micronutrient status, and the nutrition of women. Because these actions are closely inter-related, opportunities for program synergies are great. The approach expands the coverage of nutrition support by integrating these actions well beyond the traditional contact point of Growth Monitoring and Promotion (GMP) to other programs in the health and social sectors, taking advantage of every opportunity to promote Essential Nutrition Actions. In addition, the ENA approach naturally leads to the integration of nutrition support into other health sector initiatives such as IMCI programs, child survival, safe motherhood, and reproductive health programs

ENA: The “what.” The ENA approach focuses on seven proven nutrition actions to prevent malnutrition and improve the nutrition and survival outcomes of children under two years of age and women of reproductive age. These actions, described in the ‘what’ section of the module, include:

- Promotion of optimal breastfeeding during the first six months (e.g., timely initiation within one hour; exclusive breastfeeding for six months);
- Promotion of optimal complementary feeding starting at six months with continued breastfeeding to two years of age and beyond;
- Promotion of optimal nutritional care of sick and severely malnourished children;
- Prevention of vitamin A deficiency for women and children;
- Promotion of adequate intake of iron and folic acid and prevention and control of anemia for women and children;
- Adequate intake of iodine by all members of the household;
- Promotion of optimal nutrition for women.

The “what” section also includes a special section on nutrition in the context of HIV/AIDS.

ENA: The “how.” A major objective of the ENA approach is to extend the coverage of nutrition support beyond traditional, facility-based nutrition programs (e.g., growth monitoring and promotion) and integrate it into all relevant nutrition, health and social sector programs at the institutional and community levels. The focus is placed on using contacts at six critical periods in the life cycle of young children and women when nutrition support is most needed:

- During pregnancy
- At delivery and in the early neonatal period
- Post-natal and reproductive health contacts
- Well child visits
- Sick child visits
- Immunization contacts

Involving service providers and community groups in implementing the ENA approach helps to ensure that all channels are used to reach women and young children to promote the seven key action areas, as appropriate, using behavior change strategies. This could include, for example, community mobilization events, or even chance encounters with women and their families at the market, gathering wood or collecting water. While the approach encourages integration of as many actions as possible, a PVO may be able to directly address only certain nutrition actions in any given program. In these circumstances, it will be helpful to link with other community programs to achieve as much coverage as possible.

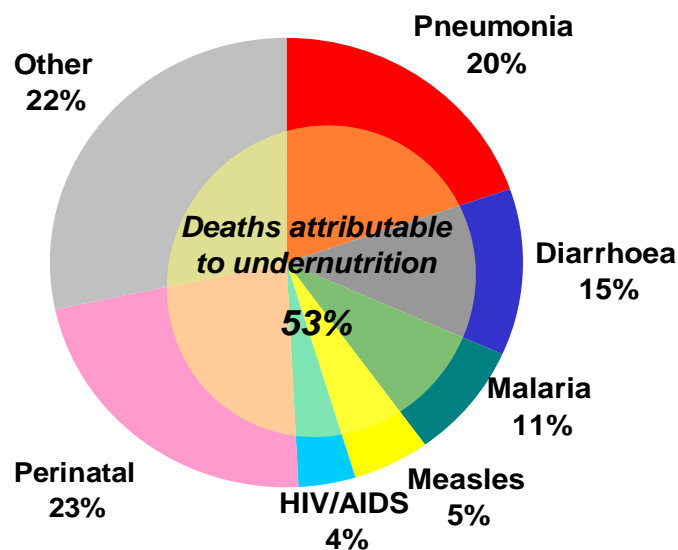
In addition to information on how to integrate ENA into community interventions in the nutrition and other sectors, the ‘how’ section will discuss program planning, formative research techniques and cross-cutting issues such as monitoring and evaluation, adult learning methodologies and anthropometry.

Nutrition in Child Survival and Health

Good nutrition is essential for adequate growth and cognitive development of children as well as for their ability to resist and fight infection. Undernutrition contributes to 53 percent of deaths of children under the age of five in the developing world (Figure 1). Among the principal causes of death in young children, 60.7 percent of diarrhea deaths, 52.3 percent of pneumonia deaths, 44.8 percent of measles deaths, and 57.3 percent of malaria deaths are attributable to undernutrition.¹ Up to 83 percent of these deaths are in children whose immune defenses and ability to recover are compromised because they are mildly or moderately underweight. Preventing malnutrition among women and children is an important step in reducing illness and death from common childhood diseases like malaria, pneumonia, measles and diarrhea, and to ensure that children grow and lead healthy, productive lives.

Figure 1.

Leading Causes of Death in Under Fives in Developing Countries and the Contribution of Undernutrition



Sources:

For cause-specific mortality: World Health Report 2003.

For deaths attributable to undernutrition: Caulfield et al. Undernutrition as an underlying cause of child deaths associated with diarrhea, pneumonia, malaria, and measles. *American J. Clinical Nutrition* 2004;80:193-8

The risk of nutritional deficiencies, while present throughout life, is heightened at different stages of the life cycle, such as infancy, early childhood, adolescence, pregnancy, and lactation. Deficiencies at one stage may have long-term consequences, such as lowered productivity or cognitive ability, as well as immediate consequences such as illness or death. The preventive nutrition interventions discussed here will focus on women during pregnancy and lactation and children during the first 24 (sometimes 36) months of life, the time when they are growing most rapidly and are therefore most vulnerable to irreversible deficits in growth and development.

¹ Caulfield et al. "Undernutrition as an underlying cause of child deaths associated with diarrhea, pneumonia, malaria and measles." *American Journal of Clinical Nutrition* 2004; 80; 195.

What: Essential Nutrition Actions²

Essential Nutrition Actions (ENA) (Box 1) is a set of affordable and highly effective nutrition interventions delivered in communities and health facilities to improve the growth and micronutrient status of children. Growth failure is concentrated in the antenatal period and the first two years of life. Therefore, reduction in child malnutrition depends on interventions during fetal development and early childhood. Women, particularly those who are pregnant or breastfeeding, and children younger than two years of age are the primary target groups of ENA. By applying elements of ENA, health and social development programs can reduce infant and child mortality, improve physical and cognitive growth and development, and improve productivity.

Box 1. The Essential Nutrition Actions:

- **Promotion of optimal breastfeeding during the first six months (e.g., timely initiation within one hour of birth and exclusive breastfeeding for six months);**
- **Promotion of optimal complementary feeding starting at six months with continued breastfeeding to two years of age and beyond;**
- **Promotion of optimal nutritional care of sick and severely malnourished children**
- **Prevention of vitamin A deficiency for women and children;**
- **Promotion of adequate intake of iron and folic acid and prevention and control of anemia for women and children;**
- **Adequate intake of iodine by all members of the household;**
- **Promotion of optimal nutrition for women**

I. ENA: Optimal Breastfeeding for Infants Age 0 through 5 Months

Why breastfeed?

Breastfeeding provides optimal nutrition for infants and young children. Breast milk's unique composition adjusts over time to provide an appropriate mix of calories, protein, essential fatty acids and micronutrients for a child. Breast milk is all that infants younger than 6 months old need to consume, and is an important source of essential nutrients for children 6-24 months old. The antibodies and enzymes found in breast milk boost children's immune systems, protecting them from illnesses such as diarrhea and acute respiratory infection, which are common causes of infant and child mortality. Compared to exclusively breastfed children in developing countries, non-breastfed children are seven times more likely to die of diarrhea and five times more likely to die of pneumonia in their first six months of life. Box 2 details the recommended practice for optimal exclusive breastfeeding.

² Excerpted/Adapted from: Diene, Serigne, "The Essential Nutrition Actions" *Global Health Link*, no 124 (Nov-Dec 2003, www.basics.org/pdf/ENA.pdf)

Box 2. Optimal Breastfeeding Practices

- **Early initiation of breastfeeding (e.g., within 1 hour of birth)**
- **Exclusive breastfeeding for first six months of life (e.g., no other liquids or foods); this is referred to as “age 0-6 months” or “age 0 through 5 months”, meaning that EBF is recommended for the first 180 days of life.**
- **Breastfeeding on demand, day and night (i.e., usually 8-12 times/day), for adequate time at each feeding; offer second breast after infant releases first**
- **Correct positioning and attachment of infant at breast**
- **Good breast health care**

Early initiation of breastfeeding

Beginning breastfeeding within one hour of birth ensures that the infant consumes colostrum, the yellowish first milk, which has nutritional, immunological, antibacterial and antiviral properties and is often referred to as a baby’s “first immunization.” This immediate suckling promotes milk production, helping to establish sufficient quantities. The skin-to-skin contact with the mother while feeding warms the baby, reducing the risk of hypothermia. It stabilizes the baby’s respiratory rate and blood sugar level while fostering early mother-infant bonding. Immediate breastfeeding also stimulates natural production of oxytocin, which stimulates uterine contractions that reduce maternal bleeding. However, to reduce the risk of maternal mortality from post-partum hemorrhage (PPH), Active Management of the Third Stage of Labor (AMTSL) is the intervention of choice. AMTSL is discussed in detail in the Maternal and Newborn Care module of the Technical Reference Materials (TRM)

Exclusive breastfeeding is key

In developing country settings, infants between 0 and 6 months old, who are not exclusively breastfed, are still twice as likely to die from diarrhea or pneumonia as infants of the same age who are exclusively breastfed.³ Exclusive breastfeeding also delays the return of post-partum ovulation and menstruation. The Lactational Amenorrhea Method (LAM), an efficacious family planning method, is discussed in detail in the family planning module of the Technical Reference Materials.

³ Black RE, Morris SS, Bryce J “Where and why are 10 million children dying every year?” *Lancet* 2003; 361: 2226-2234). <http://www.coregroup.org/resources/lancet.cfm>

Box 3. Infant Feeding Definitions⁴

Breastfeeding: The child has received breast milk direct from the breast or expressed.

Exclusive breastfeeding: The infant has received only breast milk from the mother or a wet nurse, or expressed breast milk, and no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines.

Predominant breastfeeding: The infant's predominant source of nourishment has been breast milk. However, the infant may also have received water and water-based drinks (sweetened and flavored water, teas, infusions, etc.), fruit juice; oral rehydration salts solution (ORS), drop and syrup forms of vitamins, minerals and medicines, and ritual fluids (in limited quantities). With the exception of fruit juice and sugar water, no food-based fluid is allowed under this definition.

Full breastfeeding: Exclusive breastfeeding and predominant breastfeeding together constitute full breastfeeding.

Complementary feeding: The child has received both breast milk and solid or semi-solid food.

Bottle-feeding: The child has received liquid or semi-solid food from a bottle with a nipple/teat.

Exclusive breastfeeding recommendations

The World Health Organization recommends that infants be exclusively breastfed for the first six months of life, beginning immediately after birth. Exclusive breastfeeding means that the infant consumes only breast milk. The baby should not be given water, tea, or any other liquids or food at all; anything other than breast milk, medicine or micronutrient supplements exposes the infant to contaminants, which can lead to serious illness and death. In the event that a mother cannot breastfeed, she can express the breast milk and store it without refrigeration for up to 8 hours, or in a refrigerator for up to 3 days for cup/spoon feeding of the infant.

Even exclusively breastfed infants may need additional micronutrient supplementation, especially if the mother is malnourished or the infant is low birth weight (<2500 gm). If supplements are needed to protect against iron (See iron/folic acid supplementation of infants, p. 27), zinc or vitamin D deficiencies, provide children with micronutrient supplements, not food. For other vitamin deficiencies (e.g., vitamin A), provide the mother with post-partum supplements or improve her diet.

⁴ WHO/UNICEF definitions, as reported in "What is the Definition of Breastfeeding?" Mirriam Labbok, MD, MPH, IBCLC; from BREASTFEEDING ABSTRACTS, February 2000, Volume 19, Number 3, pp. 19-21.

On-demand

This means a mother should breastfeed her infant as often as the infant wants to eat, usually 8–12 times per 24 hours, (every 2–3 hours), and sometimes more frequently. The infant should continue feeding until he/she releases the breast, so that he/she consumes the thinner, nutrient rich foremilk as well as the higher fat “hind milk.” Frequent feedings increase breast milk production, maintain milk supply and prevent breast engorgement.

Correct attachment, positioning, and breast health care

Mothers, especially first-time mothers, may need assistance and support to breastfeed properly and cope with the discomfort often experienced in the early stages of lactation. With proper positioning and attachment (Box 4) the infant will “suckle effectively, remove milk efficiently, and stimulate an adequate milk supply.”

Box 4. Proper Positioning for Breastfeeding

- **Hold baby close with head facing the breast**
- **Support the whole body in a straight line**
- **Baby’s mouth should open wide and cover whole nipple and most of areola**

More experienced women in the community or other mothers who are facing the challenges of exclusive breastfeeding may be helpful in guiding new mothers during the early days of breastfeeding. Correct attachment and positioning of the baby on the breast is the most important factor in reducing the likelihood of any breast problems like mastitis or nipple fissures.

Indicators for Monitoring and Evaluation of Breastfeeding:

Breastfeeding Initiation: Percent of children (0-11 months) who were put to the breast within one hour of delivery

Exclusive Breastfeeding Rate: Percent of children 0-5 months who were given breastmilk only in the last 24 hours

Colostrum: Percent of mothers who gave colostrum

Prelacteal feeds: Percent of mothers who did not give anything other than breastmilk in the first 3 days after birth

Breast problems

Should a woman develop mastitis - an inflammation of one or both breasts that is characterized by painful, red, swollen and hard breasts and often accompanied by fever - she should seek treatment promptly since there may be an infection. A breast infection can become a breast abscess that requires surgical draining, but this can almost always be prevented by treating mastitis promptly. Treatment of mastitis will include counseling on effective removal of milk from the affected breast (frequent, on-demand breastfeeding, or expressing the breastmilk if

breastfeeding is not possible), pain medications depending on the severity, and in the case of an infection may require an antibiotic. The advice given to an HIV-positive mother, however, is different as described below.

Mastitis and HIV. Cracked nipples, mastitis, sores and other breast problems may increase risk of HIV transmission from mother to child. To avoid transmitting HIV to her child, an HIV positive mother suffering from one of the above conditions should immediately stop breastfeeding from the affected breast and seek prompt care from a health service provider. She should also express and discard milk from the affected breast until it is healed, and continue to frequently feed her child from the healthy breast.

Breastfeeding misconceptions

Many women believe that they cannot produce enough milk to satisfy their babies' needs. In fact, a woman's body produces breast milk based on the frequency of suckling; the more a baby feeds, the more milk is produced. If this process is interrupted, often through introduction of other liquids and foods, then the milk supply will decrease. Increasing suckling frequency and duration can reinstate the cycle.

Further information on breastfeeding:

Infant Feeding Guidelines:

WHO/UNAIDS/UNICEF Infant Feeding Guidelines

http://www.unicef.org/nutrition/index_24811.html

General Breastfeeding:

Linkages. *Birth, Initiation of Breastfeeding and the First Seven Days after Birth*

<http://www.linkagesproject.org/publications/index.php?detail=18>

Linkages. *Recommended Practices to Improve Infant Nutrition During the First Six Months*

<http://www.linkagesproject.org/publications/index.php?detail=21>

Other Linkages Publications on Breastfeeding

<http://www.linkagesproject.org/technical/breastfeeding.php>

La Leche League Frequently Asked Questions

<http://www.lalecheleague.org/FAQ/FAQMain.html>

Proper Positioning

Linkages. *Recommended Feeding and Dietary Practices to Improve Infant and Maternal Nutrition*,

p. 3 <http://www.linkagesproject.org/media/publications/Technical%20Reports/recfeeding.pdf>

Mastitis

WHO. *Mastitis Causes and Management*

http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/WHO_FCH_CAH_00_13.PDF

Lactational Amenorrhea Method:

Family Planning Technical Reference Materials

<http://www.childsurvival.com/documents/TRMs/tech/Family%20Planning%20and%20Reproductive%20Health%202005.doc>

Linkages. *LAM users: Transition to other modern methods of contraception after six months postpartum*

http://www.linkagesproject.org/media/publications/Spotlight/Spotlight_LAM-Users.pdf

II. ENA: Optimal Complementary Feeding for Children 6 to 24 Months

Introduction

Starting at 6 months of age, infants need solid or semi-solid food in addition to breast milk to satisfy their nutritional requirements. They are developmentally ready to consume and properly digest solid and semi-solid foods and caregivers should begin complementary feeding, that is, offering children foods while continuing frequent, on-demand breastfeeding until the baby is at least 24 months old. Box 4 highlights optimal complementary feeding practices for children 6 to 24 months of age.

Complementary food should be introduced gradually, beginning with small amounts of pureed, mashed or semi-solid foods at six months, and slowly increasing the thickness and meal frequency. At about 12 months of age, children are able to eat foods selected from the family meals. The foods should be diverse and nutrient rich, with fortified food products when possible. The amount of complementary food needed will gradually increase over time, providing about 1/3 of calories to children 6-8 months, about 40-45 percent of calories at age 9-11 months, and about 60 percent of calories for a 12-23 month old. It is important to maintain breastfeeding until at least 24 months, because breast milk will continue to be a very important source of energy, high quality protein, essential fats, and micronutrients for infants and young children.

Box 5. Optimal Complementary Feeding Practices for Breastfed Children Age 6 to 24 Months*

- **Continue frequent, on-demand breastfeeding to 24 months and beyond**
- **Introduce complementary foods at age 6 months**
- **Prepare and store all complementary foods safely and hygienically**
- **Increase food quantity as child gets older**
 - **6-8 months: 200 kcal/day from complementary foods**
 - **9-11 months: 300 kcal/day from complementary foods**
 - **12-23 months: 550 kcal/day from complementary foods**
- **Increase frequency of feeding complementary foods as child gets older**
 - **6-8 months: 2-3 meals/day**
 - **9-23 months: 3-4 meals/day, 1-2 snacks/day (as desired)**
- **Increase food consistency and variety gradually as child gets older**
- **Feed a variety of foods daily to ensure adequate nutrient intake, including animal products, fortified foods, and vitamin A-rich vegetables and fruit.**
- **Practice responsive feeding**
- **Continue feeding during and increase feeding after illness**

* Adapted from: Linkages Project. *Facts for Feeding: Guidelines for Appropriate Complementary Feeding of Breastfed Children 6-24 months of age.*
http://www.linkagesproject.org/media/publications/facts%20for%20feeding/FFF_6-24_Eng_update-04-04.pdf

Active/responsive feeding

Research has demonstrated that actively feeding children may improve their dietary intake. This includes responding to infants' cues about hunger, feeding them patiently and encouraging, but not forcing them to eat. Feed the infants directly, talking to them and making eye contact, and help older children feed themselves. Try tempting children with different food combinations, especially if they refuse many foods.

Safe preparation and storage

To reduce the incidence of diarrhea, which peaks at 6-12 months of age, it is important that caregivers prepare and store complementary foods in a safe and hygienic way, including using clean or boiled water, so as not to expose children to pathogens. Good hygiene includes properly washing the hands of anyone who will be in contact with the food, including those preparing, feeding, and eating the food. Food should be served and stored in clean cups, bowls, and containers, and should not sit out uncovered. Liquids should be provided in a clean cup; bottles are difficult to keep clean. Lack of safe water, hygienic facilities, and time are all constraints to practicing good hygiene. However, teaching these practices, through carefully designed interventions, will help to lower diarrhea incidence, prevent malnutrition, and promote healthy growth of young children.

When breast milk is not the best option

Although breastfeeding until a child is 24 months or older is the optimal nutrition practice, this is not always possible. When the child's mother is HIV positive, she may decide, after counseling, to feed breast milk substitutes instead. A discussion of how to choose the best feeding option and alternatives to breast milk follows in the HIV and Infant Feeding Section pp. 39-45.

Table 2 summarizes best practices for feeding children aged 6 through 23 months for both breastfed and non-breastfed children based on the PAHO/WHO (2003) *Guiding Principles for Complementary Feeding of the Breastfed Child* for children from 6 through 23 months and WHO (2005) *Guiding Principles for Feeding Non-breastfed Children from 6 - 24 Months of Age*.

Indicators for Monitoring and Evaluation of Complementary Feeding:

IYCF Practice Indicator: Percent of infants and young children aged 6-23 months fed according to a minimum of appropriate feeding practices (see Table 1)

Table 1. Practices included in the IYCF Practice Indicator – see also KPC module 2

Feeding Practice	Breastfeeding status	
	<i>Breastfed</i>	<i>Non-breastfed</i>
Breastfed or Fed milk or milk products	Continued breastfeeding (A)	Fed milk or milk products (i.e. milk, dairy products or infant formula) (B)
Fed (solid/semi-solid foods) minimum number of times per day 6- 8 months 9-23 months	Two (C) Three	Four (D) Four
Fed minimum number of food groups⁵ 6-23 months	Three (E)	Four (F)

For further Information on Complementary Feeding:

General Information

Linkages Complementary Feeding Page

<http://www.linkagesproject.org/technical/compfeeding.php>

PAHO/WHO (2003). Guiding Principles for Complementary Feeding of Breastfed Child

http://www.paho.org/English/AD/FCH/NU/Guiding_Principles_CF.pdf

WHO (2005). Guiding Principles for Feeding of Non-breastfed Children 6-24 Months of Age

http://www.who.int/child-adolescent-health/publications/NUTRITION/ISBN_92_4_159343_1.htm

Sample Diets

WHO (2000). Complementary feeding: family foods for breastfed children.

http://www.who.int/child-adolescenthealth/publications/NUTRITION/WHO_FCH_CAH_00.6.htm

⁵ Based upon a 24 hour recall of food groups fed to the child age 6-23 months. The eight food groups are: 1. infant formula, milk other than breast milk, cheese or yogurt (Q.9C OR Q.10A OR Q.10O); 2. foods made from grains, roots, and tubers, including porridge, fortified baby food from grains (Q.9D OR Q.9E OR Q.10D OR Q.10F); 3. vitamin A-rich fruits and vegetables (and red palm oil) (Q.10E OR Q.10G OR Q.10H OR Q.10T); 4. other fruits and vegetables (Q.10I); 5. eggs (Q.10L); 6. meat, poultry, fish, and shellfish (and organ meats) (Q.10J OR Q.10K OR Q.10M OR Q.10S); 7. legumes and nuts (Q.10N); 8. foods made with oil, fat, butter (Q.10P).

Table 2. A Comparison of Guiding Principles for Feeding Breastfed and Non-breastfed Children from 6 to 24 Months of Age.

Guiding principles for complementary feeding of the <i>breastfed</i> Child, 6 to 24 months of age	Feeding of <i>non-breastfed</i> children from 6 to 24 months of age
1. Introduce complementary foods at 6 months of age (180 days), while continuing to breastfeed. (Breastfeed exclusively from birth to 6 months of age.)	
2. Breastfeed frequently and on-demand until child is 24 months or older.	
	<p>1. Fluid needs. Milk and other foods do not provide the non-breastfed infant with enough fluids. The infant should consume plain, clean water several times per day:</p> <ul style="list-style-type: none"> • 400-600 ml/day of additional fluids in a temperate climate • 800-1200 ml/day of additional fluids in a hot climate
<p>3. Practice responsive feeding.</p> <ul style="list-style-type: none"> • Feed infants directly and assist older children when feeding themselves • Be sensitive to hunger and satiety cues • Feed slowly and patiently, and encourage children to eat, but do not force them • If children refuse many foods, experiment with different food combinations, tastes, textures and methods of encouragement • Minimize distractions during meals • Talk to children during feeding and make eye contact 	<p>2. Practice responsive feeding.</p> <ul style="list-style-type: none"> • Feed infants directly and assist older children when feeding themselves • Be sensitive to hunger and satiety cues • Feed slowly and patiently, and encourage children to eat, but do not force them • If children refuse many foods, experiment with different food combinations, tastes, textures and methods of encouragement • Minimize distractions during meals • Talk to children during feeding and make eye contact

Guiding principles for complementary feeding of the <i>breastfed</i> Child, 6 to 24 months of age	Feeding of <i>non-breastfed</i> children from 6 to 24 months of age
<p>4. Safely prepare and store complementary foods.</p> <ul style="list-style-type: none"> • Wash caregivers' and children's hands before preparing and eating food • Store foods safely and serve immediately after preparation • Use clean utensils to prepare and serve food • Use clean cups and bowls when feeding children • Do not use feeding bottles because they are difficult to keep clean 	<p>3. Safely prepare and store complementary foods.</p> <ul style="list-style-type: none"> • Wash caregivers' and children's hands before preparing and eating food • Store foods safely and serve immediately after preparation • Use clean utensils to prepare and serve food • Use clean cups and bowls when feeding children • Do not use feeding bottles; they are difficult to keep clean
<p>5. Increase quantity gradually. Start at six months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding</p> <ul style="list-style-type: none"> • Approximate energy needs from complementary foods for infants with "average" breast milk intake in developing countries: <ul style="list-style-type: none"> ■ 6-8 months: 200 kcal/day ■ 9-11 months: 300 kcal/day at ■ 12-23 months: 550 kcal/day • Each child will be different, use responsive feeding to determine individual child's needs 	<p>4. Provide adequate amounts of food. Ensure that energy needs are met. These are approximately:</p> <ul style="list-style-type: none"> • 6-8 months: 600 kcal/day • 9-11 months: 700 kcal/day • 12-23 months: 900 kcal/day <p>This can be achieved through increased amount of food at meals, increased frequency of meals, or a combination of both.</p>
<p>6. Increase food consistency and variety gradually as the infant gets older, adapting to the infant's requirements and abilities.</p> <ul style="list-style-type: none"> • 6 months and older: pureed, mashed, semi-solid • 8 months and older: "finger foods" • 12 months and older: same foods as the rest of the family, but should be fed nutrient-dense food • Avoid foods that may cause choking 	<p>5. Increase food consistency and variety gradually as the infant gets older, adapting to the infant's requirements and abilities.</p> <ul style="list-style-type: none"> • 6 months and older: puréed, mashed, semi-solid foods • 8 months and older: "finger foods" • 12 months and older: same foods as family eats, but should be nutrient dense • Avoid foods of size and shape that may cause choking,

Guiding principles for complementary feeding of the <i>breastfed</i> Child, 6 to 24 months of age	Feeding of <i>non-breastfed</i> children from 6 to 24 months of age
<p>7. Meal frequency and energy density. Increase the number of times that the child is fed complementary foods as he/she gets older. Approximate number of meals per day for average, healthy, breastfed infant:</p> <ul style="list-style-type: none"> • 6-8 months: 2-3 meals/day • 9-11 months: 3-4 meals/day, 1-2 snacks/day as desired • 12-24 months: 3-4 meals/day, 1-2 snacks/day as desired 	<p>8. Meal frequency and energy density. For the average, healthy infant:</p> <ul style="list-style-type: none"> • Provide meals 4-5 times/day. • Provide additional snacks 1-2 times/day as desired. <p>If meals are low energy density or the child eats a small quantity of food, more frequent meals may be required.</p>

Guiding principles for complementary feeding of the <i>breastfed</i> Child, 6 to 24 months of age	Feeding of <i>non-breastfed</i> children from 6 to 24 months of age
<p>9. Feed a variety of foods to ensure that nutrient needs are met.</p> <ul style="list-style-type: none"> • Meat, poultry, fish or eggs should be eaten daily, or as often as possible. • Feed vitamin A rich fruits and vegetables daily and provide adequate fat. • Avoid drinks with low nutrient value such as tea, coffee and sugary drinks. <p>Limit amount of juice offered so as to avoid displacing more nutrient-rich foods</p>	<p>10. Feed a variety of foods to ensure that nutrient needs are met.</p> <ul style="list-style-type: none"> • Feed the child meat, poultry, fish, or eggs daily, or as often as possible. • Feed milk from acceptable sources: full cream animal milk (cow, goat, buffalo, sheep, camel), ultra-high temperature (UHT) milk, reconstituted evaporated (not condensed) milk, fermented milk or yogurt, and expressed breast milk (heat treated if HIV-positive). If child regularly consumes adequate amounts of other animal source food, he/she needs ~200-400 ml/day. If child does not regularly consume adequate amounts of other animal source food, he/she needs ~300-500 ml/day. Protein. If child does not consume adequate amounts of milk and other animal source food, feed him/her grains and legumes (together if possible) daily so that s/he consumes adequate quality protein. Calcium. If child does not consume adequate amounts of dairy products, provide other calcium-rich foods.⁶ Micronutrients. The child should consume a diet rich in vitamin A, vitamin C, riboflavin, vitamin B6, and folate.⁷Fat. Diets should have adequate fat content. If child consumes animal-source foods regularly, up to 5g of additional fats/oils may be needed. If child does not regularly consume animal foods, he or she may need 10-20g of added fat/oil, (unless already given fat-rich food, such as pastes or foods made from groundnuts, nuts or seeds) <p>Avoid giving drinks with low nutrient value, such as tea, coffee, and sugary soft drinks. Limit juice intake to avoid displacing more nutrient-rich foods.</p>

⁶ Other calcium rich foods include: Small fish with the bones (crushed), lime treated maize tortillas, soybeans, green leafy vegetables, cabbage, carrots, squash, papaya, guava and pumpkin.

⁷ **Vitamin A-rich foods include:** liver, fish, egg, red and yellow fruits and vegetables, red palm oil, vitamin A fortified oil or foods. **Riboflavin-rich foods:** Liver, egg, dairy products, green leafy vegetables, soybeans. **Vitamin B6-rich foods:** Meat, poultry, fish, banana, green leafy vegetables, potato, other tubers, peanuts. **Folate-rich foods:** Legumes, green leafy vegetables, orange juice.

Guiding principles for complementary feeding of the <i>breastfed</i> Child, 6 to 24 months of age	Feeding of <i>non-breastfed</i> children from 6 to 24 months of age
<p>11. Use vitamin-mineral supplements or fortified products for infant and mother as needed. Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed. In some populations, breastfeeding mothers may also need vitamin- mineral supplements or fortified products, both for their own health and to ensure normal concentrations of certain nutrients in their breast milk.</p>	<p>12. Use vitamin-mineral supplements or fortified products as needed. Use fortified foods or supplements (preferably mixed with or fed with food) that contain iron. If the child does not consume adequate amounts of animal-source food, the fortified food or supplement should also contain zinc, calcium, and B12. If vitamin A deficiency is prevalent in that country, children 6-24 months should receive a high-dose vitamin A supplement.</p> <p>Iron dosages:</p> <ul style="list-style-type: none"> • 6-11 months: 8-10 mg/day* • 12-24 months: 5-7 mg/day* <p>Vitamin A dosages:</p> <ul style="list-style-type: none"> • 6-11 months: 100,000 IU once • 12-23 months: 200,000 IU twice-annually
<p>13. Feed child during and after illness. Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, varied, appetizing favorite foods. After illness, feed more often than usual and encourage the child to eat more.</p>	<p>14. Feed child during and after illness. Increase fluid intake during illness, and encourage the child to eat soft, varied, appetizing favorite foods. After illness, feed more often than usual and encourage the child to eat more.</p>

Adapted from PAHO/WHO (2003). *Guiding Principles for Complementary Feeding of Breastfed Child*. For the full document: http://www.paho.org/English/AD/FCH/NU/Guiding_Principles_CF.pdf

Adapted from WHO (2005). *Guiding Principles for Feeding of Nonbreastfed Children from 6-24 months*. http://www.who.int/child-adolescent-health/publications/NUTRITION/ISBN_92_4_159343_1.htm

* These numbers reflect intakes recommended in Canada and the US. WHO Guidelines for iron and folate supplementation are being reviewed in the Summer of 2006

III. ENA: Optimal Nutritional Care of Sick Children

Introduction

Loss of body stores of micronutrients and energy, low absorption of food, poor appetite, and low nutritional intake associated with childhood diseases and conditions such as pneumonia, diarrhea, measles, HIV/AIDS, malaria, and fevers put children at risk of malnutrition. Conversely, malnutrition weakens the immune system, affecting the body's ability to resist infection. Some traditional caring practices, such as withholding food from a child with diarrhea, or providing nutrient-poor fluids that displace feeding may exacerbate the cycle of malnutrition and infection. Box 5 presents the appropriate nutritional management of sick and malnourished children.

Box 6. Optimal Nutritional Care of Sick Children

- Continue feeding and increase fluids during illness
 - Child under 6 months: increase frequency of exclusive breastfeeding
 - Child 6-24 months: increase fluid intake (e.g., including breast milk) and offer food
- Increase feeding after illness until child regains weight and is growing well
- For diarrhea: provide zinc supplementation for 10-14 days, according to WHO protocol (Table 3)
- For diarrhea: provide low osmolarity ORS to children over 6 months
- For measles: provide vitamin A treatment, according to WHO protocol (Table 4)

Continue feeding and increase fluids during illness

Even though an ill child is frequently less hungry, continued feeding will protect him or her from severe weight loss and malnutrition and help the child to recover from the illness. Continued breastfeeding will shorten the duration of diarrhea and help to prevent dehydration and growth faltering. Frequent breastfeeding will reduce the need for oral rehydration solution (ORS) and is often preferred by sick infants.

- For children *younger than six months*, continue to exclusively breastfeed, and increase the frequency of breastfeeding while they are sick. Do not offer sick children < 6 months any foods or fluids other than breast milk or ORS/ORT as prescribed by a trained provider.
- For children *6-24 months old*, increase fluid intake, including more frequent breastfeeding, and encourage them to eat soft, varied, appetizing, favorite foods.

Increase feeding after illness

To restore nutrients and weight lost during illness, a child should eat extra meals until he or she regains lost weight and is growing well. For children younger than six months this means more frequent breastfeeding. For children 6-24 months, this means continued breastfeeding and more frequent feeding and larger amounts of complementary foods.

Diarrhea: Zinc and ORS⁸

WHO recommends that all children with diarrhea be treated with zinc supplements, in combination with low-osmolarity oral rehydration solution (ORS), as soon as possible after the onset of diarrhea. Zinc supplements given for 10-14 days to a child with diarrhea will reduce the duration and severity of the episode, and lower the incidence of diarrhea in the following two to three months. Complete coverage of this treatment may prevent up to 88 percent of child deaths from diarrhea. See Table 3 for the recommended dosage.

ORS remains the most effective strategy for preventing dehydration and treating mild or moderate dehydration in young children with watery diarrhea. A new low-osmolarity ORS was introduced by WHO and UNICEF in 2004, and is being phased in to programs. It has been shown to reduce stool output, vomiting, and need for IV fluids. The use of homemade salt-sugar solution (SSS) is not recommended because the correct preparation of SSS at the household level has been found to be difficult, sometimes resulting in dangerously high concentrations of salt.

Table 3. WHO/UNICEF Recommended Zinc Supplementation for Treatment of Diarrhea

Age	Dose/Duration
< 6 months	10 mg/day for 10 or 14 days⁹
> 6 months	20 mg/day for 10 or 14 days

Persistent Diarrhea: Vitamin A to prevent deficiency¹⁰

Children with persistent diarrhea (e.g., diarrhea lasting for 14 days or longer with no signs of dehydration and no severe malnutrition) are at risk of vitamin A deficiency (VAD). If they have not received high dose vitamin A supplementation in the previous 30 days, they should receive one age-appropriate high dose vitamin A supplement (Table 4). If the child has signs of clinical VAD, including xerophthalmia, refer to treatment protocol on page 21.

Table 4. Vitamin A Dosage for Children with Persistent Diarrhea

Age	<6 months	6-11 months	12 -60 months
Dosage	50,000 IU	100,000 IU	200,000 IU

Measles: Vitamin A treatment¹¹

Vitamin A therapy is given to all children with measles unless the child has already received a preventive dose vitamin A supplement within the previous 1 month. Give two doses; the first

⁸ WHO/UNICEF Joint Statement. Clinical Management of Acute Diarrhea. May 2004.

http://www.who.int/child-adolescent-health/New_Publications/CHILD_HEALTH/Acute_Diarrhoea.pdf

⁹ The duration of 10 or 14 days depends on local products and policies. The WHO recommendation in “The treatment of diarrhea – a manual for physicians and other senior health workers” is 14 days. However, some manufacturers may make a 10-day tablet pack for promotion in a local or countrywide setting.

¹⁰ WHO/UNICEF/IVACG Task Force (1997). *Vitamin A Supplements: A guide to their use in the treatment and prevention of vitamin A deficiency and xerophthalmia*, page 5.

<http://www.sightandlife.org/booksAll/BooksPDF/18txSupplements.pdf>

¹¹ Excerpted from: WHO (2000) *Management of the Child with a Serious Infection or Severe Malnutrition*. pp 64-66. http://www.who.int/child-adolescent-health/publications/referral_care/Referral_Care_en.pdf

immediately on diagnosis, the second the next day. If the child shows eye signs of vitamin A deficiency or is severely malnourished, a third dose must be given 2–4 weeks after the second dose when the child comes for a follow-up (Table 5). Children with severe complicated measles require urgent reference for treatment to a hospital.

Table 5. Vitamin A Dosage for Children with Measles

Age	Dosage Day 1	Dosage Day 2	Dosage Day 14-28 (e.g., if clinical VAD or severely malnourished)
<6 months	50,000 IU	50,000 IU	50,000 IU
6-11 months	100,000 IU	100,000 IU	100,000 IU
12 -60 months	200,000 IU	200,000 IU	200,000 IU

Indicators for Monitoring and Evaluation of Feeding the Sick Child

Increased Fluids and Continued Feeding: Percentage of sick children age 0–23 months who received increased fluids and continued feeding during an illness in the past two weeks

Zinc: Percentage of children age 0-23 months with diarrhea in the last two weeks who were given zinc supplements

Further Reading on Nutritional Management of Sick Children:

Increased Feeding and Fluids

WHO, BASICS, UNICEF. Nutrition Essentials: A Guide for Health Managers, pp. 29-35
http://www.basics.org/pdf/NutritionEssentials_English.pdf

ORS

UNICEF Supply Division. Technical Bulletin #9. New Formulation of Oral Rehydration Salts with Reduced Osmolarity
<http://www.supply.unicef.dk/Catalogue/bulletin9.htm>

Zinc and Diarrhea

The MOST Project. Diarrhea Treatment Guidelines for Clinic-based Healthcare Workers
http://www.mostproject.org/ZINC/Zinc_Updates_Apr05/Diarrhoeaguidelines.pdf

The MOST Project. Zinc Publications and Reference Materials

<http://www.mostproject.org/whatsnew.htm#ZINC%20Publications%20and%20Reference%20Material>

Control of Diarrheal Disease TRM

<http://www.childsurvival.com/documents/trms/tech.cfm>

Vitamin A & Measles

WHO. Management of the child with a serious infection or severe malnutrition, pp. 64-65
http://www.who.int/child-adolescent-health/publications/referral_care/Referral_Care_en.pdf

IV. ENA: Prevention of Vitamin A Deficiency

Definition

Vitamin A is vital to human health for a number of reasons. It is: 1) critical to the body's immune system and the integrity of epithelial tissues (provide barrier to infection), 2) necessary for healthy growth and development and 3) essential to the health of the eye and the ability to see in low light.

Box 7. To Prevent Vitamin A Deficiency:

- Breastfeed children exclusively for the first 6 months, and continue breastfeeding until child is 24 months or older
- Treat xerophthalmia and measles cases with vitamin A, according to WHO guidelines (Tables 4 & 5)
- Provide high-dose vitamin A supplementation to children under 5, every 6 months according to WHO protocol (Table 7)
- Provide post-partum high dose vitamin A supplementation to women
 - If breastfeeding, within 8 weeks of delivery
 - If not breastfeeding, within 6 weeks of delivery
- Promote consumption of vitamin A-rich foods, including liver, fish, egg, and red and yellow fruits and vegetables
- Promote consumption of vitamin A-fortified foods

Impact of vitamin A deficiency (VAD)

Vitamin A deficiency is a public health problem in 118 countries and 127 million children less than five years of age worldwide are vitamin A deficient.¹² Because of vitamin A's role in the immune system, each year up to 647,000 vitamin A deficient pre-school aged children die from infections, such as measles and diarrhea, from which they would otherwise survive. Others suffer from more severe cases of respiratory and gastrointestinal diseases.¹³ It is also the leading cause of preventable blindness.

VAD is most common among young children because they have higher nutrient needs to support rapid growth, and a high incidence of infections. Illness reduces appetite, which reduces food intake, including that of vitamin A-rich foods. Bacterial and parasitic infections of the intestine reduce vitamin A absorption. Many infections, including diarrhea and measles, actually increase the body's requirements for vitamin A.

Pregnant and lactating women are particularly susceptible to vitamin A deficiency. It is estimated that vitamin A deficient women are 4.5 times more at risk for pregnancy related mortality. The estimates for the Global Burden of Disease also suggest that up to 20 percent of maternal deaths may be attributable to vitamin A deficiency.¹⁴ Maternal night blindness

¹² Rice, Amy et al. Vitamin A Deficiency. *Comparative Quantification of Health Risks Global and Regional Burden of Disease Attributable to Selected Major Risk Factors, Volume 2.* (WHO, 2004) p. 249

¹³ Ibid, p. 249.

¹⁴ Ibid, p. 249

prevalence may be useful for detecting households and communities of children at risk for VAD (<http://ivacg.ilsa.org/file/Nightblindness.pdf>) and it is a clear indicator for infants at risk of vitamin A-deficient breast milk consumption.

Treatment

Rapid treatment with vitamin A to improve the vitamin A status of individuals is critical in cases of xerophthalmia (e.g., the range of clinical manifestations of vitamin A deficiency seen in the eye), severe infectious episodes (e.g., particularly measles - see also p. 19), and severe protein-energy malnutrition. This is accomplished in general by oral administration of age-appropriate high-dose vitamin A supplements in the form of retinyl palmitate or retinyl acetate capsules. The WHO recommended treatment protocol for xerophthalmia is in Table 6.

Table 6: Vitamin A Dosage for Children with Xerophthalmia¹⁵

Age	Immediately (on diagnosis)	Next Day (can be given at home)	At Least Two Weeks Later (given by health service contact)
<6 months	50,000 IU	50,000 IU	50,000 IU
6-11 months	100,000 IU	100,000 IU	100,000 IU
12 -60 months	200,000 IU	200,000 IU	200,000 IU

Women of childbearing age **with severe xerophthalmia** (i.e., with acute corneal lesions and the risk of blindness) should be treated with the same dose as children over 12 months (200,000 IU on diagnosis, 200,000 IU the next day and 200,000 IU at least 2 weeks later). **HOWEVER**, all other women who are pregnant or could become pregnant must not consume high-dose vitamin A supplements because it puts the fetus at risk for birth defects.

Night blindness is an indicator of severe vitamin A deficiency (not to be confused with severe xerophthalmia) and increased risks of mortality for both the woman and the fetus. Night blindness diagnosed during pregnancy should be treated with daily oral doses of 10,000 IU daily or 25,000 IU weekly, for 4 to 8 weeks. However, these recommended low dose formulations are not widely available and in areas where they are not accessible, women should consume vitamin A rich animal source foods, especially liver, in order to increase their vitamin A intake.

Prevention

There are three common intervention strategies to prevent VAD: 1) vitamin A supplementation, 2) increased dietary intake of vitamin A-rich foods and 3) fortification of foods with vitamin A. Generally, varying combinations of all three strategies are needed.

Vitamin A supplementation of children

Vitamin A is a fat soluble vitamin that is stored in the liver for up to six months; therefore, periodically supplementing children (e.g., once every 4-6 months) with vitamin A is an effective strategy for combating VAD. Table 7 provides the suggested schedule. The capsules are

¹⁵ WHO/UNICEF/IVACG Task Force (1997). *Vitamin A Supplements: A guide to their use in the treatment and prevention of vitamin A deficiency and xerophthalmia*, page 6.
<http://www.sightandlife.org/booksAll/BooksPDF/18txSupplements.pdf>

relatively inexpensive. It is often most efficient to distribute supplements through health care delivery systems such as national immunization programs or Child Health Days or Weeks.

Table 7. Universal Preventive Vitamin A Supplementation of Children

Age Group	Dosage and Timing
< 6 months (non-breastfed only)	50,000 IU orally, once
6 through 11 months	100,000 IU orally, once
Children 12 months and older	200,000 IU orally, every 4-6 months

PVOs can assist the health sector by encouraging families to take their children to vitamin A distribution sites when supplementation is being offered. This can be done through promotional campaigns or active outreach activities. PVOs have developed creative ways to ensure vitamin A supplementation, as seen in the case study provided by Helen Keller International (Box 7).

Box 8. Case Study: Integrating Vitamin A Supplementation into Community-Directed Treatment with Ivermectin

Nancy J. Haselow, M.P.H.
Helen Keller International

With the imminent end of National Immunization Days in Africa, Helen Keller International (HKI) /Nigeria and HKI/Cameroon saw Community-Directed Treatment with Ivermectin (CDTI), a program to control symptoms of Onchocerciasis, as an opportunity to ensure sustainable, low cost, high coverage of vitamin A supplementation (VAS) in project areas that also had high vitamin A deficiency (VAD) prevalence among children (25 percent in Nigeria and 40 percent in Cameroon).¹

CDTI empowers communities to take charge of their own health care.² Communities work with front line health (FLH) workers to plan the campaign and select volunteer community-directed distributors (CDDs) to provide Ivermectin once per year for 15-20 years in order to eliminate Onchocerciasis as a public health problem. Considering that by 2010, CDTI will reach a total population of 90 million people in sub-Saharan Africa, CDTI+VAS has the potential to supplement over 11 million children at least once per year.³

HKI conducted pilot studies to test the integration and ensure that CDDs were prepared to deliver vitamin A capsules while delivering Ivermectin. HKI, community representatives, and Ministry of Health personnel planned carefully at the state, district and community health facility levels. Supplies and materials were ensured, and CDTI training modules and materials were adapted at three levels to include key vitamin A information and messages. HKI trained MOH staff as trainers to train FLH workers to educate community members and discuss the practical aspects of integrating the two interventions. CDDs explained the importance of vitamin A for child survival, that vitamin A would be given only to children 6-59 months of age and to women within 2 months post-partum, and that children would need a second dose in six months. CDDs also stressed the importance of exclusive breastfeeding. A monitoring plan was implemented to adjust the program and to collect information for scaling-up.

The evaluation showed high vitamin A supplementation and Ivermectin coverage achieved and maintained in communities. During the scaling-up phase in Cameroon, vitamin A supplementation coverage through CDTI was 77 percent among children 6-59 months of age and 90 percent among women post partum (during the two month campaign period); Ivermectin coverage increased to 74 percent in 2004 from 70.3 percent in 2003. In Nigeria, during the scaling-up phase, CDTI was able to provide supplements to 903,694 children 6-59 months of age (79.3 percent coverage) and to 155,654 women within six weeks post partum (58.9 percent coverage). Ivermectin coverage did not decline in the CDTI areas, but was maintained at over 80 percent of the total population, indicating again that CDDs are able to provide both interventions conjointly.

Based on extensive feedback from MOH and community implementers, HKI and the Provincial Onchocerciasis Coordinator refined training modules and produced IEC materials that address both Onchocerciasis and VAD. Some key messages in Cameroon were:

- Vitamin A is critical for child health and survival

- Almost 1 in 2 children suffer from VAD in this village
- Children 0-4 years and pregnant and lactating women are most vulnerable for VAD
- All children 6-59 months should receive a vitamin A capsule during the campaign and again in six months time from the nearest health post
- All women within 2 months post-partum should receive a vitamin A capsule
- Pregnant women should never take a high dose vitamin A capsule, but should eat more food rich in vitamin A
- Because mother's milk is very rich in vitamin A, to protect their infant, mothers should give the first milk and only give mother's milk for the first six months.

For further information: *How to Integrate Vitamin A Supplementation into Community-Directed Treatment with Ivermectin: A Practical Guide for Africa* can be found at http://www.hki.org/research/pdf_zip_docs/integ_vita_oncho_eng.pdf

¹ Cameroon National Vitamin A and Anemia Survey, 2000 and Nigeria Food Consumption and Nutrition Survey 2001-2003.

² Community Directed Treatment with Ivermectin, Report of a multi-country study, WHO 1996 and Empowering Communities, APOC.

³ How to Integrate Vitamin A Supplementation into Community-Directed Treatment with Ivermectin: A Practical Guide for Africa, HKI 2004.

Maternal vitamin A supplementation

The mother's diet will influence the vitamin A content of breast milk. Mature milk (e.g., around day 14 and beyond) in well-nourished mothers in developed countries contains almost twice the average vitamin A content of the mature breast milk of women in developing countries, where vitamin A deficiency is a public health problem.

After delivery. Breastfed infants of vitamin A deficient mothers may receive sufficient vitamin A to meet their immediate needs up to approximately 6 months of age, but not enough to build vitamin A stores necessary to prevent deficiency after six months of age when requirements increase due to infections and complementary feeding. In areas where vitamin A deficiency is a public health problem, providing mothers with a high-dose vitamin A supplement soon after delivery can increase the supply of vitamin A in breast milk and assist in building reserves as well as improving the vitamin A status of the mother (Table 8). Postpartum high-dose vitamin A supplements should only be given during the time period when the possibility of becoming pregnant again is unlikely (if breastfeeding, within 8 weeks of delivery, and if not breastfeeding, within 6 weeks of delivery). This is to avoid consumption of a high-dose of vitamin A during pregnancy. Fortifying food staples eaten by the mother may be another effective option for enriching breast milk with vitamin A.

During pregnancy. Women who are pregnant or could become pregnant must not consume high-dose vitamin A supplements because it puts the fetus at risk for birth defects. Night blindness is an indicator of severe vitamin A deficiency and increases risks of mortality for both the woman and the fetus. Night blindness diagnosed during pregnancy should be treated with daily oral doses of 10,000 IU daily or 25,000 IU weekly, for 4 to 8 weeks. However, these recommended low dose formulations are not widely available and in areas where they are not accessible, women should consume vitamin A rich animal source foods, especially liver, in order to increase their vitamin A intake.

Table 8. Maternal Vitamin A Supplementation Protocol from WHO¹⁶

Timing	Dosage
During lactation (after delivery): <ul style="list-style-type: none"> • If breastfeeding, within 8 weeks of delivery • If not breastfeeding, not later than 6 weeks after delivery 	Single dose of 200,000 IU

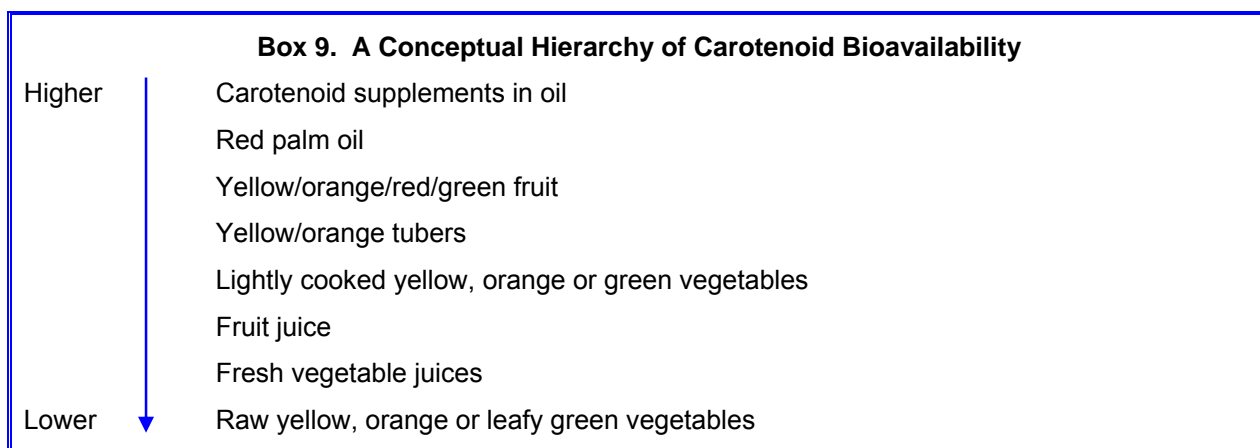
Food fortification

Fortification of commonly consumed foods such as sugar, oils, milk and flour can be very effective in reducing vitamin A deficiency. PVOs should work with decision-makers and advocate for national policies to fortify widely consumed and appropriate foods with vitamin A. When fortification policies are in place, PVOs can lead and coordinate activities to promote household use of fortified foods, thereby improving dietary consumption of vitamin A.

Dietary intake/diversification

For children 0 through 5 months, breastmilk is the best source of vitamin A. After six months, breastmilk continues to be an important source of vitamin A, and programs should support continued breastfeeding through the second year of life while also promoting appropriate, vitamin A-rich foods as well as adequate amounts of fat in children’s diets to enhance absorption of vitamin A. Infants who are not breast-fed and who are not given fortified breastmilk substitutes should receive a 50,000 IU supplement, preferably by about 2 months of age – otherwise at any time within the first 6 months of life. As an alternative, two doses of 25,000 IU can be given with an interval of a month or more in between.

Cultural food preferences should drive the nutritional education messages that a PVO uses to promote vitamin A-rich foods. In areas where sources of vitamin A are scarce, expensive, or seasonal, promoting home gardening, other agricultural activities and food storage and preservation activities is an essential part of a VAD prevention strategy.



¹⁶ WHO/UNICEF/IVACG Task Force (1997). *Vitamin A Supplements: A guide to their use in the treatment and prevention of vitamin A deficiency and xerophthalmia*, page 5. <http://www.sightandlife.org/booksAll/BooksPDF/18txSupplements.pdf>

March of Dimes (2002). *Nutrition Today Matters Tomorrow*.

Indicators for Monitoring and Evaluation of Vitamin A interventions:

Vitamin A Supplementation: Percentage of children 6-23 months who received a dose of vitamin A in the last 6 months (Card verified or maternal recall)

For more information on Vitamin A:

General information on Vitamin A

The MOST Project. *Vitamin A Facts for Health Workers*

<http://www.mostproject.org/PDF/vitAfacts.pdf>

Linkages. *Breastmilk: A Critical Source of Vitamin A for Infants and Young Children*

<http://www.linkagesproject.org/media/publications/facts%20for%20feeding/FFFvitA.pdf>

Vitamin A assessment

Sommer, Alfred *Vitamin A deficiency and its consequences: A field guide to detection and control* (WHO, 1995) <http://www.sightandlife.org/booksAll/BooksPDF/11bwnopic.pdf>

WHO. *Indicators of Vitamin A Deficiency*

<http://www.who.int/vaccines-diseases/en/vitamina/science/sci05.shtml>

Vitamin A supplementation

Goree Declaration

http://www.basics.org/new/jtb/pdf/goree_declaration.pdf

WHO/UNICEF/IVACG. *Vitamin A Supplements: A Guide to their use in the prevention and treatment of vitamin A deficiency and Xerophthalmia*

<http://www.sightandlife.org/booksAll/BooksPDF/18txSupplements.pdf>

MOST (2001). *Twice Yearly Vitamin A Supplementation: A Guide for Program Managers*

<http://www.mostproject.org/PDF/vitAguide2web.PDF>

IVACG (1998). *Safe Doses of Vitamin A During Pregnancy and Lactation*

http://ivacg.ilsa.org/file/a5_pregnancy.pdf

V. ENA: Prevention of Anemia¹⁷

Box 10. Prevention of Anemia

Promote intake of iron-rich foods, especially animal products and fortified foods.

Provide iron/folic acid supplementation to all pregnant women (Table 8)

- Continue supplementation for 3 months post-partum in areas with anemia prevalence >40 percent

Provide iron/folic acid supplementation for children (Table 8)

De-worm children >12 months, pregnant women after first trimester, and lactating women, according to WHO protocol (Table 10)

Prevent and control malaria

- Intermittent preventive treatment for pregnant women
- Insecticide treated bednets for women and children

Definition

Iron is a component of every cell of the body and it is essential for optimal physical health and cognitive development. Iron is needed for the manufacture of hemoglobin, and iron deficiency is the main cause of anemia in many settings, being estimated to cause 50 percent of anemia globally. Anemia is the condition of low levels of hemoglobin in the blood. This results in a reduced amount of oxygen being transported in the body leading to reduced energy levels, weakness, and reduced physical ability to work.

Impact

Anemia in pregnant women and girls is associated with maternal mortality, pre-term delivery, low birth weight (LBW), and increased perinatal mortality. Anemia in infants causes delay in cognitive development, and the consequences may be lifelong (i.e., even when the anemia is corrected). For children, anemia decreases their ability to learn and slows motor development. It diminishes the body's ability to fight infection and causes fatigue and apathy. It also causes lowered adult work productivity and decreased earning potential.

Determinants of anemia

Diets are often low in several nutrients simultaneously due to low intakes of animal products and micronutrient-rich and/or fortified foods. Iron deficiency is caused by inadequate dietary intake of bioavailable iron, increased iron requirements of pregnancy and periods of rapid growth (e.g., infancy and adolescence) and increased blood loss from hookworm, schistosomiasis, and other parasites or infections. Poor intake and/or¹⁸ absorption of other micronutrients also may contribute to anemia (e.g., vitamins A, B12, folate, riboflavin and C). In endemic areas, the

¹⁷ This section draws heavily from Galloway, R. (2003) *Anemia prevention and control: What works*. Washington DC: The World Bank, UNICEF, WHO, FAO, USAID, CIDA, and the Micronutrient Initiative. The web links for the two-part document are found in the final box in this section.

excessive red blood cell destruction due to malaria is responsible for much of the anemia in young children and pregnant women in their first and second pregnancies.

Addressing anemia through integrated programming

Due to the fact that iron deficiency may be only one cause of anemia, programs need to take a comprehensive, integrated approach to prevention and control of all-cause anemia. Refer to Harvey, P. (2004) *A Strategic Approach to Anemia Control*. MOST, USAID Micronutrient Program: Arlington Virginia, for a detailed discussion of an anemia control program framework. <http://www.mostproject.org/IVACG/A%20Strategic%20Approach%20to%20Anemia%20Control.pdf>

Food-based interventions

Where anemia is due to low dietary iron intake (e.g., low consumption of heme iron food sources such as meat, poultry, and fish), low consumption of iron-fortified foods, or low bio-availability diets (e.g., with few animal source foods), anemia prevention should be included in nutrition education.¹⁹ Nutritional messages encouraging intake of iron-rich foods, discouraging iron-inhibiting foods/fluids (e.g., tea with meals) and promoting iron absorption-enhancing substances (e.g., vitamin C-rich foods) may contribute to the effectiveness of a dietary approach.

From birth to 6 months of age, normal-weight, exclusively breastfed full-term infants receive enough iron from their own stored iron and from breast milk. Additional iron is required beginning at 6 months. Continue to breastfeed older infants (e.g., 6 through 23 months) for vitamins A and C, both important for anemia prevention, and introduce special iron-fortified complementary foods beginning at 6 months, as well as iron-rich foods consumed by the household.

Iron supplementation for pregnant women and girls

Pregnancy increases iron requirements in women and adolescent girls. Even in settings where animal products are consumed routinely, it is difficult to meet the requirements for iron during pregnancy. Iron/folic acid supplementation is recommended for all pregnant women (e.g., without screening) to prevent and treat anemia. In areas where the prevalence of anemia is greater than 40 percent, continued supplementation is recommended through three months after delivery (see Table 9).

Iron supplementation for children

WHO currently recommends universal supplementation of children with iron/folic acid for a number of age groups (see Table 9). Infants and young children are vulnerable because the iron content of unfortified conventional complementary foods is often insufficient to meet the high iron requirements of growing 6-24 month olds. All supplementation should be in line with national guidelines in the country in which the program is operating. A recently published study reported that universal supplementation of children in malarious areas may be problematic, and recommendations are likely to change. USAID is supporting WHO and UNICEF meetings to

¹⁹ Both animal and plant foods contain iron. However, animal-source iron is better absorbed by the body (20-30 %) than plant sources of iron (e.g., less than 5 percent is absorbed). Animal foods also offset the iron absorption-inhibiting effects found in plant foods such as cereals, so that eating small portions of animal products will enhance the total amount of iron absorbed from a meal that is composed of both animal and plant sources of the mineral.

discuss how guidelines might be modified.²⁰ The TRM will be updated if/when changes are made.

Table 9. Iron and Folic Acid Doses for Universal Supplementation in Vulnerable Groups

Group	Iron-Folic Acid Doses	Duration
Low birth weight infants (<2,500g)	Iron: 12.5 mg iron/day** Folic acid: 50mcg/day	2-24 months of age
6 to 24 month old children	Iron:12.5 mg iron/day Folic acid: 50 mcg/day	<ul style="list-style-type: none"> • 6-12 months of age where anemia prevalence is <40 percent*** • 6-24 months of age where anemia prevalence is >40 percent
24 to 59 month old children*	Iron: 20-30mg of iron/day	At least once/week for three months
School aged children (6-11 years*)	Iron: 30-60 mg/day	At least once/week for three months
Adolescents/women of childbearing age*	Iron: 60mg/day Folic acid: 400mcg/day	At least once/week for three months
Pregnant and lactating women	Iron: 60mg/day Folic acid: 400mcg/day	<ul style="list-style-type: none"> • Six months during pregnancy where anemia prevalence is <40% • Six months during pregnancy and three months postpartum where anemia prevalence is ≥40% • If it is not possible for women to take iron and folic acid for 6 months in pregnancy, supplementation should continue into the postpartum period or the dose should be increased to 120 mg/day.

* The need for universal supplementation in these groups may change if there are iron-fortified foods targeted to them.

** Iron dosage is based on 2 mg iron/kg body weight/day.

*** If the prevalence of anemia in children 6-24 months is not known, assume it is similar to the prevalence of anemia in pregnant women in the same population.

Source: Table adapted from Galloway, R. (2003) *Anemia prevention and control: What works*. Washington DC: The World Bank, UNICEF, WHO, FAO, USAID, CIDA, and the Micronutrient Initiative.

Original sources: WHO/UNICEF/UNU 2001 and Stoltzfus & Dreyfuss (1998).

²⁰ A randomized, controlled trial in Pemba, Zanzibar, where malaria is highly endemic, showed that daily iron supplementation of all children resulted in a statistical significant increase in hospitalization, and an increase in mortality (e.g., not statistically significant). The adverse outcomes appear to have occurred in children who were iron replete prior to supplementation. Further research needs to be done, and iron supplementation recommendations in malarious zones may change. (Sazawal et al Lancet vol 367 January 14, 2006 page 133.

For more detailed information on actions to prevent anemia in infants and young children:

The LINKAGES Project, *Facts for Feeding: Meeting the iron requirements of infants and young children*. http://www.linkagesproject.org/media/publications/facts%20for%20feeding/FFF_Iron.pdf

Low birth weight infants need additional iron starting at about 2 months of age to build iron stores and meet the requirements of their rapid growth. Non-exclusively breastfed infants also may need small amounts of additional iron, depending on the formulation of the breastmilk substitute they are being fed. The iron requirements of children with severe malnutrition and anemia need special attention (see Table 10).

It should be noted that there are no examples of successful large scale iron supplementation programs for infants and young children. Currently, iron/folic acid supplements for children are usually dispensed in a liquid form (e.g., syrup or drops) that is costly due to weight. New formats include sprinkles and spreads for application to complementary food. Dispersible tablets are another new technology that holds promise for cost effective supplementation of young children.

Iron supplementation for treatment of severe anemia in pregnant women and children²¹

Severe anemia is defined clinically as a low hemoglobin concentration.²² In operational settings, severe anemia may also be defined by extreme pallor or paleness of the conjunctiva of the eye, the nail beds and the palm. Once an individual child or woman has been determined to have severe anemia, provide iron/folic acid supplements according to the dosage schedule in Table 10. Severe anemia is a dangerous condition, and severely anemic pregnant girls and women should be referred to a qualified health provider for follow up. This is particularly important for girls and women in late pregnancy, for whom an unattended delivery would be extremely dangerous.

Table 10. Iron and Folic Acid Doses for Treatment of Severe Anemia in Women and Children

Group	Iron-Folic Acid Doses	Duration
Children < 2 years old	Iron: 25 mg iron/day Folic acid: 100-400 mcg/day	3 months
Children 2-12 years old	Iron: 60 mg of iron/day Folic acid: 400 mcg/day	3 months
Adolescents/ pregnant women	Iron: 120 mg/day Folic acid: 400mcg/day	3 months
Indications for supplementation: Presence of severe anemia as assessed by clinical signs, pallor or hemoglobin/hematocrit tests		
After completing three months of treatment for severe anemia, young children and pregnant women		

²¹ Stoltzfus RJ and ML Dreyfuss (1998). *Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia*. Washington, D.C.: ILSI Press. http://www.ilsa.org/file/b2_VUHUQ8AK.pdf

²² For cut-offs see WHO/UNICEF/UNU (1997) *Iron deficiency: Indicators for assessment and strategies for prevention*. Geneva: WHO

should continue on preventive supplementation regimen. Children with kwashiorkor or marasmus should be assumed to be severely anemic. Oral iron supplementation should be delayed until the child starts eating again and gains weight, usually after 14 days.

Source: Table adapted from Galloway, R. (2003) *Anemia prevention and control: What works*. Washington DC: The World Bank, UNICEF, WHO, FAO, USAID, CIDA, and the Micronutrient Initiative.

Original source: Stoltzfus & Dreyfuss (1998).

Challenges to effective supplementation programs

Ensuring an adequate supply of iron/folic acid supplements is a particularly important element of supplementation programs. Barriers to effective iron supplementation programs include supplement supply problems and the lack of high quality counseling and support for mothers about how to manage side effects, the purpose of iron/folic acid supplementation, and the need to take them on a daily basis.

Helminths and anemia

Hookworm and other helminth infections are common in many parts of the world. Hookworms attach to and feed upon the intestinal epithelium, causing bleeding and loss of blood and iron. Infection with hookworm can be a significant cause of anemia, particularly in areas where diets have little bioavailable iron or in individuals who have increased iron requirements because of growth or pregnancy. Treating helminth infections can result in large improvements in nutritional and health status (see Box 10).

Box 11.

According to WHO, deworming preschool children in rural Africa resulted in reduced mild wasting by 62 percent; reduced prevalence of small arm circumference in children < 30 months by 71 percent; reduced moderate anemia in children < 24 months by 59 percent; and improved appetite in all children by 48 percent. Mebendazole also had a positive effect on children's motor and language development.

Affected populations. School-age children are typically the population group with the highest prevalence of worm infection. However, where women do the bulk of the agricultural work, they may be the most affected. Preschool children are at higher risk of adverse impacts and greater risk of death than their older counterparts because of their smaller body mass and weaker immune system reactions to infection.

Hookworm control. There are two strategies for hookworm control: breaking transmission and deworming. Breaking the transmission requires disposing of feces safely (e.g., using pit latrines and wearing footwear). Deworming reduces worm loads and can have an immediate effect on the iron status of women and children.

Source: WHO (2005) *Deworming for Health and Development*. Geneva:WHO
http://whqlibdoc.who.int/hq/2005/WHO_CDS_CPE_PVC_2005.14.pdf

Treating hookworm and other soil-transmitted helminth infections. In areas where the prevalence of hookworm is greater than 20 to 30 percent, periodic (e.g., usually twice a year) deworming is indicated for children greater than 12 months of age. Pregnant girls and women can receive de-worming treatment after the first trimester, and lactating girls and women should receive treatment at least once a year, but optimally 2-3 times per year in areas of high endemicity. See Table 11 for specific dosages based on age and pregnancy status.

For program implementation of routine deworming of children:

WHO/UNICEF (2004). *How to add deworming to vitamin A distribution.*
http://whqlibdoc.who.int/hq/2004/WHO_CDS_CPE_PVC_2004.11.pdf

Schistosomiasis control. Schistosomiasis causes anemia and poor iron status in pregnant women and their fetuses.²³ In

endemic areas, the WHO recommends that all women and adolescent girls be treated with praziquantel at any time during pregnancy, as well as during lactation. In areas of high endemicity, there is no requirement for diagnosis but in areas of lower endemicity screening is appropriate and those judged to be infected should be treated as a high-risk group. Dosage is 40 mg Praziquantel per kg body weight, given in one dose.

Table 11. Recommended Deworming Regimen for Treatment of Soil-Transmitted Helminths

Treatment Group	Drug and Dosage				Duration
	<i>Albendazole</i> (400 mg tablet)	<i>Mebendazole</i> (500 mg tablet)	<i>Levamisole</i> (40 mg tablet)*	<i>Pyrantel</i> (250 mg tablet)*	
Children 12-23 months	½ tablet	1 tablet	2.5 mg/kg	10 mg/kg	At least annually; optimally 2 times/year**
Children 24 months and older	1 tablet	1 tablet	2.5 mg/kg	10 mg/kg	At least annually; optimally 2 times/year**
Pregnant women	1 tablet	1 tablet or 100 mg twice daily for three days	2.5 mg/kg; best if dose repeated on next two consecutive days	10 mg/kg; best if dose repeated on next two consecutive days	One treatment in second trimester. If hookworm prevalence is 50%, one dose in the each of the second and third trimesters.
Lactating women	1 tablet	1 tablet or 100 mg twice daily for three days	2.5 mg/kg; best if dose repeated on next two consecutive days	10 mg/kg; best if dose repeated on next two consecutive days	At least annually; optimally 2-3 times/year**

* Scales are needed to obtain the correct dosage for these drugs

** Where hookworm prevalence is 20-30 percent

Adapted from: WHO/UNICEF (2004) *How to add deworming to vitamin A distribution.* Geneva: WHO and Galloway, R. (2003) *Anemia prevention and control: What works.* Washington DC: The World Bank, UNICEF, WHO, FAO, USAID, CIDA, and the Micronutrient Initiative.

²³ WHO (2003) *Report of the WHO informal consultation on the use of Praziquantel and Albendazole/Mebendazole in children under 24 months.* Geneva: WHO found at http://whqlibdoc.who.int/hq/2003/WHO_CDS_CPE_PVC_2002.4.pdf and WHO (2005) *Deworming for Health and Development.* Geneva: WHO found at http://whqlibdoc.who.int/hq/2005/WHO_CDS_CPE_PVC_2005.14.pdf

Indicators for Monitoring and Evaluation of Anemia Prevention Interventions

Iron Supplementation of Pregnant Women: Percent of women who took iron supplements for 90 or more days during their last pregnancy

Malaria prevention and control. Preventing and treating malaria is essential for preventing and treating anemia where malaria is endemic. In high transmission areas, malaria control can decrease the prevalence of severe anemia in young children, the prevalence of anemia during first and second pregnancies, and the incidence of low birth weight. Depending upon local policy, for pregnant women and girls living in high malaria transmission areas, intermittent preventive treatment (IPT) and sleeping under insecticide treated bednets are recommended. In low transmission areas, treated bednets are promoted during pregnancy and the post-partum period.

Detailed information on recommended IPT for malaria in pregnant women can be found in the malaria module of the TRM and: http://siteresources.worldbank.org/NUTRITION/Resources/281846-1090335399908/anemia_Part2.pdf (p. 56).

For children, it is critical to help families recognize and seek appropriate care, increase compliance with antimalarials and antipyretics, and continue feeding and increase fluids during illness in order to reduce child morbidity and mortality from malaria. For all vulnerable groups, access to early diagnosis and quality case management of malaria is crucial for reduction of anemia. Refer to the Malaria module of the TRM for more detailed guidance.

For detailed guidance on the design and implementation of anemia prevention and control programs, refer to the recent two-part guide, *Anemia prevention and control: What works*:

Part I: Program guidance

http://siteresources.worldbank.org/NUTRITION/Resources/281846-1090335399908/Anemia_Part1.pdf

Part II: Tools and resources

http://siteresources.worldbank.org/NUTRITION/Resources/281846-1090335399908/anemia_Part2.pdf

VI. ENA: Prevention of Iodine Deficiency

Definition

Iodine is necessary for the production of thyroid hormones, which play an important role in the development and function of the brain and nervous system. Iodine deficiency can affect people at all stages of the lifecycle, but its most serious effects occur during stages of rapid growth (e.g., pregnancy, infancy, young childhood, adolescence). Infants, children, adolescents, and pregnant or lactating women are the population segments of greatest concern for intervention.

Box 12. Prevention of Iodine Deficiency

- Promote consumption of iodized salt
- Supplement pregnant women and young children in the short term with iodized oil capsules when fortified salt is not available

Impact

Iodine deficiency in pregnancy can result in stillbirth and irreversible brain and central nervous system damage in the infant. It is the single largest determinant of preventable brain damage, mental retardation (e.g., cretinism), and loss of IQ points in the world. During pregnancy and infancy, iodine deficiency contributes to child mortality. Children who are iodine deficient have a reduced learning capacity and lower school performance. Adults with iodine deficiency are less productive.

Iodine deficiency can be a public health problem anywhere. However, geographical regions with iodine depleted soil and/or lack of seafood in the diet, especially mountainous landlocked countries, are especially at risk for iodine deficiency. Symptoms of iodine deficiency range from apathy and lethargy in the milder stages to an enlarged thyroid gland (goiter) in the more advanced stages. WHO, UNICEF and the International Council for the Control of Iodine Deficiency Disorders (ICCIDD) estimate that approximately one-third of the world's population lives in iodine deficient environments; almost 120 countries have documented iodine deficiency disorders (IDD) as a problem.

Prevention

Iodine Fortification

Salt iodization is an effective and low cost intervention, and universal iodization is being promoted globally. Promoting and monitoring the consumption of iodine-fortified salt is practical for child survival and health programs and could have a measurable impact on child development. In program areas where iodine deficiency is a problem and where iodized salt is not available, PVOs can coordinate with UNICEF and work with Ministries of Health to advocate for: Legislation to support iodization, support for the industries involved in production of fortified salt, and oversight of quality production for universal iodization, as well as help with education and demand creation at the community level (see Box 12). Simple testing kits to confirm that salt is iodized are available through UNICEF country offices.

Indicators for Monitoring and Evaluation of Iodine Deficiency Prevention

Adequately Iodized Salt in Household: Percent of children aged 0-23 months living in a household with adequately iodized salt (≥ 15 ppm)

Treatment

Iodine Supplementation

In areas where iodized salt or other iodine-fortified products cannot be accessed, iodine supplementation can be provided to women before conception or as early in pregnancy as possible via a single dose of 400-600 mg (i.e., 2-3 capsules) of iodized oil. WHO guidelines conclude that treating pregnant women with iodine is safe at any stage in pregnancy, but should be administered as early as possible to maximize positive impacts on birth outcomes. Maximum protection against cretinism and neonatal hypothyroidism (e.g., insufficient production of thyroid hormone) is achieved when iodized oil is given before conception.

Box 13. Case Study: Delivery of Iodized Salt to Isolated Communities in Tajikistan

The Mountain Society Development Support Program (MSDSP), originally established under the Aga Khan Development Network, is an autonomous local NGO operating in Gorno-Badakhshan, the most isolated region of Tajikistan. The MSDSP procures and distributes good quality iodized salt at a uniform price to 468 village organizations (VO) who sell it at the community level. The VO earns a small profit of 3 dirhams per kg sold that provides funds to pay the shop assistant. All costs, including transport, are fully recovered. The delivery of iodized salt is smooth from MSDSP to the storage facilities of village organizations; reaching some of the smaller villages from the VO storage facilities can be challenging, especially if there is no available vehicle.

Local demand for iodized salt has been created by community health promoters, teachers, and health staff who promote its use. Mothers have learned to look for labels that identify iodized salt. The availability of iodized salt at the household level has increased dramatically. In 1998, 2.5 percent of households reported availability compared to 77 percent of households in 2004. Urinary iodine levels have also improved. In 2004, 69.3 percent of children had normal urinary iodine levels, compared to just 27 percent in 1998.

Information provided by Kate Straub (AKDN) and Mary Helen Carruth (Mercy Corps)

For further information on iodine:

Micronutrient Initiative. *Universal Salt Iodization Resource Kit*
<http://micronutrient.org/resources/default.asp>

International Communication Enhancement Center, Tulane School of Public Health and Tropical Medicine.

Ending Iodine Deficiency Now and Forever

http://www.micronutrient.org/Salt_CD/4.0_useful/4.1_fulltext/pdfs/4.1.6.pdf

VII. ENA: Optimal Nutrition for Women

Introduction

Adequate maternal nutritional status is a critical component of maternal and child health and survival. Anemia in mothers increases the risk of poor pregnancy outcomes such as increased maternal mortality from hemorrhage, low birth weight (i.e., weight < 2500 gm at birth), decreased infant iron and other micronutrient stores and increased infant morbidity and

mortality. Maternal deficiencies of some micronutrients such as vitamin A diminish the quality of breast milk and the micronutrient status of their infants. Low pre-pregnancy body mass index (BMI) or thinness and inadequate weight gain during pregnancy increase the risk of fetal malnutrition and low birth weight (LBW). These factors contribute to higher rates of neonatal and infant mortality as well as later deficits in child growth and development. Box 13 presents the key interventions that will contribute to optimal nutritional status in women.

Box 14. Essential Nutrition Actions for Women

- Consume more food during pregnancy and lactation
 - Pregnancy: 285 extra kcal/day (one extra serving of the staple food)
 - Lactation: 500 extra kcal/day (1-2 extra servings of the staple food)
- Increase protein intake during pregnancy and lactation (e.g., pulses, animal source foods, oilseeds)
- Provide iron/folic acid supplementation for all pregnant women
- Treat and prevent malaria
- De-worm during pregnancy in areas where helminths are a determinant of anemia
- Provide post-partum vitamin A supplementation
- Promote consumption of iodized salt

Appropriate Maternal Dietary Intake.²⁴

Pregnancy weight gain

Healthy pregnant women need an extra 285 kcal per day if their pre-pregnancy activity level is maintained. This translates into approximately one additional serving of the staple food (e.g., rice, cornmeal, millet, sorghum, yams, bread, etc.) each day. Optimal pregnancy weight gain should be gauged by women's pre-pregnant BMI.²⁵ According to the Institute of Medicine (1990), women who begin their pregnancy with a BMI of less than 19.8 must increase their daily energy intake to gain more than 12.5 kg. The recommendation for women with low pre-pregnant BMI (i.e. <18.5) is to gain 18 kg during pregnancy, or 2.0/kg/month. In some countries, pregnant women should be encouraged to reduce their physical workload in order to increase weight gain.

Table 12 provides recommended total weight gain during pregnancy and the recommended weekly weight gain during the second and third trimesters, depending on a woman's BMI at the beginning of the pregnancy. UNICEF and WHO recommend a minimum pregnancy weight gain for all women in developing countries of 6 kg (i.e., 1 kg per month during the second and third trimesters of pregnancy).

²⁴ Text for following sections is excerpted from Food and Nutrition Technical Assistance Project (2004) *HIV/AIDS: A Guide for Nutritional Care and Support*. Academy for Educational Development: Washington, DC.

²⁵ To calculate BMI, divide weight in kilograms by height squared in meters (kg/m²). For example, a 48.4 kg woman with a height of 155 cm or 1.55 m would have a BMI of 20.14 (BMI=(48.4/(1.55*1.55))).

Table 12. Recommended Weight Gain during Pregnancy

Pre-pregnancy Category BMI	Recommended Total Gain (kg)	Recommended Weekly Weight Gain, Second and Third Trimesters
BMI less than 18.5	18.0	Slightly more than 0.5 kg
BMI 18.5 to 19.7	12.5 to 18.0	Slightly more than 0.5 kg
BMI 19.8 to 25.9	11.5 to 16.0	0.5 kg
BMI 26.0 to 29.0	7.0 to 11.5	0.3 kg
BMI more than 29.0	less than 7	0.3 kg

Modified from original table by The Institute of Medicine (1990)

Energy requirements for lactation

A lactating woman needs to increase her energy consumption by about 500 kcal/day to meet the demands of lactation, particularly if she cannot draw from fat stores accumulated during pregnancy and if she is exclusively breastfeeding. Except in the most extreme cases, if a mother is malnourished, she will still be able to produce breastmilk of sufficient quantity and quality for the child, but over time her own health will be compromised unless she consumes more food. As in pregnancy, an additional one or two servings of the staple food can provide these calories.

Protein requirements

A pregnant woman requires more protein for the development of fetal and maternal tissue, including the placenta, and an increased red blood cell mass. The recommendation is approximately 71 g protein/ day. This is a 40 percent increase over the protein needs of a non-pregnant woman.²⁶ In addition to the consumption of staple foods, pregnant women should eat foods that provide protein, such as pulses (e.g., chickpeas, lentils, cowpeas, beans), oil seeds (e.g., pumpkin, sunflower, melon), and foods of animal origin (e.g., meat, eggs). Foods of animal origin provide protein, zinc, retinol, selenium, and iron that is more bio-available than the same nutrients derived from plant sources. Pregnant women need to eat a variety of foods to meet their macronutrient and micronutrient requirements.

Meeting Micronutrient Requirements for Pregnant and Lactating Women

Vitamin A. Please see ENA 4: Vitamin A, pp. 20-25 for more detailed information.

Iron. Please refer to pp. 26-32 on ENA 5: Iron and Anemia for more detailed guidance on iron.

Iodine. Please see pp. 32-34 for more information on ENA 6: Iodine.

²⁶ The National Academies. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. Washington D.C.: The National Academies, 2002.

Other micronutrients.

Additional micronutrients of particular importance to pregnant women are zinc, folate, calcium, and vitamin D. Eating a varied diet including animal products and locally available fruits and vegetables will help pregnant women meet their micronutrient requirements and fruits and vegetables will add fiber to their diet. Micronutrient-fortified staple foods such as wheat flour also help to increase the dietary sources of micronutrients for women. A daily multimicronutrient supplement containing up to one recommended dietary allowance (RDA)²⁷ of all essential nutrients may be advised when an adequate and balanced diet is not available.

For a thorough summary of maternal dietary needs with suggested food sources and health actions for women and their families to take in support of optimal maternal nutritional status, see the CORE/LINKAGES document, *Maternal nutrition during pregnancy and lactation* at:

<http://www.linkagesproject.org/media/publications/Tools/MaternalNutritionDietaryGuide.pdf>

Nutritional Issues for Pregnant Adolescents

Competing growth needs

Adolescents who are pregnant and their developing fetuses are at particular risk of inadequate nutrition due to:

- Competing caloric needs of the mother who is still growing and her developing fetus may limit the growth of both individuals
- Competing nutrient needs of the mother and her fetus may worsen maternal micronutrient deficiencies such as iron and calcium
- Higher likelihood of unplanned pregnancy among adolescents heightens the risk of folate deficiency during the periconceptual period which can result in neural tube defects in the fetus
- Poor adolescent self-care practices
- Limited control over resources to allow adequate dietary intake
- Limited access to antenatal care health services because of age and/or marital status
- Expectations of high energy expenditure for household tasks
- Substance abuse
- Gender-based violence

These factors can lead to inadequate pregnancy weight gain for a mother who may already be undernourished at conception; and children born to adolescent mothers are at greater risk of having low birth weight. In addition, incomplete maternal linear growth heightens the risk of obstructed labor. Children of adolescent mothers are also often at greater risk of poor nutritional care due to their mothers' lack of knowledge on how to care for infants and young children, increased risk of food insecurity, and limited access to health services.

²⁷ Recommended Dietary Allowance (RDA): The amounts of specific micronutrients needed to meet the nutrient requirements of approximately 98 percent of the healthy individuals in a specific age and gender group. RDA's guide individuals to achieve adequate nutrient intake aimed at decreasing the risk of chronic disease. They are based on estimating an average requirement plus an increase to account for the variation within a particular group.

Adolescents therefore should be provided with education and support services that take into consideration their special needs.

Unique micronutrient deficiency issues.

Concurrent pregnancy and growth worsen maternal micronutrient deficiencies such as iron and calcium. Folate deficiency during the periconceptual period can result in neural tube defects in the fetus. This is of concern to any woman, but the higher likelihood of unplanned pregnancy among adolescents (e.g., particularly unmarried girls) exacerbates the risk of the deficiency impacting on the birth outcome.

Nutrition and Health Interventions for Optimal Fetal Development

Impact of poor fetal development.

LBW babies have an increased risk of morbidity and death. Those that survive infancy are often handicapped for life. They perform less well in school and on cognitive tests than matched higher birthweight peers. There is also some evidence that individuals suffering from LBW are at higher risk for non-communicable diseases as adults (e.g., hypertension, coronary heart disease, obesity, diabetes mellitus) than normal birthweight counterparts. And growth is affected in children born too small. Even in industrialized countries, LBW children do not fully catch up, and are shorter and lighter as adults, potentially lowering productivity as well as jeopardizing reproductive outcomes.

Determinants of LBW include:

- Pre-pregnancy nutritional status
- Low maternal energy intake (i.e., quantity) and poor diversity of diet (i.e., quality)
- Excessive energy expenditure through heavy physical activity
- Infections (e.g., sexually transmitted infections and malaria)
- Substance abuse
- Exposure of the mother to secondary smoke inhalation and indoor air pollution
- Domestic violence

Women's nutrition in the context of HIV/AIDS²⁸

HIV-infected pregnant women and adolescents.

HIV-infected pregnant women and adolescent girls, like other people living with HIV/AIDS (PLWHA), have increased energy requirements due to infection with HIV. Attention to nutrition for HIV-infected pregnant women and adolescent girls is doubly important in order to maintain weight, prevent weight loss, and continue adequate weight gain during pregnancy. Improved nutritional status will help to maintain a strong immune system, decrease susceptibility to infections, and slow the progression to AIDS. More detailed information on the nutrition requirements of women with HIV can be found on page 39 and the FANTA publication listed below.

²⁸ This section is excerpted from Food and Nutrition Technical Assistance Project (2004) *HIV/AIDS: A Guide for Nutritional Care and Support*. Washington D.C.: Academy for Educational Development.

For more information about women’s nutrition, refer to:

Maternal Nutrition

Regional Center for Quality of Health Care and the LINKAGES Project (2001) *Essential health sector action to improve maternal nutrition in Africa*. LINKAGES/AED: Washington, D.C.

<http://www.linkagesproject.org/media/publications/Technical%20Reports/EHSAfullpaper.pdf>

HIV/AIDS and Women’s Nutrition

FANTA (2004) *HIV/AIDS: A Guide for Nutritional Care and Support (2004)*, pages 45-56.

http://www.fantaproject.org/downloads/pdfs/HIVAIDS_Guide02.pdf

Other Important Nutrition Actions: HIV/AIDS

Nutrition and HIV/AIDS

Background

HIV infection affects nutrition through increases in resting energy expenditure, reductions in food intake, nutrient malabsorption and loss, and complex metabolic alterations that lead to weight loss and wasting. Malnutrition both contributes to, and is a result of, HIV disease progression. HIV/AIDS compromises the immune system, and the resulting opportunistic infections can contribute to malnutrition. Malnutrition leads to immune impairment, worsens the effects of HIV, and contributes to a more rapid progression of the disease. Box 14 outlines the key actions for nutritional care and support for people living with HIV/AIDS (PLWHA).

Box 15. Nutritional Care and Support for People Living with HIV/AIDS

- Increase energy intake depending on age and stage of the disease (Table 13)
- Develop food-medication management strategies to prevent interactions between foods and HIV medications

Nutrient requirements

HIV-infected persons have specific nutrition needs, including increased energy intake that depend on the stage of disease progression.²⁹ WHO recommends intake levels for HIV-infected individuals based on the absence or presence of symptoms such as fever, diarrhea, weight loss and wasting, the age of the individual, and pregnancy status. A summary of these increased intake levels is in Table 13. Information on infant and young child feeding in the context of HIV follows in the next section.

²⁹ The definitions of HIV stage can be found in the Table 1.1 on page 12 of: *HIV/AIDS: A Guide for Nutritional Care and Support*. 2nd edition. Food and Nutrition Technical Assistance Project, Academy for Educational Development, Washington, DC, 2004. http://www.fantaproject.org/downloads/pdfs/HIVAIDS_Guide02.pdf

Table 13. Energy Requirement Increases for People Living With HIV/AIDS (PLWHA)

Population Group	HIV Phase (WHO definitions)	Dietary Requirements in Comparison to HIV-negative
Adults Pregnant Women* Lactating Women**	Asymptomatic (Stage 1)	10% increase in energy consumption
	Symptomatic (Stage 2, 3, or 4)	20-30% increase in energy consumption
Children	Asymptomatic (Stage 1)	10% increase in energy consumption
	Symptomatic (with no weight loss) (Stage 2)	20-30% increase in energy consumption
	Symptomatic (with weight loss) (Stage 3 or 4)	50-100% increase in energy consumption

* This is in addition to the extra energy (285 kcal/day), protein and micronutrients required by pregnancy.

** This is in addition to the extra energy (500 kcal/day), protein and micronutrients required by lactation.

Source: WHO, 2003.

HIV and Infant Feeding

Background

In regions where HIV prevalence is high and infectious disease and malnutrition are leading causes of child death, infant feeding has become a more complicated public health challenge. Mothers may transmit HIV to their children through breastfeeding. Approximately one of out every seven infants born to an HIV-infected mother and breastfed to 24 months of age will become infected through breast milk, but the majority of breastfed infants born to HIV-infected women will not become infected themselves.

Safe alternatives to breast milk are rarely available, and replacement feeding increases an infant's risk of diarrhea and malnutrition, two of the top killers of children younger than five years old. In the majority of countries with CSHGP-funded PVO child survival programs, under-five mortality from causes other than HIV/AIDS far exceeds AIDS-associated mortality. Breastfeeding protects infants and young children from infectious disease-related death, and the decision of whether or not to breastfeed must be made carefully. Families of infants in high HIV-prevalence settings need to be fully informed about the options for infant feeding and supported in their decisions (see Box 15).

Box 16. Infant Feeding in the Context of HIV/AIDS

If mother is HIV positive:

- Exclusively breastfeed for the first six months of life unless replacement feeding is Acceptable, Feasible, Affordable, Sustainable, and Safe, (AFASS)
- Transition to replacement feeding as soon as AFASS.
- At six months, if replacement feeding still not AFASS, continue breastfeeding with additional complementary foods and regularly assess mother and baby. All breastfeeding should stop once a nutritionally adequate and safe diet without breastmilk can be provided.
- If AFASS, avoid all breastfeeding and assist family in selecting appropriate breastmilk substitute
- Health services should follow-up all HIV-exposed infants and continue to offer counseling and support, whichever feeding decision they make

If mother is HIV-negative or does not know her status:

Follow ENA feeding recommendations (pages 4-16) including:

- Exclusively breastfeed for 6 months
- Introduce complementary food at 6 months and continue breastfeeding until the child is 24 months or older
- Maintain good breast health

Choosing an infant feeding method in the context of HIV/AIDS

According to the January 2007 *WHO HIV and Infant Feeding Technical Consultation Consensus Statement*, selection of the most appropriate feeding option will depend on an HIV-positive mother's individual circumstances, including her health status and the local situation, but should take greater consideration of the health services available and the counseling and support she is likely to receive.

HIV-negative mother or does not know status

Any woman who is not infected with HIV, or does not know her HIV status should exclusively breastfeed for six months, and then offer her child complementary foods in addition to breastmilk at least through 24 months of age, according to the *Guiding Principles* summarized on pages 9-16 of this document.

HIV-positive mother

Mothers who are HIV-infected should be counseled with information on risks and benefits to help them choose the best infant feeding option for their particular situation, which may be either breastfeeding or replacement feeding. Counseling contacts include:

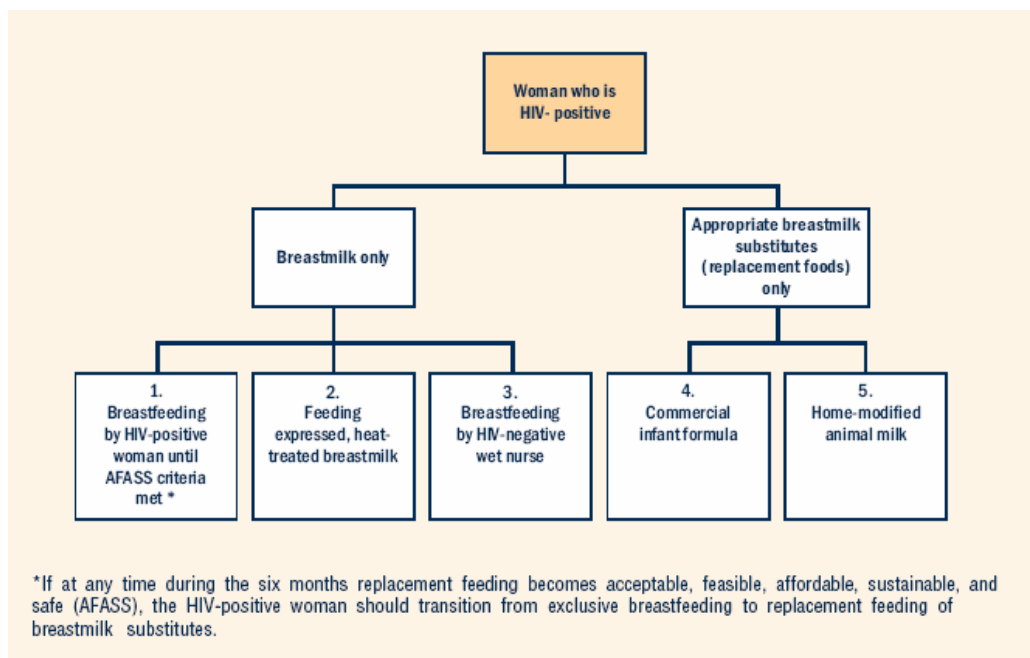
- After testing positive for HIV, but prior to delivery
- Within 10 days of delivery to assess ability of mother to implement her feeding choice
- Well-child and sick-child visits
- If/when a mother plans to change her feeding practices

Infant feeding options for HIV-positive women

Figure 2 represents the feeding options available to HIV-positive mothers, which are discussed in more detail below. Counselors should provide full information on infant feeding options and support mothers in implementing their choice. When possible, involve the mother's partner and other members of the family.

WHO/UNICEF/UNAIDS guidelines (see Box 16) state: *When replacement feeding is acceptable, feasible, affordable, sustainable, and safe (AFASS), avoidance of all breastfeeding by HIV-positive mothers is recommended; otherwise exclusive breastfeeding is recommended during the first months of life.*

Figure 2. Infant Feeding Options for HIV-positive Women for the First 6 Months



Source: The Linkages Project, *Infant Feeding Options in the Context of HIV*, May 2005
http://www.linkagesproject.org/media/publications/Technical%20Reports/Infant_Feeding_Options.pdf

Box 17. AFASS Criteria for Replacement Feeding

WHO/UNICEF/UNAIDS recommendations state that if replacement feeding meets the following requirements (AFASS), HIV positive women should use a breast milk substitute instead of breastfeeding.

Acceptable: The mother perceives no social/cultural barriers or risk of stigma/discrimination. There is no social pressure or the mother has support to cope with pressures to breastfeed.

Feasible: The mother/family has the time, knowledge, skills and resources to properly prepare the breast milk substitute and feed the infant 8-12 times daily.

Affordable: The mother/family, with community or health system support, can pay to purchase, produce, prepare, and store the replacement foods without compromising the health and nutrition of the family. Costs include ingredients, equipment, fuel, clean water, and medical expenses.

Sustainable: A continuous, uninterrupted, dependable supply and dependable system of distribution for all replacement feeding ingredients is available for the duration of replacement feeding.

Safe: Replacement foods are correctly and hygienically prepared and stored to ensure proper nutrition and prevent contamination. The person feeding has clean hands, uses clean utensils and feeds the child with a cup, not a bottle.

Adapted from Linkages: Infant Feeding Options in the context of HIV.

http://www.linkagesproject.org/media/publications/Technical%20Reports/Infant_Feeding_Options.pdf

Options for feeding infants (0 through 5 months) born to HIV-positive women³⁰

Exclusive breastfeeding followed by replacement feeding

If an HIV-positive mother decides to breastfeed, she should:

- Breastfeed *exclusively* for no more than six months.
- Prevent and manage breast problems and sores in the infant's mouth to prevent mother to child transmission (MTCT) during breastfeeding.
 - If breast becomes infected, feed from other breast and seek treatment
- Transition to replacement feeding, with a suitable breastmilk substitute when it is AFASS.
- AVOID mixed feeding (e.g., feeding both breastmilk and breastmilk substitutes). This will increase the risk of HIV transmission by irritating the stomach's lining and providing the virus easier access. It also increases the child's risk of other infections.

Box 18. Factors that Increase Risk of Mother to Child Transmission of HIV

- Mixed feeding in the first 6 months (e.g., combining breastfeeding with breastmilk substitutes)
- Breastfeeding duration (e.g., long term breastfeeding increases the risk of HIV transmission)
- Improper latching and positioning during breastfeeding
- Breast conditions (e.g., fissured and bloody nipples, mastitis, and breast abscess)
- Sores in infant's mouth
- High maternal viral load
- Maternal immune deficiency
- Maternal malnutrition
- New HIV infection in a breastfeeding mother (ie, a person is more infectious when newly infected with the virus)

Adapted from World Health Organization (WHO). *HIV and Infant Feeding: A guide for health-care managers and supervisors*, 2003.

Feeding expressed, heat-treated breastmilk

An alternative to exclusive breastfeeding is collecting expressed breastmilk and heat-treating it. This method of feeding requires resources for heating and storing the milk, time to prepare the feeds, and a supportive environment.

³⁰ Sources: *HIV/AIDS: A Guide for Nutritional Care and Support*. 2nd Edition. Food and Nutrition Technical Assistance Project, Academy for Educational Development, Washington, DC 2004, pp.63-65.

http://www.fantaproject.org/downloads/pdfs/HIVAIDS_Guide02.pdf Chapter 5

Key steps:

- Express breastmilk and collect in a clean container³¹
- Untreated breastmilk may be stored in a clean, covered container for up to 8 hours at room temperature and 72 hours in a refrigerator
- Bring breastmilk to a boil and cool immediately by standing the container in cold water
- Feed the baby within one hour of treating the milk to prevent spoilage
- Feed the infant the heat-treated breastmilk with a cup in order to avoid the risk of contamination from bottles

Breastfeeding by an HIV-negative wet nurse

An HIV- positive mother and family of a child may consider wet nursing by an HIV-negative woman. Key steps and concerns:

- The wet nurse must be found to be HIV-negative through voluntary HIV counseling and testing;
- The wet nurse must practice optimal exclusive breastfeeding;
- The wet nurse must practice safer sex practices to ensure that she does not become infected with HIV while breastfeeding the infant;
- The wet nurse will need to be available to feed the infant frequently and on demand throughout the day and night;
- The wet nurse must receive services to prevent and treat any problems such as cracked or bleeding nipples, mastitis, or abscesses that may occur.

Replacement feeding with appropriate breastmilk substitutes

HIV-positive mothers who choose not to breastfeed because replacement feeding has passed the AFASS requirements are advised to exclusively feed their infants with appropriate breastmilk substitutes such as commercial infant formula (the most nutritionally complete substitute for breastmilk) or home-modified animal milk (fresh, full cream, evaporated, ultra heat treated (UHT), or powdered).³²

The following fluids are not acceptable options for use in replacement feeding of infants because of their inadequate energy and micronutrient content: sweetened condensed milk, skimmed milk, coffee creamers, soy milk, fruit juices, sugar water, or diluted porridges.

Early cessation of breastfeeding

The risk of HIV transmission during breastfeeding continues for as long as breastfeeding is practiced. To decrease transmission risk, HIV-positive mothers should transition from exclusive breastfeeding to exclusive replacement feeding as soon as AFASS requirements are met. With

³¹ Guidelines for expressing breastmilk can be found in: Linkages Project (2005) *Infant Feeding Options in the Context of HIV*. Annex 1, p. 21

http://www.linkagesproject.org/media/publications/Technical%20Reports/Infant_Feeding_Options.pdf

³² Guidance on how to properly prepare commercial infant formula and home modified milks can be found in: Linkages Project (2005) *Infant Feeding Options in the Context of HIV*. pp. 9-12.

http://www.linkagesproject.org/media/publications/Technical%20Reports/Infant_Feeding_Options.pdf

counseling and support from health workers, a mother can determine the best time to transition. Because the transition is often more difficult for an HIV+ mother to shift from meeting energy requirements through breast milk alone to suddenly meeting them only with replacement foods, mothers will often need more support. Furthermore, a mother who ceases breastfeeding abruptly is more likely to have problems of her own, like engorgement. Detailed information on how to make a rapid transition from breastfeeding to replacement feeding can be found on page 66 of the FANTA document: *HIV/AIDS: Nutritional Care and Support*.

Options for feeding infants and young children (6-23 months) born to HIV-positive mothers.

By about six months of age, infants are able to digest undiluted animal milk, as well as semi-solid foods, making replacement feeding less difficult and less expensive for mothers than during their child's first six months. HIV-positive mothers have the following options for feeding their children from six months of age:

- Continued breastfeeding until transition to other breastmilk substitutes is AFASS, plus appropriate complementary foods;
- Expressing and heat-treating breastmilk plus appropriate complementary foods;
- Wet nursing by an HIV-negative woman plus appropriate complementary foods;
- Breastmilk substitutes (e.g., commercial infant formula, fresh animal milk, powdered full-cream or evaporated milk, UHT milk) plus appropriate semi-solid and solid foods; and
- Appropriate semi-solid and solid foods plus clean drinking water in circumstances where milk is not available.

See pp. 12-16 for more information on complementary feeding of breastfed and non-breastfed children.

Stigma associated with replacement feeding

In many communities, mothers who do not breastfeed or stop breastfeeding early may be suspected of being HIV-positive and may experience discrimination. Program managers should assess the socio-cultural acceptability of replacement feeding and work with the community and partners to support mothers who choose replacement feeding.

Further Information on Infant Feeding and HIV/AIDS:

General Information:

PVO CSHGP Technical Reference Materials: HIV
<http://www.childsurvival.com/documents/trms/tech.cfm>

FANTA (2004) *HIV/AIDS: A Guide for Nutritional Care and Support*.
http://www.fantaproject.org/downloads/pdfs/HIVAIDS_Guide02.pdf (General recommendations: pp. 15-16; pregnant and lactating women: pp. 45-56; infants and children: pp. 59-74)

URC (2004). *HIV & Infant Feeding: A Question and Answer Guide for Counselors*
<http://www.qaproject.org/strat/stratHIVjobaids2.html>

Rehabilitation of malnourished HIV + children:

WHO (1999). *Management of Severe Malnutrition: A manual for physicians and other senior health workers* <http://whqlibdoc.who.int/hq/1999/a57361.pdf>

WHO (2000). *Management of the child with a severe infection or severe malnutrition*
http://www.who.int/child-adolescent-health/publications/referral_care/Referral_Care_en.pdf
(chapters 7, 8, 9 pp. 80-112 offer more detailed guidance on managing severely malnourished children).

Infant Feeding Guidelines

WHO HIV and Infant Feeding Technical Consultation Consensus Statement
http://www.who.int/child-adolescent-health/publications/NUTRITION/consensus_statement.htm

WHO/UNAIDS/UNICEF infant feeding guidelines
http://www.unicef.org/nutrition/index_24811.html

Linkages (2005). *Infant feeding options in context of HIV*
http://www.linkagesproject.org/media/publications/Technical%20Reports/Infant_Feeding_Options.pdf

UNICEF, UNAIDS, WHO, UNFPA (2003). *HIV and infant feeding: A guide for health-care managers and supervisors*
http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/HIV_IF_MS.pdf

AFASS

Linkages. *AFASS assessment tool*.
<http://www.linkagesproject.org/media/publications/ENA-Handouts/Ethiopia/Theme4HO8-11.pdf>

Prevention of Mother to Child Transmission (PMTCT)

Linkages. *PMTCT Spotlight*
http://www.linkagesproject.org/media/publications/Spotlight/Spotlight_PMTCT_04-04.pdf

WHO and HHS/CDC. *PMTCT Generic Training Package*
<http://www.cdc.gov/nchstp/od/gap/PMTCT/>

Replacement Feeding

Linkages. *Transition to replacement feeding for HIV positive women who breastfeed*.
http://www.linkagesproject.org/media/publications/Spotlight/Spotlight_ReplacementFeeding_04-04.pdf

HOW: PLANNING FOR ENA PROGRAMMING

Introduction

The ENA approach is a comprehensive framework for prevention of malnutrition among vulnerable populations. Ideally, CSHGP implementers can work with partners in the public and private sectors to harmonize field approaches, preventive and therapeutic protocols, behavior change communication messages, and tools and materials for a consistent approach to the essential nutrition actions, delivered through multiple sectors. In addition to designing the nuts and bolts of a nutrition component or project, PVOs can play an active role in advocating among the various stakeholders in a community, district, or region, for consensus on harmonized ENA messages. They can also work to strengthen links between sectors and implementing agencies for increased coverage and improved synergy of nutrition and health resources.

A first step in the ENA approach planning process for a CSHG program is a situational analysis. This will help to determine the type and size of the nutrition problem(s), prioritize these problems, and assess the range and coverage of health and nutrition programs currently operating in the community to facilitate linkages between the CSHGP and other services.

One of the important operational elements of the ENA approach is the use of behavior change communication messages to enable caregivers to implement small, do-able actions in their homes to improve the nutritional status of infants and young children and women. The foundation of these messages is formative research, implemented during the planning phase of the nutrition component or project to identify current nutrition practices in a community/setting, barriers to improved practices, and the range of possible culturally acceptable solutions.

Situational Analysis

Situational analysis for ENA program planning

A PVO will begin planning for ENA programming by undertaking a situational analysis in partnership with key stakeholders such as health staff, health committee members, donors and other NGOs. The situational analysis will guide decision-making about the scope of the program: Will it be a stand alone nutrition program, or a component of a multisectoral child survival and health program? Because of resource constraints, prioritization of other health problems, infrastructure, service delivery capacity, geography, or security concerns a PVO may opt to begin a program by focusing on one or two nutrition actions and link to other programs and agencies for interventions to address the others. See Box 18 for an example of staggered integration of ENA into a health program.

The checklist in Table 14 is a summary of key questions that will assist CSHGP recipients in the design of ENA activities. The full checklist, developed by BASICS, and details on how to use it can be found on the BASICS website (link in footnote below).³³

³³ Source: BASICS II, 2003. Tina Sanghvi, Serigne Diene, John Murray, Rae Galloway, Ciro Franco. *Program Review of Essential Nutrition Actions: Checklist for Reviewing Nutrition Interventions in District Health Services* http://www.basics.org/new/tools/ena/Assessments/1%20Program%20Review%20of%20ENA_Checklist%20for%20DHS.pdf

Table 14: Situational Analysis for ENA

	Nature and magnitude of the problem	Nutrition activities in health facilities
<u>Key Questions:</u>	<ul style="list-style-type: none"> • Are stunting, wasting or underweight problems in this district? • Is maternal malnutrition widespread? • Are micronutrient deficiencies a problem in this district? • What are the child feeding and maternal dietary problems in this district? • Are there gaps in the available information? 	<ul style="list-style-type: none"> • What services are offered by health facilities (e.g., government, non-government, and private)? • Does health staff include key nutrition tasks in their routine practices? • What is the quality and coverage of nutrition services provided by health workers?
Data collected:	<ul style="list-style-type: none"> • Prevalence and severity of malnutrition • High risk groups, areas and seasons • Infant and young child feeding practices and maternal diets (see section on “formative research techniques,” p. 50) 	<ul style="list-style-type: none"> • Services provided by health facilities in the district • Nutrition content in maternal / reproductive health services • Nutrition content in child health services
	Nutrition activities at community-level	Nutrition in district health services
<u>Key Questions:</u>	<ul style="list-style-type: none"> • What health and nutrition services are offered in communities? • Do community workers include key nutrition tasks in their routine practices? • What is the quality of nutrition services provided by community workers? 	<ul style="list-style-type: none"> • What is the scale and coverage of district health services? • Are district resources adequate to manage nutrition activities? • Are district nutrition policies and guidelines adequate? • Are key nutrition activities integrated into all services?
Data collected:	<ul style="list-style-type: none"> • Sources of health care, commodities, diet/health counseling in the community • Nutrition content in prenatal care • Nutrition content at delivery and in postpartum care • Nutrition content of well-baby care • Nutrition content of sick child care • Community leaders’ awareness about and commitment to nutrition 	<ul style="list-style-type: none"> • Nutrition-related maternal/reproductive and child health policies and guidelines • Staff responsible for nutrition in district health services • Coverage of maternal and child health services • Training and allocation of health staff • How nutrition activities are integrated in routine health systems at the district level • Nutrition targets, resources and plans

The information collected during the situation analysis is used to form an action plan. Planning should be done with the involvement of key partners. A summary of questions to guide the action planning are below.

Key questions:

- What activities are needed in order to improve nutrition programming?
- Who will be responsible for implementing activities?
- What is the timetable for implementing activities?
- What resources are required and are they available?

Data collected:

- Current district planning activities
- Current nutrition programs/components at health facilities
- Current nutrition programs/components at the community level
- Existence/status of nutrition division within the Ministry of Health
- National budget line item for nutrition

**Box 19. Case Study. IRC Rwanda:
Staggered Integration of ENA in a PVO Child Survival Program**

The International Rescue Committee (IRC) has been working in southeast Rwanda (Kibungo) since 1994. A 1998 UNICEF survey showed that Kibungo had the highest rate of child underweight in the country at nearly 40 percent. The IRC started its growth promotion program in 2001 to respond to this situation, within the context of the Ministry of Health's Community Growth Promotion strategy and with funding from the USAID Child Survival and Health Grants Program. IRC and its partner health districts have gradually expanded the program from two to nineteen health centers. Nearly 400 trained community nutrition agents now run 118 community clinics, reaching almost 10,000 children a month.

From the start, mothers and other caregivers attending the community clinics asked for other services in addition to growth monitoring. Vitamin A, deworming (mebendazole), and ORS were added at little or no cost. Mebendazole proved the most popular, and all children one year or older attending the clinics receive the drug. Vitamin A for children has been less of a need given the Rwandese Ministry of Health's strategy of providing Vitamin A through twice-yearly campaigns. However, community clinics have proven an effective way of providing maternal vitamin A supplementation. Coverage for postpartum maternal vitamin A is significantly higher (65 percent vs. 43 percent, $p < .002$) in areas with community nutrition clinics, according to a 2005 survey. Staff at health facilities quickly realized that community nutrition clinics are good opportunities for outreach work, and currently all nutrition clinics serve as outreach sites. Immunization coverage runs about 10 percent higher in areas in which nutrition clinics are present. More recently, other activities have been added, including bednet distribution and cooking demonstrations.

Adding new interventions to growth promotion activities presents challenges. The inclusion of immunization activities tends to disproportionately attract infants, while year-old children who need nutrition screening are under-represented. Also, the provision of key inputs, particularly ORS, has been problematic in Rwanda. The IRC and its partners are taking steps to overcome these hurdles, including waiving the nominal weighing fee for older children, and purchasing ORS with local funds.

Overall, adding other nutritional services to community growth promotion clinics can be highly beneficial, increasing coverage for all of the interventions, and reducing delivery costs for both health providers and beneficiaries. More generally, the integration of multiple interventions during community growth promotion activities creates a sense of excitement and value for both caregivers and community workers, motivating the caregivers to attend and the community workers to continue serving.

Formative Research

Formative research techniques such as trials of improved practices (TIPS), positive deviance inquiry (PDI), doer/non-doer analysis, barrier analysis, and focus group discussions, among others, are helpful methodologies to ensure that ENA messages are addressing the key barriers to successful nutrition behaviors. The pre-testing of counseling and communications materials underpins the development of effective behavior change communication materials and leads to successful impact of ENA programming.

*Trials of Improved Practices (TIPs)*³⁴

Trials of Improved Practices (TIPs) is a formative research tool that uses a systematic approach to help program planners select and test the acceptability and feasibility of the nutritional practices that a program will promote. During two or three household visits, recommended behaviors are tested in homes by discussing possible improved practices with caregivers, negotiating specific practice changes, and following up to record the mothers' and children's experiences with, and reactions to, the new practices. By learning which behaviors mothers are willing and able to adopt, TIPs provide practical information on what behaviors should and should not be promoted in a program and how best to promote them. The results have been used to design successful program strategies and educational materials and to develop locally appropriate nutrition messages.

The basic TIPS process for improved child feeding.

After training field personnel and recruiting participants:

1. Conduct an initial home visit to gather background information on nutritional practices. This includes an interview with the primary caregiver about the child's diet.
2. Analyze the background data to identify problems with the child's diet and feeding practices.
3. Identify a short list of recommended behavior changes that would help to address the identified problems and would likely be feasible for the mother.
4. Conduct a counseling visit with the mother to present several options for improving her child's feeding, to record her reactions to the options, and to negotiate with her to choose one or more options that she is willing to try during the following week.
5. Conduct a follow-up visit to find out whether the mother tried the new practice(s), what happened when she did, whether she is willing to continue the practice, any modifications she made, and her reactions to the practice.
6. Create a revised guide of feeding recommendations, based on analysis of follow-up visits and amended according to mothers' suggestions.

³⁴ Adapted/Excerpted from: Dickin K, M. Griffiths and E. Piwoz (1997). *Designing by Dialogue: A Program Planners' Guide to Consultative Research for Improved Young Child Feeding*. Sara Project, AED http://sara.aed.org/publications/child_survival/nutrition/dbyd_feeding/html/intro.htm (Chapters 1 and 6) and The Change Project: Behavior Change tools and approaches website: http://www.changeproject.org/tools/xchangetools/tx_tips.htm

The analyzed information is presented in a report that provides recommendations for programming and is used to develop nutrition messages and to plan a program's communications strategy. The report also notes any remaining questions and provides recommendations for further research.

Positive Deviance Inquiry (PDI)

In every community there are people who practice behaviors that enable them to overcome challenges that others in their community, who have the same resources, cannot. These people are known as *positive deviants*. A Positive Deviance Inquiry (PDI) is a community-specific survey tool used to identify successful or desired practices exhibited by the positive deviants, and design an intervention based on those same behaviors. It is a dynamic process through which *community members* discover the affordable, acceptable, effective and sustainable behaviors that their neighbors are practicing. PDI may be used in nutritional programs, such as PD/Hearth (see p. 63), as well as in other programs for improved maternal and newborn care, health, and nutrition.

PDI is a rapid survey, taking less than a week from training through analysis. It is carried out by trained community members, program staff and volunteers. The PDI team conducts home visits from a small sample of households in each community, observing behaviors and conducting semi-structured interviews with the family. For nutrition programs, the PDI observes feeding practices, caring practices, hygiene practices, and health care practices of positive deviants.

Doer/Non-Doer Analysis³⁵

A component of the BEHAVE framework, doer/non-doer analysis is a formative research tool that helps to identify factors that are most influential in bringing about adoption of a particular behavior. The methodology draws on the basic premise that in order to change behavior, it is necessary to understand why people behave the way they do. An "elicitation survey" includes six open-ended questions that explore the range of determinants for a specific behavior. Analysis focuses on the ways in which "doers" of the behavior are different from "non-doers," in order to identify the key factors associated with its adoption.

Program managers can use the results in a number of ways:

- Developing or modifying existing activities to address the key factors that affect preventive behaviors;
- Designing messages that are relevant to an audience;
- Preparing counseling sessions to address key factors;
- Training staff to understand some of the issues around behavior change for the various people they serve.

³⁵ Excerpted from: The Change Project. "Doer/Non-doer Tool for Program Planning"
http://www.changeproject.org/tools/xchangetools/tx_doer_nondoer_tool.htm

Barrier Analysis³⁶

This is a rapid assessment tool used to identify behavioral determinants associated with a particular behavior so that more effective behavior change communication messages, strategies, and supporting activities can be developed. It focuses on eight behavioral determinants: perceived susceptibility, perceived severity, perceived action efficacy, perceived self-efficacy, cues for action, perceived social acceptability, perception of Divine will, and positive and negative attributes of the behavior.

It can be used at the start of a program to determine key messages and activities for intervention. It can also be used in an ongoing program focusing on behaviors that have not changed very much, despite repeated efforts, in order to understand what is keeping people from making a particular change.

For more information on formative research:

TIPs. Dickin K, Griffiths M, Piwoz E (1997). *Designing by Dialogue: A Program Planners' Guide to Consultative Research for Improved Young Child Feeding*. Sara Project, AED
http://sara.aed.org/publications/child_survival/nutrition/dbyd_feeding/html/intro.htm

PDI. CORE (2003) *Positive Deviance/Hearth: A Resource Guide for Sustainably Rehabilitating Malnourished Children*.
http://www.coregroup.org/working_groups/pd_hearth.cfm

Doer/Non-doer Analysis:The Change Project (2000). *Social Marketing Lite for Energy Efficiency: A Practical Resource Book for Social Marketing*. Washington, DC: AED
<http://www.aed.org/ToolsandPublications/upload/Social%20Marketing%20Lite.pdf>

Barrier Analysis. Davis Jr., Thomas P. Food for the Hungry (2004). *Barrier Analysis: A Tool for Improving Behavior Change Communication in Child Survival and Community Development Programs*.
http://barrieranalysis.fhi.net/annex/Barrier_Analysis_Facilitator_Guide.pdf

BEHAVE Framework. CORE/AED. *Applying the BEHAVE Framework*.
http://www.coregroup.org/working_groups/behave_guide.cfm

³⁶ Excerpted from: Davis Jr., Thomas P. Food for the Hungry (2004). *Barrier Analysis: A Tool for Improving Behavior Change Communication in Child Survival and Community Development Programs*.
http://barrieranalysis.fhi.net/annex/Barrier_Analysis_Facilitator_Guide.pdf

Implementation of ENA

Following the completion of a situational analysis, including formative research to determine the specific issues, approaches, and interventions needed to improve the nutritional status of young children and their mothers, the key messages for one or more of the Essential Nutrition Actions are developed. These should be promoted to women and caregivers of children under age two in as many health and social sector contact points as possible. Table 15 provides an overview of four delivery strategies for ENA. Health contact points include family planning programs, antenatal care, delivery care, postpartum follow-up, well-child visits, sick child visits, immunization programs, community-based growth monitoring and promotion programs, and child health days or weeks, among others. These actions can also be promoted via links with programs in other sectors such as food security, education, water and sanitation, gender equity, poverty alleviation and civil society. BASICS has produced a practical toolkit with guidance for operationalizing the Essential Nutrition Actions. This toolkit can be found at: <http://www.basics.org/documents/pdf/ENA%20annotated%20bibliography.pdf>

Implementing ENA includes:

1. Incorporating the ENA messages and proven interventions into maternal and child health services and expanding community outreach, particularly in underserved areas;
2. Building capacity at community level for delivery of ENA interventions through community workers and organizations, and volunteers, and
3. Using multiple communications channels to inform, sensitize and motivate key audiences.³⁷

Table 15: Examples of Contact Points for Implementing ENA

Type	Interventions	Main operational component(s)	Unique Features
1. Community-based growth promotion	All ENA interventions, linked to key health interventions	Community level services, behavior change communication, health facility level services	<ul style="list-style-type: none"> • Closely tied to evidence based health interventions for survival, growth and development • Community-based growth monitoring • Use of 'adequate weight gain' by individual children to guide interventions • Comprehensive package of age-appropriate interventions, focus on children 0-23 months

³⁷ Acharya et al (2004) *Using Essential Nutrition Actions (ENA) to Accelerate Coverage with Nutrition Interventions in High Mortality Settings*. BASICS II/USAID: Arlington, VA.

Type	Interventions	Main operational component(s)	Unique Features
2. PD/Hearth	Infant and young child feeding, linked with de-worming and selected micronutrient and health interventions delivered through partner agencies	Community level services for moderate/severely malnourished children, using local resources	<ul style="list-style-type: none"> • Demonstrates the use of locally available foods and practices for healthy growth using 'positive deviance' inquiries to identify successful strategies • Has demonstrated preventive impact on siblings • Demonstrated strategy for engaging communities in addressing malnutrition
3. C-IMCI	Infant feeding, vitamin A, Zinc with ORT and key health interventions	Community level prevention and treatment services, links with health facilities and communications for HH behaviors	<ul style="list-style-type: none"> • Evidence-based protocols for prevention and treatment • Comprehensive interventions for birth-59 months of age
4. Child Health Weeks	Vitamin A, often accompanied by health interventions (e.g., immunization, bednets, deworming)	Outreach from facilities every six months	<ul style="list-style-type: none"> • Demonstrated high coverage, sustained with associated declines in mortality • Proven feasible in diverse settings

HOW: CONTACT POINTS FOR IMPLEMENTATION OF ENA

Contact Point: Community Based Growth Promotion³⁸

The approach

Community Based Growth Promotion (CBGP) is a strategy to improve child growth. CBGP relies primarily on volunteers to proactively engage both the families of children under two years of age and the communities in which they live to monitor and to maintain the adequate growth of young children through education for behavior change. The program assesses monthly weight gain to identify children who are not growing adequately. Through one-on-one counseling, volunteers and mothers identify the potential causes of inadequate weight gain, and use evidence-based recommendations (with the help of a decision-making guide, example shown in Figure 3, p. 58) to address the causes of the problem before a child becomes malnourished. Mothers receive follow-up visits in their homes to support their behavior change. CBGP uses

³⁸ In this document, Community Based Growth Promotion (CBGP) refers to the full range of growth monitoring and promotion activities, including weighing, charting, identifying a problem in growth and responding to promote growth.

proven interventions to address growth problems and refers children to medical services when necessary. These regular contacts are an opportunity to deliver messages on all seven Essential Nutrition Actions to as many mothers/caregivers as possible.

Early identification of growth faltering is the key

CBGP is unique in that it uses an early indication that malnutrition may occur, inadequate monthly weight gain, and identifies and addresses the root causes of inadequate weight gain (e.g., illness, feeding practices, child care practices) at the local and individual level. All interventions including home visits and individual counseling at weighing sessions are intended to assure adequate weight gain to prevent malnutrition. Thus, the key difference between CBGP and traditional growth monitoring approaches is that CBGP attempts to prevent malnutrition using adequacy of monthly weight gain to identify children with feeding or health problems, while traditional growth monitoring attempts to respond to malnutrition using current weight to identify children who are already malnourished.

The trigger for action in CBGP is inadequate monthly weight gain, a sign of growth faltering and a precursor to malnutrition. By contrast, traditional growth monitoring programs monitor the presence or absence of malnutrition as defined by static measures of weight-for-age related to standard reference population measurements. Some traditional growth monitoring programs have shifted focus to assessment of the slope of the line connecting a series of successive monthly weights, and providing differing counseling responses if the slope is increasing (good), flat (bad), or decreasing (danger). While this approach is more preventive than simple assessment of current nutritional status, it does not promote optimal growth because any rising slope is considered “good”. CBGP, in contrast, promotes optimal growth by assessing whether infants/children are growing enough (i.e., adequate monthly weight gain ensures that the slope of the growth curve is steep enough rather than just rising). CBGP also focuses on growth promotion among children less than two years of age because this is a vulnerable period of rapid growth. If growth faltering is not addressed when children are less than two years of age, the damage to growth and development is largely irreversible. Additional comparisons between the two approaches (i.e., growth monitoring and CBGP) are found in Table 16. Essential elements and best practices for CBGP are found in Box 19 (p. 59).

Table 16: Traditional Growth Monitoring vs. Community Based Growth Promotion

Growth Monitoring: Curative	CBGP: Preventive
Top down programming	Vision defined from the community
Health facility based activities	Community based activities with active involvement of community members
Focus on children 0-5 years, often focused on most malnourished	Focus on children 0-2 years, focus on preventing declining nutritional status
Classified by nutritional status and illness	Classified by adequacy of weight gain and illness
Data collected for health system statistics	Data collected for decision-making at all levels
Solution usually outside community, often new technology or food	Solution sought inside family and community, usually behavior change
Family education is didactic	Family education is participatory
Training of workers is for knowledge transfer	Training of workers is for skill-building

Adapted from: Griffiths M, presentation at LAC SOTA, March 13, 2003

Dedicated community volunteers are an integral part of CBGP

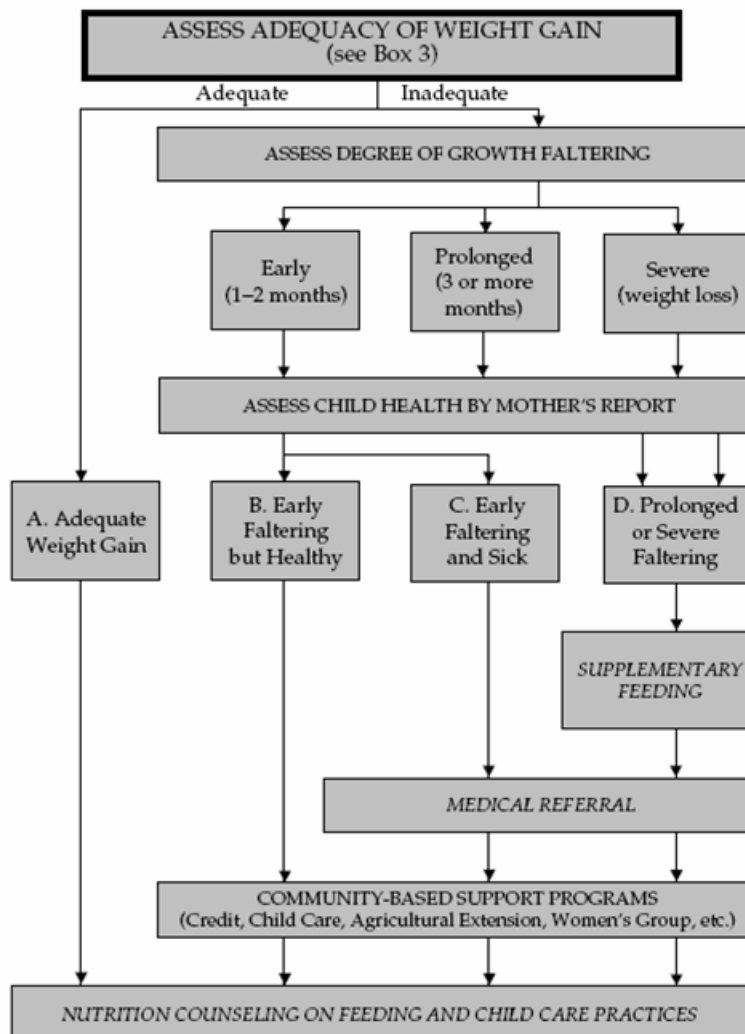
CBGP volunteers play a vital role in implementation of the strategy. Following community adoption of CBGP, volunteers are selected by the community, usually 3 volunteers for each group of 20 children. Each volunteer has specific but interchangeable tasks and roles. They are provided with in-depth, hands-on training and supervision to build the knowledge and skills necessary to perform activities. Volunteers are also given counseling cards and other tools to help them determine if children have gained adequate weight and to counsel mothers.

Individualized nutrition counseling is the cornerstone of an effective and efficient CBGP program. Figure 3 is an example of a decision tree used by CBGP volunteers, in addition to counseling cards, to help them decide what course of action to take with a mother, based on the child's weight gain.

The following are some of the key roles and responsibilities of the volunteer:

- To advocate on behalf of the community to local health staff;
- To monitor the growth of young children in the village, and provide counseling, education, referrals and home visits, with support from the local health staff;
- To ensure that all new mothers and children in the village are enrolled in the growth monitoring and promotion program;
- To help organize and participate in joint meetings with village development committees and local health staff to discuss progress of the program and propose actions based on the data;
- To advocate for families of undernourished children in seeking assistance from the community leadership (e.g., councils, development committees, health committees). The type of assistance would be defined by each committee but might include financial, food assistance or participation in a particular program (e.g., credit, agriculture, health).

Figure 3: Sample Decision Guide for CBGP Health Volunteers



Source: Adapted from Griffiths M, Dickin K, Favin, M. *Promoting the Growth of Children: What Works*. Human Development Department, The World Bank, May 1996
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTNUTRITION/0,,contentMDK:20187633~menuPK:495830~pagePK:148956~piPK:216618~theSitePK:282575,00.html>

Box 20. CBGP Essential Elements and Best Practices

A growth monitoring and promotion program has the best chance to succeed if the following key elements are present:

- Full participation of caregivers and families
- Community participation and support in planning, decision-making, and monitoring
- Ratio of 2-3 community-based workers per 20 children
- Clear guidelines for decision-making and counseling
- Materials and equipment, particularly scales, IEC aids and registers
- A clear link with health and community services
- Good follow up of children
- Effective monitoring and supportive supervision
- Good planning, preparation and training of all relevant persons, including health workers, supervisors, and the growth promoters prior to initiation of the program.

Source: Adwoa Steele, BASICS

Steps to implementing a Community Based Growth Promotion program

1. Organize the community to raise awareness of the problem;
2. Have community identify volunteers;
3. Train volunteers and staff (e.g., initial training as well as ongoing in-service training);
 - a. Use experiential training with adult learning techniques;
 - b. Train volunteers locally;
4. Create map of the community;
5. Conduct community census/baseline survey of household health and nutrition and identify all children under age 2;
6. Weigh each child every month at a community weighing session;
 - a. Meet in the community, at a set place and time;
 - b. Weigh and measure each child, recording monthly weight gain on growth card;
 - c. Determine whether the child is growing adequately;
7. Counsel each caregiver individually. Counseling content will vary based on child's weight gain, health status and history;
 - a. Use decision-making guide to assist volunteers in selecting the most appropriate courses of action to help meet mothers' needs (see Figure 3 for an example decision guide);

- b. Negotiate with the mother to decide on actions to maintain or improve child's growth, using program's counseling cards; at the next session, the mother and volunteer jointly assess the success of the selected actions;
 - c. Refer all sick children and those who don't respond after counseling to health services;
8. Follow-up with mothers in the home to reinforce messages, encourage mothers and family members, resolve problems and for direct observation;
 9. Hold quarterly community meetings to share CBGP data, explain the status of child health to the community, receive community support and mobilize collective community action;
 - a. Five indicators, often displayed via bar graphs, are generally shared with the community, and within the larger health information system:
 - # of children under two in the community,
 - # weighed each month,
 - # gaining adequate weight,
 - # with inadequate weight gain, and
 - # gaining inadequate weight for two or more months;
 10. Ensure active management of the program and frequent supportive supervision to the community volunteers (See Box 20);
 - a. The supervisor should conduct trainings, engage in problem-solving with workers, visit homes, participate in meetings, and effectively use tools such as supervisory checklists.

Box 21. Management Principles for CBGP

As with any program, good management is essential to the success of CBGP. The following are key principles for successful CBGP program management.

- Each community should have a dedicated growth promotion worker
- Workers' tasks should be limited and well-defined
- Detailed program plans should be flexible enough for local innovation
- Deliver hands-on training that is task-oriented and covers all aspects of CBGP
- Training should include problem-solving techniques
- Provide supportive supervision that includes on the job continuous training of workers; address problems they confront
- Implement continuous program monitoring
- Collect periodic data on nutritional status to submit to MOH to detail program impact

Ongoing Challenges

Quality of nutrition counseling. Counseling is conducted by trained community volunteers, who usually have a low level of education. This has led to challenges in the counseling process including lack of problem identification, failure to provide specific recommendations to mothers, and difficulty negotiating with mothers. To overcome these challenges, several programs have improved the quality of counseling by developing counseling job aids. Efforts have also been made to improve training and supervision.

Health personnel and volunteer turnover. Volunteers donate their time. Social and motivational tools such as certificates of recognition, identity cards, and special celebrations may help to overcome the challenges to retaining volunteers, which include: low education level, lack of available time, migration for economic reasons, competing programs within the same community, and competition from projects that pay community workers.

Cost of CBGP

Given the interest in replicating the program, an important, unanswered question has been: How much does CBGP cost? A World Bank study (Fiedler, 2003) based on data from 2002, estimated the average total cost per child/year of participation of the AIN-C child growth promotion program in Honduras (described in Box 21) to be 6.80 USD. This is just 11 percent of the cost of a similar MOH service, which is facility-based and provided by a nurse or nurse auxiliary instead of volunteers (Bitrán y Asociados).³⁹

Box 22. Case Study: AIN-C (Atención Integral a la Niñez-Comunitaria) - Integrated Care of the Child at the Community Level in Honduras

(Some portions adapted from Griffiths, M, presentation on “Community Based Growth Promotion,” at LAC SOTA, March 2003.)

Since 1991 the Ministry of Health (MOH) of Honduras has been implementing an integrated child nutrition program in response to the country’s persistently high rate of under-five malnutrition. In communities with poor development indicators, the MOH moved some services to the community level, and re-focused efforts to maintain adequate growth in the under-two population through breastfeeding support, appropriate child feeding guidance, and appropriate case management and referral.

Today, Atención Integral a la Niñez – Comunitaria (AIN-C) is a community volunteer-based program focusing on child growth as a composite measure of child well-being. The critical, local-level, implementing unit of the program consists of a team of three community volunteers responsible for about 25 children. In close coordination with health center nurses, these volunteers deliver the integrated AIN-C program, which includes visits to newborns, full immunization by twelve months, breastfeeding support, young child feeding support (tailored for illness and poor weight gain), micronutrient supplementation, hygiene promotion, treatment for dehydration, and first dose treatment and referral specifically for pneumonia and generally for other illnesses. This package is delivered at several contact points, including during the first week after birth, monthly growth promotion sessions, home visits to resolve problems, during sick child visits, and through referral to the health center. The team approach has been found to better maintain the volunteers’ motivation, effectiveness and interest in the Program. The Program has been implemented in roughly 1,800 communities covering portions of 24 of Honduras’ 42 health areas. Current Ministry plans call for implementing the program in the poorest municipalities throughout the country over the next several years.

The AIN-C Program is a model for targeting services to those most in need, focusing services on prevention and treatment of health problems, and on community management with occasional external support.

³⁹ Fiedler, John L. *A Cost Analysis of the Honduras Community-Based Integrated Child Care Program*. World Bank: HNP Discussion Paper, May 2003, pp. 46-51, 62-63.

<http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/Fiedler-ACostAnalysis-whole.pdf>

Most Effective Use/Criteria for Selection

CBGP is most effective in programs where the primary objective is to prevent malnutrition. It can be useful in locations in which nutrition and health interventions need to be better linked, and where there is already a large network of community-based health workers/volunteers that can be supervised by health staff. With its problem-solving approach, CBGP is effective for programs that seek to respond to local or individual problems (see Box 22).

Box 23. Case Study: Community Decision-making Using AIN-C Monitoring Data

Catholic Relief Services was operating in the 18 communities of the municipalities of Camasca and Colomocagua, located in Honduras near the border with El Salvador. These communities held community meetings every four months to discuss the growth monitoring data collected by the AIN-C program. Information presented by the community volunteers and health center staff guides community decisions.

When they analyzed why their children were not growing well, they learned that many of their children suffered from acute respiratory infections and diarrhea, inhibiting growth. The communities found that in colder, high altitude areas, many children were not appropriately dressed, some families cooked indoors over fires and their children breathed the smoke, some families did not purify their water, and others did not prepare food in a safe, hygienic way. Based on this analysis, the communities made decisions to: move cooking fires outside of the home or build chimneys, and to ensure warm clothing for children in cold weather. Other measures the communities endorsed included home visits to assist with the adoption of new caring practices, to demonstrate safe food preparation techniques, and encourage optimal feeding practices for infants and young children.

Adapted from: *Final Report: Regional Conference on Community-based Growth Promotion Programs*. Managua, Nicaragua, May 10-13, 2004 and "Use of infant growth data (bar graphs) to mobilize collective community action and municipal response", presentation by Vicky de Alvarado, BASICS II/Honduras, Regional Conference on Community-Based Growth Promotion, Managua, Nicaragua, May, 2004.

For Further Information on CBGP:

Griffiths, Marcia, Kate Dickin and Michael Favin (1996). *Promoting the Growth of Children: What Works. Rationale and Guidance for Programs*. Tool #4, The World Bank Nutrition Toolkit, The World Bank (DC). <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/Fiedler-ACostAnalysis-whole.pdf>

Griffiths, Marcia and Victoria de Alvarado (1999). BASICS/USAID, *Honduras: The AIN Community Experience*. http://www.basics.org/new/tools/ena/examples/2%20Country_Example_Honduras.pdf

Griffiths, Marcia and Judith S. McGuire (2005). A New Dimension for Health Reform – The Integrated Community Child Health Program in Honduras, in *Health Systems Innovations in Central America: Lessons and Impact of New Approaches*, The World Bank, edited by Gerard M. La Forgia. http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2005/07/20/000090341_20050720104210/Rendered/PDF/330040Health121120Central120America.pdf

Van Roekel, Karen, Beth Plowman, Marcia Griffiths, Victoria Vivas de Alvarado, Jorge Matute, and Miguel Calderón. 2002. *BASICS II Midterm Evaluation of the AIN Program in Honduras, 2000: Survey Report*, BASICS II/USAID. http://www.basics.org/pdf/AINMidterm_SurveyReport.pdf

BASICS Materials Related to CBGP: <http://www.basics.org/new/tools/ena/Promotions.html>

Contact Point: Child Health Weeks⁴⁰

Background

Child Health Weeks (or Days in some countries) are usually conducted twice annually at six month intervals to deliver vitamin A supplements and other preventive services using outreach from peripheral health facilities to communities. They have a substantial social mobilization component that includes making household visits using trained community-based volunteers to list all eligible children prior to the scheduled dates of the Child Health Week.

The facility-based health services:

- Assure adequate supplies at service delivery points
- Train and supervise volunteers who administer the supplements
- Monitor the Child Health Week to track coverage
- Use Child Health Weeks to deliver other services

Other services delivered through Child Health Weeks have included catch-up immunization, re-dipping insecticide treated nets (ITNs), iron/folic acid for pregnant women, iodized salt testing, promotion of appropriate infant and young child feeding, and growth monitoring. Child Health Week programs have helped shift the perspective of vitamin A supplementation from an immediate, short-term measure to a program that may be better seen as periodic social mobilization to reinforce routine services. As such, Child Health Weeks are a prime opportunity to reinforce ENA within the community.

Essential elements and best practices

A number of elements have contributed to the success of these programs in Ghana, Nepal and Zambia:

- Clearly defining the problem, operational target groups, and coverage goals
- Developing client-focused delivery mechanisms with a twice-yearly distribution approach
- Building community support
- Adequately training and supervising implementers
- Measuring, presenting, and using program results to improve ongoing programs

Most effective use/criteria for selection

To address the problem of vitamin A deficiency and child survival more broadly, Child Health Weeks are best suited for areas with vitamin A deficiency or where high levels of childhood mortality indicate that vitamin A deficiency is likely to be a problem. Child Health Weeks are one of the simplest and most affordable strategies that can be integrated within any district health plan. They require coordinating supplies of vitamin A supplements, a mechanism for training community volunteers (e.g., health or other sector) supervision by health staff twice annually during Child Health Weeks, communications for social mobilization to make families aware of the importance of vitamin A and location and time of upcoming Child Health Weeks outreach

⁴⁰ Excerpts from Houston, R. 2004. Why They Work: An analysis of three successful public health interventions Vitamin A supplementation programs in Ghana, Nepal, and Zambia. MOST Project report.

sessions, and rapid surveys (e.g., 30 random clusters of households) in a small number of districts following each Child Health Week.

For Further Information on Child Health Weeks:

Beaton, GH et al. *Effectiveness of vitamin A supplementation in the control of young child morbidity and mortality in developing countries*. ACC/SCN State-of-the-Art Series, Nutrition Policy Discussion Paper #13. Geneva: WHO, 1993.

<http://www.unsystem.org/scn/archives/scnnews09/ch4.htm>

Elements of Success: The National Vitamin A Program in Nepal. USAID/Nepali Technical Assistance Group/John Snow, Inc. Nepal, 2000.

Fiedler, J. March, 2001. *The Nepal National Vitamin A Program: Cost Estimates for 2000 and Alternative Configurations of a Nationwide Program*. Partners for Health Reform Plus, Abt Associates, Inc. Bethesda, Md.

Houston, R. 2004. *Why They Work: An analysis of three successful public health interventions - Vitamin A supplementation programs in Ghana, Nepal, and Zambia*. MOST Project report. <http://www.mostproject.org/PDF/WhyTheyWork.pdf>

Rassas, B et al. April, 2002. *Cost Analysis of the National Vitamin A Supplementation Program in Ghana*. MOST, The USAID Micronutrient Program. International Science and Technology Institute, Inc. Arlington, Va. <http://www.mostproject.org/IVACG/GhanaCostAnalysis.pdf>

Contact Point: Positive Deviance (PD)/Hearth⁴¹

Background

PD/Hearth is a methodology for sustainably rehabilitating malnourished children in their own community. Based on the premise that solutions to some community problems already exist within the community, the Positive Deviance Inquiry (PDI) identifies affordable, acceptable, effective and sustainable behaviors that are already practiced by community members whose children are healthy and well-nourished, although they share the same (often scarce) resources and face the same risks. After discovering the unique community practices that contribute to better nourished children, the program staff and community members design an intervention in which families with malnourished children will learn to practice these and other beneficial behaviors.

In the Hearth approach, community volunteers and caregivers of malnourished children practice new cooking, feeding, hygiene and caring behaviors shown to be successful for rehabilitating malnourished children. The practices taught come from a combination of the PDI and public health expert recommendations. This is an intensive behavior change intervention, targeting families of moderately to severely malnourished children.

⁴¹ Excerpted/Adapted from: The CORE Group. PD Hearth Programs: Essential Elements.

http://www.coregroup.org/working_groups/PD_Hearth_Essential_Elements.pdf

PD/Hearth complements other larger scale community growth promotion programs such as Community Based Growth Promotion, and Community Integrated Management of Childhood Illnesses. For greatest success, PD/Hearth should be integrated with other community-level health and nutrition interventions. The three goals of PD/Hearth are:

1. Rehabilitate malnourished children
2. Enable families to sustain improved nutritional status with existing resources
3. Prevent malnutrition among the community's other children, present and future

The PD/Hearth Model: Essential Elements of PD/Hearth

The following describes what the PD/Hearth Technical Advisory Group has identified as essential elements of the PD/Hearth model. While PD/Hearth can and should be adapted to local situations, the following are key elements of the methodology that cannot be adapted, modified, or skipped without seriously diminishing the effectiveness of the program.

1. *Conduct a Positive Deviance Inquiry (PDI) in every community:* The PDI provides an opportunity for community members to “discover” that very poor families have certain good practices which enable them to prevent malnutrition, and these practices can be adopted by any family with similarly scarce resources. In order for every community to take ownership, the discovery process must take place in every community. See page 52 for more information on PDI.
2. *Hearth Sessions:* Using the results of the PDI, the community and program staff design the Hearth sessions. Details on how to do this can be found in the CORE Group PD/Hearth Manual (link below – page 67). The two hour Hearth session is held in the homes of community people for a total of twelve days (e.g., 6 days/week for 2 weeks). At the sessions, the caregivers prepare energy-rich, calorie-dense foods that are made from local products, and are an additional meal meant to rehabilitate their children. They feed their children under the guidance of volunteers, and learn about nutritious foods and positive health and care practices. Caregivers must bring food to the Hearth session in order to participate. There are several elements that are essential to the Hearth sessions, including:
 - Utilize community women to conduct the Hearth sessions and the follow-up home visits. Mothers learn best from a peer with whom they feel comfortable and who understands local customs and conditions.
 - Prior to the Hearth Sessions, de-worm all children, update immunizations, and provide needed micronutrients.
 - Use growth monitoring to identify newly malnourished children and monitor nutritional status of participants who have graduated from Hearth.
 - Ensure that caregivers bring a daily contribution of food and/or materials to the Hearth sessions to reinforce the idea that families can afford to feed their children nutritious food.
 - Design Hearth session menus based on locally available and affordable foods.

- The Hearth session menus must provide a special nutrient-dense meal sufficient to ensure the rapid recuperation of the child.⁴² Caregivers should understand that the Hearth meal is a supplement, not a substitute, so that the child can gain weight more rapidly and improve his/her nutritional status.
- Caregivers should be present and actively involved every day of the Hearth session.
- Conduct the Hearth session for 10-12 days within a two-week period. Mothers will see noticeable improvement in their children within 8-12 days of beginning to receive the extra, nutrient-dense Hearth meal.
- Include follow up visits at home for two weeks after the Hearth session (i.e., every 1-2 days) to ensure the average of 21 days of practice needed to change a new behavior into a habit.
- Actively involve the community throughout the process to provide support, raise consciousness and empower them to prevent malnutrition from within their own community.
- Monitor and evaluate progress. At a minimum, programs should monitor attendance, weight at entry and one month, and the percentage of children who graduate after one or two sessions. Additionally, programs are encouraged to monitor the longer-term impact by measuring weight gain at 2 months, 6 months and one year after graduation.
- If a child does not gain weight after two sessions, refer the child to a health facility to check for any underlying causes of illnesses such as tuberculosis, HIV/AIDS or other infection.
- Limit the number of participants in each Hearth session. Hearth sessions are most successful when limited to ten caregivers; six to eight is the ideal range.

Criteria for PD/Hearth

PD/Hearth will not work everywhere. It is important to consider the following criteria when deciding if PD/Hearth is the right approach for a given community.

1. For cost-effectiveness, PD/Hearth should only be implemented in locations where 30 percent or more children, age 6 to 36 months are moderately or severely underweight (i.e., <-2 Z weight for age). Mildly malnourished children may also be included in the program.
2. Affordable food is available. A fundamental precept of PD/Hearth is that families can rehabilitate their children and prevent malnutrition with affordable, locally available food. If families are reliant on food aid, or only staple food is available, food security must be improved before PD/Hearth is implemented.
3. Homes are located within a short distance of each other. Caregivers are expected to bring their children to the Hearth session each day, and volunteers must make frequent home visits.
4. There must be a community commitment to overcome malnutrition, which will mobilize resources, pave the way for organizing Hearth sessions, and provide peer support.

⁴² 600-800 kcal; 25-27g Protein; 400-500 RE Vitamin A; 10 mg iron; 3-5 mg zinc; 15-25 mg Vitamin C

5. Access to basic complementary health services is necessary so that children receive deworming, immunizations, malaria treatment, micronutrient supplements, and necessary referrals.
6. Systems for identifying and tracking malnourished children. A census is acceptable for initial identification of children, but a monthly growth monitoring program must be established to track Hearth graduates and identify other children who may need to enter the program. PD/Hearth is intended as only one phase of implementing a wider, preventive nutrition program.
7. The presence of food aid requires careful planning to assure that families learn to use local foods to provide the nutrition their children need; food aid is not a sustainable solution. Limited amounts of food aid in the form of local staples can be used in Hearth menus, but the emphasis should be on using locally available foods so that participating families learn first-hand about their accessibility and affordability.
8. Organizational commitment of the implementing agency is essential. Initiating a PD/Hearth program requires a significant level of effort. The agency must be willing to adjust budget, devote adequate staff time, and monitor quality. Projects should consider budgeting for additional staff and recruiting additional volunteers rather than expecting existing staff and volunteers to add the PD/Hearth to their multiple existing responsibilities.

The Evidence Base for Positive Deviance/Hearth Impact⁴³

PD/Hearth aims to reduce malnutrition in the community through rehabilitation of malnourished children and prevention of future malnutrition in siblings through behavior change at the family level. This outcome has been documented in Vietnam where researchers returned to communities five years after the PD/Hearth program ended and found that PD/Hearth graduates tended to be better nourished than counterparts from a comparison group. Their younger siblings, who had no exposure to PD/Hearth, also were better nourished than a comparison group, although not as well nourished as the PD/Hearth graduate. This comparison was done with weight-for-age and weight-for-height Z-scores. Several PD identified behaviors persisted, with mothers from PD/Hearth areas feeding young children more frequently and washing hands more often than mothers in a comparison group.

⁴³ CORE. “PD/Hearth in the context of other nutrition and child survival interventions.” http://www.coregroup.org/working_groups/PD_Hearth_in_Context.pdf and BASICS. “The Hearth Nutrition Model: Application in Haiti, Vietnam, Bangladesh” <http://www.basics.org/publications/pubs/Hearth/hearth.htm>

For Further Reading on PD/Hearth:

CORE (2003). *PD/Hearth: A Resource Guide for Sustainably Rehabilitating Malnourished Children*
http://www.coregroup.org/working_groups/Hearth_Book.pdf

CORE (2005). *Positive Deviance/Hearth Addendum*.
http://www.coregroup.org/working_groups/PD_Hearth_Addendum_Aug_2005.pdf

CORE (2004). *Positive Deviance/Hearth in the Context of Other Nutrition and Child Survival Interventions*.
http://www.coregroup.org/working_groups/PD_Hearth_in_Context.pdf

Additional resources can be found on the CORE website:
http://www.coregroup.org/working_groups/pd_hearth.cfm

Contact Point: Community Integrated Management of Childhood Illnesses (C-IMCI)

Background

IMCI is a good entry point for integrating nutrition with other child survival efforts. The World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) developed Integrated Management of Childhood Illness (IMCI) to address the five major causes of childhood morbidity and mortality: malnutrition, measles, malaria, pneumonia, and diarrhea. IMCI includes three components: improving case management skills of health providers, strengthening the health system, and improving family and community practices. It addresses both prevention and treatment interventions and ensures that programming is integrated. In the past, the tendency has been to try to improve child health by targeting single areas – such as increasing the number of children being immunized or promoting breastfeeding. But by using a more integrated approach, working with and through the community, it is possible to maximize the benefit of a range of activities, focusing attention on the child, not the disease or condition.

Within the community component, sixteen key practices were identified that, if adopted by caregivers, would lead to a significant decrease in morbidity and mortality (see Box 23). It is important to note that all seven ENA practices are included on this list. This is an excellent opportunity to connect nutrition programming to programming in these other child survival intervention areas for a holistic approach.

Box 24. Sixteen Key Family Practices of C-IMCI

For physical growth and mental development:

- Breastfeed infants exclusively for six months
- Starting at six months of age, feed children freshly prepared energy- and nutrient-rich complementary foods, while continuing to breastfeed up to two years longer
- Ensure that children receive adequate amounts of micronutrients (e.g., vitamin A and iron), through diet or supplementation
- Promote mental and social development by responding to children's needs for care through talking, playing, and providing a stimulating environment

For disease prevention:

- Take children as scheduled to complete the full course of immunizations (e.g., BCG, DPT, OPV, and measles) before their first birthday
- Dispose of feces, including child feces, safely; wash hands after defecation, before preparing meals, and before feeding
- Protect children in malaria-endemic areas by ensuring sleep under insecticide-treated bednet
- Adopt and sustain appropriate behaviors regarding prevention and care for HIV/AIDS-affected people, including orphans

For appropriate home care:

- Continue to feed and offer more fluids, including breastmilk, to sick children
- Give sick children appropriate home treatment for infections
- Take appropriate actions to prevent and manage child injuries and accidents
- Prevent child abuse and neglect and take appropriate action when it has occurred
- Ensure men's active participation in providing childcare, and in the reproductive health of the family

For seeking care:

- Recognize when a sick child needs treatment outside the home. Seek care from appropriate providers
- Follow the health worker's advice about treatment, follow-up, and referral
- Ensure that every pregnant woman has adequate antenatal care, including at least four antenatal visits with and appropriate health care provider, Tetanus Toxoid vaccinations and support from family and community in seeking care at the time of delivery and during the postpartum and lactation period

In order to program within community IMCI, it is useful to refer to the C-IMCI Framework created by CORE, BASICS, and other partners. Based on experiences from NGOs, the framework outlines the four elements that make up a comprehensive community-based approach:

- facility/community linkages;
- care and information at the community level;
- promotion of the key family practices in the household; and
- coordination with other sectors to ensure greater scope and sustainability of the other interventions.

The actual strategy implemented within each of these elements will be determined based on local programming needs, but the framework provides an organizing approach to ensure that programming is well balanced. See Table 17 for examples of how the multi-sectoral platform and key elements are related to nutrition.

Table 17. Links between Household/Community IMCI Framework and ENA

Elements	Linkages with Nutrition	Programming Examples
Multi-sectoral Platform: Development activities linked with health sector	Collaboration with other sectors working on agricultural production, food security, emergency feeding, income generation, HIV/AIDS, etc.	Work with water sector programs to install sources of safe drinking water in areas with high diarrhea prevalence. Connect messages for complementary feeding to safe water storage and use.
Health Facilities: Improving partnerships between health facilities (and services) and the communities they serve.	Collaboration between health services and communities on growth promotion, nutrition rehabilitation and micronutrient delivery	Work with health facilities to bring outreach workers to community growth monitoring days to identify and address growth faltering early.
Community-Based Providers: Increasing appropriate & accessible care and information from community-based providers.	Improved nutrition counseling by private providers Growth monitoring and nutrition education by community health workers	Train community health workers to provide nutritional guidance to mothers on complementary feeding.
Households: Integrated promotion of key family practices critical for child health and nutrition	Promotion of nutrition interventions and behaviors fully integrated with promotion of other key family practices	In mother support groups, practice and reinforce safe preparation and storage of complementary foods, handwashing, and continuing to provide food and fluid to sick children.

Adapted from: CORE (2001). *Reaching Communities for Child Health and Nutrition: A Framework for Household and Community IMCI*. http://www.coregroup.org/working_groups/c_imci_full_english.pdf

For Further Information on C-IMCI:

Technical Reference Materials: IMCI

<http://www.childsurvival.com/documents/trms/xcut.cfm>

CORE (2001). *Reaching Communities for Child Health and Nutrition: A Framework for Household and Community IMCI*.

http://www.coregroup.org/working_groups/c_imci_full_english.pdf

The CORE GROUP: Household and Community Integrated Management of Childhood Illness Framework: A Facilitator's Guide for Conducting Meetings on C/HH IMCI

http://www.coregroup.org/working_groups/imci_guide/FacilitatorsGuide.doc

WHO, UNICEF and CORE Group, (2004). *Child health in the community: "Community IMCI" briefing package for facilitators*. Report WHO, Geneva.

http://www.coregroup.org/working_groups/imci_briefing.cfm

CORE IMCI Working Group

http://www.coregroup.org/working_groups/childhood.cfm

BASICS, USAID, Linkages, Advance Africa, MOH/Madagascar, 2003. *Improving Family Health Using An Integrated Community-Based Approach*. Child Survival case Study.

<http://www.basics.org/publications/pubs/madagascarcasestudy/PDFs/MadExecSum.pdf>

Contact Point: Breastfeeding Support Groups

Background

A new mother often needs guidance, support and encouragement in order to provide the best care possible for her baby. Through breastfeeding support groups, new mothers learn about optimal practices in a comfortable, supportive, and respectful environment. Breastfeeding support groups vary in their organization, structure and facilitation. A breastfeeding support group covers pregnancy, childbirth, the postpartum period and all aspects that relate to breastfeeding. Some organizations form support groups for mothers that include ENA messages that complement breastfeeding.

Mother-to-mother breastfeeding support groups are based on the idea that women are comfortable sharing their concerns with other mothers, especially those with similar backgrounds and experiences. In these community-based support groups, a mother with breastfeeding experience facilitates the meeting, which is a guided discussion around a specific topic related to breastfeeding. In addition to having experience in breastfeeding, this facilitator receives training in infant and young child feeding, counseling, and adult education techniques. The facilitator introduces the topic and all mothers, new and experienced, are encouraged to share experiences, thoughts, and concerns. Active group participation helps mothers to overcome breastfeeding challenges and encourages them to improve feeding practices. The facilitator and other experienced moms ensure that accurate information is disseminated. Essential elements include the creation of a comfortable environment in which group members respect one another and all members participate, a group no larger than 15 people, and a meeting time and place that fits into mothers' schedules.

Another type of breastfeeding group is facilitated by a health care provider or other professional in the field who may or may not belong to the same peer group as the mothers with whom she works. The format varies: some are discussion based and mothers are encouraged to share their experiences, while others follow a lecture format and are purely for dissemination of knowledge.

Potential topics

Mother-to-mother breastfeeding support groups and other breastfeeding groups may cover topics such as the advantages of breastfeeding, breastfeeding techniques, solutions to common breastfeeding difficulties, coping with a sick baby, introduction of complementary foods, and breastfeeding myths, among others.

For further information on breastfeeding support groups:

La Leche League International (www.llli.org)

Linkages (2003). *Mother-to-Mother Support Group Methodology and Infant Feeding: Training of Trainers*.

<http://www.linkagesproject.org/publications/index.php?detail=51>

Green, Cynthia P. 1998. *Mother Support Groups: A Review of Experience in Developing Countries*. Published for the U.S. Agency for International Development (USAID) by the Basic Support for Institutionalizing Child Survival (BASICS) Project, Arlington, Va.

(http://www.basics.org/publications/abs/abs_msg.html)

Contact Point: Community Therapeutic Care (CTC)

*Background*⁴⁴

Community Therapeutic Care (CTC) takes an innovative approach to treating acute malnutrition in emergencies. Developed in response to the failure of traditional Therapeutic Feeding Centers (TFCs) to provide adequate population-level impact for children during the humanitarian crises in Africa in the 1990s, CTC offers a community-based alternative to TFCs that complements an integrated program of clinic-based care and supplementary feeding.

Comparisons to date between CTC and TFC programs suggest that CTC achieves greater reductions in mortality and default rates (i.e., about 10 to 50 percent of TFCs) and coverage rates two to three times greater than TFCs. These promising results come from CTC programs implemented in Malawi, Ethiopia, and Sudan. They have generated interest in the approach among PVOs, national governments, and donor agencies.

What is CTC?

Community Therapeutic Care is a community-based approach for managing large numbers of severely malnourished children in times of food insecurity and crisis. CTC promotes community participation and creates a platform for long-term solutions to the problems of food security and public health. The approach's key principle is the home-treatment of the majority of severely malnourished children in a population. Only those children with medical complications in addition to severe acute malnutrition are treated in facility-based programs. The approach includes stabilization centers for medically complicated cases attached to existing health units, decentralized outpatient treatment at home for children without complications, and decentralized supplementary feeding. Central to the home-based care of children with acute malnutrition is the provision of nutrient dense and palatable ready-to-use-therapeutic food (RUTF).

Ready to use therapeutic food

Ready to use therapeutic foods are specifically designed for the treatment of severe acute malnutrition. They are formulated, fortified pre-cooked foods for home use. Currently, there is one commercial RUTF product available: an energy dense peanut paste called Plumpy'nut® that is produced and licensed by the French company Nutriset and used in the majority of CTC programs. There is limited, but positive experience with local manufacture of RUTF (e.g., in Malawi) at a somewhat lower cost with mostly local ingredients.

⁴⁴ This section is excerpted and adapted primarily from the following three documents: (1) Khara, T. and S. Collins, (November 2004) *Community-based therapeutic care (CTC)* Emergency Nutrition Network (ENN) Special Supplement Series Number 2. Emergency Nutrition Network: Oxford, UK.

<http://www.fantaproject.org/downloads/pdfs/ENNctc04.pdf>

(2) Grobler-Tanner, C. and S. Collins (June 2004) *Community therapeutic care (CTC): A new approach to managing acute malnutrition in emergencies and beyond*. FANTA Technical Note No. 8. Food and Nutrition Technical Assistance Project: Washington D.C. http://www.fantaproject.org/downloads/pdfs/TN8_CTC.pdf

(3) The report of the February 2005 CTC meeting in Washington DC written by A. Duffield, in draft.

Basic program elements

The four central elements of a CTC program are:

1. Social mobilization/participation;
2. Supplementary feeding (SFP): for management of moderate acute malnutrition (MAM) without serious medical complications;
3. Outpatient therapeutic care (OTP): for management of severe acute malnutrition (SAM) without serious medical complications - similar to Phase 2 treatment in TFCs⁴⁵; and
4. Stabilization centers (SC): for management of moderate or severe acute malnutrition with complications (e.g. dehydration, severe anemia, hypoglycemia, etc.) – similar to Phase I treatment in TFCs⁴⁶.

The CTC model is based on a public health approach. This approach focuses on:

- Maximizing coverage, access and timelines. Severe acute malnutrition (SAM) is more easily treated at an early stage before complications develop.
- Appropriate case management. Uncomplicated cases of acute malnutrition do not require the same resources for management as complicated cases, and may benefit by not being placed at risk of cross-infection through exposure to sicker complicated cases. Furthermore, by not treating moderately acutely malnourished children presenting with complications in the same manner as severely acutely malnourished, there is the risk of deterioration.
- Building the understanding and capacity of local staff. This will allow the program to become a platform for longer-term solutions. Viable exit strategies need to be thought through from program inception.
- Employing a multi-sectoral strategy to deal with the problem.

Elements of success

CTC is successful because it reaches children with services and addresses cases of acute malnutrition before they become medically complex. The community is able to see the benefits of CTC quickly and it embraces the program rapidly. The program supports development of local capacity and addresses not only the medical and food aspects of malnutrition, but also the social and economic characteristics. For example, the evolving experience with local production of RUTF can support local agriculture and food industry.

⁴⁵ Refer to the WHO guide to management of severe malnutrition at <http://whqlibdoc.who.int/hq/1999/a57361.pdf>

⁴⁶ Ibid

Implementing CTC

The CTC model combines three modes of treatment and care:

1. *Supplementary Feeding Program (SFP)*: In response to an emergency, an SFP is established. Dry take-home rations are distributed for children with moderate acute malnutrition (MAM) without complications (e.g., anorexia, life threatening illness).

In the CTC program (Save the Children/UK) in North Darfur, Sudan, all moderately acutely malnourished children 6 to 59 months received 4 kg of a fortified blended food (UNIMIX) mixed with oil and sugar according to national and international standards. Children were screened for acute illness, measles vaccination and vitamin A supplementation status were verified, and they were de-wormed.

2. *Outpatient Therapeutic Program (OTP)*: Home-based treatment with a specially formulated RUTF is provided on a weekly basis; medical treatment is given using simplified medical protocols; and follow-up is provided for children with SAM without complications. OTP is implemented through a large number of decentralized points using the existing health infrastructure. Children return weekly or, in some cases, every two weeks for monitoring. The OTP can be set up in a few days. This phase is followed by an increased focus on community mobilization to increase participation and an understanding of the program.

In South Wollo, Ethiopia, OTP treatment included a weekly health check, provision of RUTF according to weight, standard medical treatment and basic nutrition education for care providers of the children.⁴⁷ For discharge from the North Darfur OTP program, children had weight-for-height (WFH) > 85 percent of the reference WFH on two consecutive weeks and they were free from infectious disease.

3. *Stabilization Centers (SC)*: Inpatient care, also known as “phase 1 treatment” is provided for moderately or severely acutely malnourished individuals with medical complications and no appetite. Unlike the WHO/IMCI protocols,⁴⁸ which send all severely (and only severely) acutely malnourished children to phase 1 treatment, CTC calls for treating only those acutely (moderately *and* severely) malnourished children *with serious medical complications* in SCs.

Stabilization Centers within existing structures are improved and strengthened to provide individual care for malnourished children with complications. New SCs are established where no previous infrastructure exists only when absolutely necessary.

The final phase of full CTC involves follow up of malnourished children at home to provide support, encourage return of defaulters, and actively find new cases. Efforts should be made to integrate the program with other sectoral programs (e.g., food security, public health, water and sanitation), as well as initiating the local production of RUTF where appropriate.

⁴⁷ Khara, T and S. Collins, (November 2004) *Community-based therapeutic care (CTC)* Emergency Nutrition Network (ENN) Special Supplement Series Number 2. Emergency Nutrition Network: Oxford, UK.

<http://www.fantaproject.org/downloads/pdfs/ENNctc04.pdf>

⁴⁸ Refer to the WHO guide to management of severe malnutrition at <http://whqlibdoc.who.int/hq/1999/a57361.pdf>

Admission criteria for CTC

The admission criteria to CTC programs are based on children falling below a cutoff: Either weight-for-height (WFH or wasting) or mid-upper arm circumference (MUAC) measurement combined with clinical assessment including edema. Using both of these anthropometric measurements in the same program is problematic because each (WFH or MUAC) can produce different assessment results for the same child. MUAC tends to identify children as being at risk at a greater rate than a comparable cutoff for WFH. Programmers feel it is preferable to be overly inclusive on admission criteria given the seriousness of not treating SAM. In addition, the skills needed to collect WFH may be limited among community nutrition workers. For these reasons, CTC programs are moving to using MUAC as the preferred criterion for admission.

Definitions of severe acute malnutrition

Severe acute malnutrition is defined as weight for height less than 70 percent of the median (WHM <70 percent) and/or bilateral edema and/or MUAC <110 mm. Any child presenting with edema is classified as SAM. Moderate acute malnutrition is (MAM) defined as WHM between 70 percent and 80 percent. Acute malnutrition with complications requiring inpatient care is defined by one or more of the following: no appetite, high fever, lower respiratory tract infection, severe dehydration, severe anemia, or not alert. Figure 4 details the decision tree for admission.

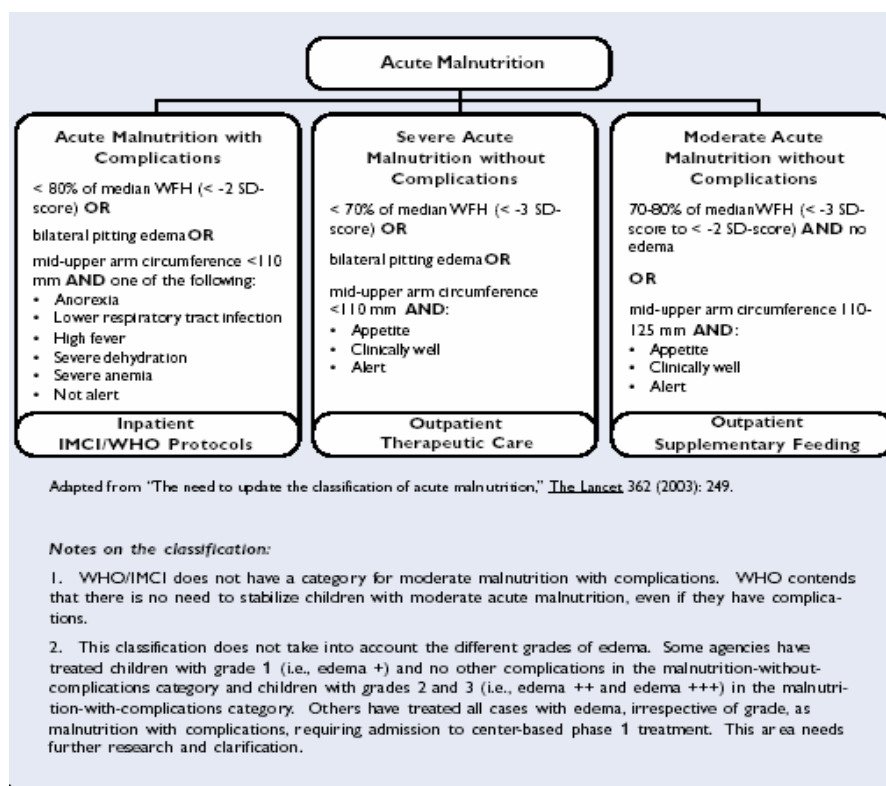
CTC in the context of Child Survival Programs

The potential for moving from emergency relief to development-type activities to address malnutrition in the community is key to the interest that CSHGP implementers have in the CTC model. According to Khara and Collins (2004),⁴⁹ “From the start, one of the main attractions of the CTC model has been the possibility that short-term emergency interventions may lay a foundation for longer term, more sustainable, benefits.” While working with families to rehabilitate their children, CTC implementers should educate them on prevention of malnutrition, emphasizing ENA messages.

CSHG programs operate in vulnerable, often isolated, communities. In the event that an emergency occurs in its operational area, a traditional child survival PVO may find itself in the position of temporarily implementing an emergency nutritional rehabilitation program for severely malnourished children. CTC is an appropriate program for these PVOs because it is community-based, like most PVO CSHG programs.

⁴⁹ Khara, T and Collins, S (November 2004) *Community-based therapeutic care (CTC)* Emergency Nutrition Network (ENN) Special Supplement Series Number 2. Emergency Nutrition Network: Oxford, UK. <http://www.fantaproject.org/downloads/pdfs/ENNctc04.pdf>

Figure 4. Suggested Classification and Treatment System for Acute Malnutrition



Source: Grobler-Tanner, C and S. Collins (June 2004) *Community therapeutic care (CTC): A new approach to managing acute malnutrition in emergencies and beyond*. FANTA Technical Note No. 8. Food and Nutrition Technical Assistance Project: Washington D.C.

Contact Point: Referral for Severe Protein Energy Malnutrition⁵⁰

Severe malnutrition

Severe malnutrition puts children at risk of death, serious infections, poor growth and impaired cognitive and psychosocial development. Any child suffering from severe malnutrition needs immediate referral for treatment. There may be an appropriate community-based approach, such as PD/Hearth (focused on underweight) or CTC (focused on wasting/acute malnutrition) established initially in emergencies that will handle uncomplicated cases of severe malnutrition in children. If no such community program exists, or the child has complications such as illness or edema, he or she should be referred to a residential nutritional rehabilitation program at a hospital or other type of in-patient healthcare facility.

⁵⁰ Based on: WHO. *Management of Severe Malnutrition: A Manual for Physicians and Other Senior Health Workers*. 1999. <http://whqlibdoc.who.int/hq/1999/a57361.pdf> and WHO. *Management of the child with a serious infection or severe malnutrition. Guidelines for care at the first referral level in developing countries*. 2000. http://www.who.int/child-adolescent-health/publications/referral_care/Referral_Care_en.pdf (Chapter 7).

Definition

Severe malnutrition requiring referral to a hospital or facility-based in-patient treatment program includes:

Severe wasting (WFH < -3 Z-score or < 70 percent of the median)

or

symmetrical edema in both feet

or

Severe underweight complicated by severe illness (WFA < -3Z or < 60 percent of the median and severe illness)

or

Failure to thrive for 3 months or more: a decrease in expected rate of growth based on the child's previously defined growth curve, irrespective of whether it is below the third percentile.

Severely stunted children are considered to have a milder, chronic form of malnutrition although they can deteriorate rapidly with the onset of illness (e.g., diarrhea, respiratory infections, and measles). Usually, severely stunted children can be managed in the community through a non-residential program.

Treatment Program

At a residential clinic or hospital-based treatment program a child will be observed, treated, and fed day and night. Full rehabilitation will generally take approximately 26 weeks. The stages of treatment are:

- *Stabilization:* Life threatening problems including infections are identified and treated in a hospital or residential facility. Specific deficiencies are corrected (e.g., severe micronutrient deficiencies, severe anemia), metabolic abnormalities are reversed (e.g., low blood glucose, dehydration) and feeding is begun. Iron is not given during the initial phase of treatment, as it can have toxic effects and may reduce resistance to infection. This phase usually lasts about one week and is done in a residential facility.
- *Rehabilitation:* Intensive feeding is given to recover lost weight. Oral iron supplementation must be given during this phase. Emotional and physical stimulation is increased to counter the frequent delays observed in mental and behavioral development among severely malnourished children. This stage lasts for about 5 weeks (weeks 2-6 of treatment). The program is residential for the first 1-2 weeks. Once the child is eating well and gaining weight, he or she is managed in a daytime nutritional rehabilitation program, returning home at night. The caregiver should be trained to continue care at home and preparations are made for the child's discharge. During the rehabilitation phase, growth is classified as follows: Poor: < 5g/kg/day, Moderate: 5-10 g/kg/day, Good: >10 g/kg/day.
- *Follow-up:* Despite improved health and nutritional status, children often remain stunted and display delayed cognitive development at discharge, necessitating continued follow-up. Parents should be instructed in good feeding practices and sensory stimulation so they may continue improved care and feeding practices at home. The hospital should follow the child and family to prevent relapse and assure the child's continued physical, mental, and emotional development, with greater frequency of contact immediately after discharge (e.g.,

follow-up home visits should occur at weeks 1 and 2 after discharge; 1 month, 3 months, and 6 months). This last phase lasts approximately 20 weeks.

Cross-cutting Issues

There are several issues that cut across the different ENA contact points/nutrition interventions. These include: 1) Management of personnel, 2) Monitoring and evaluation, 3) Participatory adult education techniques, 4) Behavior change communication, and 5) Anthropometry.

1. **Program Management.** Most community nutrition programs rely heavily on community based volunteers who most likely do not have prior training or experience in child health or nutrition. In order for the program to be successful, supervisors should be supportive and constructive and be certain that workers are not overburdened. Training for supervisors should include management training on how to effectively supervise and motivate their team. Box 20 on p. 60 details management principles for successful community-based programs.
2. **Monitoring and evaluation.** Interventions to improve maternal and child nutritional status by improving care and feeding practices are components of many child survival and health programs. The TRM for Monitoring and Evaluation is available on the CSTS website (www.childsurvival.com). Program planners and managers need indicators of adequate growth and adequate feeding and care practices to make program decisions and to assess progress toward program objectives. Because ENA is cross-cutting, virtually all of the modules of the KPC 2000+ survey measure some aspect of ENA. The KPC 2000+ is found on the CSTS website: <http://www.childsurvival.com/kpc2000/kpc2000.cfm>.

Module 2 of the KPC, Breastfeeding and Child Nutrition Indicators, has recently been updated. The recent consensus-development work that led to the articulation of ten “Guiding Principles” for complementary feeding of breastfed children and nine principles for feeding of the non-breastfed child provides the background and organizing framework for the indicators that have been recommended. The list should be viewed as a menu, from which project managers can select those indicators most relevant to their information needs.

In *Generating Indicators of Appropriate Feeding of Children 6 through 23 Months from the KPC 2000+* <http://www.fantaproject.org/downloads/pdfs/indicatorsKPC.pdf> the tabulation plan suggests indicators related to the nutrient content of complementary food for infants and children 6-23 months of age, and describes indicators for dietary diversity, animal-source foods eaten the previous day, and vitamin A-rich plant foods eaten the previous day. Indicators for appropriate frequency of feeding and for avoidance of bottle use are also proposed.

The module also includes a summary indicator that measures infant and young child feeding practices for children ages 6-23 months for both the breastfed and non-breastfed child. The summary indicator is constructed by combining scores for continued breastfeeding or feeding of milk or milk products, age-appropriate frequency of feeding based on a minimum number of feedings per day, and dietary diversity based on being fed a minimum number of food groups, to provide a summary of “good” complementary feeding practices.

3. **Participatory Adult Learning**⁵¹. Many of the nutrition interventions that CSHGP PVOs implement involve training or educating health workers, community members, or caregivers for behavior change. All of these education and training sessions should employ adult learning methods.

Principles of Adult Learning

- *Dialogue*. Adult learning is best achieved through dialogue. Allow them to learn new attitudes or skills in relation to their life experience. Dialogue should be encouraged and used in formal training, informal talks, one-on-one counseling sessions, and any other situation in which adults are learning.
- *Safety in environment and process*. Adults are better able to learn when they are physically and psychologically comfortable, with no distractions. They should be confident that their ideas and contributions are valued and that they will not be ridiculed.
- *Respect*. Appreciate learners' contributions and life experiences.
- *Affirmations*. Learners need to receive praise even for small attempts
- *Sequence and Reinforcement*. Start with the easiest ideas or skills and build on them. Present them in a structured way. Reinforce key ideas and skills repeatedly.
- *Thinking, Feeling, Doing*. Learning is most effective when it involves thinking, feeling and doing
- *20/40/80 rule*. Learners remember more when visuals are used to support the verbal presentation and best when they practice the new skill. We remember 20 percent of what we hear, 40 percent of what we hear and see, and 80 percent of what we hear, see and do.
- *Relevance*. People learn best when they can see how to apply what they are learning to what they already know or do, or if they know it will be useful in the future. Learning should meet the real-life needs of the adult.
- *Teamwork*. Help people learn from each other and solve problems together.
- *Engagement*. Adults prefer to actively participate in learning. People learn faster when they actively process information, solve problems or practice skills.
- *Clarity*. Present messages clearly and visually. Use familiar terms and sentence structure. Explain technical terms. Ensure that roles are clear.

For Further Reading on Adult Learning Methodologies:

Linkages (2005). *Training Methodologies and Principles of Adult Learning: Application for Training in Infant and Young Child Nutrition and Related Topics*. Training of Trainers Course

<http://www.linkagesproject.org/media/publications/Training%20Modules/TOT-Adult-Learning.pdf>

Vor der Bruegge, E and Davis R. *Designing for Adults Course Packet*. Freedom from Hunger, 2002

http://www.coregroup.org/resources/Dialogue_Education_Course_Packet.pdf

⁵¹ Adapted from Linkages (2005). *Training Methodologies and Principles of Adult Learning: Application for Training in Infant and Young Child Nutrition and Related Topics*. Training of Trainers Course
<http://www.linkagesproject.org/media/publications/Training%20Modules/TOT-Adult-Learning.pdf>

4. ***Behavior Change Communication (BCC)***. An important operational element of the ENA strategy that underpins all seven action areas is the use of “behavior change communication” to promote small, do-able actions in well targeted age specific messages that mothers and families can take to improve their nutrition situation. These messages are derived from formative research undertaken to identify key nutrition issues including current practices, obstacles facing mothers that prevent optimal practices, and the most likely and culturally acceptable solutions. For more information on BCC, see the TRM module on Behavior Change Interventions.
5. ***Anthropometry***.⁵² Anthropometry, the study and technique of human body measurement, is a widely used, inexpensive and non-invasive measure of the nutritional status of an individual or population group. It is routinely used to identify undernutrition in young children. It is also used to identify women at risk of poor birth outcomes. It may be used to screen or target individuals for intervention or action during times of famine or civil unrest. Anthropometry can also determine overweight and obesity in all age groups. Anthropometry assesses health and nutritional well-being of individuals, and provides information on the overall health and well-being of a population.

For child survival programs, anthropometry may be used to screen individuals for enrollment in intervention programs; to identify at-risk individuals, households or populations; to monitor growth/health of children; and to evaluate program impact. The most commonly used anthropometric indicators are: weight-for-age (underweight); weight-for-height/length (wasting); height/length-for-age (stunting); mid-upper arm circumference (MUAC); and body mass index (BMI).

Weight-for-age

Low weight-for-age index identifies the condition of being underweight, for a specific age. The advantage of this index is that it reflects both past (e.g., chronic) and/or present (e.g., acute) undernutrition (although it is unable to distinguish between the two).

Underweight is a composite measure of stunting and wasting. It is recommended as the indicator to assess changes in the magnitude of malnutrition over time. Prevalence of child underweight (0-23 months) is the sentinel measure of child health and well-being for the KPC (Knowledge, Practices, and Coverage Survey guide) Rapid Core Assessment Tool on Child Health (CATCH) required for all CSHGP mid-term and final evaluations.

http://www.childsurvival.com/kpc2000/rapidcatch_tab.pdf

Height-for-age

Low height-for-age index identifies past undernutrition or chronic malnutrition. It cannot measure short term changes in malnutrition. For children below 2 years of age, the term is length-for-age, which is measured with the child in a recumbent position; above 2 years of age, the index is referred to as height-for-age, measured while the child is standing. Deficits in length-for-age or height-for-age are referred to as stunting.

⁵² Excerpted/Adapted from: Cogill, Bruce. *Anthropometric Indicators Measurement Guide*. Food and Nutrition Technical Assistance Project, Academy for Educational Development, Washington, DC 2003
http://www.fantaproject.org/downloads/pdfs/anthro_2003.pdf

Stunting is low length-for-age, stemming from a slowing in the growth of the fetus and the child and resulting in a failure to achieve expected length as compared to a healthy, well-nourished child of the same age. Stunting is an indicator of past growth failure. It is associated with a number of long-term factors including chronic insufficient protein and energy intake, frequent infection, sustained inappropriate feeding practices and poverty. In children over 2 years of age, the effects of these long-term factors may not be reversible. For evaluation purposes, it is preferable to use children under 2 years of age because the prevalence of stunting in children of this age is likely to be more responsive to the impact of interventions than in older children. Data on prevalence of stunting in a community may be used in problem analysis in designing interventions. Information on stunting for individual children is useful clinically as an aid to diagnosis. Stunting, based on height-for-age, can be used for evaluation purposes but is not recommended for monitoring as it does not change in the short term such as 6 – 12 months.

Weight-for-height

Low weight-for-height helps to identify children suffering from current or acute undernutrition or wasting and is useful when exact ages are difficult to determine. Weight-for-length (e.g., in children under 2 years of age) or weight-for-height (e.g., in children over 2 years of age) is appropriate for examining short-term effects such as seasonal changes in food supply, short-term nutritional stress brought about by illness, and sub-optimal feeding practices.

Wasting. Wasting results when a child's weight falls significantly below the weight expected of a child of the same length or height. Wasting indicates current or acute malnutrition from failure to gain weight or actual weight loss. Causes include inadequate food intake, incorrect feeding practices, disease, and infection or, more frequently, a combination of these factors. Wasting in individual children and population groups can change rapidly and shows marked seasonal patterns associated with changes in food availability or disease prevalence to which it is very sensitive. Because of its response to short-term influences, wasting is not used in evaluation but may be used for screening or targeting purposes in emergency settings and is sometimes used for annual reporting. Weight-for-height is not advised for evaluation of change in non-emergency situations since it is highly susceptible to seasonality.

In humanitarian assistance activities, wasting (a Standardized Monitoring and Assessment of Relief and Transitions or SMART indicator⁵³) or thinness in children in the 6-59 month age range, combined with nutritional edema (i.e., swelling caused by excess fluid in body tissues) is an indicator of acute malnutrition and should be used to reflect the overall severity of a crisis.⁵⁴

⁵³ SMART is an interagency global initiative to improve the assessment, monitoring, reporting and evaluation of humanitarian assistance interventions. It promotes routine collection, analysis, and dissemination of nutrition and mortality data to assess the severity of a crisis, and to identify needs and prioritize resources to meet these needs. See <http://www.smartindicators.org/index.html> for more information.

⁵⁴ Edema can be diagnosed by applying moderate thumb pressure to the back of the foot or ankle. Edema is diagnosed only if both feet show the impression for some time. The presence of edema in individuals should be recorded when using weight-for-height for surveillance or screening purposes. A child with edema is automatically considered to have severe acute malnutrition, independent of stunting, wasting or underweight status. Edema is used only for screening and surveillance, not for evaluation purposes.

Mid - Upper Arm Circumference (MUAC)

MUAC is relatively easy to measure and a good predictor of immediate risk of death for children over six months. It is used for rapid screening of acute malnutrition and admission into CTC programs for the 6-59 month age range, although MUAC may overestimate rates of malnutrition in the 6-12 month age group. MUAC can be used for screening in emergency situations but is not typically used for evaluation purposes (MSF, 1995). MUAC is recommended for assessing acute adult undernutrition and for estimating prevalence of undernutrition at the population level. Special tape measures have been developed to measure arm circumference.

Body Mass Index (BMI).⁵⁵

BMI is defined as (weight (kg))/(height (m²)). This measure is used in adults to identify chronic energy deficiency and obesity. WHO proposed cut-offs for adults, which are age and gender independent, are included in Table 18. In early pregnancy, it can be used to identify women who may need referral to dietary counseling or supplementary feeding as well as to specialized neonatal care for their infants.

Table 18. Proposed BMI Cut-offs for Chronic Energy Deficiency in an Individual Adult

	Grade 3 thinness (severe)	Grade 2 thinness (moderate)	Grade 1 thinness (mild)	Normal	Overweight	Obese
BMI Range	<16	16-16.9	17-18.4	18.5-24.9	25-29.9	≥30

For adolescents (i.e., approximately ages 10-19), BMI-for-age can be used to screen for enrollment in supplementary feeding, referral to medical care and nutrition education, or for interventions to prevent overweight or obesity. The interpretation of BMI in adolescents depends on the age and sex of the individual. The calculated BMI is plotted on a growth curve to determine the percentile where the adolescent's BMI-for-age lies. Unlike the adult BMI classifications listed above, health-outcome related indicators have not been determined for adolescents at this time. Statistically based US National Center for Health Statistics (NCHS) data are the current international reference for people over the age of 5 years. However, these and the data of other industrialized countries are not considered a healthy goal for children of developing countries, but are to be used provisionally until a better reference is devised. NCHS BMI-for-age charts for adolescents can be found at:

<http://www.cdc.gov/nccdphp/dnpa/bmi/00binaries/bmi-checkbook.pdf>

The new 2006 WHO Growth Standards also include BMI standards for infants and children up to age five years, which will enable early detection and prevention of obesity in children.

Measuring Technique

Accurate anthropometric measurement is a skill requiring specific training. Standardizing weighing and measuring methods helps to ensure their accuracy and makes comparisons

⁵⁵ Some information for this section drawn from: WHO. *Physical Status: The use and interpretation of anthropometry*. Report of a WHO Expert Committee. WHO, Geneva, 1995.

possible. Chapter 5 in *Anthropometric Indicators Measurement Guide*, 2003 edition, explains measurement technique http://www.fantaproject.org/downloads/pdfs/anthro_2003.pdf pages 23-36. This guide is based on *How to Weigh and Measure Children: Assessing the Nutritional Status of Young Children in Household Surveys*, (United Nations Department of Technical Cooperation for Development and Statistical Office, 1986), which is a detailed and definitive guide, but is not available on the internet

Anthropometric Reference Standards

To determine whether a child under 60 months is malnourished or how prevalent malnutrition is in a given population, the above measures (weight for height, height for age, weight for age, BMI for age) must be compared to a reference standard of a child of the same age and sex.

In April 2006, WHO released new international Child Growth Standards. These standards are based on data from the 5 year Multi-centre Growth Reference Study (MGRS) that followed 8500 children from Brazil, Ghana, India, Oman, Norway, and the USA between 1997 and 2003. All children in the sample were cared for in a manner consistent with current WHO health recommendations, including breastfeeding and infant and young child feeding norms. Because the children followed were raised in optimum conditions in several countries, these standards demonstrate how all children *should* grow when healthy. They apply to all children under five years in developing and developed countries worldwide, regardless of ethnicity and socioeconomic status.

These new references will be phased in over time, and individual governments will decide whether to adopt them and when. You can access the new growth charts, along with background information, training materials, and analysis software at:

<http://www.who.int/childgrowth/en/index.html>.

The previous international references were a combination of growth references from US children and compiled by the US National Center for Health Statistics (NCHS) and were a cross-section of children in the United States only. The sample included a mix of breastfed and formula fed infants. To access NCHS growth tables and growth charts: <http://www.cdc.gov/growthcharts/>.

The most common methods of comparing a child's measurements to the standard are using standard deviation units (Z-scores); percentage of the median; and percentiles.

Z-score

The z-score is the difference between the value for an individual and the median value of the reference population for the same age (e.g., weight-for-age, height-for-age) or height (e.g., weight-for-height), divided by the standard deviation of the reference population. This is the most commonly used comparison measurement in the nutrition community and by WHO because it is considered the simplest way of describing the reference population and making comparisons to it.

Percentage of the Median

Is the ratio of a measured or observed value in the individual to the median value of the reference data for the same age or height, and sex. This is expressed as a percentage. The median is the

value at exactly the mid-point between the largest and smallest. For example, if a child's measurements are exactly the same as the mid-point of the reference population, he or she is "100 percent of the median."

Percentile

Is the rank position of an individual on a given reference distribution, stated in terms of what percentage of the groups the individual equals or exceeds.

Malnutrition Classification Systems

The use of cut-off points enables individual measurements to be converted into prevalence statistics. Cut-offs are also used for identifying those children suffering from or at a higher risk of adverse outcomes. There are multiple classification systems; the WHO (Z-score) system is the most widely used. However, the Road to Health (RTH) system is commonly seen in clinic based growth monitoring systems, and the Gomez classification is used in a few countries. The classification of mild, moderate, and severe is different in each system, and results cannot be compared across systems. The same system should be used to analyze and present all data. The cut-off points determining severity of malnutrition for individuals for the three classification systems are in Table 19.

Table 19. Classifications of malnutrition for individuals⁵⁶

System	Cut-off	Malnutrition classification
WHO	< -1 to >-2 Z-scores	Mild
	< -2 to >-3 Z-scores	Moderate
	< -3 Z-scores	Severe

Child survival programs will need to use the above classifications of malnutrition to determine the level of the problem in the communities in which they work. Table 20 provides information on the severity of malnutrition prevalence in a population based on percentage of children under 5 who are malnourished (<-2 Z).

Table 20 The Prevalence (%) Range Used by WHO to Categorize the Public Health Significance of the Prevalence of Different Measures of Undernutrition (<-2 SD)*

	Height-for-Age (% Stunted)	Weight-for-Height (% Wasted)	Weight-for-Age (% Underweight)
Low (Acceptable)	<20	<5	<10
Medium (Poor)	20-29	5-9	10-19
High (Serious)	30-39	10-14	20-29
Very High	≥ 40	≥ 15	≥ 30

* It should be noted that the above categorization is not based on correlations with functional outcomes and simply reflects a convenient statistical grouping of prevalence levels from different countries (Physical Status: The use and interpretation of anthropometry, WHO Technical Report Series, 1995).

⁵⁶ Cogill, Bruce. *Anthropometric Indicators Measurement Guide*. Food and Nutrition Technical Assistance Project, Academy for Educational Development, Washington, DC, 2003. p. 42.

There are no internationally established cut-offs for MUAC in children aged 6-59 months. A commonly used cut-off for identifying severely malnourished children is 110 mm. Children with MUAC below 125 mm without edema are classified as moderately malnourished. Children with MUAC below 125 mm and edema are severely malnourished.

Linking with Other Sectors: Nutrition in the Broader Context of Community Health⁵⁷

CORE defines multi-sectoral programming as “Building partnerships between the health sector and non-health sectors in order to improve the impact of child health programming in a way that is more effective, efficient, equitable or sustainable than acting alone and provides positive benefits for all sectors involved.” A multi-sectoral platform (MSP) is a necessary foundation for nutrition interventions to have maximum and sustained impact on a community.

By addressing the underlying causes of child undernutrition, identified by UNICEF (Figure 5) such as food insecurity, inadequate care of mothers and children, and inadequate health and sanitary conditions, the MSP helps to create an environment suitable to long-term improvements in nutritional status as well as success of nutrition and related health interventions. Additionally, cooperation among sectors provides more opportunities to deliver ENA messages through cross-sectoral contact points, reaching a larger segment of a given community. A multi-sectoral platform may include coordinated programs in: water and sanitation; household food security; women’s education; family planning; gender equity, poverty alleviation, and local governance/civil society. These programs and nutrition programs complement each other.

The CORE Group publication *Reaching Communities for Child Health: Advancing Health Outcomes through Multi-Sectoral Approaches*, describes three approaches to implementing a multi-sectoral platform:

- Communicating key family practices and/or extending health services through other sectors
- Conducting joint activities with non-health sectors to address local key determinants of child health
- Working through local government to increase capacity and funding for community health programming

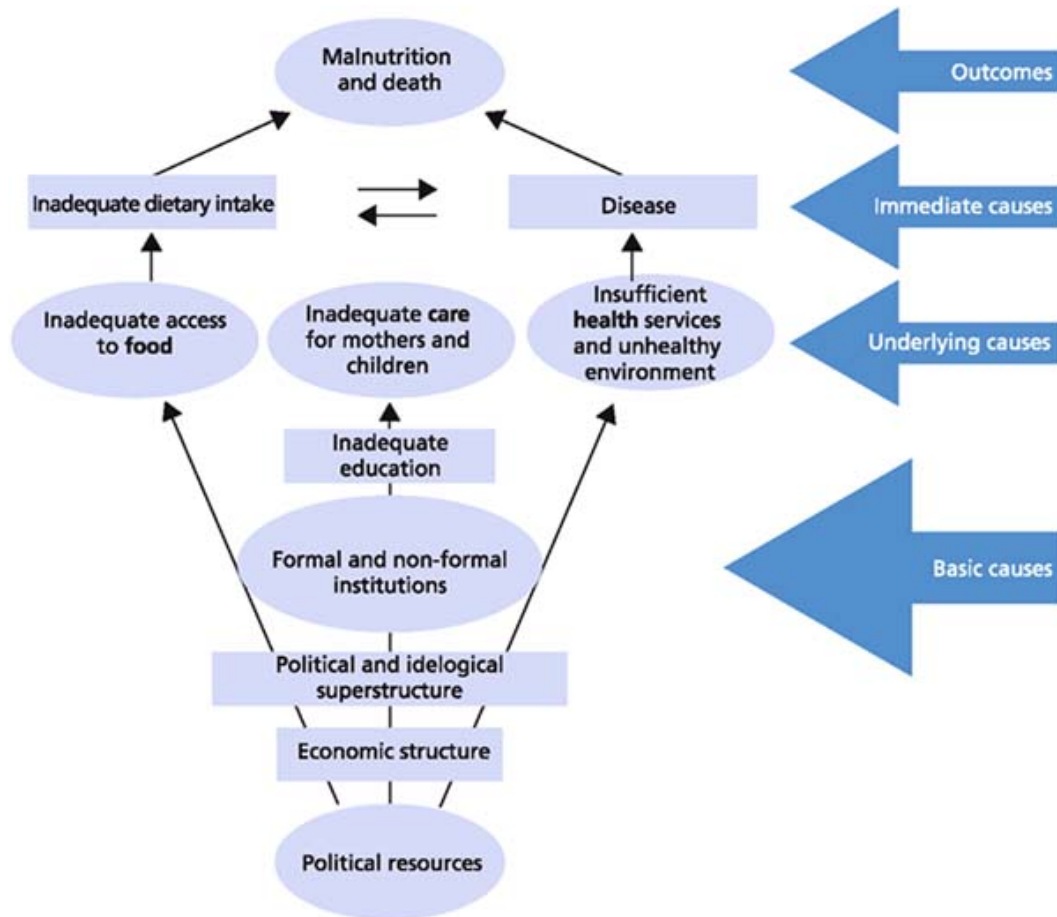
This section addresses a number of important related sectors for achieving CSHGP goals for improved child health, growth, and survival. These are:

- Hygiene Improvement and Nutrition
- Household food security
- Women’s education
- Family planning

⁵⁷ Excerpted or adapted from Bessenecker and C, L. Walker (2004). *Reaching Communities for Child Health: Advancing Health Outcomes through Multi-Sectoral Approaches*. Washington, DC. The CORE Group. http://www.coregroup.org/working_groups/MSP_dec%2022.pdf

- Gender equity
- Poverty alleviation
- Local governance and civil society

Figure 5. UNICEF Framework for the Underlying Causes of Malnutrition and Mortality



Source: FAO

Hygiene Improvement and Nutrition

Nutrition and diarrheal disease

A strong, bidirectional relationship exists between diarrheal disease and nutritional status. The negative effects of diarrhea on nutritional status result from anorexia and reduced intestinal absorption of nutrients. A large body of literature shows that children who experience more frequent bouts of acute diarrhea are more likely to experience greater growth faltering and weight decline than children who experience fewer cases of acute diarrhea.

Confounding effects make it more difficult to document whether malnutrition has an impact on the frequency, duration and severity of diarrhea. However, most researchers believe that

malnutrition increases the risk of contracting diarrhea. This happens when malnutrition weakens a child's immune host defenses. Malnourished children can suffer longer and more severe episodes of diarrhea, and are more likely to die from diarrhea than children who are not malnourished.

Recent research has also shown that micronutrient deficiencies can increase the risk of diarrhea mortality. In children with vitamin A deficiency, the risk of dying from diarrhea, measles and malaria is increased by 20-24 percent (Rice et al., 2004). Zinc deficiency increases the risk of mortality from diarrhea, pneumonia, measles and malaria by 13-21 percent (Caulfield et al., 2004). Many studies also show that infant feeding practices are another nutrition-related risk factor for contracting diarrhea and other infections. These studies found that exclusively breastfed infants were much less likely to contract diarrhea and other infections than infants who received other foods or liquids along with breast milk or were fully weaned from the breast before six months.

For more information on diarrheal disease, please see the Control of Diarrheal Disease TRM: <http://www.childsurvival.com/documents/trms/tech.cfm>

Integrating water and sanitation interventions to reduce diarrhea

Given these findings and the prevalence of diarrheal disease in the developing world, nutrition programs should consider this bidirectional relationship when planning for and implementing nutrition programs. There is a strong evidence base showing that three key hygiene practices can substantially reduce the risk of diarrhea. These practices could be promoted in nutrition programs:

1. *Safe storage and treatment of water at the point-of-use.* This practice has been shown to reduce the risk of diarrheal disease from between 30 to 40 percent (USAID, 2004). A recent analysis of 21 controlled field trials concluded that the interventions used in the studies to improve the microbiological quality of the water at the household level resulted in a 42 percent median reduction in the incidence of diarrheal disease (Clasen, T., 2003).

One way that safe water storage and treatment practices could be promoted in nutrition programs is by informing caregivers that they should practice good hygiene when preparing complementary foods. This would include using only water that was safely stored and/or treated. Studies show that the use of containers with narrow openings for filling, and spouts or taps/spigots for pouring, protect collected water during storage and household use better than vessels with wide openings. Improved containers protect stored household water from the introduction of contaminants via contact with hands, dippers, and other objects.

The most promising and accessible of the technologies for household water treatment are filtration with ceramic filters, chlorination with storage in an improved vessel, solar disinfection in clear bottles by the combined action of UV radiation and heat (See: <http://www.sodis.ch/>), thermal disinfection (pasteurization) in opaque vessels with sunlight from solar cookers or reflectors and combination systems employing chemical coagulation-flocculation, sedimentation, filtration and chlorination. All of these systems have been

shown to dramatically improve the microbiological quality of water and program approaches for most of the systems are now being tested for effectiveness in the field. (WHO, 2002).⁵⁸

2. *Optimal handwashing.* This is an effective means of preventing diarrhea when done properly and at critical times. A recent meta-analysis of handwashing studies concluded that handwashing can reduce the risk of diarrhea by 42-44 percent (Curtis, V., et al., 2003). When and how handwashing is performed is critical to preventing diarrheal disease. Hands should be washed before preparing food, before feeding a child or eating, after defecating, cleaning a baby or changing a diaper. Proper technique includes using soap, or an equally effective substitute such as ash, rubbing your hands together at least three times, and then drying them with a clean cloth or by air. Handwashing could be promoted in programs based on the six Essential Nutrition Actions since complementary feeding and feeding of a sick child all require washing of caregiver's and children's hands before food preparation and feeding or eating. Handwashing is also an important determinant of a caregiver or mother's health and should be included in maternal nutrition programs.
3. *Sanitary disposal of human feces in basic, low-cost sanitation facilities.* Sanitary feces disposal entails that the feces of all family members be disposed of hygienically. Depending upon existing feces disposal behavior this may mean promoting that all family members over the age of five defecate in a hygienic latrine, that young children (3-5 years) defecate in a hygienic latrine, potty or fixed place, and that the feces of children under the age of three are disposed of hygienically by the caregiver.⁵⁹ Safe feces disposal has been shown to reduce the risk of diarrheal disease by 30 percent or more.

Most endemic diarrheal disease, including hookworm and other helminthes, is transmitted from person to person on hands, food or some other object. Two of the primary barriers to prevent transmission from person to person are safe feces disposal and handwashing after defecation to remove fecal material from the hands. These practices could be included in nutrition programs and are already included in the C-IMCI as key family practices which improve child health and development.⁶⁰

Promoting hygiene improvement through C-IMCI

Box 24 outlines how the C-IMCI Approach was used in the Democratic Republic of Congo. C-IMCI provided a framework for the Basic Rural Health Project (SANRU) to promote and extend primary health care to rural communities. Linking water, sanitation, and hygiene improvement

⁵⁸ For a more detailed description of treatment and storage methods and practices see Sobsey, 2002. For more information on program approaches using these systems and website URLs see CDC, 2003. For information on chlorination and safe storage see SANDEC/EWAG, 2002. For a program guide and tools for promoting Solar Disinfection (SODIS), for information on chemical coagulation-flocculation see P&G, 2004, and for examples of ceramic filter programs see IDE, 2003 and Potters for Peace at <http://www.potpaz.org/>

⁵⁹ For a definition of a "hygienic latrine" see Bateman, et al., 2002. The WHO/UNICEF Joint Monitoring Program for water Supply and sanitation (WHO/UNICEF JMP) monitors progress toward achieving the MDG Goal of reducing the number of people without access to an improved water supply or sanitation facility by 50% by 2015 from the base year of 1990. A hygienic latrine is one that meets the WHO/UNICEF definition of an improved sanitation facility. For the WHO/UNICEF JMP definition of an improved sanitation facility see WHO/UNICEF, 2004a.

⁶⁰ To access the Inter-agency Committee on C-IMCI go to: <http://www.unicef.org/programme/cimci/>. The C-IMCI handbook can be found at: http://www.catholicrelief.org/publications/pdf/Hea1202_e.pdf.

to C-IMCI was a major factor in hygiene gaining acceptance in integrated primary health care projects. Using the C-IMCI framework got the attention of key technical staff in the zones where it was being implemented. Incorporating hygiene practices actively into C-IMCI meant that a wider audience was reached than when using facility-based channels only.

Box 25. Nutrition & Hygiene Integration in the Democratic Republic of Congo

WHO, WHAT, WHEN & WHERE – The Basic Rural Health Project III (SANRU III) is designed to strengthen the capacity of sixty NGO-managed health zones in the Democratic Republic of the Congo (DRC) to deliver primary health care (PHC) interventions. Priority PHC intervention package of interventions includes: HIV/AIDS and STIs, malaria, nutrition, re-emerging diseases such as tuberculosis, and water, sanitation and hygiene. SANRU III reaches over 1 million Congolese care givers.

WHY - The connections between diarrhea and malnutrition are well-documented. While SANRU I and II included water supply and sanitation infrastructure components, they did not include a hygiene promotion strategy and the water supply and sanitation components were not well linked with other primary health care interventions such as nutrition. As a result, the Ministry of Health requested that SANRU III include a hygiene promotion component in the basic PHC package.

HOW – C-IMCI provided the framework for SANRU III to promote and extend primary health care to rural communities. Integrating a hygiene promotion component into the C-IMCI framework was a major factor in hygiene improvement activities gaining acceptance. Integration was achieved by training zonal health teams, health workers, community C-IMCI teams, and community health promoters to include key hygiene practices into all sessions held with care givers of children under five. Six new flipchart pages covering hygiene improvement were included in the existing health flip chart covering the other PHC interventions such as nutrition. These materials and counseling and interpersonal communication techniques were used for household visits. Integration was reinforced through improvement of water points and sanitation facilities through “Clean Village” campaigns that encompassed nutrition, agriculture, education, hygiene and other areas of concern to the villages.

RESULT - While the impact of this integrated programming on episodes of diarrhea in the 10 zones is still being assessed, early outcome evaluation show that proper hand washing practices observed have increased by 18 percent, number of households fetching water from an improved water source has increased by 20 percent, and the percentage of households immediately disposing of their children’s feces in a latrine has increased by 19 percent.

Based on information from: <http://www.sanru.org/> and (Rosensweig, F., 2004).

References/ Further Information on Hygiene Improvement and Nutrition:

Caulfield, L.E. and R.E. Black, (2004). "Zinc deficiency." Volume 1, Chapter 5 in: Ezzati M, Lopez AD, Rodgers A, Murray CJL, eds. *Comparative quantification of health risks: global and regional burden of disease attributable to selected major risk factors*. Geneva, World Health Organization, 2004.

Clasen, T. (2003). *Disease reductions through household water treatment*. Paper presented at the IWA/WHO International Symposium on Health-Related Water Microbiology, Cape Town, South Africa, 14-19 September 2003.

Curtis, V. and S. Cairncross, (2003) "Effect of washing hands with soap on diarrhea risk in the community: a systematic review." *Lancet* 3: 275-281.

Rice, A.L., K.P. West, and R.E. Black, (2004). "Vitamin A deficiency." Volume 1, Chapter 4 in: Ezzati M, Lopez AD, Rodgers A, Murray CJL, eds. *Comparative quantification of health risks: global and regional burden of disease attributable to selected major risk factors*. Geneva, World Health Organization, 2004.

Rosensweig, F., and I. Moise, (2004). Activity Report 132. *Developing a Hygiene Promotion Program: Summary of Assistance to SANRU III in the Democratic Republic of Congo*. Prepared under EHP Project 26568/CESH.DRC.SANRU.REPORTS. See: http://www.ehproject.org/PDF/Activity_Reports/AR-132DR CongoSummarytFormat.pdf

USAID (2004). Environmental Health: Technical and Program Background. Bureau for Global Health, Office of Health, Infectious Diseases, and Nutrition. Washington, DC: USAID, 2004. See: http://www.usaid.gov/our_work/global_health/home/News/ehaad.pdf

Household Food Security and Nutrition

What is food security?

USAID defines food security as "When all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life." Food security requires that food must be *available* within a country, households have *access* to food (usually through purchase or own production), and individuals have the ability to fully *utilize* the food once it is consumed (e.g., be free of infections).

Recently, the concept of *resilience to shocks* has been added to this standard definition. Food secure households are able to respond to shocks such as economic declines or unfavorable climatic conditions without resorting to unsustainable coping strategies.⁶¹ By linking to programs that address the multisectoral dimensions of food security, many elements of CSHGP programming may be more effective. For example, a mother is better able to adopt recommended changes in feeding patterns for children if she can access the type of food being advocated. Food security programs will often include recognizable elements of child survival programming (particularly maternal and child health and nutrition activities), but these activities are set within the larger socio-economic context.

⁶¹ Unsustainable coping strategies may include behaviors such as selling off productive assets, begging, relying primarily on wild foods, and severely decreasing the amount of food eaten.

What agencies implement food security programming?

USAID food security programs (or Title II programs⁶²) usually fall under the office of Food for Peace (FFP) and are carried out in partnership with many PVO partners, the World Food Program, and others. FFP programs address two types of food security: 1) chronic food insecurity through multi-year programs geared to address long term food security issues and 2) acute emergency food insecurity situations through one year programs geared to meet the immediate food needs of vulnerable populations. The USDA Foreign Agricultural Service also supports food security through their Food for Progress and McGovern-Dole International Food for Education and Child Nutrition programs. Food for Progress funds agricultural, economic, and infrastructure development programs and McGovern-Dole promotes education, child development, and food security through school-feeding and maternal and child nutrition projects in low-income countries.

How does food security relate to nutrition?

Title II food security programs are often designed to influence both the access and utilization components of food security. Working on food availability at the country-level is beyond the usual scope of these programs. Activities range from working with mothers to change feeding behaviors, to ensuring clean water supplies, to food for work activities that create community infrastructure, to increasing agricultural production and improving storage facilities, and training farmers in value-added agricultural processing. Food security programming is not, as many people think, solely agricultural programming or distribution of food.

Title II programs pay particular attention to ensuring that the result of food security interventions is increased intake of sufficient calories and micronutrients for all vulnerable members of the household. This can result either through direct supplementary food distribution or from a household's enhanced ability to produce or purchase food.⁶³ One frequent area of overlap between food security and CSHGP programs is maternal and child health and nutrition. Both types of programs implement behavior change and other activities directed at improved maternal and child health and nutritional status, and use similar or identical indicators to capture the impact of these activities.

Linking nutrition and food security interventions

It is important for CSHGP programs to understand the food security situation of households in the communities in which they plan to work. Questions to consider include: How does food insecurity interact with and affect the desired results of the program? For example, households dependent on agricultural production for their livelihood may be particularly food insecure when crops are not ready for consumption and/or little food is available in the marketplace. Reducing the dietary intake of family members may be a usual coping pattern. What determinants of household food insecurity can the CSHGP program influence? What kinds of coordination and

⁶² For more information, see http://www.usaid.gov/our_work/humanitarian_assistance/ffp/

⁶³ A recent study by the Food and Nutrition Technical Assistance Project (FANTA), *The Impact of Title II Maternal and Child Health and Nutrition Programs on the Nutritional Status of Children*, provides a picture of the type of impact that can be expected within the context of a food security program. <http://www.fantaproject.org/publications/ffpOP4.shtml>

linkages with Title II and other food security programs will yield better results for the CSHGP program through the synergy of the two types of programmatic approaches?

Another important aspect of food security is the economic status of the household. There are many ways to measure this, but in the context of food security one of the most useful ways to look at this is the household dietary diversity (HDD). CSHGP programs are accustomed to look at the dietary diversity of an individual to determine whether or not they are consuming an adequate diet. In a similar way, HDD helps the program understand the food security status of the household through the linkage between a diverse diet and a household's access to food.⁶⁴ Activities should be focused on households that are struggling (due to poverty) to provide an adequate diet for the household.

Some of the more common food security activities (aside from the standard MCHN activities) that can be incorporated in CSHG programs include: household gardens, food storage improvement, and food processing. All of these activities address both utilization and access issues. Meanwhile, ENA actions can be incorporated into food security programs, as nutritional practices at the household level are an essential component of proper biological utilization of food.

Women's Education⁶⁵

An educated mother is more likely to have well-nourished children because she is better able to acquire knowledge and apply it to her child care practices. She is better able to effectively use health care facilities and interact with the health staff, enabling her to provide proper care and treatment for her child. Educated women often have more sophisticated skills that enable them to earn higher incomes, and thus enhance household food security, although working outside the home may negatively affect certain care practices. Evidence shows that level of maternal education has a significant impact on nutrition and care seeking behavior. A 2000 study by Smith and Haddad found that the strongest underlying determinant of reductions in child underweight from 1970 to 1995 was increased female secondary school enrollment, attributing 43 percent of the improvements to that cause. The paper states that in order to reduce malnutrition in Sub-Saharan Africa, East Asia, the Near East and North Africa and Latin America and the Caribbean in the coming years, improving women's education should be a high priority.⁶⁶

Education programs prepare women to be more independent, to better care for themselves and their families and to better navigate the health system. Education sector programs, especially those that seek to improve access to education for girls are a useful platform for delaying marriage and first pregnancy and for teaching future parents about nutrition and health. ENA messages can be delivered in schools to both girls and boys and may help to ensure the

⁶⁴ A new module on these aspects of food security is being developed for the KPC by FANTA. For references on these indicators, see http://www.fantaproject.org/publications/hdds_mihfp.shtml.

⁶⁵ This section draws heavily on: Smith L, Haddad L (2000). *Explaining Child Malnutrition in Developing Countries: A Cross-Country Analysis*. <http://www.ifpri.org/pubs/abstract/111/rr111.pdf> and Smith and Haddad (2000) *Overcoming Child Malnutrition in Developing Countries: Past Achievements and Future Choices*. <http://www.ifpri.org/2020/dp/2020dp30.pdf>

⁶⁶ Smith L, Haddad L. *Explaining Child Malnutrition in Developing Countries: A Cross-Country Analysis*

nutritional status of adolescent girls before marriage and pregnancy by improving self-care and child care practices. Involving both boys and girls increases the likelihood of them using optimal behaviors in the care of their children. Younger school-children may bring the messages home and encourage their families to practice optimal nutrition.

Family Planning

Family planning enables women to: 1) delay pregnancy until they are ready to have children, 2) plan the number of children they have, and 3) have adequate time between pregnancies. This, in turn, helps them to have healthier, better nourished children. By reducing the number of births and spacing births at least three years apart, family planning can potentially prevent 25 percent of infant deaths and improve child nutritional status. Evidence shows that intervals of 36 to 41 months between births are associated with a 28 percent reduction in stunting and 29 percent reduction in underweight as compared to 24 to 29 month intervals.⁶⁷ Birth spacing is also beneficial to the mother's health; women who space births 27-32 months apart are 1.3 times more likely to avoid anemia in their pregnancy as women who give birth at 9 to 14-month intervals, and 2.5 times more likely to survive childbirth.⁶⁸

Several possible explanations have been given for the link between birth spacing and maternal and infant nutrition: 1) Longer intervals between births allow a woman to regain the nutritional reserves that were diminished during pregnancy and breastfeeding. Short intervals have been shown to negatively affect mothers' energy, weight and BMI. 2) The birth of a second baby may lead to premature weaning of a previous child, increasing the older child's risk of infection, disease and slower growth. 3) Children close in age may compete for their mother's limited caring resources. Adequate birth spacing will provide mothers with more time to care for each young child. 4) Shorter birth spacing may also be associated with an increased risk of preterm birth, which increases risk of low birth weight.⁶⁹

Linking family planning and nutrition programs together will help to promote safe motherhood and the birth of healthy babies. Family planning programs provide an opportunity to educate women and adolescent girls about ENA messages for women's nutrition, especially as it relates to pre-pregnancy nutrition and care practices.

Family planning contacts can communicate messages about nutritional care practices during pregnancy and interpregnancy intervals. When they are ready to become pregnant, women who have received nutrition messages through family planning contact points will be able to make healthy decisions, such as taking iron/folic acid supplements, and eating well before and during pregnancy and lactation. This will help to ensure healthy pregnancies from the moment of conception, and before. Family planning programs can also encourage mothers to participate in community nutrition programs.

⁶⁷ Birthspacing: Research Update, USAID, December 2002;

http://www.usaid.gov/our_work/global_health/pop/techareas/familyplanning/birth_spacing.doc

⁶⁸ Population Reports, Series L, Number 13. Setty-Venugopal V and Upadhyay U. *Birthspacing: Three to Five Saves Lives*, <http://www.infoforhealth.org/pr/113edsum.shtml> (2002)

⁶⁹ Population Reports, Series L, Number 13. Setty-Venugopal V and Upadhyay U. *Birthspacing: Three to Five Saves Lives*, <http://www.infoforhealth.org/pr/113edsum.shtml>

Nutrition programs are a good platform to introduce and reinforce family planning messages about contraception and birth spacing. For first time mothers or others who may not have planned their pregnancy, nutrition counselors can deliver messages encouraging 3 to 5 year intervals between births and refer mothers to family planning services for advice on appropriate methods of contraception, especially while breastfeeding. The Lactational Amenorrhea Method (LAM), based on the natural infertility resulting from exclusive breastfeeding may serve as an introduction to modern contraceptive methods. LAM is discussed in the TRM family planning module.

Gender Equity⁷⁰

A woman's status relative to men affects her physical and mental health as well as her independence and decision-making power over allocation of household resources, ultimately determining her ability to act in the best interest of herself and her children. Women's physical and mental health is directly related to their ability to provide optimal care to their children. If a woman is malnourished earlier in the lifecycle, there are potential consequences for the birthweight of her child as well as her own health and nutrition. Additionally, when women are able to control resources, they are more likely than men to allocate them to children's needs. From 1970-1995, improvements in women's status in developing countries were responsible for about 12% of the reduction of malnutrition in children under 5. This was achieved during a period of little improvement in women's status; increased gender equity has the potential to make a much larger contribution to reducing child malnutrition.

Poverty Alleviation⁷¹

Poverty, a basic cause as well as a result of malnutrition, contributes to food insecurity, inadequate maternal and child care practices and substandard health facilities and environment, the underlying causes of malnutrition. From 1970-1995, growth in national per capita income in developing countries was an indirect cause of about half of the reduction in malnutrition prevalence during that time.⁷² However, after a country reaches a per capita income of about \$4700, further increases no longer affect child malnutrition rates.⁷³ Per capita income in most countries where CSHG programs operate is well below that threshold. At the household level, increasing income, savings and wealth help the poor to become more resilient to crises and provide the opportunity to make investments in their health and well-being. Programs to alleviate poverty at the household level include microcredit, savings programs, safety-net grants to cope with crises, grants, employment programs, insurance, and non-financial services such as

⁷⁰ This section draws heavily on: Smith and Haddad (2000) *Overcoming Child Malnutrition in Developing Countries: Past Achievements and Future Choices*. <http://www.ifpri.org/2020/dp/2020dp30.pdf> pp 7-8 and Smith L, Haddad L (2000). *Explaining Child Malnutrition in Developing Countries: A Cross-Country Analysis*. <http://www.ifpri.org/pubs/abstract/111/rr111.pdf>

⁷¹ A useful resource to learn about microfinance and other methods of poverty alleviation is the Consultative Group to Assist the Poorest: www.cgap.org

⁷² Smith L, Haddad L (2000). *Explaining Child Malnutrition in Developing Countries: A Cross-Country Analysis*. <http://www.ifpri.org/pubs/abstract/111/rr111.pdf>

⁷³ Smith and Haddad (2000) *Overcoming Child Malnutrition in Developing Countries: Past Achievements and Future Choices*. <http://www.ifpri.org/2020/dp/2020dp30.pdf>

literacy programs. At the community or national level, poverty alleviation programs often include investments in infrastructure and legal and institutional reform.

There are several examples of using microfinance programs as a platform to deliver health and nutrition education, thereby capitalizing on the synergy between poverty reduction and improved nutritional status. Most programs have regular meetings, and require participation in education sessions in order to receive the financial services. This regular contact point that reaches a wide population is a key opportunity to deliver ENA messages not only to mothers, but to fathers, mothers-in-law and members of the community. It is important to note the cyclical relationship between nutrition and poverty. Reducing poverty is likely to improve nutritional status and poverty alleviation programs are an appropriate forum to deliver ENA messages. Improvements in nutrition also may lead to reductions in poverty. Good nutritional status leads to better health, reducing a family's health expenses and increasing productivity.

Clients of Bolivian microfinance organization CRECER, which provides health education and financial services together, had higher rates of breastfeeding than non-clients. In Ghana, participants in Freedom from Hunger's *Credit with Education* practiced better breastfeeding behaviors and their children had lower rates of stunting and underweight than those of non-participants (see case study, Box 25). A survey done by the Bangladesh Rural Advancement Committee (BRAC) found fewer cases of severe malnutrition among BRAC microcredit clients who received health education, with even fewer cases among long-time members.

Local Governance/Civil Society

Good local governance and an active civil society are part of the platform on which to build successful community based nutrition programs. *Successful Community Nutrition Programming: Lessons from Kenya, Tanzania, and Uganda*⁷⁴ (2002) cites community organizational capacity such as women's groups and village development committees, community leadership (e.g., via pro-active individuals or a pro-active government), and community ownership of the process among the characteristics that contribute to a successful nutrition program.

Working through organized community groups under local leadership has been effective in implementing nutrition programs, and ensures that the program will be sustained when the PVO exits. In some instances, nutrition programs will work through existing civil society structures. In other instances, nutrition programs will choose to create groups to support their programs.

⁷⁴ <http://www.linkagesproject.org/media/publications/Technical%20Reports/CommNut.pdf>

Box 26. Case Study: The Multi-sectoral Platform: Integrating Nutrition Messages into Microfinance Programs

Freedom from Hunger's *Credit with Education* program has successfully integrated health and nutrition education with microfinance in 15 countries in Africa, Asia, Latin America and the Caribbean, reaching 220,000 women. The village banking program provides small scale loans to economically active poor rural women. Participants form credit associations with 15-50 members that meet regularly. At these one to two hour meetings, participants repay portions of their loans, deposit savings and participate in a 20-40 minute educational session on health, nutrition, or business management. The health and nutrition programming promotes optimal practices in: breastfeeding; infant and child feeding; diarrhea prevention and management; immunization; family planning; and HIV prevention.

The education sessions are active and participatory, combining local knowledge and practices with global learning and experience. One field agent manages all aspects of the program, financial and educational. The field agent, who is trained in adult education strategies but is not a health or nutrition expert, introduces the topic, helps participants understand the relevance of the issues in their lives, offers basic information about practical changes, encourages participants to share successful experiences, and promotes solidarity. The education modules, developed by Freedom from Hunger and adapted to local circumstances, are covered over a two year period. One health topic and one business topic are covered in each loan cycle (16 weeks).

In coastal Ghana, where Freedom from Hunger works with the Lower Pra Rural Bank, evaluations have shown significant improvement in comparison to control communities in: participants' health and nutritional practices (including feeding colostrum, more timely introduction of complementary foods, and improved nutritional quality of complementary food); caloric intake of their children; and nutritional status (improved mean height for age and weight for age Z-score) of one year old children.

Microfinance programs are an example of a non-health contact point through which a PVO may introduce Essential Nutrition Actions to a population. Project Hope and World Relief Corporation have developed their own versions of *Credit with Education*. Using a multi-sectoral platform often reaches a wider population than most MCHN programs can. *Credit with Education* reaches young mothers as well as younger women who are not pregnant or lactating and older women whose support younger women may need in order to adopt behavior changes. This platform for providing nutrition education is sustainable; microfinance institutions are designed to be financially self-sustaining through program generated income. After a child survival program ends, the local microfinance institution will likely be operational, with continued regular meetings, at which important health and nutrition messages can continue to be delivered, at a minimal marginal cost.

Case study adapted from:

Dunford, C and McNelly, B. "Using Microfinance to Improve Health and Nutrition Security," *Global Health Link*. (Nov.-Dec. 2002) <http://www.globalhealth.org/publications/contents.php3?id=2&issue=118> (requires login)

Dunford, C and Denman V *Credit with Education: A Promising Title II Microfinance Strategy*. Food and Nutritional Technical Assistance Project <http://www.fantaproject.org/downloads/pdfs/cwe.pdf>

For further information:

Freedom from Hunger Technical Resource Site

<http://www.ffhresource.org/>