The Positive Deviance Nutrition Guide for Peace Corps Volunteers

a community-based approach to behavior change for improved nutrition outcomes

Peace Corps
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Acknowledgements

Countries served by the Peace Corps, particularly those in West Africa, have been fortunate to have a significant "diffusion of innovation" of the Positive Deviance Nutrition program. To a large extent, this diffusion can be attributed to the original Peace Corps PD Hearth Nutrition Guide written by Amanda Palmer, who served as a Volunteer in Guinea (2000-2002). In 2008, Ariel Wagner and other Peace Corps Volunteers serving in Mali updated and significantly enhanced the guide based on their experiences. This current edition represents a collaborative effort that initially began in 2011.

The Peace Corps is grateful to CORE Group members who provided considerable technical feedback on ways to improve early versions of this guide and to colleagues at the Positive Deviance Initiative (PDI) for their thoughtful review, guidance, and patience.

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Executive Summary

Malnutrition is a challenging problem in many Peace Corps Volunteer communities. Fortunately, Volunteers enjoy a literal "seat at the table" when it comes to improving nutrition, being welcomed into homes to share meals with community members. This offers them a unique opportunity to make an impact concerning knowledge, attitudes, and ultimately behaviors in reference to food and nutrition.

This guide assists Volunteers to better understand the methodology of Positive Deviance (PD) and to execute the various steps that ensure activities are planned appropriately, use locally discovered PD behaviors, work with the correct participants, don't displace other effective programs, and stress follow-up and community engagement to ensure lasting solutions.

The guide is meant to inform Positive Deviance-Nutrition activities. Positive Deviance in the realm of nutrition has often included Hearth activities, but experience has shown that such activities in isolation from proper PD inquiries have frequently degenerated into loosely run supplementary feeding programs.

In simple terms, the Hearth model brings together a group of caregivers and their young children to eat together in a group setting. Essentially a supplementary feeding activity, the Hearth has traditionally included health education topics and discussion on caring practices with and between the caregivers.

The guide is notably more technical than previous versions used by the Peace Corps. This is a result of the evolution of treatment for acute malnutrition outside of the agency and a standardization of appropriate, evidence-based practice with an emphasis on "Do No Harm" programming. While engaging in this way requires greater detail to training and understanding of technical nutrition, it is necessary when dealing with children who have an elevated risk of malnutrition.

One major change from previous guidance is strict referral for detected cases of severe acute malnutrition (SAM). SAM is a clinical condition that requires professional care and treatment that is outside the realm of Volunteers. In addition to this, screening of children is now advised to involve Mid-Upper Arm Circumference (MUAC) for selecting participants, which aligns the approach with screening protocol used elsewhere in combating acute malnutrition. This change still allows Volunteers to align with Growth Monitoring Programs, in addition to the weights that are typically collected in these widespread programs.

The re-branding of PD-Nutrition is an intentional rededication to the principles of PD and an explicit effort to ensure that PD can be employed with or without Hearth. The Hearth activities address inadequate complementary feeding practices, a single but complicated driver of malnutrition. Since malnutrition can be caused by multiple factors, this adaptation encourages the implementation of PD to explore PD behaviors beyond "what's in the bowl" for promotion and practice.

PD stresses action while empowering communities to look inward for solutions. The dynamic created by communities cooperating to solve problems on their own should not be underestimated. PD is about empowerment and gives communities ownership of the solutions to their own problems. Planners are encouraged to reflect back on the guiding principles of PD periodically throughout implementation and remind themselves of how important the community is to the process.

With careful planning and beneficiary selection, PD Nutrition can help to achieve a transformative process in the communities PC serves. Though care must be taken to manage risks when working in nutrition, the rewards can be enormous and potentially life changing.

Acronyms

APCD	Associate Peace Corps Director (commonly known as Program Manager)
ARI	Acute Respiratory Infection
BCC	Behavior Change Communication
BNE	Breast-feeding Nutrition Educator
CHW	Community Health Worker
CMAM	Community Management of Acute Malnutrition
CSG	Community Support Group
DBC	Designing for Behavior Change
DHS	Demographic and Health Surveys
ENA	Essential Nutrition Actions
FGD	Focus Group Discussion
GFD	General Food Distribution
GMP	Growth Monitoring and Promotion
HfA	Height for Age
IEC	Information and Education Communication
MAM	Moderate Acute Malnutrition
MOH	Ministry of Health
MUAC	Mid-Upper Arm Circumference
NGO	Nongovernmental Organization
NPD	Non Positive Deviant
ORS	Oral Rehydration Solution
OTP	Outpatient Therapeutic Program
OVC	Orphans and Vulnerable Children
PD	Positive Deviance
RUTF	Ready to Use Therapeutic Foods
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SFP	Supplementary Feeding Program
TBA	Traditional Birth Attendant
TFC	Therapeutic Feeding Center
VDC	Village Development Committee
VHSG	Village Health Support Group
WfA	Weight for Age
WfH	Weight for Height
WFP	World Food Program
WHO	World Health Organization

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So What Is Positive Deviance Nutrition?

The Positive Deviance Concept

Positive Deviance (PD) is based on the observation that in every community, there are those who have better outcomes than their neighbors, despite similar economic circumstances and frequently limited access to resources, services, or other inputs. Their more successful outcomes are due, at least in part, to utilizing uncommon but successful behaviors and strategies. In the context of nutrition, there are some families who use existing resources more effectively to provide their children with a healthy and nutritious environment. Their children thrive and grow while many of their neighbors struggle to keep their children healthy. This is the PD concept. It exists in nature and evolves naturally as nature and humans learn to mimic what works best. PD work strives to accelerate the dissemination process of this learning and adaptation as a means to desirable outcomes.

The Positive Deviance approach is an asset-based, problem-solving process focused on community ownership. While leveraging leadership and local expertise, community members learn and discover existing but frequently hidden solutions to a given problem. They use existing resources, skills, and wisdom. By following the steps in the PD approach, community members learn to listen and observe differently to discover each other's strengths. Throughout the process, families and other stakeholders are asked questions, observed, and invited to participate in community self-discovery of what is already working for some of its members.

As volunteers steering the PD process along in your community, keep in mind what behaviors and strategies are discovered and challenge community members to come up with fun activities that allow them to practice the discovered behaviors and strategies. Do not limit this exclusively to food, but also focus on caring, hygiene, and health seeking practices.

The PD approach for nutrition provides "living proof" of the effects of good feeding, hygiene, child caring, and health seeking practices observed in families who already have well-nourished children, despite the fact that they are no wealthier or advantaged than other community members. The process of growth monitoring by community members, and then the collective view of the health of all children raises the consciousness of community members and helps them maintain a healthy status and prevent future malnutrition within their own community.

The transformative nature of successful PD interventions should not be underestimated. Without a certain scale of the problem, the issue fails to generate interest and motivation among group members. If the outcome of interest is relatively rare (very low rates of malnutrition in the community) then the PD inquiry methodology bogs down as it is difficult to determine just who the positive deviants are (since they are so numerous) and, therefore, which novel approaches to daily tasks (feeding, food preparation, hygiene, breast-feeding, etc.) are to be promoted.

Use of a threshold of cases, combined with qualitative work that explores the relative importance of the problem to community members can assist planners in determining the feasibility of using the PD approach. Positive Deviance seeks to catalyze change using quick, observable gains through the application of small do-able actions that are practical in nature for a majority of those impacted.

The PD process will enhance the skills of those who make up the "discovery team." Community health workers (CHWs), traditional birth attendants (TBAs); midwives, breast-feeding nutrition educators (BNEs); community support groups (CSGs), and others will practice listening and communicating differently. They will learn how to make home visits where listening is more important than the provision of information. Eventually, this intervention will impact many of the current groups already present and active in your community.

TABLE 1: PD APPROACH COMPARISON

Contrasting Traditional Community Assessment Approaches to the PD Approach	
Traditional Approach	PD Approach
What are your needs?	What are your strengths?
What is wrong?	What is working here?
What is lacking here? What can we provide?	What are your resources? What can we build on?

What is particularly appealing about the PD approach is that it leverages locally available resources and existing successful behaviors and strategies, which increase the chances of the focused behaviors being sustained. The PD approach also brings together stakeholders and community members who usually don't have conversations about infant and young child health. Open discussion allows new and different relationships to begin and raises the awareness of how each person affects the health and well-being of the community's children.

In the fight against childhood malnutrition, this approach enables the community to highlight sustainable ways already being successfully used to promote positive nutrition outcomes.

Implemented appropriately, Positive Deviance as an approach offers a number of advantages over other implementation methodologies. Though the approach may not be suited for every situation and is most successful when specific criteria are met, the basics of the approach's design confer advantages over many other approaches.

Public health nutritionists continually have to remind policy makers and other stakeholders that undernutrition is NOT just about food. We know that malnutrition results from a myriad of factors; included among them are sub-optimal caring practices. The PD method addresses this issue as it seeks to explore not only feeding practices, but also caring practices (including psychosocial practices, child care practices, and practices that support the physical and emotional development of the young child). The PD approach also can target hygiene practices (body, food, and environmental hygiene) because they play an important role in disease prevention (diarrhea, worms, malaria, etc.) and emerging evidence suggests persistent exposure to unhygienic environments has a negative impact on the health of the small intestinal wall, affecting the body's ability to effectively absorb nutrients and prevent infection. Health seeking practices are also included because they critically affect children's morbidity and mortality. The PD approach has a flexible template that allows users to adapt the approach to the local context.

The PD approach intends to **involve ALL caregivers of young children**. Program activities are designed to reach non-traditional caregivers (such as grandmothers, fathers siblings, etc.), as well as others who support or supplement caregiving of young children.

PD **values the community as a true implementation partner** and seeks to dismiss the idea of participants as beneficiaries. Many PD programs fail because the facilitators are health staff members who may not possess the skills to mobilize the community. It is vital that community mobilizers be involved from the very beginning to help communities create the quantitative baseline that informs them of the actual health status of their children.

PD **emphasizes practice instead of knowledge**—the "how" instead of the "what" or "why." The PD mantra is: "You are more likely to act your way into a new way of thinking than to think your way into a new way of acting."

The PD process **values experts within the community**, not technical experts from outside the community, to provide information about what will impact on the identified problem. There is an appropriate use of technical guidance to take advantage of a wealth of collective knowledge on improving nutrition outcomes, but this expertise is grounded in the PD approach by using local "experts" to highlight how evidence-based practices are achieved amid the various challenges presented by a particular shared context.

Examples of local proverbs that have been used to explain the PD concept

Mozambique – Macua proverb from Nampula province: "The faraway stick does not kill the snake."

Senegal - Wolof: "la foulee du coureur reveille celui qui dort (the draft from the runner wakes those who are still asleep)"

Because the discussions and work require all community members to become involved and contribute their own stories, relationships emerge, building both **formal and informal networks that will strengthen the community** and link people together in new ways.

Positive Deviance Nutrition & Positive Deviance Hearth

The original concept of the Hearth model was introduced in the 1980s in Haiti by Drs. Gretchen and Warren Berggren. Up until then, severely malnourished children and their families were referred to a hospital setting for treatment. Often, this was not accessible or financially possible for families and the Berggrens witnessed many children dying because they could not stay in the hospital for the time required to complete treatment. The Hearth model consisted of group feeding activities in the community for caregivers and their malnourished children. Activities included having the caregivers and community health workers cook local weaning foods of high caloric and protein value, provided by the hospital or other aid organizations. Once the meal was prepared, the caregivers would feed their children together and hear a health lesson provided by the community healthcare worker. The participants continued to attend these cooking and feeding sessions until their children were rehabilitated.

The Hearth took on new formality in 1990 when it was piloted in Vietnam and paired with a strong PD component. This effort was catalyzed by a government mandate that sought to develop a sustainable solution. Identified positive deviants were poor families with healthy children. Community members interviewed these families and discovered their uncommon behaviors that had a positive impact on the health of the identified PD child. The community then designed a modified Hearth model based on the discovered uncommon behaviors, strategies, and food being fed to the healthy child.

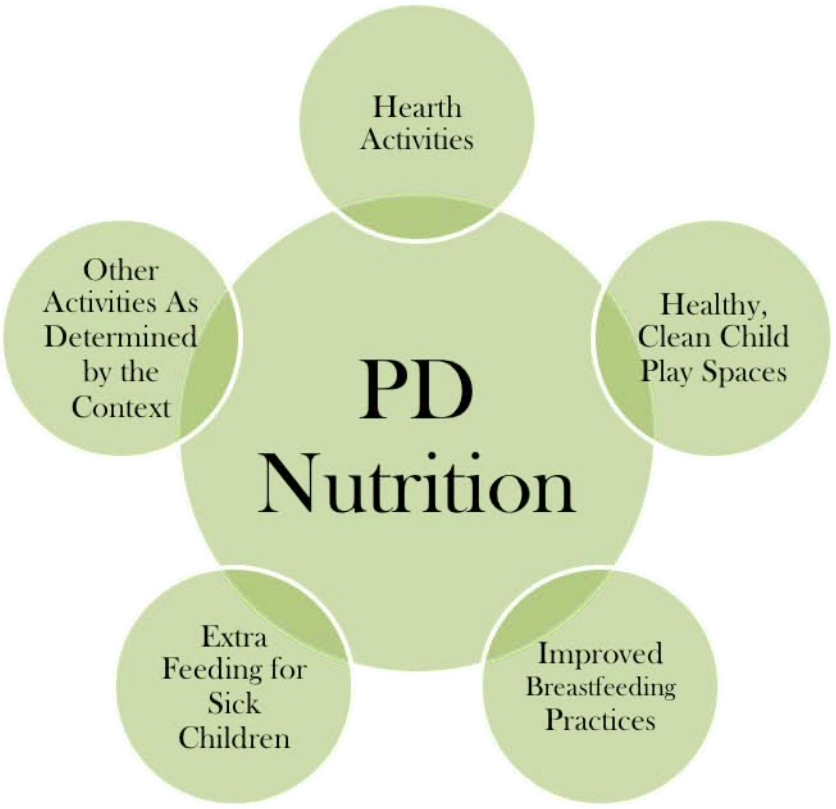
Participants met at someone's home each day for 10-12 days with a day off in the middle to let the caregivers practice the new behaviors at home on their own. There were then two weeks off until the next session to again let families practice the behaviors at home.

As the application of PD/Hearth has become operationalized, the emphasis and focus typically has narrowed to the promotion of Hearth activities in isolation of the PD inquiry. This has led to an inappropriate interpretation of the intervention model as a supplementary feeding activity or, still more dangerous, a therapeutic feeding intervention.

Advances over the past decade have introduced effective, life-saving treatments for children (as well as adults) with severe acute malnutrition (SAM) and the nature of these advancements has increased the coverage for these critical interventions. These Community Management of Acute Malnutrition (CMAM) programs utilizing Ready-to-Use Therapeutic Foods (RUTF), such as Plumpy'Nut, have been found to be highly effective, particularly when cases are detected early, in the rehabilitation of children. They help children to recover quickly and dramatically reduce their risk of mortality. Despite their dependence on commodities (the RUTF) from outside the community, they remain the unrivaled best practice for treating severe acute malnutrition.

A new PD model is emerging to account for dramatically improved coverage of highly effective treatment programs for SAM cases and the shared experiences associated with mixed results of programming that frequently emphasized the Hearth without a strong PD component. That new model, PD Nutrition, is not so much a new philosophy as it is a re-dedication to the power of using community successes to foster behavior change. Part of this shift to PD Nutrition is an appreciation for the multiple drivers of malnutrition and that optimal nutrition outcomes are about more than simply "what's in the bowl?" Finally, the evolution reflects the reality of current treatment protocols for SAM.

TABLE 1: PD APPROACH COMPARISON



PD Nutrition and the Peace Corps

The PD Nutrition intervention has been conducted in various countries and cultures around the world. It was originally adapted by Peace Corps/Guinea in 2000, followed by Peace Corps/Mali in 2005 and Peace Corps/Burkina Faso in 2008. While local adaptations are often necessary and creativity is encouraged, use of the essential PD Nutrition elements have been shown to increase the likelihood of a successful intervention. When working with children with a heightened risk of mortality, it is important to use sound technical guidance. This manual will provide a framework for setting up and implementing activities using the PD approach to address the issue of malnourished children.

Peace Corps experience shows that it may be helpful to think in terms of positive deviant families rather than positive deviant mothers or children since the actions of the father and other key family members can play equally critical roles in the health and upbringing of the child. Just as the most motivated woman can have a difficult time feeding her children well if she has an unsupportive husband or mother-in-law, a woman whose husband is supportive and concerned about his children's health is far more likely to keep them healthy and well-fed.

Additionally, PCVs are uniquely situated to offer ongoing monitoring and support through house visits and communal events. Interpersonal relationships formed within the community offer opportunities to promote change and to encourage and recognize incremental gains. These psychological components should not be underestimated in their ability to foster both individual and community change.

The Peace Corps, Positive Deviance, and Behavior Change

The Peace Corps defines development in terms of its greatest resource: people—**helping people develop their capacity to improve their own lives.** By working within a human capacity-building framework, the focus of Volunteers' work is strengthening the capacity of men, women, and youth to actively participate in their own development. This approach seeks to empower local people to be their own decision-makers and develop the skills, and ultimately *behaviors*, needed to improve their lives.

PD Nutrition activities offer opportunities to affect behavior change. The PD approach can be used on its own to promote change through the social dynamics of modeling and demonstration, as well as through repetition, encouragement, and reinforcement. By highlighting achievable behaviors that are protective against malnutrition, or supportive of healthy nutrition outcomes, PD Nutrition can build momentum across a community that changes behaviors.

Though PD can be used as an approach to behavior change on its own, it can also be paired with other behavior change methods to inform activity planning. While there are many theories of behavior change and tools used by practitioners to promote behavior change, the Designing for Behavior Change (DBC)[1] is a tool the Peace Corps endorses and has used as a basis for training modules on behavior change.

1 Food Security and Nutrition Network Social and Behavioral Change Task Force. *Designing for Behavior Change for Agriculture, Natural Resource Management, Health and Nutrition.* Washington, DC: Technical and Operational Performance Support (TOPS) Program, 2013. http://www.coregroup.org/storage/Tools/DBC_Curriculum_Final.pdf

Designing for Behavior Change

The DBC framework is a field tool that operationalizes behavior change theory and uses community level information to inform activities to overcome obstacles to those behaviors. Its value is in its practicality for field level use and its balance of sound principles for formative research and realistic expectations of time, resources, and skills.

The framework uses a categorization system for the various determinants of behavior. These categories can be used then to describe conditions or attitudes that determine behaviors. Understanding the determinants of behavior is important in designing sound behavior change activities related to infant and young child nutrition.

The four most influential determinants of behavior, according to the DBC, are:

- Perceived self-efficacy/skills
  – Am I able to do this particular behavior? Do I have the capacity, skills, knowledge, resources, etc.?
- Perceived social norms
  – Do others, whose opinion I value, think I should adopt a particular behavior?
- Perceived positive consequences
  – What are the positive things that will occur if I adopt a particular behavior?
- Perceived negative consequences
  – What negatives are there to my adopting a particular behavior?

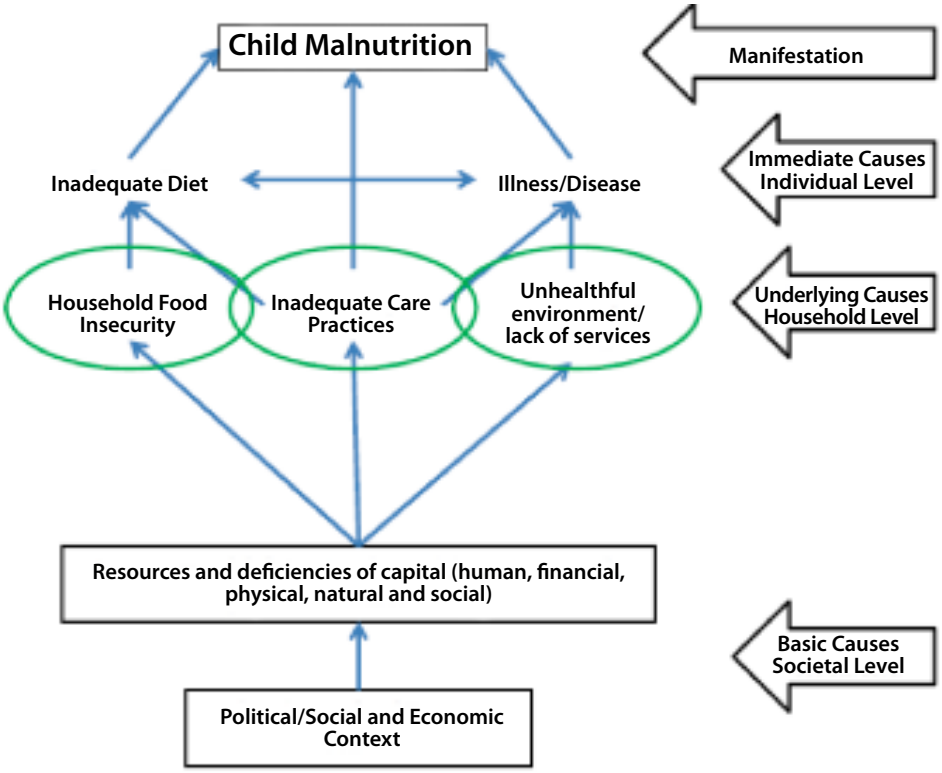
Other determinants include:

- Access
- Cues for action/reminders
- Perceived susceptibility/risk
- Perceived severity
- Perceived action efficacy
- Perceived divine will
- Policy
- Culture

To adeptly employ the DBC model, it is critical to identify those whose behavior is being targeted, as well as the community members or group(s) who are the most influential in those people's behavior. The tool forces practitioners to explore the determinants from the perspective of the targeted group and to do so through formative research and inquiry.

After the formative research and defining the various groups with whom to be concerned, the tool systematically assists in converting these informed discoveries into points of action. Through this structured process, practitioners isolate those obstacles that prove to obstruct adoption of desired behaviors and focus activity planning on overcoming them.

FIGURE 2: UNICEF FRAMEWORK FOR MALNUTRITION



UNICEF 1990

Designing for Behavior Change (DBC) and Positive Deviance

These approaches to structured behavior change can be used independently, but there is a natural intersection for the two to be mutually reinforcing and complimentary. Since the DBC requires the promoted behavior to be KNOWN at the outset, the PD inquiry can be utilized in advance of the DBC to isolate the focus behavior. This PD inquiry methodically explores a community member's home life and routine practices.[2] In the case of nutrition, there is a wealth of knowledge on behaviors that promote normal growth and development for children, so using anecdotal exploration to find truly novel behaviors employed by positive deviant caregivers with children who are well nourished is anecdotal and could be misleading. However, using the Essential Nutrition Actions (ENA) framework[3] as a backdrop for how to structure that PD inquiry helps us to couch the approach in current best practices and evidence-based programming. Importantly, both approaches place a premium on what is done or action taken rather than simply the transfer of knowledge or the creation of awareness.

The ENA framework allows one to understand the general nutrition behavior categories to be promoted. With that information in mind, the tools and process of PD can mine for the highly specific **ways in which behaviors that promote nutrition are achieved**. A limitation of using the ENA framework is the exclusive focus on direct nutrition actions.

2 See section on PD inquiry and sample tools in Appendices P and Q.
3 See "Malnutrition Basics" section for the 7 Essential Nutrition Actions..

We know from the conceptual framework of malnutrition in Figure 2, diet and food intake is only a part of what can cause malnutrition. Care practices and access to services/healthful environment also contribute, often to a staggering degree, to malnutrition. As is discussed in the PD inquiry section of this manual, PD planners are encouraged to look beyond simply "what is in the bowl" and explore behaviors related to hygiene and care.

The Goals of PD Nutrition

Improve nutrition outcomes

Enable families to sustain improved nutrition outcomes of children at home on their own

Prevent malnutrition throughout the community, now and in the future

PD Nutrition is a community-based approach to address malnutrition with three inextricably linked goals. The method focuses on changing or promoting new behavior rather than transferring knowledge. Though program success is measured by improving nutrition outcomes, the emphasis during the intervention is placed on what people do rather than what people know or have learned, in addition to incremental improvements to nutrition status (and well-being) that occur along the way. Changing or promoting new behavior in the caregivers of children is achieved by employing the following learner-centered strategies:

- Involving the caregivers in modeling good practices, i.e., "learning by doing" during a PD Nutrition activity
- Using peer support to encourage new habits

These strategies enable caregivers of young children to:

- Gain the confidence necessary to embrace a new habit through direct and repeated practice
- Take responsibility for providing the care and nutrition to achieve optimal child growth and development
- Continue to practice the new habits at home because they see positive changes in the malnourished child's physical appearance and behavior, usually within 2-3 sessions of the PD Hearth activity (2-3 months)[4]

The PD process impacts more than the nutritional status of infants and young children. Unanticipated positive results have occurred in many communities that have used the PD approach. Because community members' relationships change and their mindsets flip from dependence to abundance and power, self-esteem for individuals and the community as a whole can transform the social fabric of the community.

4 Marsh, David, Monique Sternin, and Jerry Sternin. *Designing a Community-Based Nutrition Program Using the Hearth Model and the Positive Deviance Approach - A Field Guide.* Save the Children Federation, Inc.: Pages 17-18. http://www.positivedeviance.org/pdf/publications/PD%20Hearth%20Field%20Guide.pdf

Guiding Principles of the PD Approach

Remember these basic principles when initiating the PD approach in a community:

- The community owns the entire process.
- All individuals or groups who are part of the problem are also part of the solution and hence the PD process involves all parties who affect the problem. *"Don't do anything about me without me."*
- The community discovers existing uncommon, successful behaviors and strategies (PD inquiry).
- The community designs ways to practice and amplify successful behaviors and strategies and unleashes innovation.
- Community members recognize that "someone just like me" can get results, even in the worst case scenarios (social proof).
- PD emphasizes *practice* instead of knowledge—the "how" instead of the "what" or "why." The PD mantra is: "You are more likely to act your way into a new way of thinking than to think your way into a new way of acting."
- The community creates its own benchmarks and monitors progress.
- PD process facilitation is based on deep respect for community, its members, and its culture, focuses on interactive engagement, and the capacity to let the community lead.
- The PD process expands existing networks and creates new ones.

The Ethics of PD Nutrition - *Do No Harm*

Both emergency medical and humanitarian ethics frameworks widely embrace "Do No Harm" language. Non-maleficence is a term derived from the Latin phrase *primum non nocere* or "first, do no harm." In common language, non-maleficence codifies the idea that the decision to engage or provide care must be informed by an analysis and acceptance of potential risks. At its core, the principle acknowledges that there are many situations where an intervention may pose significant risk of causing harm while offering a less than certain chance of being beneficial. Understanding this, the principle implores one to understand the appropriateness of considering "no action" as preferable to potentially causing harm by intervening.

In the discussion of PD Nutrition, and specifically Hearth activities, appropriate targeting and screening is integral in setting the stage to have the greatest positive impact. However, appropriate selection of participants is also crucial to avoid providing inappropriate care that can cause harm. Assessing risk of harm requires looking beyond the activity at hand and exploring the impact of that activity in a more holistic way. Exploring what activities might be displaced or interrupted, for example, is a common way to uncover sources of risk. In the case of Hearth, misguided selection of participants could prevent children from being placed into an effective treatment program. This is why targeting children through careful, technically sound screening methodology is important.

Though the implications of the Do No Harm imperative are far reaching, there are two primary, practical considerations to protect the populations served.

The first is to protect the period of exclusive breast-feeding. During a child's first six months of life, the exclusive consumption of breast milk, in absence of other solid foods and liquids, conveys health benefits through improved growth and immunity.

The second consideration is to ensure sufferers of severe acute malnutrition are referred to therapeutic programs and that they are not included in PD Nutrition activities that lack the therapeutic component. The greatly increased risk of death associated with SAM cases is the result of an extreme deprivation of calories, co-infections, and potential interruptions to normal metabolic activity and, therefore, require therapeutic care.

Malnutrition Basics

Malnutrition Basics

Malnutrition can be most basically defined as a condition arising due to a sub-optimal intake or utilization of necessary vitamins, minerals, and calories to maintain growth and maintenance of the body's various systems. The term malnutrition is often used in place of undernutrition, but malnutrition includes both undernutrition and overnutrition. Understanding that malnutrition is not just a single thing with a single solution is absolutely paramount in beginning work to improve nutrition outcomes.

Undernutrition

Improper care practices, inadequate food intake, and unhealthful environments can all drive undernutrition, though the manifestations can be varied. Figure 2 visually demonstrates the various pathways of the drivers of malnutrition. Though deficiencies of various types of capital tend to serve as the most basic causes of malnutrition, these more immediate factors are those which can be affected by intervention work at the community level.

Chronic malnutrition results from nutritional deficits sustained over time, affecting growth and development of the affected child. Though mortality is much more closely linked to acute malnutrition, chronic malnutrition affects many more children globally. Deficits of critical nutrients impede a number of biological processes that disrupt or impair cellular and systems functionality in the body, resulting in sub-optimal growth and development. This impaired linear growth is called stunting. Stunting is detectable by measuring the height or length of a child relative to age. Even severe stunting is sometimes not apparent, since the age of the child may not be obvious to an onlooker. Though achievement of optimal physical growth is important, so too is the concurrent cognitive development as demonstrated by the links to lower educational attainment, decreased lifetime earnings, and a number of chronic health issues in adults who suffered childhood stunting.[5]

Acute malnutrition results from an immediate and severe nutritional deficit. This type of malnutrition manifests with either wasting or bilateral edema (bi-pedal nutritional swelling found in the feet and ankles and continuing up the body, dependent upon severity) and is the form of malnutrition most closely linked to child mortality. Over a relatively short period of deprivation, the body depletes fat stores and begins to break down proteins found in lean body tissues resulting in weight loss. This is called wasting. In some cases normal cellular function is disrupted, causing an abnormal retention of fluid, which is why bilateral edema indicates a severe nutritional concern. Acute malnutrition is assessed by a low weight-for-height measurement or a low mid-upper arm circumference (MUAC) measurement, and/or the presence of bilateral edema. It is possible for wasting and edema to manifest concurrently. Though this form of malnutrition is the most visibly shocking, it represents the smallest number of cases compared with micronutrient malnutrition or chronic malnutrition. The risk of mortality increases as the severity of the condition occurs[6]; early detection of cases is a high priority for action and these cases are best treated through effective therapeutic programs in either inpatient or outpatient[7] settings.

5 Victoria, Cesar G., et al, "Maternal and child undernutrition: consequences for adult health and human capital," *The Lancet* 371 (2008): Pages 340-357.

6 Valid International, *Community-based Therapeutic Care (CTC): A Field Manual* (Oxford: 2006): Page 7.

7 "Outpatient" therapeutic treatment programs are often called "Community Management of Acute Malnutrition" or CMAM programs that utilize ready-to-use therapeutic foods (RUTF), such as Plumpy'Nut, to treat cases at their own homes.

"Hidden hunger" or **micronutrient malnutrition** manifests itself in a number of different ways and results from a lack of specific micronutrients. This can occur due to a lack of intake, absorption, or utilization of various vitamins and minerals.

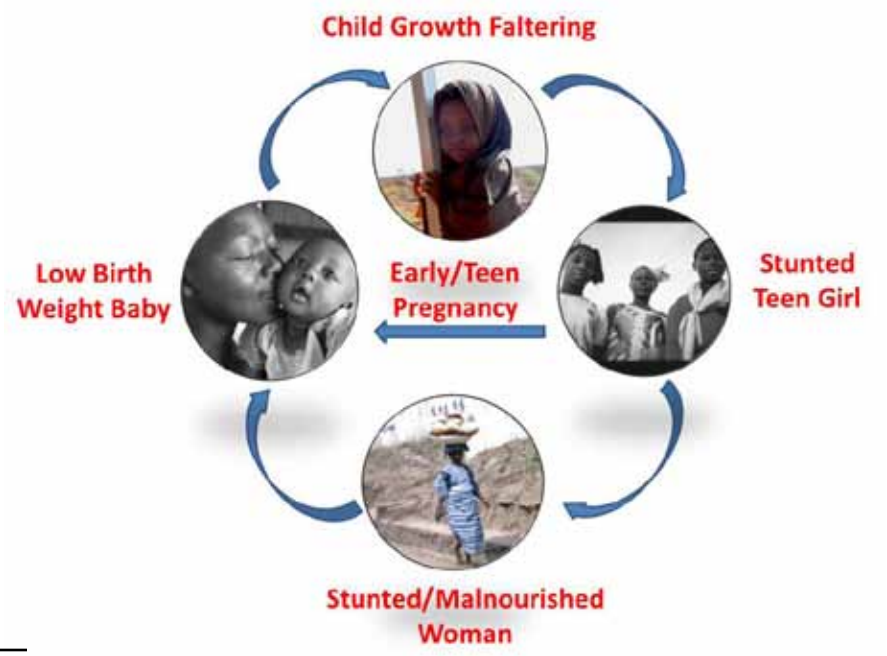
Overnutrition

Poor nutritional status can be caused by wrong types of foods, as much as it can be caused by deficits of food. Overconsumption of foods that are "energy dense" but "nutrient poor" can result in overweight or obese nutritional statuses. Even in cases of an abundance of calories, deficiencies of certain micronutrients can be common. Additionally, the abundance of calories and weight gain are both risk factors for a number of chronic diseases, including diabetes, hypertension, heart disease, and stroke.[8]

The Cycle of Malnutrition

Just as malnutrition can rarely be attributed to a single cause, it is not just isolated at a point in time either. The nature of malnutrition is cyclical and this characteristic is part of what makes the struggle so challenging. Figure 3 demonstrates how malnutrition is propelled forward in communities through a life cycle or intergenerational lens. The logic is straightforward but nonetheless important to consider and understand when seeking to change behaviors that will result in lasting, impactful changes. The same children who fail to reach their growth and development potential become adolescents who are stunted. Stunted teens are more likely to be anemic and experience adverse health outcomes. They are more likely to experience their first pregnancy at a younger age and their pregnancies, no matter at what age they have them, are more likely to result in low birth weight babies. Overall, lifetime education and economic possibilities are dimmed and the cycle continues.

FIGURE 3: INTERGENERATIONAL CYCLE OF MALNUTRITION



8 Choprah, Mickey, Sarah Galbraith, and Ian Darnton-Hill. "A global response to a global problem: the epidemic of overnutrition," Bulletin of the *World Health Organization* 80 (2002): Pages 952-956..

Actions that Promote Optimal Nutrition Outcomes

The Essential Nutrition Actions (ENA) is a framework used by practitioners and supported by both the 2008 and 2013 Lancet Series' on Maternal and Child Nutrition. This framework synthesizes best practices and uses contemporary evidence to highlight a set of behaviors or actions that have been demonstrated to promote optimal nutrition outcomes, as well as to reduce mortality.

The ENA framework is cognizant of a lifecycle approach and embraces the 1000 Days,[9] a public health nutrition campaign built on the knowledge of a critical window for intervention from pregnancy through a child's second birthday. The framework seeks to consolidate the priority action categories that affect undernutrition around which interventions can be planned to improve outcomes.

The Essential Nutrition Actions

Promotion of optimal nutrition for women

Promotion of adequate intake of iron and folic acid and prevention and control of anemia for women and children

Promotion of adequate intake of iodine by all members of the household

Promotion of optimal breastfeeding during the first six months

Promotion of optimal complementary feeding starting at 6 months with continued breastfeeding to 2 years of age and beyond

Promotion of optimal nutritional care of sick and malnourished children

Prevention of vitamin A deficiency in women and children

The 1000 Days… and Beyond

Based on current research, the ill effects of malnutrition on growth and cognitive development can generally be reversed when the situation is remedied in the period of an affected child's life prior to their second birthday. This focus on the 1000 Days is built on a critical window of opportunity to afford children the best chance to reach their potential in growth and development.[10] The evidence is based largely on the ill effects of chronic undernutrition and its manifestation, stunted linear growth

The Right Nutrition during the 1000 Days

- Save more than a million lives each year
- Significantly reduce the human and economic burden of TB, malaria, and HIV/AIDS
- Reduce risk of noncommunicable diseases later in in life
- Improve educational achievement and future earning potential
- Increase GDP by 2-3 percent annually

In the case of acute malnutrition, or wasting, children older than 2 years of age can most certainly be affected. With the increased risk of mortality associated with either moderate or severe acute malnutrition, these children need to be afforded the same care as those children 6 months to 2 years of age. With this in mind, any growth monitoring and/or screening programs that identify children under 5 with severe acute malnutrition should refer them to the nearest referral point (clinic, hospital, etc.), and cases of moderate acute malnutrition can be referred to any supplementary feeding programs, if available, and/or included in PD Hearth activities where appropriate.

9 See http://www.thousanddays.org/about/

10 Black, RE et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet Series on Maternal and Child Nutrition.* June 2013.

Anthropometry

Anthropometry is the measurement of the human body. For nutritional purposes there is a shortlist of useful metrics to inform programming relative to various types of malnutrition. As with any measurement, care should be taken from two perspectives. The first is to ensure that the most appropriate type of measurement is being used for the activities being conducted. Additionally, an accurate and precise measurement technique is important for valid findings.

The most common type of anthropometry in international nutrition is weight for age. The majority of growth monitoring programs focus exclusively on measurement of weight. Weight for age is the nutrition indicator upon which the majority of global reporting focus for tracking progress on hunger and malnutrition reduction. This includes the Millennium Development Goals.

Weight for Height (WfH)

Description: This type of measurement is conducted by collecting both the height and weight of a child. The weight relative to height is then compared against a reference population to demonstrate the relative "normalcy." Charts used by field workers help to classify the measurements. Though these are expressed as z-scores, the tables available for field use (see resources below) ensure that there is no need for calculations as determinations can be made using the measurements and the tables and/or charts exclusively.

What it tells us: Weight for height z-score is used to detect acute malnutrition. Short-term deficits of protein and calories can result in the depletion of subcutaneous fat tissue, resulting in wasting or thinning.

How to measure: Measurement of WfH requires equipment. A length board or height board is needed to accurately record the length/height of a child. The board should have a head board that is used to measure from the top of the head. Weight can be measured using various different devices, depending on the context and the age of the client.

See the sections below on weight for age and height for age for instructions on how to accurately measure weight and height

CASE DEFINITIONS:

Nutrition Indicator	Moderate Acute Malnutrition	Severe Acute Malnutrition
Weight for Height	≥ -3 SD & <-2 SD	< -3SD
Mid-Upper Arm Circumference (MUAC)	≥115 & <125mm	<115mm
Bilateral Edema (Nutritional Swelling)[11]	No	Yes

REFERENCES:

Appendix B-1: Weight for Length/Height Growth Table Boys 0-2yrs
Appendix B-2: Weight for Length/Height Growth Chart Boys 0-2yrs
Appendix C-1: Weight for Length/Height Growth Table Girls 0-2yrs
Appendix C-2: Weight for Length/Height Growth Chart Girls 0-2yrs
Appendix D-1: Weight for Length/Height Growth Table Boys 2-5yrs
Appendix D-2: Weight for Length/Height Growth Chart Boys 2-5yrs
Appendix E-1: Weight for Length/Height Growth Table Girls 2-5yrs
Appendix E-2: Weight for Length/Height Growth Chart Girls 2-5yrs

11 A child is considered to have nutritional edema if there is noticeable pitting that remains from normal thumb pressure placed on the frontal part of both ankles and held for three seconds.

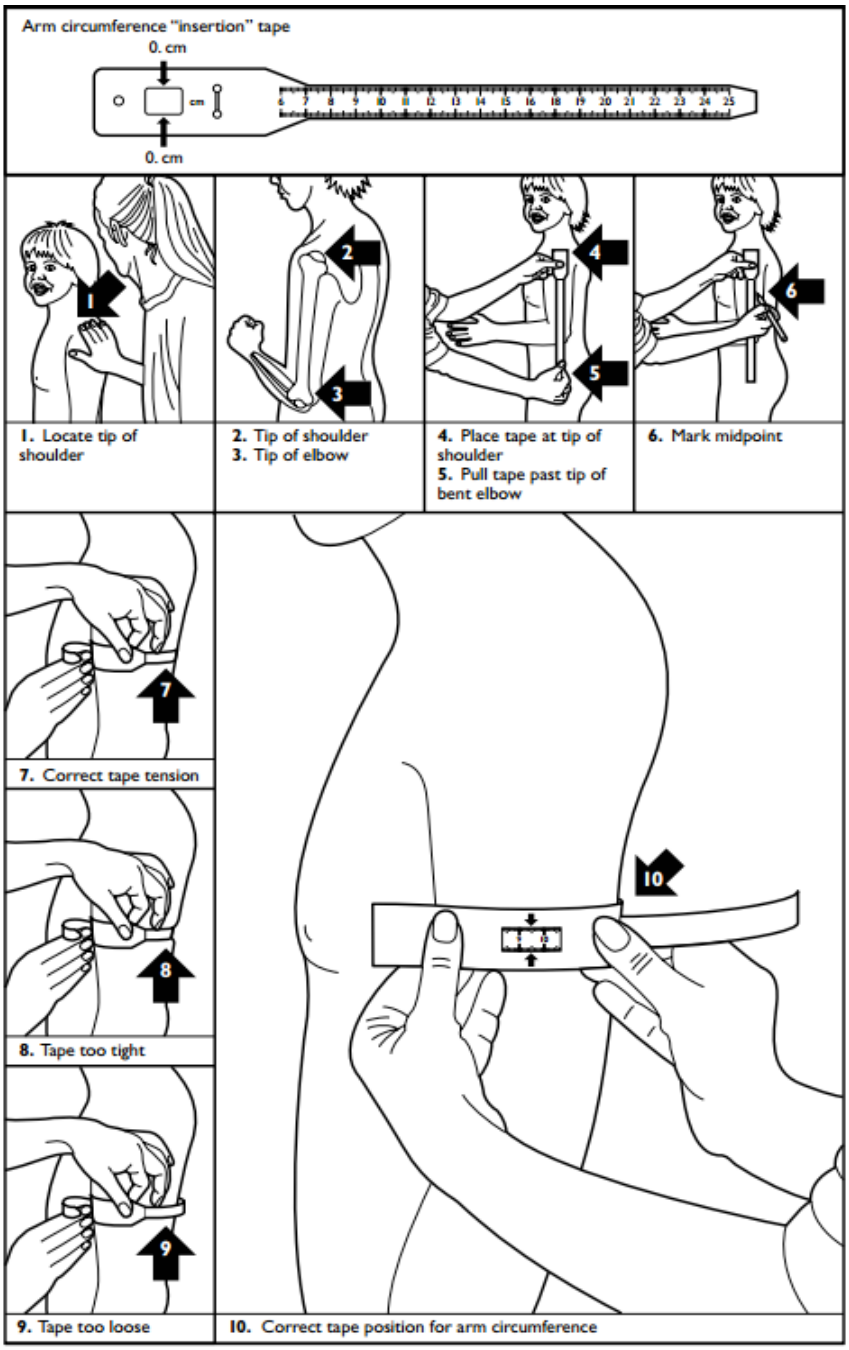
Mid-Upper Arm Circumference (MUAC)[12]

Description: This type of measurement is conducted by measuring the circumference of the upper left arm. Measurement of MUAC can be used to some degree for all populations above the age of 6 months, though it is most credible for children 6 months to 5 years old. MUAC for adults can be used to screen for acute malnutrition on its own or as a result of HIV/AIDS infection. MUAC is the most appropriate field tool to screen for acute malnutrition due to its ease and speed of use, as well as its link to mortality.

What it tells us: MUAC indicates the nutritional status of a client relative to acute malnutrition. Due to severe nutritional deficits, the body can deplete the subcutaneous fat resulting in wasting or thinning. Use of MUAC and weight for height are both measures of acute malnutrition, but MUAC is the preferred measure.

How to measure: Measurement of MUAC requires a minimal skillset and inexpensive MUAC tapes. The tapes are most frequently color coded, offering the flexibility to train field practitioners regardless of numeracy or literacy, with red indicating severe acute malnutrition, yellow indicating moderate acute malnutrition, and green indicating a normal nutritional status.

FIGURE 4: MEASURING MID-UPPER ARM CIRCUMFERENCE



Cogill, Bruce, *Anthropometric Indicators Measurement Guide*. FANTA and FHI 360. March 2003.

12 Mid Upper Arm Circumference is the primary screening protocol for selection of children to a Hearth or any other activity that targets moderate acute malnutrition (MAM) or at-risk children to prevent severe acute malnutrition (SAM) and seeks near term, immediate, and measurable results.

CASE DEFINITIONS:

Nutrition Indicator	Moderate Acute Malnutrition	Severe Acute Malnutrition
Weight for Height	≥ -3 SD & <-2 SD	< -3SD
Mid-Upper Arm Circumference (MUAC)	≥115 & <125mm	<115mm
Bilateral Edema (Nutritional Swelling)[13]	No	Yes

REFERENCES:

http://www.unicef.org/nutrition/training/3.1.3/6.html

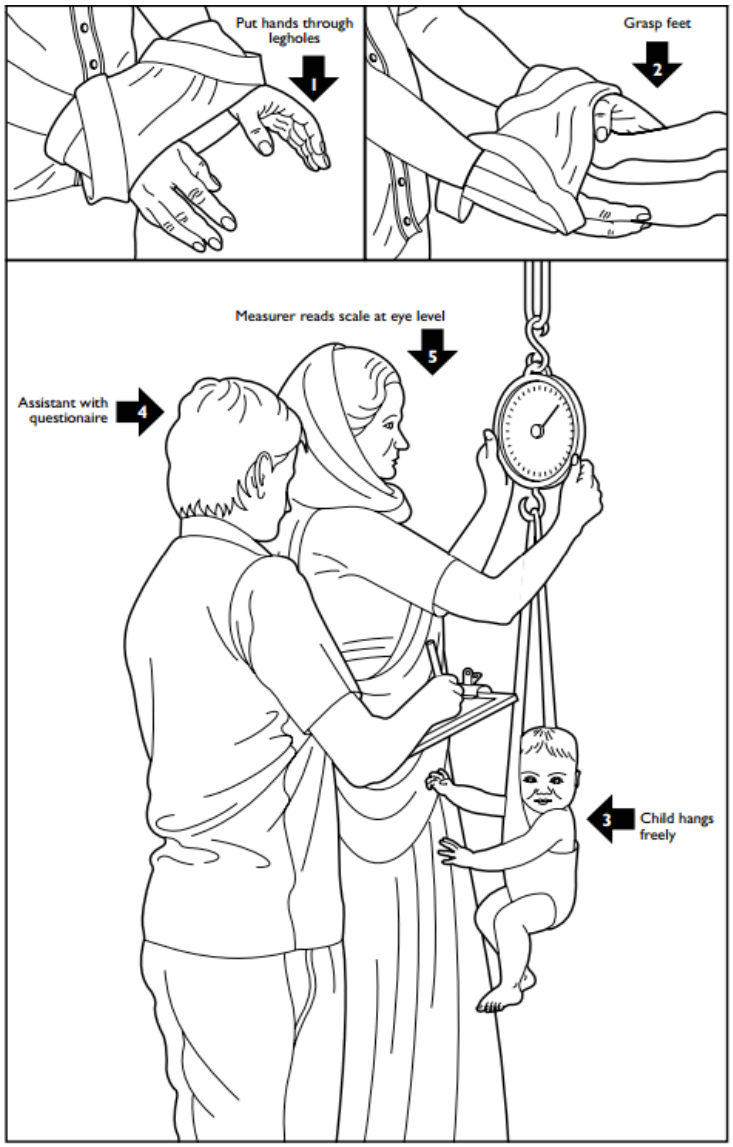
Weight for Age (WfA)

Description: This type of measurement is conducted by measuring the weight of a client and then plotting that weight against his/her age. This weight relative to age is then compared against a reference population to determine normalcy. Though these are expressed as z-scores, the tables available for field use (see resources below) ensure that there is no need for calculations as determinations can be made using the measurements and the tables exclusively.

What it tells us: Weight for age z-score is used to detect underweight, but measures both acute and chronic undernutrition. This is the result of the fact that both stunted (chronic) and wasted (acute) children may also have a low weight for age measure as a result of their condition. Though this is a less specific measure, it is the most common indicator for which data are collected and it generates a general picture of nutrition status.

How to measure: Weight can be measured using various different devices depending on the context and the age of the client, though Figure 4, at right, shows the use of a hanging scale frequently used to weigh small children.

FIGURE 5: MEASURING CHILD WEIGHT



Cogill, Bruce, *Anthropometric Indicators Measurement Guide*. FANTA and FHI 360. March 2003.

13 A child is considered to have nutritional edema if there is noticeable pitting that remains from normal thumb pressure placed on the frontal part of both ankles and held for three seconds.

CASE DEFINITIONS:

Nutrition Indicator	Moderate Underweight	Severe Underweight
Weight for Age	≥ -3 SD & <-2 SD	< -3SD

REFERENCES:

http://www.who.int/childgrowth/standards/cht_wfa_girls_z_0_5.pdf
http://www.who.int/childgrowth/standards/cht_wfa_boys_z_0_5.pdf

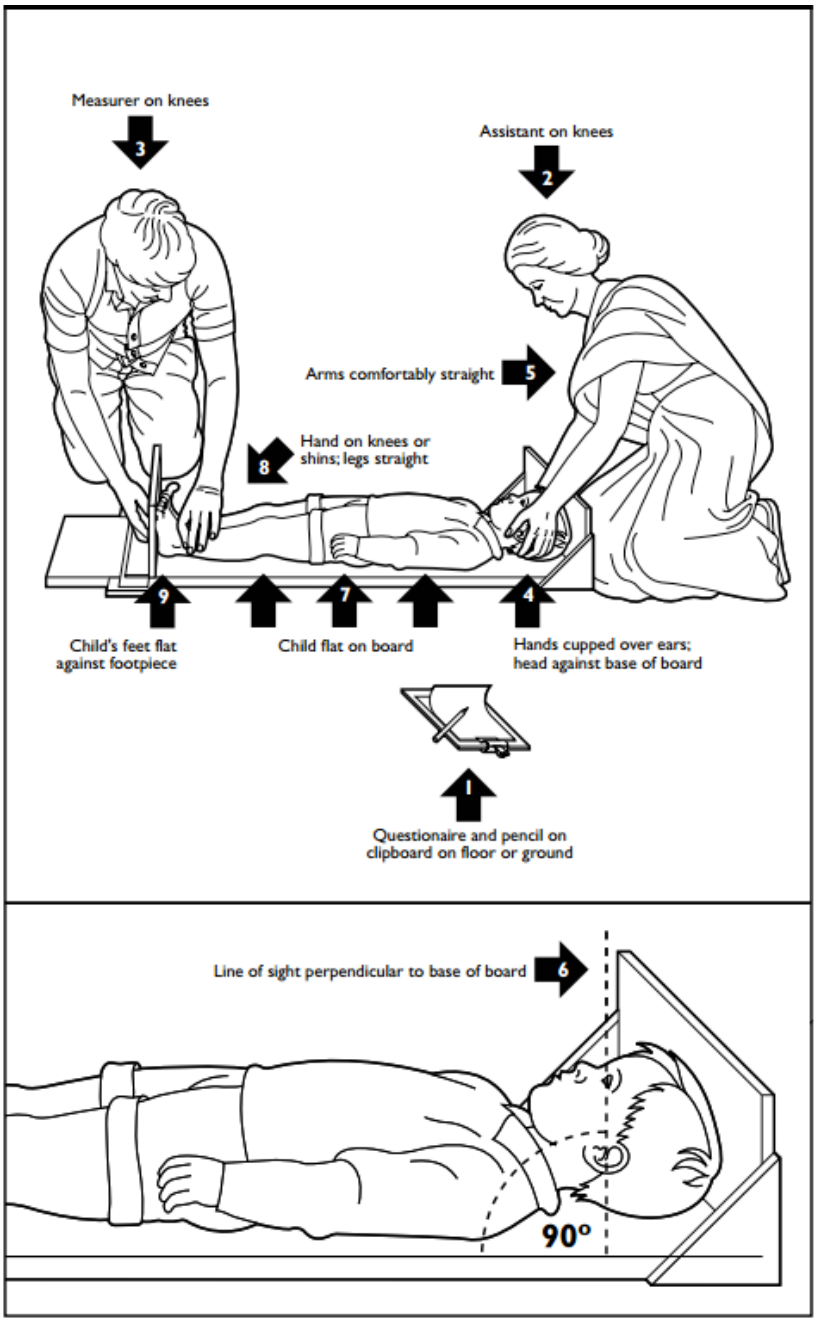
Height for Age (HfA)

Description: This type of measurement is conducted by measuring the height or length of a client and then plotting that height against his/her age. This height relative to age is then compared against a reference population to determine normalcy. Though these are expressed as z-scores, the tables available for field use (see resources below) ensure that there is no need for calculations as determinations can be made using the measurements and the tables exclusively.

What it tells us: Height for age z-score is used to detect chronic undernutrition. Sustained nutritional deficiencies can suppress normal development, manifesting as growth failure. This is called stunting.

How to measure: A length board or height board is needed to collect the accurate length/height of a child. The board should have a head board that is used to measure from the top of the head.

FIGURE 6: MEASURING CHILD LENGTH



Cogill, Bruce, *Anthropometric Indicators Measurement Guide*. FANTA and FHI 360. March 2003.

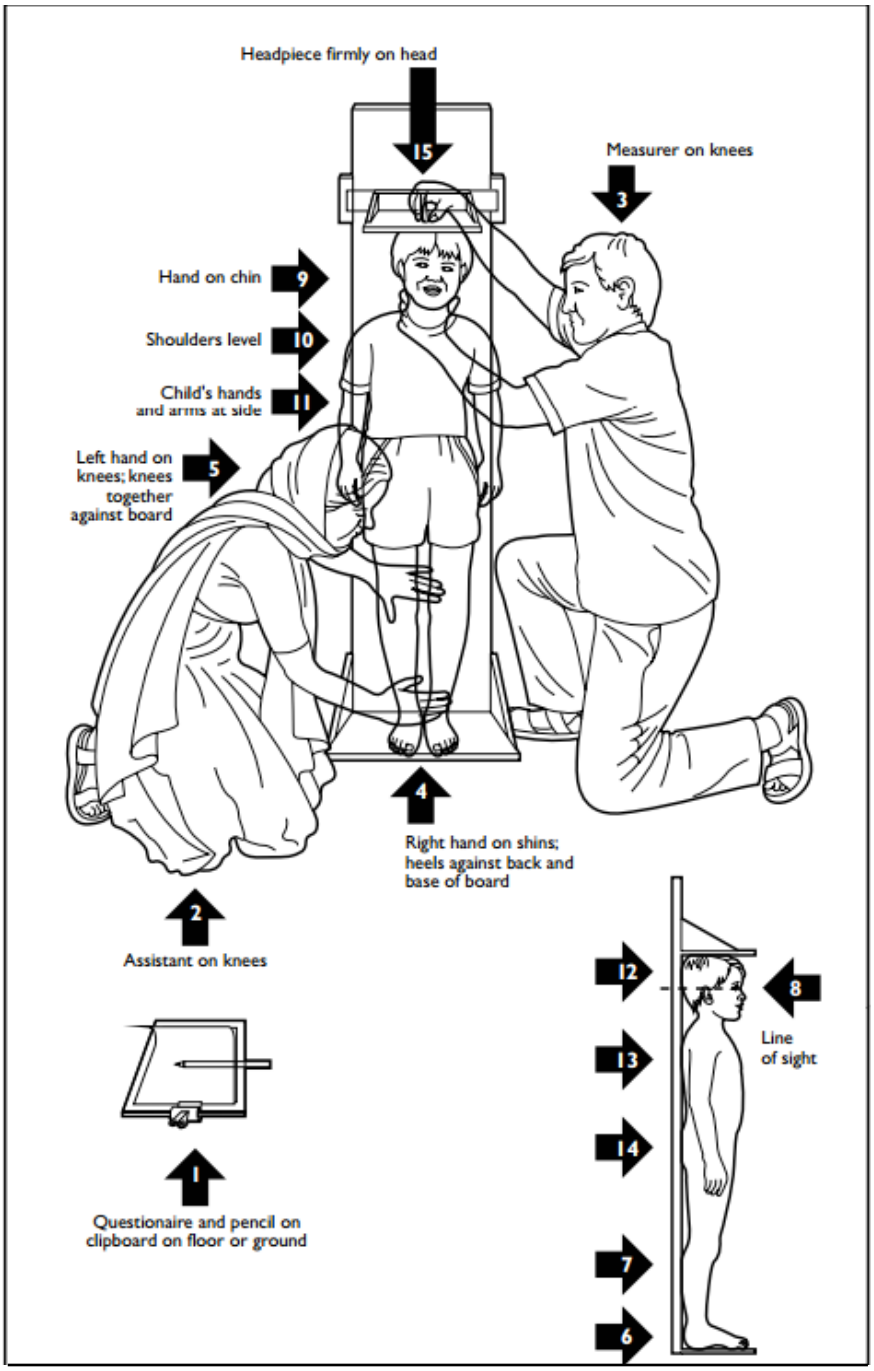
CASE DEFINITIONS:

Nutrition Indicator	Moderate Underweight	Severe Underweight
Height for Age	≥ -3 SD & <-2 SD	< -3SD

REFERENCES:

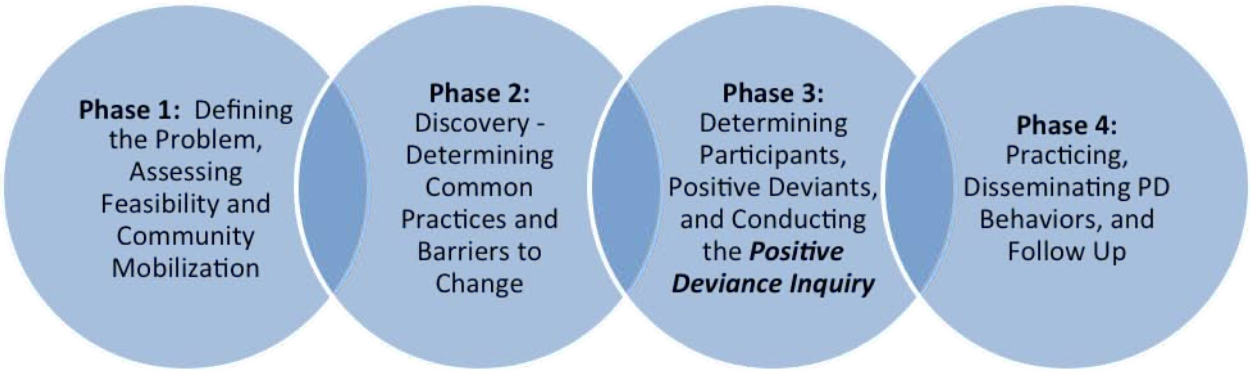
http://www.who.int/childgrowth/standards/cht_lhfa_boys_z_0_5.pdf
http://www.who.int/childgrowth/standards/cht_lhfa_girls_z_0_5.pdf

FIGURE 7: MEASURING CHILD HEIGHT



Cogill, Bruce, *Anthropometric Indicators Measurement Guide*. FANTA and FHI 360. March 2003.

PD Nutrition Program Planning and Execution



Phase 1: Defining the Problem, Assessing Feasibility and Mobilizing the Community

Growth Monitoring and Promotion – Defining the Problem

Growth Monitoring and Promotion (GMP) program activities may be active in the community. Though widely variable in terms of their regularity and quality, GMPs are fairly widespread. They serve as an excellent contact point through which a Volunteer can interact with the targeted group. Appendix A can be used to help initiate a GMP program where those activities are either not functional or nonexistent.

Growth Monitoring Programs are most frequently designed to capture weight for age information (conflates stunting and wasting). Use the programs as an entry point, but focus on screening using Mid Upper Arm Circumference (MUAC) to identify wasted children for PD Nutrition activities.

These programs preselect for mothers and caregivers of children under 5 years old. Some programs may target a smaller age bracket (through 24 or 36 months), but they are always capped at 5 years (60 months). Though GMP activities may include children under 6 months for measurement, any intervention that would interrupt exclusive breastfeeding for the first six months of life must be avoided. Inclusion of male leaders and fathers, as well as grandmothers and mothers-in-law, in these activities can prove to be a critical component in improving their viability, coverage, sustainability, and relevance to community members.

Growth Monitoring and Promotion (GMP) is an activity to track the growth of children in a specific catchment area. Usually, the programs measure the weight of children against their age in months. It involves regular weighing (optimally every month) using an accurate weighing scale to track the weight of the child according to his/her age in months. Individual child data is recorded on a growth monitoring card that is maintained by the caregiver. This data, collected monthly, is important to the caregiver as it graphically shows over time whether a child is achieving adequate growth or is growth faltering. (See Appendices F and G for a sample growth chart for weight for age) Many Ministries of Health track and report on these weight for age scores to inform progress on national goals, as well as the Millennium Development Goals, which continue to use "underweight" as the primary measure of malnutrition. In some cases, other anthropometrics are measured as well (including height for age, weight for height or MUAC), but this is infrequent.

Objectives of the GMP Activity:

- To involve families in assessing and monitoring the health and nutritional well-being of their children through growth monitoring (the P for promotion may involve any number of interventions that seek to improve dietary intake or reduce threats to health that manifest as malnutrition).
- To identify moderate, acutely malnourished (MAM) children to include in PD Nutrition activities, as well as to screen for SAM cases for referral into therapeutic programs.
- To monitor the nutritional status of all children under 24, 36, or 60 months over time.

- To assess program impact on targeted malnourished children, and on the entire population under 24, 36, or 60 months of age.
- In the case of PD Nutrition, an objective of the GMP is to enable the selection of participants, as well as possible PD families or households.

A typical GMP can inform the scale of the problem of general undernutrition. However, it is important to note that if only underweight (weight for age) is reported, there remains some uncertainty of the nutrition problem. Since underweight can capture both wasting (measured using weight for height/MUAC) and stunting (measured using height for age), reporting on underweight leaves some uncertainty as to the nature of the nutrition problem. Care should be taken to verify the nature of the nutrition situation as planning an intervention such as a PD Hearth may be destined for disappointing results if the issue is primarily one of stunting and chronic undernutrition. This is a result of a mismatch between the methodology's reliance on near term changes in growth to stimulate community-wide, social change and the long-term, slow response of linear growth to improved nutrition. Use of acute malnutrition screening methods, primarily MUAC, will inform the relative severity of the problem in the community.

As a result, a typical GMP that focuses on weight for age will serve as an excellent entry point and the weight for age data can guide activities or track progress for ministries and other partners. That same weight for age data can serve as a baseline for the general nutrition situation in the community. However, for the sake of PD Nutrition, which again relies on transformative social change powered by near term, visible results, wasting must be assessed to select program participants. The most appropriate technology for this is the measure of MUAC (see the section on Mid-Upper Arm Circumference). Screening using MUAC can help identify program participants for a PD Nutrition or Hearth intervention, but also can help to identify cases of SAM that are too advanced for PCVs and that require referral and therapeutic treatment.

Table 2 diagrams a sample roster that can be replicated to collect information during the GMP. In many GMPs, information is recorded on the child growth card that is held by the mother or caregiver. To ensure that information is available to plan PD Nutrition activities, a separate roster may have to be created.

However the information is collected and recorded, the information found in Table 2 is seen as the standard that will permit the community and its partners to identify Positive Deviant families/ households for the Positive Deviance Inquiry.

Once the roster has been reviewed and all of the children registered, the wealth ranking criteria and activity can be done by a Discovery Team, or a group of community volunteers who will assist with house visits and collection of information on community practices. A simple mark on this list can indicate if the child is from a wealthy family or poor family.

It is important to notice who is missing from the GMP activities. It is rare that 100 percent of the target group will be participating in the monthly GMP weighing sessions and it is frequently families of malnourished children who miss a growth monitoring session. The children regularly attending are often from motivated, health-conscious families, though this does not preclude them from suffering from malnutrition. Where growth monitoring is not in place, or where children are being missed, house visits are recommended for all households with children in the target age group to complete GMP and MUAC screening activities.

TABLE 2: SAMPLE ROSTER FOR PD NUTRITION

Name of Village: _____

Name of Hamlet or Cluster: _____

Name of Local Chief or Leader: _____

Name of Person Weighing: _____

Date of Weighing: _____

#	Child Name	Father Name	Mother Name	Location	Gender	DOB Month, Yr	Age in months	Weight	Nutritional Status	Birth rank[14]	MUAC
1											
2											
3											
4											
…											

Determining the Feasibility for PD Nutrition - Critical Mass for Transformative Change of PD

The transformative nature of successful PD interventions should not be underestimated. It is for this reason that PD purists put in place benchmarks for the scale of the problem being addressed. The approach posits that it is the application of unique behaviors, or ways of achieving certain behaviors, that will serve to address the problem at hand (in this case malnutrition). Relatively uncommon problems would only generate a small sample of behaviors and a formal inquiry will often struggle to produce "unique" behaviors being used to achieve better outcomes. As such, the potential to build communitywide momentum is significantly lessened by both this practical limitation and the lack of a shared experience related to the severity of the problem.

Previous guidance on PD and PD Hearth has stipulated a benchmark or critical mass be reached in terms of malnutrition in a community to warrant the intervention.[15] Through the use of benchmarks, a problem is quantified and can be evaluated for its relative importance to community members. While understanding that Positive Deviance as an approach may not be best suited for all situations, care should be taken to not only look at the prevalence or frequency of an issue or condition in the total population, but to also look at the community through a vulnerability lens, exploring the relative impact of malnutrition upon sub-groups. Where one may find only a small number of people affected by a condition in the community at large, a vulnerable sub-group may view this same condition to be a major issue affecting a larger relative proportion of its members that is negatively impacting their lives. Changing how one looks at the population can have a significant impact on the process of

14 This is simply the number that represents the order in which the child was born relative to any siblings. 1 represents firstborn, 2 second born, etc.

15 30 percent underweight (< -2 SD)

determining the relative severity of the problem. Though the numerator may stay the same (cases), thinking about this statistically by looking at the denominator (population vs. sub-population) in different ways can have an effect on the perceived relative severity of that problem or condition.[16]

It is important that the idea of scale be contextualized when deciding whether or not to engage in PD Nutrition activities. This is best illustrated through the example on the following page.

Making Sense of PD with Other Programs, Actors, and Activities

Volunteer-led and -supported activities are frequently limited by time and resources. Realistic limitations exist in terms of the number of participants included and time invested. Though this is not unique to Peace Corps Volunteers, it is particularly relevant due to restrictions on resources and the lack of paid support staff in a given Volunteer's activities.

As such, it is important that an understanding of the nutrition landscape account for the various stakeholders and activities. Determining which other organizations and institutions are active and understanding their programming objectives and mandates is vital to plan activities.

To formalize this inquiry, explore the following questions:

- How are cases of moderate acute malnutrition treated locally? Formal/informal methods? Are there any food distributions in the area? Are there General Food Distributions (GFD) or Supplementary Feeding Programs (SFP) that are often sponsored by the Government or World Food Program (WFP)
- If so, what food commodities do beneficiaries receive? Who receives them? How long is the program expected to continue?
- What is the nearest facility that is mandated to treat cases of severe acute malnutrition?
- Is there a Therapeutic Feeding Center (TFC) or Outpatient Therapeutic Program (OTP)?What procedures are in place for follow up (if any) when children are discharged from a treatment program?
- Is there an active CMAM program in the area? Who manages it? What, if any, follow-up protocol exists for cases when they are "cured"?
- Is there an active Growth Monitoring and Promotion (GMP)? Who manages it?

Determining where to refer children with SAM is a critical step in planning activities. As children are screened for inclusion in any PD Nutrition activities (See section on targeting and screening), cases of SAM may be detected. These children have a substantially increased risk of mortality and require medical attention. Since the risk of mortality increases precipitously relative to the severity of the malnutrition, effective screening and improved early case detection can go a long way to mitigating the risk of mortality as children get the treatment they need before complications and comorbidities[17] make life-saving treatment considerably less effective. Once referred, children with SAM may be treated in either an inpatient or outpatient setting. A Volunteer and counterpart working relationship with the organization/clinic/hospital mandated to treat SAM cases need not be one directional (with Volunteer/counterpart referring detected SAM cases). Depending on services available for "cured" cases (after children are discharged from therapeutic feeding programs), there may be an opportunity to engage with PD Nutrition activities to prevent relapse in these recovered but vulnerable children.

16 For illustrative purposes only; both the numerator and denominator may well change when looking specifically at vulnerable groups as cases can and do occur outside of the vulnerable groups.

17 Presence of one or more diseases or conditions concurrently with the primary disease or condition.

Working with an Isolated Group where Malnutrition is a Local Concern

Liz had spent nearly nine months in her community and had begun to understand both the scale and complexity of the food and nutrition security problem in her community. Wanting to help, she sought guidance on how to intervene or plan activities to address the problem.

Working with her host country counterpart, Liz sought out data from the local health clinic to inform their planning of activities. The data from the health clinic showed that the most current estimate for underweight (<-2 SD) was 24 percent. When she asked if they had information on an estimate for the number of children who were stunted they said they didn't have that information. They also did not have an estimate for the number of weak children.

After the meeting with the local health officials, Liz and her counterpart reviewed some guidance notes they had found for Positive Deviance programming. They were concerned by the fact that they knew this issue of malnutrition to be a significant and important problem in the community, but the official estimates suggested that the threshold of 30 percent underweight in under-fives had not been reached for planning a PD program. That this threshold had not been crossed did not discourage them, as they realized that the reason for the threshold is based upon the notion that PD is a methodology that works best when it is able to create communitywide momentum around an issue. Since they planned on working with a sub-set of the community as a whole, they had only to determine that within this sub-set the scale of the problem was such that it was deemed a local health priority and would therefore have the potential to generate the type of momentum sought for transformative PD programming.

Liz and her host country counterpart decided to initially explore with a remote geographic corner of the community, where there were known to be several cases of acute malnutrition. The total number of compounds in that corner of the community was a manageable 16 and was made up of households of younger parents with very young children and even a few female-headed households. When they began to assess and conducted screenings they identified the following:

- 10 compounds with 27 households
- 33 children under 5 years of age
- 16 cases of underweight
- 4 MAM cases, 1 SAM case

What this told Liz and her counterpart was that there was nearly 50 percent prevalence of underweight in the group and, more telling for the sake of the PD activities to be planned, there were a total of five cases of acute malnutrition. This meant 15 percent of children were classified as wasted, an alarmingly high number. Importantly, Liz's counterpart successfully referred the one child suffering from SAM to a nearby hospital where she received therapeutic care. The remaining four MAM cases were targeted for inclusion of PD Nutrition activities that they began to plan. They included four more families from the underweight group, using the following vulnerability priority criteria:

1. Female headed household
2. Recent (previous 30 days) bout of diarrhea

With these two criteria, as well as the verified MAM cases, they rounded the intervention group out to eight caretakers and eight children. After identifying a PD mother/family, they proceeded with the group of nine caregivers and themselves to plan and carry out a PD Nutrition-Hearth program.

Working in conjunction, rather than in parallel to growth monitoring and promotion activities, will help the PD intervention be seen as part of an integrated strategy. This can help to avoid confusion on the part of beneficiaries as to why multiple actors are interested in assessing their children, build trust among actors that are likely to long outlast a Volunteer in the community, and increase the efficiency and reach of activities. Additionally, this cooperation provides a natural venue through which to build capacity of health workers and community volunteers.

Community Support

The process of conducting the GMP is likely to lead to the discovery of some community members who are enthusiastic and interested in becoming involved. Besides having a point person to count on and help lead the way, it is also important to involve a variety of stakeholders to participate in the next steps for PD Nutrition.

An Especially Vulnerable Group: A Real Opportunity for Impact

Children who are successfully treated for severe acute malnutrition (SAM) are usually discharged as "cured" cases. At that point in time, they enjoy a return to relative normalcy in terms of their health and risk of death. However, they remain especially vulnerable as relapse is not uncommon. Although the treatment has addressed the immediate effects of the problem, underlying causes of the problem remain. This is an excellent opportunity to make a real impact with PD work. Establishing a relationship with the agency or organization that treats SAM cases can be mutually beneficial. Cases identified early through MUAC screening with PC counterparts can be referred to the treatment program and have better success rates in treatment (due to early detection). At the same time, cured cases discharged from the treatment programs are more likely to have a sustained recovery by entering the PD activities after successful recovery from SAM. In this way, strategies to address some of the underlying causes of the malnutrition are employed as a solution.

Any successful intervention that seeks to change behaviors **must have support from community members.** This is important as local leaders are likely to be more influential and trusted during processes of change. Change is difficult; it challenges customary practices and routines and shouldn't be taken lightly. As such, having the support of local community members who are depended on to both influence and encourage their peers, but also to possibly engage in new behaviors themselves, is a necessary foundation upon which to build a PD Nutrition intervention.

The **role of the Volunteer should be that of a catalyst**. The energy that surrounds a Volunteer's presence in a community can be used to create momentum, raise awareness, and start the ball rolling. However, **community members are both the implementers and their own agents of change** in the PD process.

The sustainability of the PD-promoted changes to behavior will be highly dependent upon this local support. The ability to generate discussion and facilitate constructive community dialogue around the topic of child malnutrition is a critical first step in building this foundation. Though some support will have to exist prior to growth monitoring and screening activities, the challenges of building community[18] support may only ramp up in the period after assessing the nutritional status of children.

18 "Community" is not intended to indicate any specific group, administrative unit, or location. "Community" for the sake of this exercise can be defined in a number of different ways and may only make up a sub-group within the overall population of a given administrative unit.

If the village has a low understanding of the importance of optimal nutrition, discussion with community leaders before asking them to help mobilize the community is required. Community leaders who understand the importance of optimal nutrition practices and the potential benefits of implementing a PD Nutrition project in their village will be more effective at convincing people to participate and will be more motivated themselves to promote the intervention (see Appendix J for sample talking points for communicating with community leaders).

Presenting Information from the Growth Monitoring and Screening Activities to Community Leaders

In Mali, CARE staff prepared big bar graphs to show the average nutrition status of children in a community in comparison to those of children from other villages. When the charts were explained to the village leaders, one exclaimed, "I'm embarrassed that the children here are more malnourished than those in other places. We must do something about this now!"

A PD Nutrition program is most successful if the community is actively involved. Engaging communities early in the process of discovering existing solutions is crucial for success and will always be aided when respected community members or leaders are part of the PD team. Learning and practicing the identified PD behaviors and strategies is a community-wide effort. Use of tools found in the *PACA Manual*[19] can help to ensure the process is participatory in nature and strives for an environment of inclusion.

A community-wide meeting to share the results of the GMP and join in the process allows everyone to participate. The emphasis of the community meeting should be on existing wisdom, existing expertise, and existing solutions. A sample list of objectives for the first community meeting is:

- Discuss the magnitude of the problem with all members of the community
- Discuss the potential consequences of malnutrition on the individual, family, community, and region
- Arrive at a consensus about what a better future would look like
- Demonstrate that there are some families who, despite all the odds of being poor and having no extra resources, are able to raise healthy children
- Obtain permission from everyone to learn from them about their own challenges and stories

Building the Intervention Team

There are several ways in which community members can participate and be involved in the effort. During the community meeting, an invitation should be extended to all community members to participate in whatever way they can: as part of the discovery team (initially, high level of time commitment), as resource people to share their stories (an hour or two of group discussions), or as resource people for community-designed activities to practice discovered PD behaviors and strategies (see Appendix K for a sample agenda).

Once it has been determined that a PD Nutrition program would be beneficial, planning the discovery phase begins. A group of between 8-15 people will make up the core of the discovery team. Some additional motivated individuals might emerge during the GMP process – a father who helps with the scale calibration, a teacher, a grandparent, and others will want to join in after the community-

19 The Peace Corps. *Participatory Analysis for Community Action (PACA) Training Manual* [No. M0053]. 2007.

wide meeting. Along with these people, a point person is needed to help promote and support the PD Nutrition activities. In the past, Volunteers have frequently used counterparts, the local midwife, or a community health worker as the point person. Because health center staff often have too many responsibilities to be able to help with the discovery phase in addition to their day-to-day activities, it is often more feasible for someone outside of the existing health care structure to serve as the point person.

The point person, to be successful, must have the time to commit to the project, so a clear explanation of the time and work requirements (from the beginning) is advised. To estimate the necessary time commitment and communicate it effectively, figure approximately one full day of GMP work each month if there is only one GMP held in your community. In addition to the GMP commitment, consider time to organize and execute the activities. As an example, the Hearth will require 10-12 days of several hours each during the practice phase of the intervention. Consider the frequency of these activities, both in terms of the commitment required and that which is required to be productive and enjoy the likelihood of success. Formal counterparts, even when not tasked with the co-facilitator role, may well offer guidance on cultural norms, logistics, publicity, etc. A good point person is someone who is reliable, knowledgeable, and well-respected by both men and women of the community.

Working with the point person, an exploration of other human resources is a logical next step. Who are the movers and shakers in the community? Is there a health committee in place? Are there community health workers? Also, if there are any local NGOs working on health issues, consider inclusion of some key people from those organizations. They may offer value in helping the community to discuss assets or resources they have to combat malnutrition.

There are a few group activities in Appendix L to help break down traditional relationships and roles, and to encourage the group to learn new ways to listen, observe, and learn from fellow community members. These activities should be seen as optional resources to use for creating dialogue around core issues that are critical in PD Nutrition delivery.

Phase 2: Discovery — Determining Common Practices and Barriers to Change

Focus Group Discussions (FGDs)[20]

A focus group discussion is an open-ended conversation with a targeted group of community members for a specific purpose. In the case of PD Nutrition, the group discussion is intended to help facilitators and other group members understand cultural beliefs and traditional practices regarding infant nutrition, feeding practices, hygiene, and health seeking behaviors.

In addition to the baseline information captured through growth monitoring and screening activities, these discussions help members of the community begin to think among themselves about how their actions impact the health and well-being of their children. These discussions serve to gather information on common practices and beliefs AND to raise the awareness of community members that they are important, they have stories to tell, and that they contribute to the overall understanding of the current situation in the community.

20 Use of PACA tools can be used to facilitate work with FGDs. See *Participatory Analysis for Community Action (PACA) Training Manual* [No. M0053]. The Peace Corps, 2007.

After learning the "norms" of the community, identification of unique behaviors employed by the positive deviants is made easier. In addition, it will also serve as a qualitative baseline against which you can later document changes in feeding, caring, and health-seeking practices as a result of the program. Various groups might include pregnant women, young mothers, fathers, grandmothers, older siblings, or other groups whose ideas about nutrition and children's health would be helpful to understand before planning PD Nutrition activitities.

The groups gathered should be somewhat homogeneous so participants don't feel intimidated to share their own practices. For example, if mothers-in-law and young mothers are brought together, the younger women might not feel as free to tell about their own experiences. Community group discussions are interactive. In coaching the group in facilitating these community discussions, they should be reminded that they are learners, not teachers, which requires asking open-ended and nonjudgmental questions (see Appendix N). It can be fun to role-play and exaggerate body language to show what happens when participants think the interviewer is judgmental.

The number of discussions to explore the behaviors and norms of the community can be determined by the following questions:

- How large is the target group for intervention?
- Are there numerous distinct groups to consider (tribe, religion, etc.)?
- Will mixed gender groups reduce female input?
- Are there groups that should be convened to ensure the acceptance of the intervention, even if their expected input "nutritionally" is of limited value?

To structure the FGDs, some basic organization is suggested. As long as participants understand the concept of the inquiry and are led through the process, a rich discussion is frequently achievable. A sample agenda for leading and facilitating an FGD can be found in Appendix O , complete with a listing of questions to lead the discussion. This should be viewed as a sample and adaptation according to context and culture is encouraged.

In the sample agenda from Appendix O , a list of questions is suggested. In the event that this list is NOT used, the following topics should be addressed and explored to be able to learn about the practices and behaviors that exist in the community:

- Breastfeeding practices
- Complementary feeding practices for young children
- General information around sanitation and hygiene
- Caring practices

During this step, a recorded history of what is learned about the local feeding, caring, hygiene, and health-seeking customs and beliefs will inform the process moving forward.

The activity brings together people in your community around a specific topic, but allows them to interact with others with whom they might not regularly communicate. This has an impact on community life and is the beginning of new networks and conversations. The group discussions should continue until everyone who wants to participate has had a chance. By offering to listen to everyone who wants to tell their story, space and opportunity are provided for everyone to

become involved and aware of the issue of malnutrition. This is crucial for the phase of activity design once the PD behaviors and strategies are uncovered. The more people involved, the better the activities and behavior change.

Writing down each person's comment may give the impression that the interviewer is looking for "right" answers that may make individuals less likely to respond to the questions truthfully. Addressing this at the beginning with the assurance that the group facilitator is here to learn often disarms group members who might otherwise be suspicious. Successful group leaders are often able to convey to the group a genuine desire to capture all of the great ideas and insights and the need to take written notes to achieve this.

Once the community group discussions are complete, the discovery team should look for common practices that were brought up over and over again in the various groups. With your help, in addition to those members from the health clinic, look for behaviors that have a negative impact on the health status of the children and have someone circle those.

Don't Assume!

Depending on the level of experience in international nutrition, there is often an assumption that problems of undernutrition are to be solved with improved diet alone. Remember the UNICEF conceptual framework (see Figure 1) and understand that diet is just one contributing factor in undernutrition. Working to improve one's diet can be the most difficult of all interventions and, in some cases, potential for impact may be much greater elsewhere. Below are some activities that would be alternatives to Hearth activities and offer significant upside in terms of their impact on nutritional status.

Intervention	Mechanism
Improved breast-feeding practices	Nutrition counseling; support groups to aid mothers; engaging men and/or mothers-in-law
Prevention of diarrhea	Hand-washing interventions (tippy taps, etc.); reduce exposure of children to animal feces and other contaminants around play space
Treatment of diarrhea	Zinc supplementation for prevention or treatment (with ORS) – lessens the duration and severity of bouts and aids recovery

Conducting A Wealth Ranking Activity in Four Steps

If the Discovery Team has not yet been formed, then members should be recruited and engaged prior to the wealth ranking activity. This activity can also be conducted with the Resource Team or generally any reasonably representative group of the target community who is willing to contribute to the process.

The objective of any wealth ranking exercise is to understand the community classification of economic differences and to determine criteria for classifying individual families or households. The definition of household may vary across contexts, but generally, those who eat or are fed from the same pot daily make up a household.

Step 1: Engage the Group of Community Members in a Discussion of Wealth in the Community

Suggested questions to stimulate discussion:

- How is wealth understood?
- How do you distinguish among your neighbors who are wealthy or not?

Encourage the group to think about signs that indicate wealth – a wooden floor or tiled roof, livestock, a bicycle or TV, remittances from family members outside of the community, etc.

Step 2: Categorize a Group of Community Households into Wealth Categories[21]

Using a list of a subset of households in the community and index cards (or sheets of paper), write out the household or family names, one per card. Approximately 25-30 households are usually sufficient to generate the three groups and ascertain their characteristics. Despite the names being written onto cards, literacy of the participating group need not be an obstacle as only each card will be read aloud to the group and discussed before consensus will determine the categorization.

Instruct the group that for each name read they will be asked to determine if the mentioned household is seen by the community as "very poor," "poor, but a bit better off," or "doing OK." Repeat the categories for clarity, without qualifying what each category means (the group will determine this during the exercise). After each name is read, the household or family can be categorized based on discussions among the group. For some, this will take very little time, but for other households, divergent opinions may emerge. Allow the group to work through this without intervening and when consensus is reached, move on to the next until all cards are read and categorized.

Step 3: Determine the Defining Characteristics of the Wealth Categories

Ask the group for a general description of each of the three wealth groups. Using Appendix M , the group should begin to work through a discussion to decide what separates these wealth categories that have been denoted in Step 2. Record the outcomes of these discussions using the matrix, including key items for the various categories and across all the wealth categories.

Using a matrix that breaks down various asset categories can help to clarify what conditions distinguish the concept of wealth in the community and can isolate important key criteria that can be used as proxies for wealth. The use of these proxy indicators[22] of wealth can be useful since the perception of wealth is nearly as important as validated wealth in the context of PD. The behavior change component of the methodology embraces the notion that positive outcomes are regularly

Why is the Wealth Ranking Necessary?

It is important to consider wealth in the context of malnutrition. This follows the logic that greater resources available to a family will generally permit greater expenditure on food items, or greater investment into food production (in the case of subsistence farming communities and net food producers). With greater resources, access to food is generally improved, diminishing risks of malnutrition by improving dietary intake (either quality or quantity or both). This view oversimplifies malnutrition and suggests that all malnutrition is the result of inadequate intake of food. Despite the oversimplification of this view of nutrition, poverty and malnutrition are nonetheless inextricably linked. Use of a wealth ranking exercise to highlight cases of desirable outcomes (normal nutrition and health status) in the context of limited resources is empowering and can demonstrate the ability to achieve adequate dietary intake, but can also eventually unearth (through the process of Positive Deviance Inquiry) non-dietary or non-feeding-related behaviors that contribute to positive nutrition outcomes.

21 If the community or target area is small enough, it is possible to use this step as the entirety of the wealth ranking process.
22 A measure or variable that indirectly measures or approximates something else that may be difficult to measure.

Using Wealth and Growth Monitoring Information to Visually Demonstrate the Problem of Undernutrition

Once every child (household) is categorized, the group can plot the children on a growth chart, using data from the GMP. Though this requires context and explanation, it can be a useful way to visually show how malnutrition is affecting the community. The photo shows a community health worker explaining the results of growth monitoring. Using a graph like this is one way to demonstrate the presence of financially stable families who have malnourished children (to highlight the pervasiveness of the problem in the community), as well as very poor households in the community who are raising healthy children.

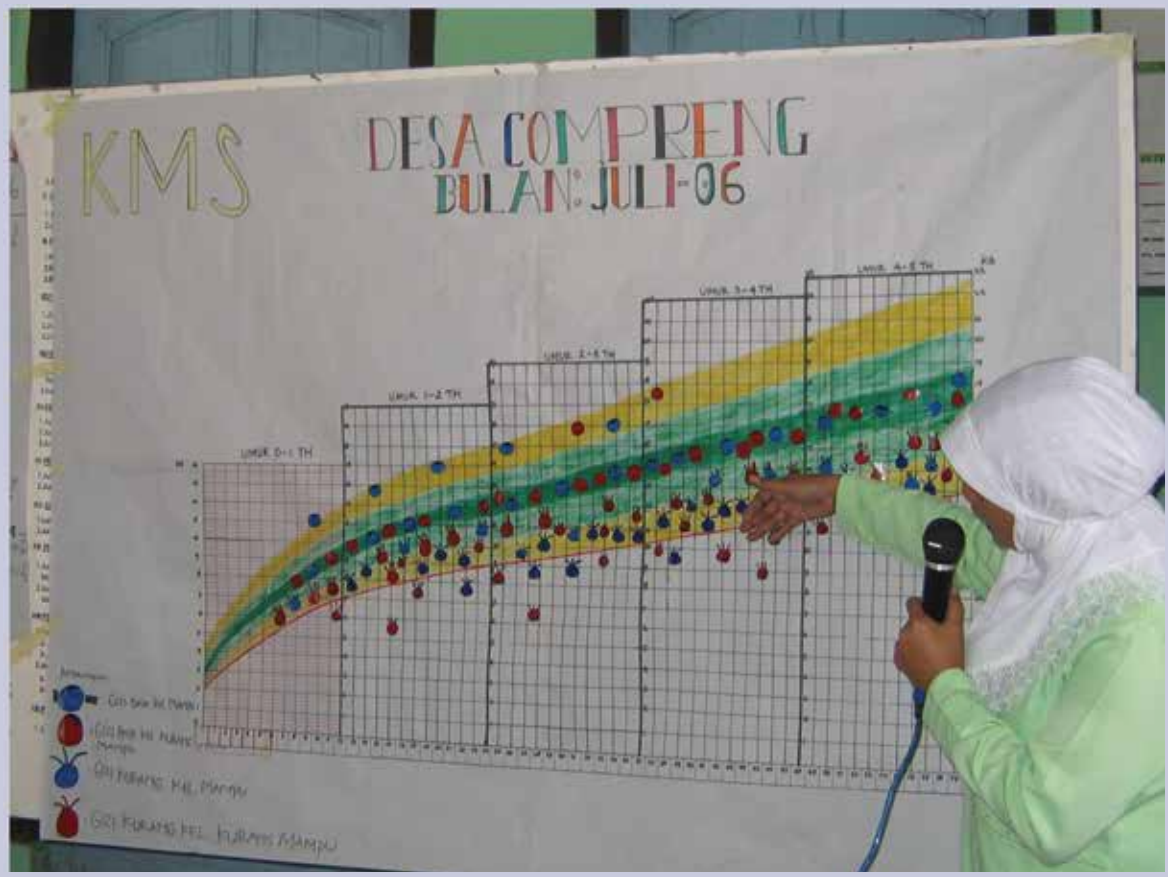


Photo courtesy of Randa Wilkinson, Positive Deviance Initiative.

achieved despite wealth status. The imprecision of specific proxy indicators are not a concern as long as they are generated by an agreement among group members as consensus. It is this social dynamic of a generalized perception of wealth that is sought. And it is the recognition by community members that those families, with whom they can identify, relative to wealth, are able to achieve

healthy nutrition outcomes for their children. In terms of behavior change, this can overcome the "self-efficacy/skills" determinant of behavior in that it demonstrates success given a similar set of skills and resources.[23]

Step 4: Use the Key Wealth Proxies for Classifying Into Wealth Categories

After completely filling out the matrix with information from the group of informants, group members should be tasked with identifying the most telling, or most important characteristics of each wealth group. For instance, a group of informants may determine that the most distinguishing characteristic between households that are doing OK and those that are either "poor but a bit better off" or "very poor" is land ownership and certain sizes of land. They may alternatively (or additionally) determine that presence of remittance money sent from family members who have migrated for work is a major proxy for wealth.

Using these agreed upon proxies, a rough classification can be made for households. To pair this with the growth monitoring data, the roster of GMP measures can be looked over retroactively or a column for wealth category can be included during the next iteration (often monthly).

The classification will enable the community to see (graphically, if presented as suggested below) both how cases of undernutrition can occur in various wealth groups, but also how lower wealth groups often have children with a normal nutrition status.

Phase 3: Determining Participants and Positive Deviants and Conducting the Positive Deviance Inquiry

Positive Deviance Inquiry is the stage in which a process of discovery occurs and local positive deviant behaviors that can be replicated by others throughout the community are uncovered. The PD inquiry provides the information needed to design PD activities and health education content for the sessions.

Targeting and Participant Selection

Selecting participants for nutrition programming (often referred to as targeting) is done in several different ways. Since programming objectives dictate a desire to address some sort of problem, participants are most appropriately selected based upon either having the targeted nutritional problem or being at risk for that problem. The realities of PCV communities suggest that some "convenience" selections may have to take place due to the unique duality of life as a PCV (that duality defined by concurrent roles as programmer, neighbor, and friend). However, for best results and to ensure a principled approach, beneficiaries should be selected based as much upon need as possible.

As previously discussed, there are at-risk groups from which beneficiaries can be selected. However, when the opportunity is available to use anthropometry to inform these decisions, it is the most un-biased and appropriate selection criteria for inclusion into programming that aims to prevent or reverse negative nutrition outcomes.

23 Food Security and Nutrition Network Social and Behavioral Change Task Force. *Designing for Behavior Change for Agriculture, Natural Resource Management, Health and Nutrition*. Washington, D.C.: Technical and Operational Performance Support (TOPS) Program: 2013.http://www.coregroup.org/storage/Tools/DBC_Curriculum_Final.pdff

PD Nutrition program activities can be undertaken with a wide range of participants. When the objective is the prevention of severe acute malnutrition, then working with those most at risk of SAM is the key. This would obviously include children with moderate acute malnutrition (MAM) or those who fit into other pre-determined criteria for vulnerability (Orphans and Vulnerable Children (OVCs), children experiencing repeated bouts of diarrhea, etc.) At this point in the process, it should be possible to identify families with children for inclusion into PD Nutrition activities.

Targeting For PD Nutrition Activities that DO NOT include Hearth

While Positive Deviance in the context of nutrition has frequently been generalized to a Hearth intervention, this manual has already discussed some of the risks of doing so (see Positive Deviance Hearth & Positive Deviance Nutrition).

PD Nutrition activities that do not include the Hearth activities may address any number of nutrition problems. These could feasibly include obesity and overweight, as well as stunting (chronic undernutrition) or wasting (acute malnutrition). Frequently, underweight (which conflates chronic and acute malnutrition) children are targeted for intervention, though there are two primary technical concerns with this. The first is that the rapid recovery that is part of the community transformational component is simply not attainable if the participants are underweight because they are stunted – the recovery time (catch-up growth) for stunted children is much slower. Secondly, rapid weight gain is desired when a child is wasted, but there are potential risks of predisposition for noncommunicable diseases later in life for those children who are not wasted and experience rapid weight gain. Additionally, while many PD Nutrition efforts to treat moderate acute malnutrition include the Hearth feeding component, if there is an existing supplementary feeding program, the PD activities can identify and promote PD behaviors that contribute to positive nutrition outcomes but are not related to complementary feeding (hygiene, active feeding, treatment and prevention of diarrhea, etc.).

Whichever nutritional objective is the focus of the intervention (reduction of obesity, prevention of severe acute malnutrition, reduction of stunting, etc.), it should be clearly established and supported by data acquired during the growth monitoring and promotion activities (and screening) or other collection of information regarding the nutrition status of community members.

Case Study: Deciding Who to Include

A group of Volunteers decided to invite the families of all children identified as moderately acutely malnourished in their community GMP to an evening meeting at the home of a local official. Invitees included the director of the health center, district president, community elders, a community health agent, and the parents. The first half of the meeting was used to discuss the high rate of malnutrition in the community. The Volunteers then introduced the concept of PD Hearth and detailed requirements for participation. Finally, they asked for 10 families to volunteer to participate in the program.

The Volunteers found this strategy effective. No women felt pressured to include their children. All information about PD Hearth was presented to parents at one time. There was an opportunity to ask questions and make suggestions about the program. Finally, Volunteers presented the problem of malnutrition not as a household issue, but as a community problem. The presence of community leaders and community elders helped to stress this point. Therefore, those who committed themselves to PD Hearth were doing so not just to help their own children, but to assist the community as a whole and did so voluntarily.

Targeting For PD Nutrition with Hearth Activities

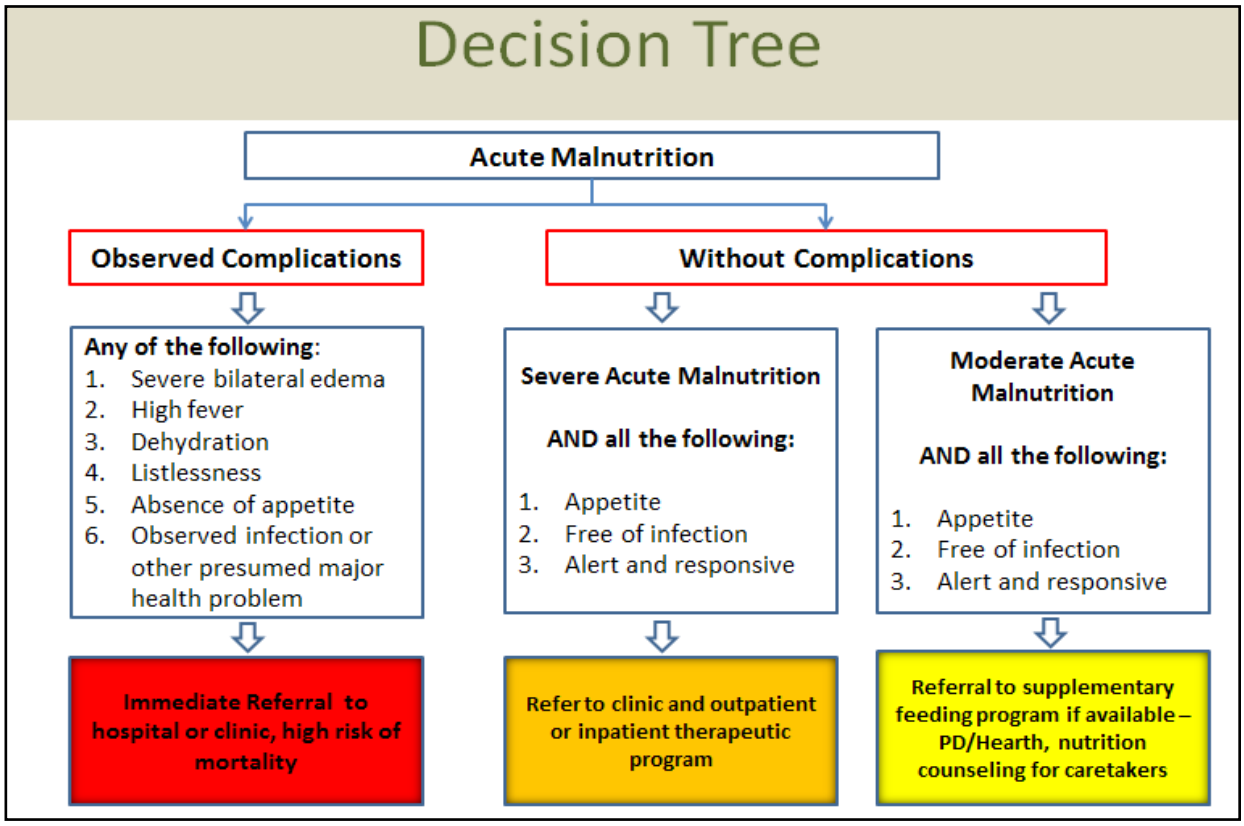
PD Hearth programming targets *improved complementary feeding*[24] as the activity or behavior change that will offer the greatest impact for targeted children.

Hearth programming is a form of a supplementary feeding program (SFP) and should be treated with the same technical respect as AFPs implemented by other actors.[25] Hearth is a treatment intervention, intended to treat cases of *moderate acute malnutrition*.[26] The Positive Deviance component of PD Hearth aims to capitalize on near-term growth (weight gain) for the dual purpose of helping acutely malnourished children to recover, as well as to generate enthusiasm for improved feeding practices (and sometimes corollary behavior change to improve nutrition outcomes) through observable results in this short span of time.

The Do No Harm imperative requires Hearth planners to ensure that the appropriate children are included in the Hearth. In addition to those children for inclusion, a clear criterion for exclusions is also important to prevent unintended harm. To best understand this it is suggested to review the Admission and Discharge Criteria diagram (Figure 9, page 48).

Despite the initial indication of a nutrition problem determined by the rate of underweight children in a typical GMP, it is the relative problem of wasted children with whom PD Hearth program planners should be concerned. In this guidance document, MUAC is the measurement that is suggested for

FIGURE 8: DECISION TREE FOR ACUTE MALNUTRITION



24 For guidance on recommended Complementary Feeding practices, see the WHO recommendations included on Page 53.

25 Though this UNHCR resource is for nutrition in emergencies, intervening with a supplementary feeding program is suggestive of a nutritional emergency – examples of technical guidance for SFPs can be found here: http://www.unhcr.org/4b7421fd20.pdf.

26 Acute malnutrition results from a sudden and severe nutritional deficit. An expanded explanation and definition can be found in the "What is Malnutrition?" section of this manual.

screening for wasted children. Within that group of wasted children, it is the *moderately acutely malnourished* that should be targeted by the PD Nutrition program activities, while severely acutely malnourished children are referred for care.

Figure 8 gives a general idea for decision making while screening children under 5. The Admission and Discharge Criteria section (found on Page 47 and demonstrated in Figure 8) gives more specific guidance on the protocol for selecting program participants in a Hearth activity, including cut-offs for measurements at admission as well as discharge from the activities. This requires that children be appropriately screened for acute malnutrition (see Page 28). This is an important addition since most GMPs are set up to assess weight (using weight for age) only to determine nutritional status (underweight). As has been previously discussed, underweight (weight for age) conflates acute and chronic malnutrition and since the Hearth seeks near term change in weight, this conflation with stunted children makes underweight a problematic screening measure for the Hearth.

Failure to identify the correct children for a PD Hearth activity is problematic for the following reasons:

- Including children who don't meet the criteria (are NOT *moderately acutely malnourished)*
  - Rapid weight gain in children over 2 who are NOT acutely malnourished has been shown to predispose them to adult obesity[27] [28]
  - May be taking the place of a child who is in greater need of the intervention
- Including children that are severely acutely malnourished
  - This should simply not occur as this clinical condition merits medical attention and specific therapeutic treatment regimens – risks include death

For a detailed description of measuring MUAC, see Page 28 where the following case definitions can also be found for children under 5:

Nutrition Indicator	Moderate Acute Malnutrition	Severe Acute Malnutrition
Weight for Height	≥ -3 SD & <-2 SD	< -3SD
Mid-Upper Arm Circumference (MUAC)	≥115 & <125mm	<115mm
Bilateral Edema (Nutritional Swelling)[29]	No	Yes

Identification of the Positive Deviants

PD Nutrition, at its base, is concerned with identification of success stories in the community and extending the benefits of the behaviors that have led to successful outcomes. As such, it is important to ensure that the individuals in the community assessed for having overcome the obstacles are truly positive deviants.

Table 3 is a list of criteria for use in identification of positive deviants in the community.

27 Black, RE et al. "Maternal and child undernutrition and overweight in low-income and middle-income countries," *The Lancet Series on Maternal and Child Nutrition.* June 2013.

28 Another reason for our focus on the 1000 Days – this should also be contextualized with the intervention, but if the meals/feedings are exceptionally energy dense, then it is most appropriate to do so with children who are in need of the additional calories and not those who are not.

29 A child is considered to have nutritional edema if there is noticeable pitting that remains from normal thumb pressure placed on the frontal part of both ankles when held for three seconds.

TABLE 3: POSITIVE DEVIANT SELECTION CRITERIA

Characteristics	Details
Normal Nutrition Status of All Children[30]	MUAC: ≥ 125mm WFH: ≥ -2SD WFA: ≥ -2SD HFA: ≥ -2SD
Number of Children in Family	At least two children – family should approximate the average family size
Household Head Occupation	To be viewed as peers, the main occupation or livelihood strategy of the household or household head should be the same as the majority of community members
General Health	No severe health problems for the child
Resources and Wealth	Same wealth group as the target group for the PD Nutrition intervention and less than or equal access to resources compared to the target group

Preparing for House Visits

In order to conduct a PD inquiry, the discovery group will be divided into teams to conduct home visits and observe the behavior of families and caregivers. The visits should be planned during times meals are prepared and eaten to ensure that the team will be able to observe actual practices. The home visits should allow the teams to learn and observe the family taking care of and feeding the young child. For PDI home-based assessments, there should be an observer and a note taker. Depending on the number of teams needed, the PD inquiry and analysis of the results can be completed in less than a week.

- With the discovery team, establish PD criteria
- Review village data and identify the PD families based on the criteria
- Develop or adapt a PD inquiry tool for questions and observations[31]
- Practice asking the questions
- Conduct PD inquiries to identify positive but uncommon behaviors and strategies around infant and young child feeding, nutrition, caring, hygiene, and health seeking
- Analyze results

Sort out children and families accordingly and plan visits to those who meet the above criteria. Sometimes, there are only a few PD families, but they should all be visited and learned from. A family should never be told that they are either positive or negative deviants. They should be informed that they are being observed and interviewed in order to help the community find solutions to the malnutrition problem. The aim of the PD inquiry is to find "model behaviors," not to find "role models."

The house visits should be conducted with non-positive deviant households, as well as positive deviant households. This is necessary to analyze the differences in behaviors. Information from focus group discussions on typical community behaviors can be used to distinguish unique positive deviant behaviors as well.

30 It isn't compulsory to measure using all nutrition indicators, but if ANY of these are known not to be met, the family/household should not be identified as positive deviants.

31 See Appendix P for a sample PD inquiry tool.

In the case of visits to PD and non-PD households, the Discovery Team should discuss cultural norms and expectations that govern visits to homes. In some cases, it is determined that appointments be set in advance to ensure that caregivers can be located and interviewed/observed in the home. In these cases, it is advised that while setting the appointment, caregivers be assured that they need not make any special preparations for the visit and should assume their routine activities for the visit.

Where possible, it is often advised to make house visits with little or no advance notice. This is more likely to assure the Discovery Team is observing a typical day in the life of the household under observation. Discovery Team members should not publicly distinguish between PD and NPD families, but rather keep those classifications private. They would then approach PD families and merely say, "We are visiting several families in the community to learn about nutrition and wonder if you would be willing to talk with us." Plan to conduct the home visits around meal times. Consider distance to household or between households to visit. Allow a minimum of three hours for each family visit.

PD Nutrition and the Existing Evidence Base

There are some well-informed concerns around the methodology of Positive Deviance for Nutrition. Responsible public health intervention work implores program planners to take action and plan interventions grounded by evidence as a way to strive for the greatest impact and to avoid unintentional harm to participants. As such, inappropriate application of PD, and PD-promoted behaviors in particular, risk ineffective activities and can actually cause harm as they may displace more appropriate interventions or actions. A grounding in best practices and agreed-upon nutrition actions to improve health and reduce risks of morbidity and mortality is fundamental when deciding to intervene to improve nutrition outcomes. This is especially important when dealing with acutely malnourished children and their elevated risk of mortality. An appreciation for the existing evidence base in public health nutrition is a way to avoid these concerns. Additionally, use of the PD inquiry sample tools found in Appendices P-Q will assist the Discovery Team in focusing the exploration of appropriate behaviors.

The basis for concern is the potential to use anecdotal evidence from the discovery to inform our "knowledge" of what is generating the desired nutrition outcomes in the positive deviants. Since the causes of malnutrition are many and varied (see the UNICEF framework for malnutrition in Figure 2), it is questionable and even inappropriate to observe a single (or even multiple) unique behavior in a household that has a child with a normal nutrition status (and the characteristics of the household are such that they would qualify as a positive deviant household) and promote that behavior to other households as the "protective" or preventative behavior against malnutrition. With this in mind, it is important to intervene with a solid understanding of current nutrition programming basics and contemporary evidence. This doesn't require a PhD in international nutrition, but it does require an investment of thought commiserate with the activity at hand. In the case of working with moderately acutely malnourished children, there is an imperative to establish a base level of understanding in terms of the condition.

"Rigging" the PD Inquiry

In other applications of Positive Deviance, outside of nutrition, the need to identify truly unique behaviors may prove to be the key in promoting positive change. In nutrition, however, the focus of the inquiry to is to identify **HOW** behaviors are achieved or executed, rather than searching for unique behaviors in and of themselves.

This is best illustrated with an example. If the Discovery Team member who is executing a PD inquiry enters a household and identifies the family as positive deviants, an exploration will take place to identify the positive deviant behavior. Without any base knowledge, the team member might isolate that the mother of the household listens to the radio while she prepares meals, whereas the team member notices that other community members with malnourished children who have radios were not observed listening to them during meal preparation and cooking. Theoretically, one could interpret the Positive Deviance methodology to indicate that this would be an appropriate behavior to promote – and that it is an existing solution that the community has to the problem. "Mothers should listen to the radio during meal preparation to reduce malnutrition."

Promoting radio listening to reduce malnutrition would be unlikely to create any positive change in nutrition outcomes (even if the radio was programming meant to educate and motivate improved behaviors around breastfeeding or complementary feeding!). Now, if the same Discovery Team member had been exposed to Essential Nutrition Actions (see Page 16), or some other evidence-based, simplified list of doable actions that promote optimal nutrition, the discovery process can take a different form. Instead of the pursuit of truly unique behaviors, s/he works from a list of behaviors or "doable actions" that current science has demonstrated to be instrumental in promoting optimal nutrition and searches for **HOW** these behaviors are achieved in the context of the community.

For example, s/he sees that "optimal complementary feeding" is on the list. S/he is unable to assess exact quantities, nutrient densities, or exact intakes of the various food items the child is fed. However, during the discovery process (the inquiry) in the positive deviant household, the team member notices that the PD mother does a peculiar thing when she serves her children. She seems to make a point to dig her ladle or serving spoon down deep into the pot of stew as she serves the small children their portion. She places this portion into a small bowl for the child. In other households, the Discovery Team member has witnessed this similar action several times, but with two distinctions. The first is that the small children are rarely given their own bowl (whereas, in this household they were) and second, the scooping of the stew usually was just from the top of the pot—not skimming the surface, but most certainly not going down to the bottom of the pot for the children's portion. The outcome of this observation is an interesting example of **HOW** this mother appears to be achieving positive results with respect to complementary feeding for her child. She is able to control and monitor the amount of food eaten by the child since s/he is eating from her/his own bowl. There is no confusion about just how much food the child ate (this is a way to improve or at least monitor the quantity of food). And in the case of stew, frequently any meat or vegetables will sink to the bottom of the pot, making those scoops taken from deep in the pot more nutrient-dense. In this way, whether knowingly or not, the mother is controlling for quality of the complementary food, as well as increasing the nutrient density of the child's portion. This existing solution found within the community comes at no cost. This is a classic example of how PD can be powerful to identify community or context-specific adaptations to improve nutrition outcomes.

Carrying Out the Positive Deviance Inquiry

Without a well-executed Positive Deviance Inquiry, a PD Hearth runs the risk of becoming a supplementary feeding activity, and one that may have considerable variability in quality due to the lack of standardized nutrition quality controls that other supplementary feeding programs strive to maintain. As such, the PD inquiry is a key component to the intervention and should not be taken lightly and NEVER omitted altogether.

Establishing a friendly relationship with the family is a key to the entire PD inquiry home visit. It facilitates the interview and will enable the mother or caregiver to relax and respond more completely and accurately.

The guided interview is usually conducted in the home compound. Specific topics, such as hygiene around food preparation and cooking, are best discussed in the kitchen area so the actual utensils and methods used to process and serve the food can be observed. It also facilitates the conversation and enables the interviewer to compare reported practices with observed behavior.

Remember to use probing questions (secondary questions) as a way to get more specific information after the initial response to a question, or repeat the respondent's last phrase.

Tips for Discovery Team Members

1. Be polite and respectful at all times
2. Follow a culturally acceptable time frame for introductions and greetings
3. State clearly the purpose of the visit – stress that the purpose is to learn and not to instruct, teach, preach, or judge
4. Avoid criticism or displays of dismay, annoyance, or disapproval
5. Avoid signs of approval, but remain positive and curious

Example of dialogue using probing questions:

Question: What food do you give your child in addition to breast milk?
Answer: Many foods

Probe question: What are they?
Answer: The usual foods, like rice and vegetables

Probe Question: Vegetables?
Answer: Yes, you know, like mustard greens or spinach

Avoid going through the entire interview all at once. Rather, focus on each part at well-spaced times during the visit unless the caregivers are very busy. Encourage the caregiver or the mother to go on with the business at hand and continue the conversation while working. It will make your interview more natural and congenial. In many cases, Discovery Teams dedicate three hours for each house visit, which allows them to collect the desired information through questions and observation without it feeling as though it is simply a survey.

Guidelines for Guided Interview
Make sure you ask all the questions to every family you visit
Involve caregivers other than the mother in the interview
When the answer to a specific question is vague, seek clarification by rephrasing the question
When you are not sure you have understood the interviewee's statement, summarize by saying, *"Let me repeat. If I understand correctly..."* Or request confirmation: *"Did I hear you say..."*
Use "situational questioning" to elicit more accuracy in the responses to your questions. Example: Ask about feeding practices while the mother is feeding the child; ask about the food the child eats when the caretaker is cooking or processing food or while talking in the cooking area.
Avoid leading questions and practice active listening

Most PD inquiries are executed using two primary field tools, the first of which is a questionnaire that is used to verbally interview household members and caregivers during a house visit. A sample questionnaire can be found in Appendix P. The second tool is an observation form that can be of equal or greater importance as it allows the Discovery Team to record observations made during house visits that may have otherwise not been considered when using only the interview with a caregiver. A sample observation form can be found in Appendix Q.

Often the PD inquiry enables the community to discover uncommon behaviors concerning fathers' involvement with care practices. Those fathers who spend time with their children, helping feed or playing with the children, are as important as what is in the bowl. Fathers' groups for good child rearing practices can be formed or activities fathers and the young children do together can be identified. There are many other examples of activities that allow community members to practice discovered PD behaviors and strategies.

Sometimes the team may find that, during the closer analysis of a home visit, a family identified as a potential positive deviant does not in fact meet the criteria. This is common and should not be cause for the Discovery Team to become discouraged. When it is determined that a pre-determined PD household does not qualify, it is advised to simply conclude the visit in a culturally appropriate manner and move on to the next household.

It is also important to distinguish between families with children under 1 year of age and those with children 1 to 2 years old. Try to observe families with children in each age group in order to ensure that a variety of age-appropriate feeding and caregiver practices are found.

An Activity for Communicating the Findings of the PD Inquiry

Using two drawings of children – one healthy, the other malnourished, have the Discovery Team write the common behaviors and the PD behaviors on small cards or pieces of paper. Distribute the cards randomly among the audience. Ask members to gather around those people who have a card. Ask each group to discuss the behavior and decide if it is likely to be one practiced in the household of the healthy child or the malnourished child and why. Invite someone from each group to come and put the card either by the drawing of the healthy child or the child who is malnourished and explain why. Once the two lists are up, go through the PD behaviors and ask if each behavior discovered can be practiced by everyone in the community. Those that are viewed to be unattainable should be removed from the list of PD behaviors.

After the PD inquiries have taken place, look for commonalities among the PD families' behaviors that might positively impact a child's nutritional status. Review the Essential Nutrition Actions and evaluate HOW PD households are able to achieve some of the behaviors outlined in the ENA framework (Page 16). Use of the list Essential Nutrition Actions will assist the analysis to focus on behaviors that have an established evidence base for promoting optimal nutrition outcomes.

These identified ways of achieving known nutrition-promoting behaviors that community members are employing with success (children with normal nutritional status) will be PD actions/behaviors to promote through the PD Nutrition program.

It may or may not be clear from the PD inquiry that a particular food is "unique" and can be labeled a PD food. Other characteristics, such as frequency of feeding, portion size, or hygiene, may be equally important. Organize the uncommon positive practices, as well as common good practices, together by category (food, hygiene, health seeking, care giving). The team compiles a master list of the beneficial household practices. The team can use a matrix to compare PD practices across households.

It is advised that these all be shared at a large stakeholder meeting where all community members are to be invited. They can also be shared during the PD Hearth sessions, one-on-one counseling, mother to mother, or other methods of sharing the good practices with the caregivers or families of malnourished children.

Phase 4: Practicing, Disseminating PD Behaviors, and Follow Up

The crux of PD Nutrition is about changed behaviors or getting to action. This phase of the activity requires that PD behaviors are promoted and **practiced**. As previously discussed, these activities can be far ranging, though they should be grounded in behavior that is known to promote optimal nutrition outcomes.

Organizing and Rolling Out a PD Hearth Program

This section provides guidance for implementing the PD Nutrition activities around complementary feeding (and should include promotion of active feeding practices). It is just one part of a range of activities that can be run by community members to practice behaviors and strategies discovered through the PD inquiry.

PD Hearth brings together between 8-12 caregivers and their malnourished children for a shared meal for 10 to 12 consecutive days (usually with a one-day break once or twice during the event for practicing the behaviors at home). This is a PD Hearth session. On the first and last day, each child is weighed and their MUAC measured and both are recorded. As has been previously discussed, the Hearth is appropriate for targeting *moderately acutely malnourished* children, and this can be determined using the MUAC measurement.[32]

The activity can be managed by a Volunteer and counterpart or another person from the health clinic or discovery team. It is important not to have too many helpers, as the caregivers should be the main actors in these activities – they are acting their way into a new way of taking care of their children and practicing the identified behaviors is the most effective way for them to gain new habits. The PD

32 Moderate acute malnutrition for children 6 months to 5 years is indicated by a MUAC <125mm and ≥ 115mm.

Hearth sessions occur 12 days each month until all the children in the community are rehabilitated and sustaining growth. This might take a few months or more than a year, depending on the number of children and their severity of malnutrition.

It is strongly suggested that PD Hearth sessions be repeated for several months (for children that are not "discharged" as having achieved normal nutritional status) to provide enough time and opportunity for the community to experience the changes and improvements in their children's health. This also offers time to talk as a community about what is happening and how they have achieved these improvements. Though children need not be discharged after achieving normal nutritional status, there are two reasons for doing so. The first reason is the presumption of limited resources, where inclusion of a child who has a normal nutrition status means that another who is moderately malnourished is unable to participate. Second, and this is worth mentioning but unlikely to be of major concern, is potential risks of *too much* weight gain. If PD Hearth supplemental meals are highly energy dense, there exists a small risk of overweight promotion. Malnourished children are at greater risk of becoming overweight. Rapid weight gain after the age of 2, particularly for children of normal nutrition status, is associated with greater fat mass as an adult.[33] These risks should be contextualized since much of the problem with obesity and associated noncommunicable diseases can be attributed to obesogenic[34] environments.

The number of actual sessions can be driven by need and intended reach of the activities. By focusing on quick recovery and targeting those who are moderately acutely malnourished, there may not be a large group of children to intervene with. This should be viewed as a positive and any Hearth with these children can follow the general guidance that focuses on improved complementary feeding and supplemental high energy feeding. In the event that the Hearth activities are viewed as successful in treating acute malnutrition, the program can be expanded to target and prevent stunting, but several considerations should be taken, including less of a focus on the high energy density of supplemental PD Hearth meals, but rather nutrient dense ones, or even focusing on PD Nutrition activities that expand beyond complementary feeding practices. See the PD Hearth Meals section on Page 52 .

When inviting caregivers to participate, it is critical to remember that in many cultures, it is not the mother who makes decisions. For this reason, planners may need to explain the program and its importance to the husband/head of household, the woman's mother-in-law, and anyone else with an important role in the family in order to obtain their permission and active support for the woman's or caregiver's participation. Some Volunteers have reported that a strong community awareness campaign or mobilization prior to inviting families to participate will make this process easier.

The size of the population in the catchment area or community may affect how to best organize the PD Hearth. Is it a small village, a town, or a large city? In a small village it may be possible to cover a broad cross-section of the population by inviting all the malnourished children to participate. Volunteers who work in a town or city might want to focus on one neighborhood at a time. It may work best to do the PD Hearth activities with an existing organization within the community (such as a women's group). It is useful to consider many of the factors that are key to the success of most community-based projects (timing, seasonality, geography and spatial considerations, possible barriers to entry, etc.).

33 Black, RE et al. "Maternal and child undernutrition and overweight in low-income and middle-income countries." *The Lancet Series on Maternal and Child Nutrition*. June 2013.

34 Promoting excessive weight gain

Using the list of eligible or targeted children, discuss with caregivers, including fathers, to invite their children to participate in PD Hearth. Frequently a house visit to each household facilitates a disarming discussion on the intent of the activities and their potential benefits. A general discussion of what PD Hearth entails at the household level is important to bring up in the community meeting as well, but restating it during the house visit can remind caregivers of the details and commitment. Given this information, they can make an honest decision as to whether they want the mother or another caregiver to participate.

Refer to the Hearth Preparation Worksheet that recaps some of the key steps needed to organize a PD Hearth. See Appendix R for the worksheet and Appendix S for sample training for community volunteers.

Include the Local Health Clinic

Arrange for health facility staff to provide vitamin A, deworming medicine, and updated vaccinations for all children in the community during the GMP session. You do not want to single out just the PD Hearth participants. If deworming is not a usual service, or is in limited supply, then during the GMP activity, have the health staff administer a deworming medication (mebendazole or albendazole) to those participating in the next PD Hearth session in order to ensure that worms do not inhibit any catch-up growth during the Hearth program. Have a professional health worker administer the medication to ensure compliance with the type of medicine, its form (pill or syrup), and the age of the child.

If possible, a basic medical screening for each of the children planning on attending PD Nutrition activities should be conducted a few days before the start of the activities. Colds, coughs, and other illnesses can be treated. By separating the medical evaluation from the nutritional activities of the PD Nutrition program, you will prevent community members from wrongly attributing a child's catch-up growth to the administration of the medication, rather than the PD Nutrition activities themselves.

Admission and Discharge Criteria

The aim of PD Nutrition is to improve the nutritional status of participants. When executing PD Nutrition with a Hearth component, this is accomplished in a manner that sets about to prevent severe acute malnutrition in the community by working to treat moderate acute malnutrition. It is important to do so in a manner that can be replicated and repeated so as to bring about widespread change throughout the community.

Along the lines of the targeting protocol, running the Hearth requires a disciplined admission and discharge criterion to be put into place. However, this criterion will necessarily include information about monitoring during the program and provide logic concerning how participants progress through the program.

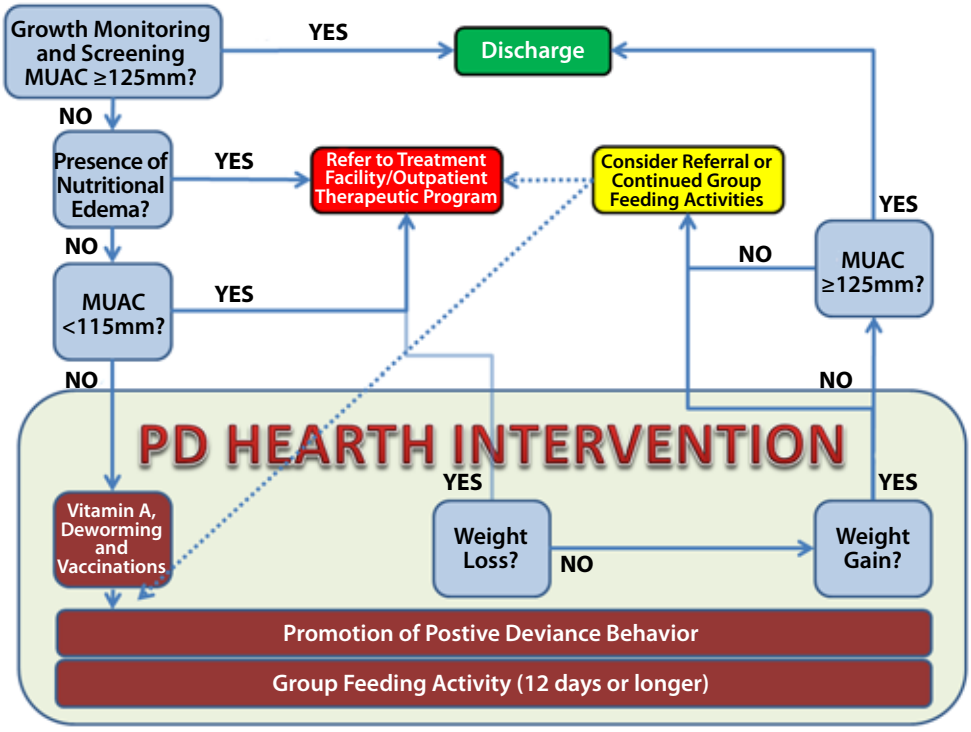
As previously discussed, a working knowledge of the nutrition landscape, complete with an understanding of the various actors and their mandates, is an essential part of planning. When deemed appropriate, a Hearth project can fill a gap in an overall severe acute malnutrition (SAM) prevention (NOT treatment) program. Basing the project on vulnerability, it is most important to work with those most at risk of SAM, with cases of moderate acute malnutrition (MAM) being the obvious first priority group. **Never admit children aged less than 6 months** into a Hearth program to avoid displacing exclusive breastfeeding for the first six months of the child's life.

TABLE 4: ANTHROPOMETRIC INDICATORS AND PD NUTRITION WITH A HEARTH COMPONENT

	Weight for Height	MUAC	Weight for Age	Height for Age
Type of malnutrition measured	Wasting	Wasting	Stunting and Wasting	Stunting
Appropriate for inclusion in Hearth	Moderate acute malnutrition (MAM ≤-2 SD >-3 SD	Moderate acute malnutrition (MAM)	Don't use as selection criteria, but should be used for monitoring progress	Don't use as selection criteria
Inappropriate for inclusion in Hearth	Severe acute malnutrition (SAM) ≤-3 SD	Severe acute malnutrition (SAM)	Don't use as selection criteria	Don't use as selection criteria

A recommended admission and discharge protocol is shown below in Figure 9.

FIGURE 9: PD HEARTH ADMISSION AND DISCHARGE PROTOCOL



Admissions

As previously discussed, the aim of the Hearth dictates that moderately acutely malnourished children be the targeted group for intervention. The diagram in Figure 9 illustrates how the activities fit together and how screening protocol is used to identify children for a PD Hearth program.

Figure 9 maps out the screening process for children 6 months to 5 years old. Any children who are found to have a MUAC of 125mm or greater should not be targeted for the program activities. Though these children may well benefit from intervention, their nutritional status suggests that activities other than a Hearth would be more appropriate for improving nutrition outcomes.

Children with a MUAC < 125mm should be observed for any complications, including nutritional edema. In the case of serious complications or edema, as well as any children with a MUAC <115mm, an immediate referral should be made to the nearest clinic or facility for therapeutic treatment.

Therefore, children with a MUAC< 125mm and ≥ 115mm without nutritional swelling or complications are eligible for the PD Hearth intervention and stand to benefit the most with limited risk.

Discharging

Though greater attention has been paid to the importance of follow up and support after the Hearth to foster adoption of learned behaviors around improved complementary feeding at home, there is limited discussion of "discharge criteria" in the way that other feeding programs are concerned. Though often advised against, program activities, particularly in Peace Corps settings, have frequently been relatively limited to the 10- to 12-day Hearth activity itself, without the focus on community-specific PD inquiries, combined with appropriate focus on practicing behaviors with follow-up visits. Experience shows that while small changes (increase of appetite, noticeable level of energy and emotion in children, and even weight gain) can and do occur over a short period of time, it is the establishment of a routine and prolonged changes in practices that show nutritional results in the mid and long term. It is common for cases to require several two-week Hearths to demonstrate both adequate weight gain and to reach the desired MUAC discharge criteria.

Since the intervention is targeting children who are moderately acutely malnourished with a heightened risk of mortality, there is an obligation to treat both admission and discharge with a technical standard requisite of other feeding programs. As such, Figure 9 demonstrates the use of weight gain and MUAC measurement as criteria for discharge. More specifically, Figure 9 illustrates a MUAC of ≥ 125mm for successful discharge from the activity. Importantly, weight loss during or at conclusion of the activity should result in a referral to a treatment facility.

Similarly, even with modest weight gain, if there is any reason a follow-up MUAC measurement is not equal to or greater than 115mm, the child should be referred. If there has been improvement in weight and MUAC, but the threshold of 125mm has not been reached, continued Hearth feeding sessions or other follow up and support should be considered to help promote the trajectory of recovery. The strong recommendation is continued participation in the Hearth itself, but if there is follow up that demonstrates continued improvement and ongoing practice of promoted behaviors this can be seen as a compromise.

This or similarly responsible discharge criteria should be adopted in any Hearth activities to guard against children whose condition deteriorates or fails to respond to the Hearth. Referring non-responders or deteriorating cases is part of a responsible Hearth. Committing to seeing the activity through to a successful conclusion for all participants is also part of a responsible Hearth. Some children are likely to respond and be "cured" after perhaps two sessions (two weeks for each session, with time included to practice behaviors at home). Others may demonstrate steady but slow progress

and could take three, four, or five sessions. Proper monitoring can ensure that children are improving and noticeable changes in appetite, mood, behavior, etc., will frequently be observed and should be highlighted to encourage caregivers.

When to Hold PD Hearth Sessions

There are many considerations that go into deciding when to host a PD Hearth. Seasonality related to work requirements, agriculture, climate, cultural and religious celebrations, and any other events that can affect communities or groups of households and how they allocate their time are considerations for planning and assessing the feasibility of a PD Hearth at a given time. For this reason, exploration with community members and work partners is a requisite step in the process. Use of PACA tools[35] can assist and permit the process to be conducted in an appropriate participatory manner, generating a seasonal calendar, as well as hourly allocation of time for planned activities. Ideally, if there is an established GMP, the PD Hearth should follow a few days after the GMP activity. During the GMP, those children who are appropriately screened for moderate acute malnutrition and their caregivers can be invited to join the next two-week session of PD Hearth.

Often, the mother is busy in the fields. An activity that requires attendance for 10-12 days for several hours each day may not be feasible. Making an explicit invitation to other caregivers, including an older sibling, father, neighbor, or other caregiver, increases the potential for the child to be included and can prove beneficial in strengthening intra-household dynamics that support child health and well-being.

While some Volunteers live in regions where PD Hearth can be conducted nearly year-round, Volunteers in other regions have found a much smaller window of time each year in which caregivers have the necessary free time to dedicate to participating. However, repeated sessions of the PD Hearth allow caregivers to practice new behaviors.

A routine activity that is intensive and requires dedication and time commitment reflects the seriousness with which community members take the health and growth of their children. The activity won't last forever, but will impact on the future of the children, their families, and their community.

As is demonstrated in the sample activity log in Table 5, several PD Hearth sessions can be planned as part of a community-wide program. The sample activity log assumes that prior to the first week a number of activities have already taken place to launch the effort with the community and to appropriately execute the PD inquiry with the Discovery Team.

In addition to considering the best time of year to do a PD Hearth, it is important to discuss with participants what time of day works best for them. A reminder that this is a supplemental meal or snack and not a replacement for a meal will reinforce the importance of frequency of food intake for small children. It should not be scheduled during a usual meal time to avoid displacement of the regular meal.

Some Volunteers have found that starting on a holiday such as International Women's Day, World Water Day, World AIDS day, etc., helps to launch the PD Hearth sessions. Certain holidays may also be good for encouraging the whole community to participate. If the whole community is involved in the launch, it is more likely that the caregivers will take attendance seriously.

35 The Peace Corps. *Participatory Analysis for Community Action (PACA) Training Manual* [No. M0053]. 2007

TABLE 5: SAMPLE CALENDAR OF GMP AND PD HEARTH EVENTS

	MON	TUE	WED	THU	FRI	SAT
Week 1		GMP Session				
Week 2	PD Hearth 1(PDH1) Admission Weights and MUAC	PDH1 Day 2	PDH1 Day 3	PDH1 Day 4	PDH1 Day 5	PDH1 Day 6
Week 3	PDH1 Day 7	PDH1 Day 8	PDH1 Day 9	PDH1 Day 10	PDH1 Day 11	PDH1 Day 12 Weight and MUAC
Week 4				House visits	House visits	
Week 5		GMP Session				
Week 6	PD Hearth 2 Admission Weights and MUAC	PDH2 Day 2	PDH2 Day 3	PDH2 Day 4	PDH2 Day 5	PDH2 Day 6
Week 7	PDH2 Day 7	PDH2 Day 8	PDH2 Day 9	PDH2 Day 10	PDH2 Day 11	PDH2 Day 12 Weight and MUAC
Week 8				House visits	House visits	
Week 9		GMP Session				
Week 10	PD Hearth 3 Admission Weights and MUAC	PDH3 Day 2	PDH3 Day 3	PDH3 Day 4	PDH3 Day 5	PDH3 Day 6
Week 11	PDH3 Day 7	PDH3 Day 8	PDH3 Day 9	PDH3 Day 10	PDH3 Day 11	PDH3 Day 12 Weight and MUAC

Following local protocol is a necessity. Be sure to meet with appropriate community officials and formal and informal leaders to inform them and get their support: the village chief, the mayor, village elders, the head of the community, the president of the local women's association, religious leaders, NGO representatives, the head of a health facility, and local midwifes. This should be done before any of the discovery work is set in motion, but reinforced when the PD Hearth activities start. In some cases, it is useful to have the village chief go to each family before the start of the Hearth session to explain the activity to the family and their responsibilities, such as food contribution, and get their consent to participate.

Where to Hold PD Hearth Sessions

There are several different options for where to host PD Hearth sessions. One option is to host them in a kitchen in your community. The kitchen of the volunteer mother may be an option. Another option is to rotate kitchens between a few or all of the women in the PD Hearth. This has the added benefit of encouraging each of the women or caregivers to clean up her kitchen as part of hosting the activity.

In general, hosting PD Hearth activities in a family's kitchen means not only that the women and caregivers are cooking in a realistic environment (which helps them see that continuing the behaviors they have learned is an easy and possible thing to do), but also that the whole family (often including the men) sees what is going on and can benefit from the health messages and recipes. However, it is also important to keep in mind that the women and other caregivers may not feel comfortable discussing certain topics (such as family planning) in the presence of men. There are realistic considerations about potential inclusion or exclusion of participants based upon the social or political relationship they may have with the host.

Unique Characteristics of an Urban Setting

In some urban settings a majority of households do not regularly cook, but rather buy their food already prepared – the PD Hearth activities should accurately reflect these circumstances and situation. The group of caregivers and their children might meet and go together to the food vendors to learn about the best choices as reflected from the PD inquiry, and then spend time together practicing active feeding and hygiene before eating.

Another option is to hold the PD Hearth activities at the local health center or maternity clinic. If there is adequate room for the cooking activities, running water, accommodation for caregivers and their children to gather together comfortably, and it does not displace the clinic's regular activities, this can also be a good place. While many PD Hearth projects advise against this practice, noting that it is not the type of environment in which the women normally cook and therefore is not as sustainable, it may be a good option for the community, especially if houses in your village are small. Since many Volunteers work closely with the local health center, hosting a PD Hearth at the health center may be a chance to get women more comfortable and familiar with the center and, consequently, more likely to frequent it.

For all these reasons, careful consideration of the impact of hosting in different locations should be done and, based on the benefits and consequences, an informed decision can be made by those planning the events.

PD Hearth Meals

Too often, PD Nutrition initiatives only have the Hearth activity. When implementing the PD Hearth activity, it is essential to base it on the PD inquiry findings and not fall into the trap of designing a traditional supplementary feeding activity. PD Hearth is not about intervening as a clinician or dietician to formulate a nutritionally ideal diet to solve the community's nutrition problems. Using the existing positive behaviors and including specific foods to achieve those behaviors as a basis for the Hearth activities, a sustainable model can be presented and practiced for making lasting improvements in infant and child feeding and rearing practices. This can be done in incremental steps for the community to share and build upon.

TABLE 6: MACRONUTRIENTS AND CALORIES

Macronutrients and Calories	
Fat	9 kilocalories per gram
Protein	4 kilocalories per gram
Carbohydrate	4 kilocalories per gram

Support should be given to those organizing the activities to develop two to three recipes using information obtained during the PD inquiry. Though some PD inquiries will isolate specific foods or food groups (i.e., animal source foods), resist the temptation to artificially highlight food items as "miracle" foods. Though not all foods are created equal, and some have superior nutrient profiles, problems of undernutrition are not solved by consumption of a single magic ingredient or food item. Even therapeutic foods (such as therapeutic milks and Plumpy' Nut) that are effective beyond a reasonable doubt in treating severe acute malnutrition have been developed by combining numerous food items and mineral and nutrient supplements. Keep in mind that it is always better to choose simple recipes that build off of local recipes and cooking techniques than to try to introduce new recipes, even if these recipes use local ingredients. Community members are the experts here, and they will grasp how to best boost the traditional menus. Volunteers can best serve the role of assisting in improving the energy density and nutritional quality of current meals. Though Volunteers are often energized to contribute in the creation of recipes, it is advised to withhold contributions until they are devised by the collaborating community members. After recipes are devised and proposed for inclusion, they can be evaluated for their nutritional value, feasibility within the program design of the activity and relative affordability/accessibility for all participants in the activity. A market price survey can be used to inform this last component and although a plethora of tools exist with varying complexity, a simple collection of prices (based on recognizable/convertible quantities) is all that is required to ascertain the relative affordability.

The recipes should approximate common recipes but should take care to provide abundant energy (primarily through addition of proteins and/or fats). There are ways of modifying or supplementing recipes to increase the number of calories and grams of protein. Often, the typical portion size of the main staple (rice, millet, sorghum, cassava) can be reduced significantly to accommodate increased amounts of protein, vegetables, and fat. Adding a tablespoon of cooking oil to porridge will increase the density of calories without altering the taste or acceptability of the porridge. Some Volunteers in West Africa have worked with community members to focus on improving the nutritional value of local sauces, for example by adding Moringa or sweet potato leaves. Inclusion of fortified products (flours, Incaparina, etc.) can substantially boost micronutrient density, though availability and affordability may be barriers.

TABLE 7: THE WHO COMPLEMENTARY FEEDING RECOMMENDATIONS

WHO Feeding Recommendations[36]		
Age Range	***Feeding Amount***	***Feeding Frequency***
< 6 months	Exclusive Breast-feeding	On demand – from eight to 12 times daily
6 to 8 months	Start with 2-3 tablespoons per feeding, increasing gradually to one-half of a 250 ml cup	**2-3** feedings daily + **1 or 2** snacks (small bits of fruit etc.)[37] + continued breast-feeding on demand
9 to 11 months	One-half of a 250 ml cup/bowl	**3-4** feedings daily + **1 or 2** snacks + continued breast-feeding on demand
12 to 23 months	Three-fourths to a full 250 ml cup/bowl	**3-4** feedings daily + **2** snacks + continued breast-feeding on demand
24 to 59 months	Full 250 ml cup/bowl	**4+** feedings daily + **2** snacks + 2 servings of milk[38]

36 World Health Organization. http://www.who.int/features/qa/21/en/
37 Depending on appetite
38 Breast-feeding can be displaced during this period, but animal milks are advised to take its place in optimal child feeding.

Children have small stomachs and the size of the stomach changes fairly rapidly with age. The capacity of a newborn stomach is remarkably limited (comparable to a cooked chickpea in the first days) and that is why exclusive breast-feeding during the first six months is practiced on demand while emphasizing frequent feedings. Though the size of the stomach increases over the first several years of life, its capacity remains limited relative to that of the adult stomach. For this reason, frequent meals and snacks are important to maintain optimal feeding. Using the WHO recommendations for feeding amount and frequency in Table 7, supplemental Hearth meals can be planned accordingly. The age of the children in the intervention group will dictate both the quantity of food required and the type/consistency of food to be included.

TABLE 8: MEAL PLANNING CONSIDERATIONS FOR PREVENTION AND TREATMENT OF MODERATE ACUTE MALNUTRITION

Meal Planning Considerations for Prevention and Treatment of Moderate Acute Malnutrition[39]	
Characteristics	***Explanation***
Appropriately high energy density	Addition of fats or sugar increased energy content with minimal increase in volume
Micronutrient load	Vitamin A, iron, iodine, and zinc remain the high priority micronutrients – inclusion of vitamin C improves absorption of iron – animal source foods are more efficiently absorbed than plant source foods
Adequate protein	Diversity of sources seen as a key – mixture of lentils, legumes, and animal source foods
Sufficient fat	Fat is required for absorption of fat soluble vitamins and provides energy – 30-40 percent of the energy should come from fat
Acceptability	Taste, texture, and cultural considerations – locally available
Affordable	Can be a challenge, but animal source foods and fortified products should be evaluated for inclusion
Avoidance of contamination	Before, during, and after food preparation, food should be cared for to avoid toxins, microbes, and contaminants
Minimize negative impact of anti-nutrients[40]	Soaking, germination, malting, and fermentation are all food preparation strategies that can reduce the negative impact on vitamin and mineral absorption posed by anti-nutrients found in many plant source foods

The amount of food and kilocalories required can be informed by an understanding of the traditional diet and feeding practices[41] compared to what we know to be generalizable needs for all children during their development. Children during the complementary feeding stage (6 months to 2 years) who continue to breast-feed but are no longer meeting their nutritional requirements through breast milk alone have rapidly changing needs, as demonstrated by their increasing calorie requirements.

39 Adapted from: S. de Pee and Bloem, Martin W. "Current and potential role of specially formulated foods and food supplements for preventing malnutrition among 6- to 23-month-old children and for treating moderate malnutrition among 6- to 59-month-old children," Food and Nutrition Bulletin, Vol.30 No.3. 2009.

40 Phytates, tannins, and other compounds found in foods and beverages can inhibit absorption of some nutrients.

41 A nutritional assessment can be used to identify a "nutrient gap."

TABLE 9: ENERGY NEEDS FOR BREAST-FED CHILDREN BY AGE (6 – 23 MONTHS)

Energy Needs for Breast-fed Children by Age (6 – 23 months)[42] [43]			
	6-8 months	**9-11 months**	**12-23 months**
Total normal daily energy requirements	615 kcal/day	686 kcal/day	894 kcal/day
Breast milk contribution	413 kcal/day	379 kcal/day	346 kcal/day
Energy requirements from complementary food	200 kcal/day	300 kcal/day	550 kcal/day
Recommended additional energy intake for recovery from moderate acute malnutrition[44]	+25 kcal/kg/day	+25 kcal/kg/day	+25 kcal/kg/day

Remember that PD Nutrition should not immediately devolve into an uninformed supplementary feeding program. The PD inquiry needs to inform the entire process and behaviors that are not oriented to address dietary intake may not only be easier to achieve, but may also offer greater return in terms of impact while ultimately providing more sustainability. The difficulty of developing locally available and accessible supplementary snacks/meals can be instructive for the group in terms of the challenge and the attention needed to address the problem. Particular attention should be paid to the "low hanging fruit." Examples such as hygiene practices, serving the nutrient dense bits of the soup (from the bottom) to children, making porridges less watery, and others are only slight modifications of behavior. They are not requisite of new invested resources but can be sustained. These "in-community" solutions are what PD Nutrition seeks to unearth and share widely.

Before beginning the PD Hearth sessions, experiment with counterparts and others who are interested in participating. As a game, you can make several recipes and practice how much time and the amount of ingredients you will need for the PD Hearth meals. Based on the market survey and the discovered PD food, challenge the group to prepare a PD meal. Each team will have a certain amount of money. They will go to the market and buy ingredients for a particular current recipe. Which team is able to have a higher content of protein and more calories, and how much money did they spend? Did anyone remember to incorporate locally available and free food? How do the results change if this activity is conducted at a different time of the year (dry season/rainy season or pre- and post-harvest)? You will need food scales, calculators, pencils, erasers, paper, and time to prepare the food. Then children nearby can be invited to taste the food. This is a good way to practice preparing the 2-3 recipes you will be using during the PD Hearth sessions. You will have a good idea of the quantity of each ingredient and be able to assign contributions of PD food accordingly.

Develop a supply list

Here is a sample list of basic supplies needed for most PD Hearth sessions. Adjust them based on any materials needed for the specific sessions to be held. The PD inquiry will inform how best to program discussions to take place during the preparation of food. Discuss who will be responsible for supplying each item.

42 WHO. Technical note: *supplementary foods for the management of moderate acute malnutrition in infants and children 6-59 months of age.* Geneva, World Health Organization, 2012.

43 Pan American Health Organization/WHO. *Guiding principles for complementary feeding of the breast-fed child*. Washington D.C., PAHO, 2002.

44 Not proven – though is based on existing evidence and risk of contribution to overweight or obesity is believed to be low.

Fuel: wood/charcoal/manure

- Matches
- Petrol (as needed to light the fire)
- Water for cooking and washing utensils and hands (in a container with appropriate cover)
- Drinking cups for participants (these can be brought by the caregivers from their homes)
- Bowls or plates for participants (these can be brought by the caregivers from their homes)
- Pots, pans, large mixing bowls for food preparation
- Knives and large spoons, spatula for cooking
- Several bowls or containers for storing ingredients
- Soap
- Mat for children to sit and play on
- Visual aids and any other materials for the planned discussion

Who Runs the PD Hearth Sessions?

The bulk of the work should be done by the caregivers participating in the PD Hearth sessions. Because all PD initiatives are grounded in "learning by doing" principles, the meal preparation, active feeding, and cleanup is done by those gathered to learn and practice new behaviors. Volunteers and counterparts or someone else in the community can be the behind-the-scenes organizers. They can check on location and basic supplies, oversee meal preparation and participants' contributions, weigh and measure MUAC and record these data on the first and last day of the PD Hearth session. They can also lead conversations on various health topics, following up with home visits to participants during the weeks when there isn't a PD Hearth in session. Finally, such organizers can invite caregivers and their children identified during the latest GMP session to join the next PD Hearth sessions. However, the caregivers are the central focus of all activities, and should be given as much responsibility as possible in the daily running of PD Hearth activities.

Caregivers take turns going to the market (if appropriate), bringing, washing, and preparing food for the meals; actively feeding their children; cleaning and straightening up the dishes, pots, and other equipment; and sweeping the area after the session is over. In many programs, caregivers bring food or other items several hours before the scheduled session, then come back when most of the meal preparation is done by the designated cooks for that day, sign in for attendance, wash their hands and their child's hands with soap and water, and then feed their child while either listening to a health talk or participating in some discussions around various topics. Encourage the caregivers to practice active feeding during the meal.

Who Runs the Health Discussions?

There are several ways of running these discussions. Topics can be identified and prepared beforehand, or certain days can be reserved to talk about questions participants have. For some topics, an extra activity can be incorporated into the mealtime, such as having all the caregivers prepare ORS or discuss storage or optimal frequency of feeding a sick child. Though this time can be used for important but corollary topics, it is advised to begin the two-week event with discussions around issues identified during the PD inquiry that are seen to be contributing to positive nutrition outcomes of children in the

community. Hygiene, food safety, food storage, meal frequency, meal timing, breastfeeding, and active feeding are examples of topics that could turn up during the PD inquiry and can be useful to discuss in the group, devising strategies for adopting positive behaviors. Snack choices can be discussed using favorite snacks brought in by participants and then discussing their nutritional value.

Volunteer counterparts may begin by leading health discussions. They are fluent in the local language and well connected to community members. The Volunteer role in supporting them in the health discussion is to remind them to expose PD behaviors during their health talks, and to provide a nonjudgmental attitude during the discussions to encourage participants to share their own challenges and concerns about a certain topic.

Alternative Options for Facilitating the Hearth Activities

The Volunteer Mother Facilitator Approach

To utilize this delivery model, a mother from the community assumes the lead role for the activity. This woman is ideally a model mother (she has healthy children and a clean home), although she does not have to be identified to the group as such. Most of the caregivers able to commit the most time to the Hearth are likely to be caregivers who have older children and, therefore, the volunteer mother doesn't have to qualify as a positive deviant in the strict sense of having children in the appropriate age range with all the appropriate characteristics. Among the caregivers with consistently healthy children, select a small number of potential model caregivers and visit them at their homes. The community counterpart may already know some women in the village who could serve as a volunteer mother. It is likely that candidates for this role are older, respected, and have raised their children who are now aged 5 years or older.

Because a volunteer mother needs to be representative of your community, she should be in the same economic group as the other caregivers (e.g., ideally not a schoolteacher or the wife of a government worker) and should not have an education level too far beyond that of the other caregivers. If she is not originally from the community, she should have been there long enough that she is not perceived as an outsider by her peers. Some ideal characteristics for a volunteer mother are:

- All children are healthy and well-nourished.
- If she has young children, they have up-to-date vaccinations.
- Her kitchen is generally clean and food is kept covered.
- She is well-respected, outgoing, and confident in front of her peers.

Although it is difficult to find one mother who excels in all areas, the volunteer mother should possess as many of these characteristics as possible (with particular emphasis on the first three).

Setting volunteer mother facilitator expectations

Once a volunteer mother has been identified, explain to her the full expectations of the intervention. She must be willing to commit approximately 2½ weeks of her time to training and the implementation of the Hearth. In this model, two or three days of training are conducted at the volunteer mother's home. During the 12 days of the Hearth, the volunteer mother is responsible for

organizing the women, preparing and teaching the recipes, helping to launch health topic discussions, and checking in with all of the Hearth families on a regular basis.[45] Also, health education sessions are more effective if led by volunteer caregivers themselves.

If Hearth participants will co-lead sessions, mention this aspect of the program when explaining the requirements of participation to families prior to starting your Hearth.

The Participant-led Approach

For those Peace Corps Volunteers who have a difficult time getting their counterpart or other community person to help lead health discussions, there are other ways to approach the PD Hearth intervention that may be equally effective. For instance, a different PD Hearth participant may lead each day's health discussion. The day before each session, the Volunteer and counterpart visit the caregiver responsible for the next day's presentation at his/her home in order to go over the next day's theme, using visual aids and any other available support materials. The next day, the selected caregiver would present to the group what s/he had learned, with the Volunteer and counterpart intervening when necessary. Each caregiver is, therefore, responsible for leading one session over the course of the 12-day PD Hearth.

It often becomes clear that one or more of the participants takes on a lead role once the PD Hearth gets underway. Volunteers can encourage such women to take on increasingly active roles in the daily sessions, often spending extra time training them at home on the health education messages.

Health Discussion Topics

During a PD Hearth, participants have the opportunity to learn (and actually practice) the basics of family health. The design of the activity lends to a significant amount of focused time over a concentrated number of days. While meals cook, discussions are planned to take advantage of this time. When planning the agenda with the facilitator, volunteer mother, or others involved in the administration and facilitation of the activity, start with topics that have been unearthed through the PD inquiry. These are community-based, practical solutions to malnutrition and, perhaps, other health issues that are common among participants. As the relationship with the participants grows and the dynamic of the group changes, consideration of discussion around more sensitive subjects, such as HIV/AIDS or family planning, may be possible. The schedule of health education should focus on those topics that are most pertinent to the specific problems of nutrition and child and maternal health faced by your community (revealed by the PD inquiry, baseline survey, or focus group discussions). Choose topics where behavior change seems both important and feasible and be as specific as possible when explaining such subjects. Avoid lectures and plan discussions that invite wide participation.

Generally the health talk sessions run 10-15 minutes, although some Volunteers have said their sessions ran as long as 45 minutes. How long the facilitator can hold people's attention will depend largely on the group dynamic, interest in the topic at hand, and pressure to return home to work. The use of visual aids is always a plus.

45 In many communities, communicating with husbands is important to ensure that they are supportive of their wives' inclusion. Regardless of what this step might indicate in a Western culture, it may well be an important part of making community decisions. Volunteers are expected to best understand these location-specific details.

While some Volunteers have conducted a different health education session each day, others have allotted 2-3 days for each topic. How much time is spent on each subject area should depend on how long the daily presentations run. In some cases, participants will catch on quickly, while in other cases, it may take a few days for the women to understand concepts that you may find quite simple. Be patient, flexible, and remember that actual practice is vital. As an example, for the topic of diarrhea, instead of demonstrating how to make an ORS solution and give zinc supplements, have everyone practice making ORS solution and feeding their children the solution. It takes patience to spoon-feed ORS when children are sick and dehydrated, but simple instructions broken down into practicable actions make the task much easier for caregivers. How would caregivers describe how often they should give another spoonful of ORS solution to their children? How do they get their children to swallow the zinc tablets? How do they remember to give the zinc tablet once a day for 14 days? Where did they get the zinc?

Other topics that are related but often overlooked are games and songs for young children. What are some of the ways caregivers interact with children? Who else plays with the child? What kinds of games can be played to help a child develop his/her motor skills and social skills?

To get to action, each topic discussion session should conclude with a question, such as:
"What will you try to do differently at home today after participating in this session?"

The next day, during discussion time, the facilitator can ask:
"Who wants to share what they did differently at home yesterday?"

How Long Should the PD Hearth Activities Last?

For participants and their families:

As the daily routine of the 10-12 days of PD Hearth become more automatic, it may be possible to analyze what is working and if children are finishing their meals, interacting with caregivers and other children, and how the rhythm of the session works. Volunteers and counterparts will begin to notice that some children are finishing their meals, becoming more active, and looking better. Though discharge criteria should have been discussed as part of the planning stage, a point during the execution of the PD Hearth activities in which there is notable progress provides an opportunity to revisit this with the team. Discussion is important since the activities of the Hearth are meant as a treatment of moderately acutely malnourished children. They are intended to assist them in recovery; therefore, an end goal of "normal" nutrition status is sought.

The participating children and their caregivers come every day to the PD Hearth session and will return the following month for a session if their MUAC fails to reflect adequate recovery to raise them out of the moderate acute malnutrition classification (the yellow). Most implementers agree that the measurement at the end of the first session is only an indication of progress during the activity, not an indication that a child is cured. A follow-up measurement to occur two weeks after the conclusion (allowing for the new behaviors to be practiced for an additional two weeks) is important for gauging the relative sustainability of the changes. If there is a normal measure of MUAC shown at the next GMP/screening, the caregiver and child should be successfully discharged from the PD Hearth activities and celebrated. Changing behaviors can require substantial practice, repetition, and support to turn new behaviors into routine habits.

For the community:

The goal of PD Hearth is to rehabilitate moderate acutely malnourished children, sustain their growth, and prevent future cases of malnutrition. PD Hearth activities should continue each month for as long as there are malnourished children in the community.

In some communities, members may want to suspend the PD Hearth sessions due to cultural or religious events. In Muslim communities, many caregivers do not want to hold PD Hearth during Ramadan. This is a sensitive topic and can be discussed and determined by community members. Most likely, however, PD families continue daytime feeding of their children during the fasting month, and this practice should be part of the PD inquiry and incorporated into the schedule of PD Hearth. Gaining favor with influential religious leaders can be useful in assuring that optimal feeding practices can continue for children during their growth and development.

Monitoring and Evaluation (M&E)

Monitoring and evaluation will help keep momentum going and provide valuable information as to how activities are affecting the health of the community. Some of the monitoring will be done by community members so they can report back to the larger community on the intervention's impact and the progress being made, and some will be done by the caregivers and family as to how their children are improving their nutritional status and overall health.

PD Hearth M&E

For monitoring and evaluation purposes, it is important to measure the MUAC and weight of the children on the first and last day of the PD Hearth and during each PD Hearth session (not each day, but each two-week session) that they participate in. Having the MUAC and weight of the children marked in a visible place instead of a book will allow caregivers and others to see how their children are doing. Attendance should be tracked to complement MUAC and weight measurements/gains. See Appendix T for suggested forms.

Daily participation is important to monitor. The caregivers mark their attendance and contribution in a way that makes sense to them. Creative ways can add to the enjoyment of PD Hearth activities. In some countries, caregivers mark their child's attendance by drawing different parts of the body on a large piece of paper. Day 1 is the head, Day 2 the left eye, Day 3 the right eye, Day 4 the nose, Day 5 the mouth, Day 6 the neck, Day 7 the left arm, Day 8 the right arm, Day 9 the body, Day 10 the left leg, Day 11 the right leg, and Day 12 a flag in the hand of this stick figure. The picture does not have to be perfect, but by having the caregivers mark their attendance, they are reminded of the importance of their daily attendance.

Monitoring Establishment of Practices Using Home Visits

Appendix U presents one example of a monitoring tool, the bottom of which can be used for home visits during follow up. Successful PD Hearth interventions NEVER end on Day 12. Between the two-week sessions, as well as after discharge, home visits by the counterparts and Volunteers to caregivers who attended the PD Hearth session are vital. This is to see how things are going and if they are able to practice some of the behaviors and meals they learned about during the PD Hearth activities. Visits

should be conducted with an emphasis on counseling and support and visitors should avoid passing judgment or otherwise being perceived as adversaries. Encourage the caregiver and other family members to try the behaviors being emphasized and to do so in the way that has been presented. Keeping track of the home visits and new behaviors being tried will also help reinforce the PD inquiry findings and those community-driven strategies for improving the health and nutrition of children.

The PD Hearth sessions provide an opportunity to record results, note the successes and problems encountered, and highlight lessons learned along the way. This will help to reflect on what worked and what still needs improvement during the next session. These lessons learned and challenges will be useful to share with other PC Volunteers at in-service training, or for those newer Volunteers who are just starting the process.

The success of the PD Hearth is dependent on these activities. If, after several sessions of the PD Hearth, the child is now gaining weight and the MUAC measurement is improving, the activity is proving successful.[46] A case can be considered "cured" and thus discharged when the MUAC shows a reading of "normal" (green).This information should be recorded and reported, as appropriate, to both community leaders and programming staff at post.

Furthermore, results from the PD Hearth can be shared with the community and host country/ministry of health counterparts. Significant changes in the children's weight and energy over the span of 12 days is often observed, and communicating these positive results to the community will not only reinforce the caregivers' commitment to the behavior changes they learned, but also promote interest in the program among non-participating caregivers. It may encourage those whose children did not have the same weight gain to attend the next 12-day PD Hearth session. Community members often come up with ideas to use between sessions to help families who have children who have not progressed or been successfully discharged – and community members will pay attention to that particular child and encourage them in informal playing and eating activities.

Community M&E

The community will want to know how things are going. By monitoring numbers of children attending the GMP, and then tracking numbers of children who are healthy, moderately acutely malnourished and severely acutely malnourished, the number of children attending the PD Hearth sessions, and any other activities that were generated during the community-wide meeting, the community can evaluate the progress being made and determine other actions that may be useful.

An added result of conducting PD Nutrition or PD Hearth sessions is that attendance at the GMP will increase. This is something to keep track of and present during subsequent community meetings.

Community members may decide that the findings of the PD inquiry should be posted for all to see as a reminder of the wisdom in their own community. Communitywide meetings may increase because of the PD activities. This is an important indicator of note, as it reflects a change in community mobilization. Also interesting to notice, though this might be more for evaluation, is if there are different community leaders who emerge who present and lead discussions. Community transformation is quite possible with those communities that have participated in the PD process.

46 Subtle improvements in weight are generally easier to detect than in MUAC. While both tend to respond at a relatively similar pace, the nature of measuring MUAC in the field may make it more challenging to detect a small (e.g., 2 mm) change in MUAC, which is why weight remains a strong indicator for monitoring changes.

Reporting Findings Back to the Community

An important but occasionally overlooked step in the process of a PD Nutrition program involves communication of PD inquiry findings to the community. The manner in which findings are expressed to the community as a whole will be largely dependent upon the context. One common approach that has been deployed effectively involves grouping and discussing various behaviors.

Without this step, it can be difficult to build the momentum necessary to facilitate change on the community/social level that will be instrumental in creating sustainable change. The reporting out keeps community members informed and engaged, but also changes the discussion of malnutrition into a community-specific discussion as the specific behaviors and norms become disclosed. This includes behaviors and practices that tend to promote positive nutrition outcomes, as well as some that can be seen to be contributing to poor nutrition outcomes. It is during this meeting that community members can begin to see where this effort is headed and choose to become involved.

Engaging with the community in this part of the process assists in the practicality of achieving various targeted PD behaviors and they can be collectively explored.

Frequently Asked Questions about PD Hearth

No matter how much effort Volunteers and counterparts put into planning the PD Hearth, challenges arise. Following are some tips from returned Peace Corps Volunteers.

1. What if women don't show up or show up late? What if women send their children but don't attend themselves? What if they attend but don't bring their children?

Attendance is a common problem, especially if the family is not given the option of sending a caregiver with the malnourished child in place of the mother. It is important to discuss this early and allow other members of the family to participate. You may find that women who are too busy to attend will send an older child to pick up the PD Hearth meal. It also needs to be clear from the beginning that the child must be present during the activity – how else can you practice active feeding? The child and caregiver are often stimulated to eat more when they see other children sitting next to them eating. During the planning stage, emphasize to each family that attendance of the caregiver and child is mandatory. If problems persist, talk to your counterpart or village leader.

Do not rush to judge a caregiver if she misses a day. Find out why she was absent (perhaps she or another child was sick) and try to find ways of supporting her attendance.

Some ways other Volunteers have encouraged punctuality or attendance are:

- A reward at the end only for caregivers who meet the set attendance standard
- Caregivers who show up late are responsible for cleaning up (punctuality)
- Mandatory attendance or the mother cannot attend any of the sessions

2. What if a caregiver is not feeding her child his/her entire portion of meal?

If a child is not able to eat the entire PD Hearth portion, then the caregiver can bring it home for a later snack. If she thinks it is too much for the child or claims the child refuses to eat all of it, explain to her that it often takes time for children to adapt to new foods (especially if the child has just started getting food other than breast milk).

3. What will you do if a child gets sick during your PD Hearth session?

Even though children suffering from diarrhea will probably not gain weight or may lose weight over the course of the PD Hearth, they can still benefit from participating by getting the ORS solution and being encouraged to eat. All children who get sick during the PD Hearth should be referred to a health care worker for assessment. If a child becomes seriously ill, s/he should be referred to a doctor immediately. Children who are contagious should be kept home until they are no longer contagious.

This provides an opportunity for PD organizers to initiate a discussion on appropriate feeding for a sick child. Encouraging such practices is a good way to get to the action component of the PD process. This is also an important time for educating about and promoting behaviors that prevent childhood illnesses. With the example at hand, messages concerning sleeping under bednets to prevent malaria, washing hands with soap, and participation in immunization campaigns will have greater resonance.

4. What if there is no treatment facility for SAM or if the organization with this mandate are not performing well?

This is a tricky question and one that should be discussed with in-country supervisors. However, it is of critical importance to remember that PCVs are not trained clinicians and that SAM is a medical emergency. PCVs are not trained to treat these children and their condition (nor any co-infections) and must refer them wherever they might fight adequate care. If there is an organization that is underperforming in this arena, then perhaps working to highlight that or bring attention and resources to it could be a major contribution. The sensitivity of the issue requires that decisions made be done so in accordance with PC staff and supervisors.

5. What should be done if a child does not gain weight or augment his/her mid-upper arm circumference during the PD Hearth?

Ask the caregiver what else the child is eating at home. Make sure the caregivers are still feeding the children three or four times a day. If you believe the child is, in fact, eating his/her food, it may be possible that this child has an illness other than malnutrition. Did the child receive deworming medicine? Extra home visits to determine how the child is doing during the two weeks after the PD Hearth will help encourage the caregiver and family to continue feeding the child more frequently and practice other behaviors. See how the child does at the next GMP and include him/her in the next 12 day PD Hearth session. If, at the end of this session, the child has not gained any weight or has lost weight (or failed to augment their MUAC), you should refer the child to a health care professional.

If none of the children in the PD Hearth sessions gain weight, it could indicate that the recipes are either not caloric and protein dense enough or that they are being used as substitute meals instead of being supplemental.

6. What if, during the PDI, there is not a particular PD food that stands out? What if the process results in a limited number of foods that are not necessarily nutritious or accessible, yet are used by PD families?

It may not become clear from the PDI that a particular food is "unique" and can be labeled a PD food. Although it is nice to be able to identify a particular PD food, this is not always possible. Other characteristics, such as frequency of feeding and volume of food, may be equally important. Manner of food preparation may be the behavior that makes the difference. For example, if vegetables are boiled until overdone and depleted of nutritional value, then the proper way of cooking may be a PD behavior. In one PD inquiry it was discovered that when the vegetables were finely chopped, the children actually ate vegetables and found them palatable. Families with malnourished children did not chop large vegetables and the children did not eat them. This is an example of food preparation making the crucial difference.

Resources

The Positive Deviance Initiative website: http://www.positivedeviance.org/

The Positive Deviance Field Guide:
http://www.positivedeviance.org/pdf/Field%20Guide/FINALguide10072010.pdf

The CORE website: www.coregroup.org/
Designing a Community-Based Nutrition Program Using the Hearth Model and the Positive Deviance Approach - A Field Guide, by Monique Sternin, Jerry Sternin, and David Marsh.
http://www.positivedeviance.org/pdf/manuals/fieldguide.pdf

CORE Group (Nutrition Working Group). Positive Deviance/Hearth: *A Resource Guide for Sustainably Rehabilitating Malnourished Children.* February 2003. Available in English, French, Portuguese, Indonesian, and Spanish on the Positive Deviance Initiative website and the CORE website:
http://www.coregroup.org/storage/documents/Diffusion_of_Innovation/Hearth_Book.pdf

Addendum published in August 2005:
http://www.coregroup.org/storage/documents/Diffusion_of_Innovation/PD_Hearth_Addendum_Jun_2009.pdf

The PD/Hearth *Facilitators Guide:*
http://www.coregroup.org/storage/documents/Diffusion_of_Innovation/PDH_Facilitators_Guide.pdf

FAO's Food Composition Table for Use in Africa:
http://www.fao.org/docrep/003/X6877E/X6877E00.HTM

Appendix A

Steps for Initiating a Community Growth Monitoring and Promotion Program

To carry the first GMP session in the village:

1. Map out the village with the help of the village leaders, midwives, community health workers, and other members of the community. It is important to identify all children under the age of 60 months who are living in your community.[47]
2. Community health workers or other community members prepare a roster/register book of all children under 60 months in their assigned households as a way to cross check the community mapping.[48]
3. With this group, decide the date and location of the weighing activity, taking into consideration other time constraints of mothers and caregivers. The location should be centrally located and have enough space to host a large group of people comfortably (shaded from the sun and protected from rain).
4. If there are more than 100 children in the community, it is usually a good idea to organize another location and time for a second GMP. A good rule of thumb is to have a maximum of 100 children attending a GMP. It takes time to weigh, record, and counsel the caregivers about their children's health progress. If the GMP session is too crowded and takes too long, caregivers will be less eager to attend.
5. Get the word out to everyone in the community about the weighing activity. Leverage existing community communication venues and techniques – using religious or other regular gatherings to remind everyone about the weighing activity.
6. Prepare all materials needed for the GMP, such as calibrated weighing scales, a basket or sarong to hold the child being weighed, WHO health cards for all the children, notebooks, pencils, tables, chairs, etc. A dry run prior to the day often helps identify possible bottlenecks or logistical problems. Is there a comfortable place to wait in line? Is there shade for everyone? Are there other activities, such as making ORS solution for diarrhea, that can happen while caregivers wait?
7. Develop a chart for calculating babies' ages. If people don't know the date of birth, there are simple ways of estimating given local events and seasonal markers. Work with community members to calculate events over the past five years so when children come to be weighed, there is an easy way of estimating their birth month and year based on temporal proximity to these widely known events.
8. Community health workers, midwives, and other volunteers, together with the community will weigh all of the 0- to 36- or 60-month-olds in the community using the Salter scale or scale that is available. The child must be weighed with minimal clothing and, if possible, not right after a meal.

47 Most GMP programs target all children under 5, though in some cases only children under 2 will be targeted. The decision on age group should be driven by the MoH policy of the host country. Additionally, though children under 6 months can and should be measured in GMP activities, interventions that risk displacing exclusive breast-feeding risks harm to the child.

48 The *PACA Training Manual* can help guide a community mapping project.

9. A health care worker will inform the mother of the child's weight and whether s/he falls within the normal growth, moderate, or severe malnourished categories. The growth chart should be filled out completely and given to the mother or caregiver. Remind the caregiver that she will need to bring the growth chart for the next month's GMP.
10. The reader of the weight must carefully check the weight of the child or double check the weight before telling the recorder, who will then mark the weight down in the roster and plot it on the growth chart.
11. Have men, community health workers, midwives, and others practice weighing and recording weights. This is often a fun activity, as everyone can try weighing children who are willing to be a part of the activity. Training people to record accurately also takes time and practice, so design the training with plenty of time to practice.

Appendix B-1

Weight-for-Length/Height Growth Table for Boys (0-2 years)

http://www.who.int/childgrowth/standards/sft_wfl_boys_z_0_2.pdf

Weight-for-length BOYS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
45.0	1.9	2.0	2.2	2.4	2.7	3.0	3.3
45.5	1.9	2.1	2.3	2.5	2.8	3.1	3.4
46.0	2.0	2.2	2.4	2.6	2.9	3.1	3.5
46.5	2.1	2.3	2.5	2.7	3.0	3.2	3.6
47.0	2.1	2.3	2.5	2.8	3.0	3.3	3.7
47.5	2.2	2.4	2.6	2.9	3.1	3.4	3.8
48.0	2.3	2.5	2.7	2.9	3.2	3.6	3.9
48.5	2.3	2.6	2.8	3.0	3.3	3.7	4.0
49.0	2.4	2.6	2.9	3.1	3.4	3.8	4.2
49.5	2.5	2.7	3.0	3.2	3.5	3.9	4.3
50.0	2.6	2.8	3.0	3.3	3.6	4.0	4.4
50.5	2.7	2.9	3.1	3.4	3.8	4.1	4.5
51.0	2.7	3.0	3.2	3.5	3.9	4.2	4.7
51.5	2.8	3.1	3.3	3.6	4.0	4.4	4.8
52.0	2.9	3.2	3.5	3.8	4.1	4.5	5.0
52.5	3.0	3.3	3.6	3.9	4.2	4.6	5.1
53.0	3.1	3.4	3.7	4.0	4.4	4.8	5.3
53.5	3.2	3.5	3.8	4.1	4.5	4.9	5.4
54.0	3.3	3.6	3.9	4.3	4.7	5.1	5.6
54.5	3.4	3.7	4.0	4.4	4.8	5.3	5.8
55.0	3.6	3.8	4.2	4.5	5.0	5.4	6.0
55.5	3.7	4.0	4.3	4.7	5.1	5.6	6.1
56.0	3.8	4.1	4.4	4.8	5.3	5.8	6.3
56.5	3.9	4.2	4.6	5.0	5.4	5.9	6.5
57.0	4.0	4.3	4.7	5.1	5.6	6.1	6.7
57.5	4.1	4.5	4.9	5.3	5.7	6.3	6.9
58.0	4.3	4.6	5.0	5.4	5.9	6.4	7.1
58.5	4.4	4.7	5.1	5.6	6.1	6.6	7.2
59.0	4.5	4.8	5.3	5.7	6.2	6.8	7.4
59.5	4.6	5.0	5.4	5.9	6.4	7.0	7.6

Weight-for-length BOYS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
60.0	4.7	5.1	5.5	6.0	6.5	7.1	7.8
60.5	4.8	5.2	5.6	6.1	6.7	7.3	8.0
61.0	4.9	5.3	5.8	6.3	6.8	7.4	8.1
61.5	5.0	5.4	5.9	6.4	7.0	7.6	8.3
62.0	5.1	5.6	6.0	6.5	7.1	7.7	8.5
62.5	5.2	5.7	6.1	6.7	7.2	7.9	8.6
63.0	5.3	5.8	6.2	6.8	7.4	8.0	8.8
63.5	5.4	5.9	6.4	6.9	7.5	8.2	8.9
64.0	5.5	6.0	6.5	7.0	7.6	8.3	9.1
64.5	5.6	6.1	6.6	7.1	7.8	8.5	9.3
65.0	5.7	6.2	6.7	7.3	7.9	8.6	9.4
65.5	5.8	6.3	6.8	7.4	8.0	8.7	9.6
66.0	5.9	6.4	6.9	7.5	8.2	8.9	9.7
66.5	6.0	6.5	7.0	7.6	8.3	9.0	9.9
67.0	6.1	6.6	7.1	7.7	8.4	9.2	10.0
67.5	6.2	6.7	7.2	7.9	8.5	9.3	10.2
68.0	6.3	6.8	7.3	8.0	8.7	9.4	10.3
68.5	6.4	6.9	7.5	8.1	8.8	9.6	10.5
69.0	6.5	7.0	7.6	8.2	8.9	9.7	10.6
69.5	6.6	7.1	7.7	8.3	9.0	9.8	10.8
70.0	6.6	7.2	7.8	8.4	9.2	10.0	10.9
70.5	6.7	7.3	7.9	8.5	9.3	10.1	11.1
71.0	6.8	7.4	8.0	8.6	9.4	10.2	11.2
71.5	6.9	7.5	8.1	8.8	9.5	10.4	11.3
72.0	7.0	7.6	8.2	8.9	9.6	10.5	11.5
72.5	7.1	7.6	8.3	9.0	9.8	10.6	11.6
73.0	7.2	7.7	8.4	9.1	9.9	10.8	11.8
73.5	7.2	7.8	8.5	9.2	10.0	10.9	11.9
74.0	7.3	7.9	8.6	9.3	10.1	11.0	12.1
74.5	7.4	8.0	8.7	9.4	10.2	11.2	12.2
75.0	7.5	8.1	8.8	9.5	10.3	11.3	12.3

Weight-for-length BOYS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
75.5	7.6	8.2	8.8	9.6	10.4	11.4	12.5
76.0	7.6	8.3	8.9	9.7	10.6	11.5	12.6
76.5	7.7	8.3	9.0	9.8	10.7	11.6	12.7
77.0	7.8	8.4	9.1	9.9	10.8	11.7	12.8
77.5	7.9	8.5	9.2	10.0	10.9	11.9	13.0
78.0	7.9	8.6	9.3	10.1	11.0	12.0	13.1
78.5	8.0	8.7	9.4	10.2	11.1	12.1	13.2
79.0	8.1	8.7	9.5	10.3	11.2	12.2	13.3
79.5	8.2	8.8	9.5	10.4	11.3	12.3	13.4
80.0	8.2	8.9	9.6	10.4	11.4	12.4	13.6
80.5	8.3	9.0	9.7	10.5	11.5	12.5	13.7
81.0	8.4	9.1	9.8	10.6	11.6	12.6	13.8
81.5	8.5	9.1	9.9	10.7	11.7	12.7	13.9
82.0	8.5	9.2	10.0	10.8	11.8	12.8	14.0
82.5	8.6	9.3	10.1	10.9	11.9	13.0	14.2
83.0	8.7	9.4	10.2	11.0	12.0	13.1	14.3
83.5	8.8	9.5	10.3	11.2	12.1	13.2	14.4
84.0	8.9	9.6	10.4	11.3	12.2	13.3	14.6
84.5	9.0	9.7	10.5	11.4	12.4	13.5	14.7
85.0	9.1	9.8	10.6	11.5	12.5	13.6	14.9
85.5	9.2	9.9	10.7	11.6	12.6	13.7	15.0
86.0	9.3	10.0	10.8	11.7	12.8	13.9	15.2
86.5	9.4	10.1	11.0	11.9	12.9	14.0	15.3
87.0	9.5	10.2	11.1	12.0	13.0	14.2	15.5
87.5	9.6	10.4	11.2	12.1	13.2	14.3	15.6
88.0	9.7	10.5	11.3	12.2	13.3	14.5	15.8
88.5	9.8	10.6	11.4	12.4	13.4	14.6	15.9
89.0	9.9	10.7	11.5	12.5	13.5	14.7	16.1
89.5	10.0	10.8	11.6	12.6	13.7	14.9	16.2
90.0	10.1	10.9	11.8	12.7	13.8	15.0	16.4
90.5	10.2	11.0	11.9	12.8	13.9	15.1	16.5

Weight-for-length BOYS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
91.0	10.3	11.1	12.0	13.0	14.1	15.3	16.7
91.5	10.4	11.2	12.1	13.1	14.2	15.4	16.8
92.0	10.5	11.3	12.2	13.2	14.3	15.6	17.0
92.5	10.6	11.4	12.3	13.3	14.4	15.7	17.1
93.0	10.7	11.5	12.4	13.4	14.6	15.8	17.3
93.5	10.7	11.6	12.5	13.5	14.7	16.0	17.4
94.0	10.8	11.7	12.6	13.7	14.8	16.1	17.6
94.5	10.9	11.8	12.7	13.8	14.9	16.3	17.7
95.0	11.0	11.9	12.8	13.9	15.1	16.4	17.9
95.5	11.1	12.0	12.9	14.0	15.2	16.5	18.0
96.0	11.2	12.1	13.1	14.1	15.3	16.7	18.2
96.5	11.3	12.2	13.2	14.3	15.5	16.8	18.4
97.0	11.4	12.3	13.3	14.4	15.6	17.0	18.5
97.5	11.5	12.4	13.4	14.5	15.7	17.1	18.7
98.0	11.6	12.5	13.5	14.6	15.9	17.3	18.9
98.5	11.7	12.6	13.6	14.8	16.0	17.5	19.1
99.0	11.8	12.7	13.7	14.9	16.2	17.6	19.2
99.5	11.9	12.8	13.9	15.0	16.3	17.8	19.4
100.0	12.0	12.9	14.0	15.2	16.5	18.0	19.6
100.5	12.1	13.0	14.1	15.3	16.6	18.1	19.8
101.0	12.2	13.2	14.2	15.4	16.8	18.3	20.0
101.5	12.3	13.3	14.4	15.6	16.9	18.5	20.2
102.0	12.4	13.4	14.5	15.7	17.1	18.7	20.4
102.5	12.5	13.5	14.6	15.9	17.3	18.8	20.6
103.0	12.6	13.6	14.8	16.0	17.4	19.0	20.8
103.5	12.7	13.7	14.9	16.2	17.6	19.2	21.0
104.0	12.8	13.9	15.0	16.3	17.8	19.4	21.2
104.5	12.9	14.0	15.2	16.5	17.9	19.6	21.5
105.0	13.0	14.1	15.3	16.6	18.1	19.8	21.7
105.5	13.2	14.2	15.4	16.8	18.3	20.0	21.9
106.0	13.3	14.4	15.6	16.9	18.5	20.2	22.1

Weight-for-length BOYS
Birth to 2 years (z-scores)

World Health Organization

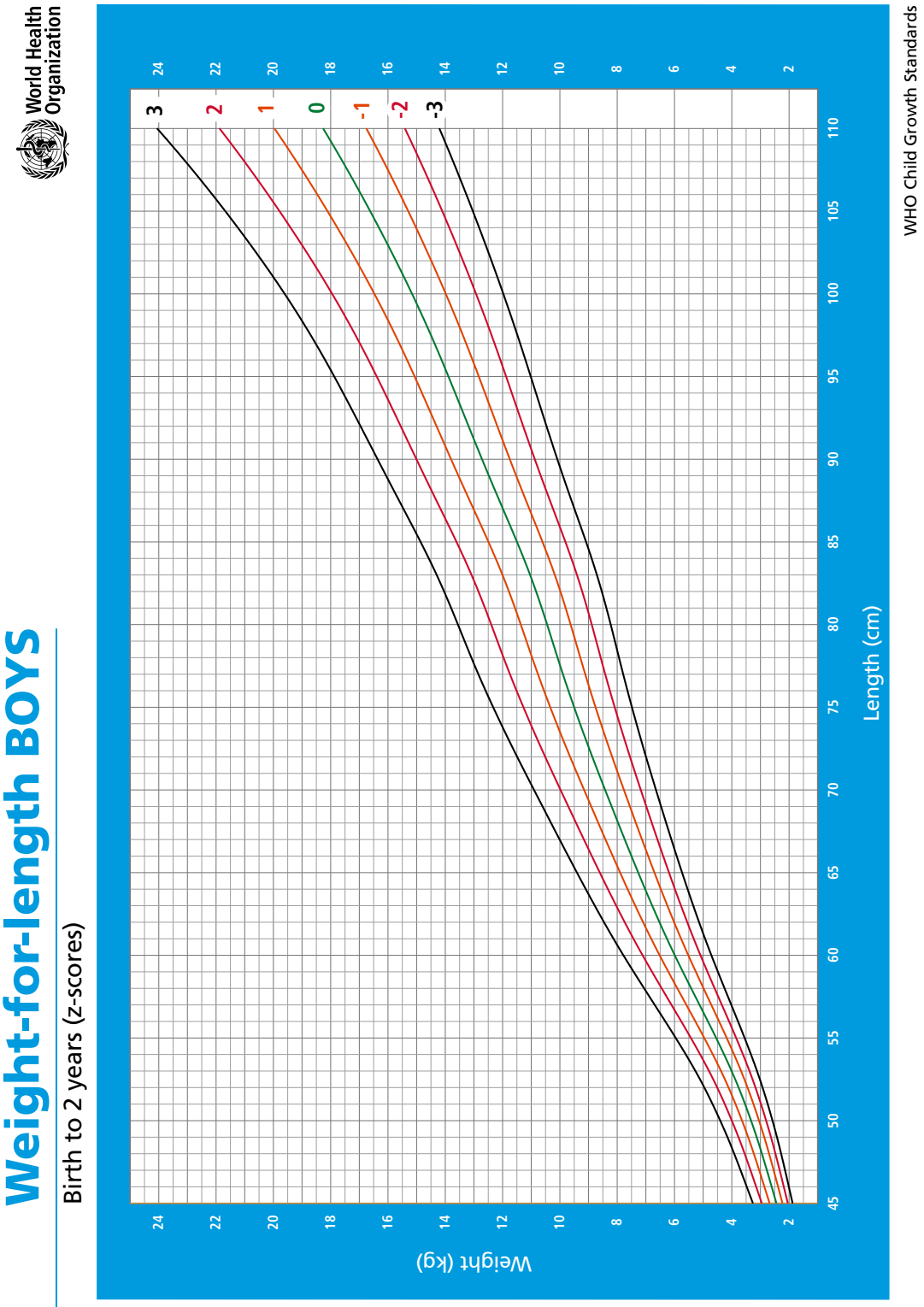
cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
106.5	13.4	14.5	15.7	17.1	18.6	20.4	22.4
107.0	13.5	14.6	15.9	17.3	18.8	20.6	22.6
107.5	13.6	14.7	16.0	17.4	19.0	20.8	22.8
108.0	13.7	14.9	16.2	17.6	19.2	21.0	23.1
108.5	13.8	15.0	16.3	17.8	19.4	21.2	23.3
109.0	14.0	15.1	16.5	17.9	19.6	21.4	23.6
109.5	14.1	15.3	16.6	18.1	19.8	21.7	23.8
110.0	14.2	15.4	16.8	18.3	20.0	21.9	24.1

WHO Child Growth Standards

Appendix B-2

Weight-for-Length/Height Growth Chart for Boys (0-2 years)

http://www.who.int/childgrowth/standards/cht_wfl_boys_z_0_2.pdf



Appendix C-1

Weight-for-Length/Height Growth Table Girls (0-2 years)

http://www.who.int/childgrowth/standards/sft_wfl_girls_z_0_2.pdf

Simplified field tables

Weight-for-length GIRLS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
45.0	1.9	2.1	2.3	2.5	2.7	3.0	3.3
45.5	2.0	2.1	2.3	2.5	2.8	3.1	3.4
46.0	2.0	2.2	2.4	2.6	2.9	3.2	3.5
46.5	2.1	2.3	2.5	2.7	3.0	3.3	3.6
47.0	2.2	2.4	2.6	2.8	3.1	3.4	3.7
47.5	2.2	2.4	2.6	2.9	3.2	3.5	3.8
48.0	2.3	2.5	2.7	3.0	3.3	3.6	4.0
48.5	2.4	2.6	2.8	3.1	3.4	3.7	4.1
49.0	2.4	2.6	2.9	3.2	3.5	3.8	4.2
49.5	2.5	2.7	3.0	3.3	3.6	3.9	4.3
50.0	2.6	2.8	3.1	3.4	3.7	4.0	4.5
50.5	2.7	2.9	3.2	3.5	3.8	4.2	4.6
51.0	2.8	3.0	3.3	3.6	3.9	4.3	4.8
51.5	2.8	3.1	3.4	3.7	4.0	4.4	4.9
52.0	2.9	3.2	3.5	3.8	4.2	4.6	5.1
52.5	3.0	3.3	3.6	3.9	4.3	4.7	5.2
53.0	3.1	3.4	3.7	4.0	4.4	4.9	5.4
53.5	3.2	3.5	3.8	4.2	4.6	5.0	5.5
54.0	3.3	3.6	3.9	4.3	4.7	5.2	5.7
54.5	3.4	3.7	4.0	4.4	4.8	5.3	5.9
55.0	3.5	3.8	4.2	4.5	5.0	5.5	6.1
55.5	3.6	3.9	4.3	4.7	5.1	5.7	6.3
56.0	3.7	4.0	4.4	4.8	5.3	5.8	6.4
56.5	3.8	4.1	4.5	5.0	5.4	6.0	6.6
57.0	3.9	4.3	4.6	5.1	5.6	6.1	6.8
57.5	4.0	4.4	4.8	5.2	5.7	6.3	7.0
58.0	4.1	4.5	4.9	5.4	5.9	6.5	7.1
58.5	4.2	4.6	5.0	5.5	6.0	6.6	7.3
59.0	4.3	4.7	5.1	5.6	6.2	6.8	7.5
59.5	4.4	4.8	5.3	5.7	6.3	6.9	7.7

Weight-for-length GIRLS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
60.0	4.5	4.9	5.4	5.9	6.4	7.1	7.8
60.5	4.6	5.0	5.5	6.0	6.6	7.3	8.0
61.0	4.7	5.1	5.6	6.1	6.7	7.4	8.2
61.5	4.8	5.2	5.7	6.3	6.9	7.6	8.4
62.0	4.9	5.3	5.8	6.4	7.0	7.7	8.5
62.5	5.0	5.4	5.9	6.5	7.1	7.8	8.7
63.0	5.1	5.5	6.0	6.6	7.3	8.0	8.8
63.5	5.2	5.6	6.2	6.7	7.4	8.1	9.0
64.0	5.3	5.7	6.3	6.9	7.5	8.3	9.1
64.5	5.4	5.8	6.4	7.0	7.6	8.4	9.3
65.0	5.5	5.9	6.5	7.1	7.8	8.6	9.5
65.5	5.5	6.0	6.6	7.2	7.9	8.7	9.6
66.0	5.6	6.1	6.7	7.3	8.0	8.8	9.8
66.5	5.7	6.2	6.8	7.4	8.1	9.0	9.9
67.0	5.8	6.3	6.9	7.5	8.3	9.1	10.0
67.5	5.9	6.4	7.0	7.6	8.4	9.2	10.2
68.0	6.0	6.5	7.1	7.7	8.5	9.4	10.3
68.5	6.1	6.6	7.2	7.9	8.6	9.5	10.5
69.0	6.1	6.7	7.3	8.0	8.7	9.6	10.6
69.5	6.2	6.8	7.4	8.1	8.8	9.7	10.7
70.0	6.3	6.9	7.5	8.2	9.0	9.9	10.9
70.5	6.4	6.9	7.6	8.3	9.1	10.0	11.0
71.0	6.5	7.0	7.7	8.4	9.2	10.1	11.1
71.5	6.5	7.1	7.7	8.5	9.3	10.2	11.3
72.0	6.6	7.2	7.8	8.6	9.4	10.3	11.4
72.5	6.7	7.3	7.9	8.7	9.5	10.5	11.5
73.0	6.8	7.4	8.0	8.8	9.6	10.6	11.7
73.5	6.9	7.4	8.1	8.9	9.7	10.7	11.8
74.0	6.9	7.5	8.2	9.0	9.8	10.8	11.9
74.5	7.0	7.6	8.3	9.1	9.9	10.9	12.0
75.0	7.1	7.7	8.4	9.1	10.0	11.0	12.2

Weight-for-length GIRLS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
75.5	7.1	7.8	8.5	9.2	10.1	11.1	12.3
76.0	7.2	7.8	8.5	9.3	10.2	11.2	12.4
76.5	7.3	7.9	8.6	9.4	10.3	11.4	12.5
77.0	7.4	8.0	8.7	9.5	10.4	11.5	12.6
77.5	7.4	8.1	8.8	9.6	10.5	11.6	12.8
78.0	7.5	8.2	8.9	9.7	10.6	11.7	12.9
78.5	7.6	8.2	9.0	9.8	10.7	11.8	13.0
79.0	7.7	8.3	9.1	9.9	10.8	11.9	13.1
79.5	7.7	8.4	9.1	10.0	10.9	12.0	13.3
80.0	7.8	8.5	9.2	10.1	11.0	12.1	13.4
80.5	7.9	8.6	9.3	10.2	11.2	12.3	13.5
81.0	8.0	8.7	9.4	10.3	11.3	12.4	13.7
81.5	8.1	8.8	9.5	10.4	11.4	12.5	13.8
82.0	8.1	8.8	9.6	10.5	11.5	12.6	13.9
82.5	8.2	8.9	9.7	10.6	11.6	12.8	14.1
83.0	8.3	9.0	9.8	10.7	11.8	12.9	14.2
83.5	8.4	9.1	9.9	10.9	11.9	13.1	14.4
84.0	8.5	9.2	10.1	11.0	12.0	13.2	14.5
84.5	8.6	9.3	10.2	11.1	12.1	13.3	14.7
85.0	8.7	9.4	10.3	11.2	12.3	13.5	14.9
85.5	8.8	9.5	10.4	11.3	12.4	13.6	15.0
86.0	8.9	9.7	10.5	11.5	12.6	13.8	15.2
86.5	9.0	9.8	10.6	11.6	12.7	13.9	15.4
87.0	9.1	9.9	10.7	11.7	12.8	14.1	15.5
87.5	9.2	10.0	10.9	11.8	13.0	14.2	15.7
88.0	9.3	10.1	11.0	12.0	13.1	14.4	15.9
88.5	9.4	10.2	11.1	12.1	13.2	14.5	16.0
89.0	9.5	10.3	11.2	12.2	13.4	14.7	16.2
89.5	9.6	10.4	11.3	12.3	13.5	14.8	16.4
90.0	9.7	10.5	11.4	12.5	13.7	15.0	16.5
90.5	9.8	10.6	11.5	12.6	13.8	15.1	16.7

Weight-for-length GIRLS
Birth to 2 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
91.0	9.9	10.7	11.7	12.7	13.9	15.3	16.9
91.5	10.0	10.8	11.8	12.8	14.1	15.5	17.0
92.0	10.1	10.9	11.9	13.0	14.2	15.6	17.2
92.5	10.1	11.0	12.0	13.1	14.3	15.8	17.4
93.0	10.2	11.1	12.1	13.2	14.5	15.9	17.5
93.5	10.3	11.2	12.2	13.3	14.6	16.1	17.7
94.0	10.4	11.3	12.3	13.5	14.7	16.2	17.9
94.5	10.5	11.4	12.4	13.6	14.9	16.4	18.0
95.0	10.6	11.5	12.6	13.7	15.0	16.5	18.2
95.5	10.7	11.6	12.7	13.8	15.2	16.7	18.4
96.0	10.8	11.7	12.8	14.0	15.3	16.8	18.6
96.5	10.9	11.8	12.9	14.1	15.4	17.0	18.7
97.0	11.0	12.0	13.0	14.2	15.6	17.1	18.9
97.5	11.1	12.1	13.1	14.4	15.7	17.3	19.1
98.0	11.2	12.2	13.3	14.5	15.9	17.5	19.3
98.5	11.3	12.3	13.4	14.6	16.0	17.6	19.5
99.0	11.4	12.4	13.5	14.8	16.2	17.8	19.6
99.5	11.5	12.5	13.6	14.9	16.3	18.0	19.8
100.0	11.6	12.6	13.7	15.0	16.5	18.1	20.0
100.5	11.7	12.7	13.9	15.2	16.6	18.3	20.2
101.0	11.8	12.8	14.0	15.3	16.8	18.5	20.4
101.5	11.9	13.0	14.1	15.5	17.0	18.7	20.6
102.0	12.0	13.1	14.3	15.6	17.1	18.9	20.8
102.5	12.1	13.2	14.4	15.8	17.3	19.0	21.0
103.0	12.3	13.3	14.5	15.9	17.5	19.2	21.3
103.5	12.4	13.5	14.7	16.1	17.6	19.4	21.5
104.0	12.5	13.6	14.8	16.2	17.8	19.6	21.7
104.5	12.6	13.7	15.0	16.4	18.0	19.8	21.9
105.0	12.7	13.8	15.1	16.5	18.2	20.0	22.2
105.5	12.8	14.0	15.3	16.7	18.4	20.2	22.4
106.0	13.0	14.1	15.4	16.9	18.5	20.5	22.6

Weight-for-length GIRLS
Birth to 2 years (z-scores)

World Health Organization

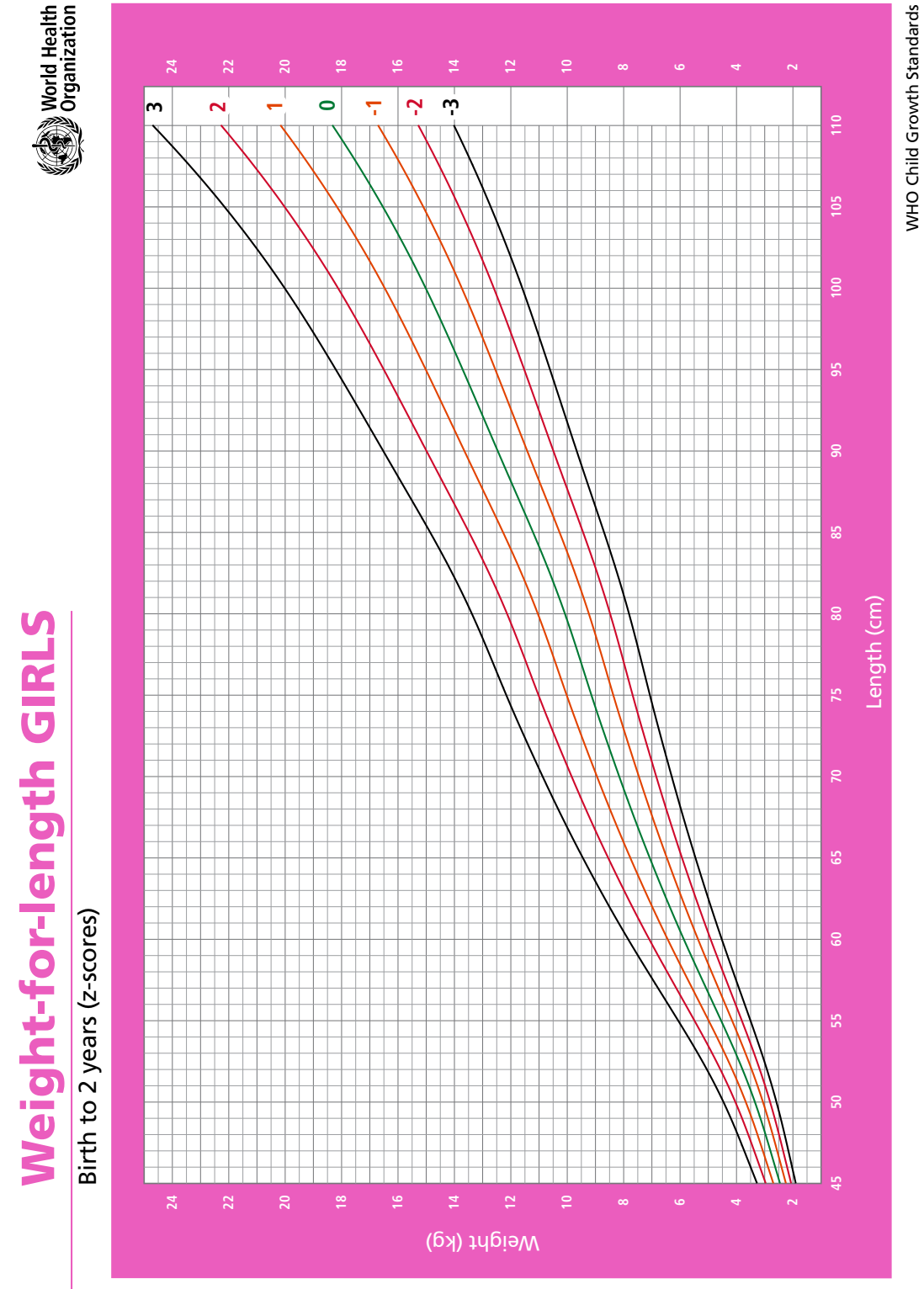
cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
106.5	13.1	14.3	15.6	17.1	18.7	20.7	22.9
107.0	13.2	14.4	15.7	17.2	18.9	20.9	23.1
107.5	13.3	14.5	15.9	17.4	19.1	21.1	23.4
108.0	13.5	14.7	16.0	17.6	19.3	21.3	23.6
108.5	13.6	14.8	16.2	17.8	19.5	21.6	23.9
109.0	13.7	15.0	16.4	18.0	19.7	21.8	24.2
109.5	13.9	15.1	16.5	18.1	20.0	22.0	24.4
110.0	14.0	15.3	16.7	18.3	20.2	22.3	24.7

WHO Child Growth Standards

Appendix C-2

Weight-for-Length/Height Growth Chart Girls (0-2 years)

http://www.who.int/childgrowth/standards/cht_wfl_girls_z_0_2.pdf



Appendix D-1

Weight-for-Length/Height Growth Table for Boys (2-5 years)

http://www.who.int/childgrowth/standards/sft_wfh_boys_z_2_5.pdf

Simplified field tables

Weight-for-height BOYS
2 to 5 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
65.0	5.9	6.3	6.9	7.4	8.1	8.8	9.6
65.5	6.0	6.4	7.0	7.6	8.2	8.9	9.8
66.0	6.1	6.5	7.1	7.7	8.3	9.1	9.9
66.5	6.1	6.6	7.2	7.8	8.5	9.2	10.1
67.0	6.2	6.7	7.3	7.9	8.6	9.4	10.2
67.5	6.3	6.8	7.4	8.0	8.7	9.5	10.4
68.0	6.4	6.9	7.5	8.1	8.8	9.6	10.5
68.5	6.5	7.0	7.6	8.2	9.0	9.8	10.7
69.0	6.6	7.1	7.7	8.4	9.1	9.9	10.8
69.5	6.7	7.2	7.8	8.5	9.2	10.0	11.0
70.0	6.8	7.3	7.9	8.6	9.3	10.2	11.1
70.5	6.9	7.4	8.0	8.7	9.5	10.3	11.3
71.0	6.9	7.5	8.1	8.8	9.6	10.4	11.4
71.5	7.0	7.6	8.2	8.9	9.7	10.6	11.6
72.0	7.1	7.7	8.3	9.0	9.8	10.7	11.7
72.5	7.2	7.8	8.4	9.1	9.9	10.8	11.8
73.0	7.3	7.9	8.5	9.2	10.0	11.0	12.0
73.5	7.4	7.9	8.6	9.3	10.2	11.1	12.1
74.0	7.4	8.0	8.7	9.4	10.3	11.2	12.2
74.5	7.5	8.1	8.8	9.5	10.4	11.3	12.4
75.0	7.6	8.2	8.9	9.6	10.5	11.4	12.5
75.5	7.7	8.3	9.0	9.7	10.6	11.6	12.6
76.0	7.7	8.4	9.1	9.8	10.7	11.7	12.8
76.5	7.8	8.5	9.2	9.9	10.8	11.8	12.9
77.0	7.9	8.5	9.2	10.0	10.9	11.9	13.0
77.5	8.0	8.6	9.3	10.1	11.0	12.0	13.1
78.0	8.0	8.7	9.4	10.2	11.1	12.1	13.3
78.5	8.1	8.8	9.5	10.3	11.2	12.2	13.4
79.0	8.2	8.8	9.6	10.4	11.3	12.3	13.5
79.5	8.3	8.9	9.7	10.5	11.4	12.4	13.6

Weight-for-height BOYS
2 to 5 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
80.0	8.3	9.0	9.7	10.6	11.5	12.6	13.7
80.5	8.4	9.1	9.8	10.7	11.6	12.7	13.8
81.0	8.5	9.2	9.9	10.8	11.7	12.8	14.0
81.5	8.6	9.3	10.0	10.9	11.8	12.9	14.1
82.0	8.7	9.3	10.1	11.0	11.9	13.0	14.2
82.5	8.7	9.4	10.2	11.1	12.1	13.1	14.4
83.0	8.8	9.5	10.3	11.2	12.2	13.3	14.5
83.5	8.9	9.6	10.4	11.3	12.3	13.4	14.6
84.0	9.0	9.7	10.5	11.4	12.4	13.5	14.8
84.5	9.1	9.9	10.7	11.5	12.5	13.7	14.9
85.0	9.2	10.0	10.8	11.7	12.7	13.8	15.1
85.5	9.3	10.1	10.9	11.8	12.8	13.9	15.2
86.0	9.4	10.2	11.0	11.9	12.9	14.1	15.4
86.5	9.5	10.3	11.1	12.0	13.1	14.2	15.5
87.0	9.6	10.4	11.2	12.2	13.2	14.4	15.7
87.5	9.7	10.5	11.3	12.3	13.3	14.5	15.8
88.0	9.8	10.6	11.5	12.4	13.5	14.7	16.0
88.5	9.9	10.7	11.6	12.5	13.6	14.8	16.1
89.0	10.0	10.8	11.7	12.6	13.7	14.9	16.3
89.5	10.1	10.9	11.8	12.8	13.9	15.1	16.4
90.0	10.2	11.0	11.9	12.9	14.0	15.2	16.6
90.5	10.3	11.1	12.0	13.0	14.1	15.3	16.7
91.0	10.4	11.2	12.1	13.1	14.2	15.5	16.9
91.5	10.5	11.3	12.2	13.2	14.4	15.6	17.0
92.0	10.6	11.4	12.3	13.4	14.5	15.8	17.2
92.5	10.7	11.5	12.4	13.5	14.6	15.9	17.3
93.0	10.8	11.6	12.6	13.6	14.7	16.0	17.5
93.5	10.9	11.7	12.7	13.7	14.9	16.2	17.6
94.0	11.0	11.8	12.8	13.8	15.0	16.3	17.8
94.5	11.1	11.9	12.9	13.9	15.1	16.5	17.9
95.0	11.1	12.0	13.0	14.1	15.3	16.6	18.1

Weight-for-height BOYS
2 to 5 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
95.5	11.2	12.1	13.1	14.2	15.4	16.7	18.3
96.0	11.3	12.2	13.2	14.3	15.5	16.9	18.4
96.5	11.4	12.3	13.3	14.4	15.7	17.0	18.6
97.0	11.5	12.4	13.4	14.6	15.8	17.2	18.8
97.5	11.6	12.5	13.6	14.7	15.9	17.4	18.9
98.0	11.7	12.6	13.7	14.8	16.1	17.5	19.1
98.5	11.8	12.8	13.8	14.9	16.2	17.7	19.3
99.0	11.9	12.9	13.9	15.1	16.4	17.9	19.5
99.5	12.0	13.0	14.0	15.2	16.5	18.0	19.7
100.0	12.1	13.1	14.2	15.4	16.7	18.2	19.9
100.5	12.2	13.2	14.3	15.5	16.9	18.4	20.1
101.0	12.3	13.3	14.4	15.6	17.0	18.5	20.3
101.5	12.4	13.4	14.5	15.8	17.2	18.7	20.5
102.0	12.5	13.6	14.7	15.9	17.3	18.9	20.7
102.5	12.6	13.7	14.8	16.1	17.5	19.1	20.9
103.0	12.8	13.8	14.9	16.2	17.7	19.3	21.1
103.5	12.9	13.9	15.1	16.4	17.8	19.5	21.3
104.0	13.0	14.0	15.2	16.5	18.0	19.7	21.6
104.5	13.1	14.2	15.4	16.7	18.2	19.9	21.8
105.0	13.2	14.3	15.5	16.8	18.4	20.1	22.0
105.5	13.3	14.4	15.6	17.0	18.5	20.3	22.2
106.0	13.4	14.5	15.8	17.2	18.7	20.5	22.5
106.5	13.5	14.7	15.9	17.3	18.9	20.7	22.7
107.0	13.7	14.8	16.1	17.5	19.1	20.9	22.9
107.5	13.8	14.9	16.2	17.7	19.3	21.1	23.2
108.0	13.9	15.1	16.4	17.8	19.5	21.3	23.4
108.5	14.0	15.2	16.5	18.0	19.7	21.5	23.7
109.0	14.1	15.3	16.7	18.2	19.8	21.8	23.9
109.5	14.3	15.5	16.8	18.3	20.0	22.0	24.2
110.0	14.4	15.6	17.0	18.5	20.2	22.2	24.4
110.5	14.5	15.8	17.1	18.7	20.4	22.4	24.7

Weight-for-height BOYS
2 to 5 years (z-scores)

World Health Organization

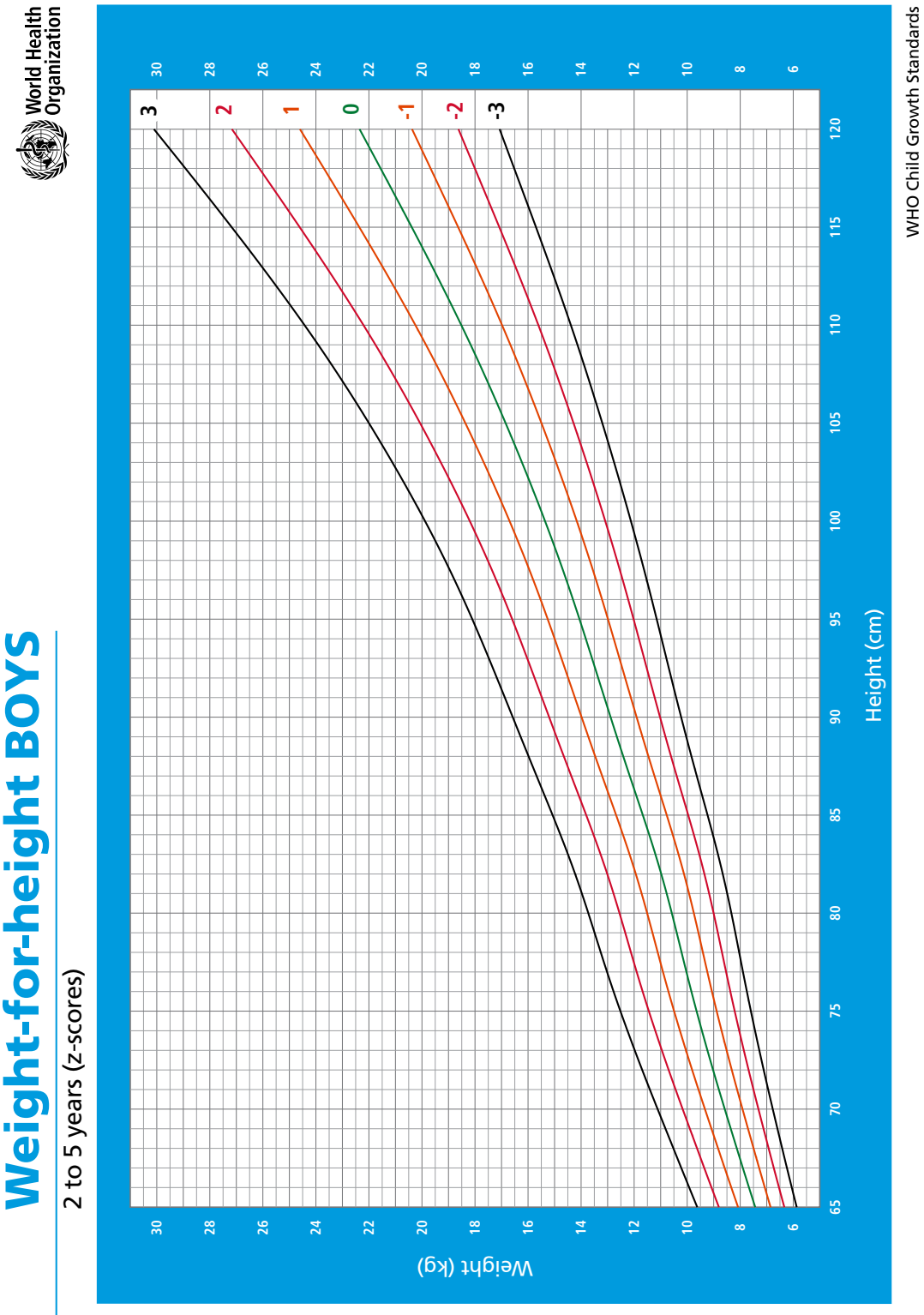
cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
111.0	14.6	15.9	17.3	18.9	20.7	22.7	25.0
111.5	14.8	16.0	17.5	19.1	20.9	22.9	25.2
112.0	14.9	16.2	17.6	19.2	21.1	23.1	25.5
112.5	15.0	16.3	17.8	19.4	21.3	23.4	25.8
113.0	15.2	16.5	18.0	19.6	21.5	23.6	26.0
113.5	15.3	16.6	18.1	19.8	21.7	23.9	26.3
114.0	15.4	16.8	18.3	20.0	21.9	24.1	26.6
114.5	15.6	16.9	18.5	20.2	22.1	24.4	26.9
115.0	15.7	17.1	18.6	20.4	22.4	24.6	27.2
115.5	15.8	17.2	18.8	20.6	22.6	24.9	27.5
116.0	16.0	17.4	19.0	20.8	22.8	25.1	27.8
116.5	16.1	17.5	19.2	21.0	23.0	25.4	28.0
117.0	16.2	17.7	19.3	21.2	23.3	25.6	28.3
117.5	16.4	17.9	19.5	21.4	23.5	25.9	28.6
118.0	16.5	18.0	19.7	21.6	23.7	26.1	28.9
118.5	16.7	18.2	19.9	21.8	23.9	26.4	29.2
119.0	16.8	18.3	20.0	22.0	24.1	26.6	29.5
119.5	16.9	18.5	20.2	22.2	24.4	26.9	29.8
120.0	17.1	18.6	20.4	22.4	24.6	27.2	30.1

WHO Child Growth Standards

Appendix D-2

Weight-for-Length/Height Growth Chart for Boys (2-5 years)

http://www.who.int/childgrowth/standards/cht_wfh_boys_z_2_5.pdf



Appendix E-1

Weight-for-Length/Height Growth Table Girls (2-5 years)

http://www.who.int/childgrowth/standards/sft_wfh_girls_z_2_5.pdf

Simplified field tables

Weight-for-height GIRLS
2 to 5 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
65.0	5.6	6.1	6.6	7.2	7.9	8.7	9.7
65.5	5.7	6.2	6.7	7.4	8.1	8.9	9.8
66.0	5.8	6.3	6.8	7.5	8.2	9.0	10.0
66.5	5.8	6.4	6.9	7.6	8.3	9.1	10.1
67.0	5.9	6.4	7.0	7.7	8.4	9.3	10.2
67.5	6.0	6.5	7.1	7.8	8.5	9.4	10.4
68.0	6.1	6.6	7.2	7.9	8.7	9.5	10.5
68.5	6.2	6.7	7.3	8.0	8.8	9.7	10.7
69.0	6.3	6.8	7.4	8.1	8.9	9.8	10.8
69.5	6.3	6.9	7.5	8.2	9.0	9.9	10.9
70.0	6.4	7.0	7.6	8.3	9.1	10.0	11.1
70.5	6.5	7.1	7.7	8.4	9.2	10.1	11.2
71.0	6.6	7.1	7.8	8.5	9.3	10.3	11.3
71.5	6.7	7.2	7.9	8.6	9.4	10.4	11.5
72.0	6.7	7.3	8.0	8.7	9.5	10.5	11.6
72.5	6.8	7.4	8.1	8.8	9.7	10.6	11.7
73.0	6.9	7.5	8.1	8.9	9.8	10.7	11.8
73.5	7.0	7.6	8.2	9.0	9.9	10.8	12.0
74.0	7.0	7.6	8.3	9.1	10.0	11.0	12.1
74.5	7.1	7.7	8.4	9.2	10.1	11.1	12.2
75.0	7.2	7.8	8.5	9.3	10.2	11.2	12.3
75.5	7.2	7.9	8.6	9.4	10.3	11.3	12.5
76.0	7.3	8.0	8.7	9.5	10.4	11.4	12.6
76.5	7.4	8.0	8.7	9.6	10.5	11.5	12.7
77.0	7.5	8.1	8.8	9.6	10.6	11.6	12.8
77.5	7.5	8.2	8.9	9.7	10.7	11.7	12.9
78.0	7.6	8.3	9.0	9.8	10.8	11.8	13.1
78.5	7.7	8.4	9.1	9.9	10.9	12.0	13.2
79.0	7.8	8.4	9.2	10.0	11.0	12.1	13.3
79.5	7.8	8.5	9.3	10.1	11.1	12.2	13.4

Weight-for-height GIRLS
2 to 5 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
80.0	7.9	8.6	9.4	10.2	11.2	12.3	13.6
80.5	8.0	8.7	9.5	10.3	11.3	12.4	13.7
81.0	8.1	8.8	9.6	10.4	11.4	12.6	13.9
81.5	8.2	8.9	9.7	10.6	11.6	12.7	14.0
82.0	8.3	9.0	9.8	10.7	11.7	12.8	14.1
82.5	8.4	9.1	9.9	10.8	11.8	13.0	14.3
83.0	8.5	9.2	10.0	10.9	11.9	13.1	14.5
83.5	8.5	9.3	10.1	11.0	12.1	13.3	14.6
84.0	8.6	9.4	10.2	11.1	12.2	13.4	14.8
84.5	8.7	9.5	10.3	11.3	12.3	13.5	14.9
85.0	8.8	9.6	10.4	11.4	12.5	13.7	15.1
85.5	8.9	9.7	10.6	11.5	12.6	13.8	15.3
86.0	9.0	9.8	10.7	11.6	12.7	14.0	15.4
86.5	9.1	9.9	10.8	11.8	12.9	14.2	15.6
87.0	9.2	10.0	10.9	11.9	13.0	14.3	15.8
87.5	9.3	10.1	11.0	12.0	13.2	14.5	15.9
88.0	9.4	10.2	11.1	12.1	13.3	14.6	16.1
88.5	9.5	10.3	11.2	12.3	13.4	14.8	16.3
89.0	9.6	10.4	11.4	12.4	13.6	14.9	16.4
89.5	9.7	10.5	11.5	12.5	13.7	15.1	16.6
90.0	9.8	10.6	11.6	12.6	13.8	15.2	16.8
90.5	9.9	10.7	11.7	12.8	14.0	15.4	16.9
91.0	10.0	10.9	11.8	12.9	14.1	15.5	17.1
91.5	10.1	11.0	11.9	13.0	14.3	15.7	17.3
92.0	10.2	11.1	12.0	13.1	14.4	15.8	17.4
92.5	10.3	11.2	12.1	13.3	14.5	16.0	17.6
93.0	10.4	11.3	12.3	13.4	14.7	16.1	17.8
93.5	10.5	11.4	12.4	13.5	14.8	16.3	17.9
94.0	10.6	11.5	12.5	13.6	14.9	16.4	18.1
94.5	10.7	11.6	12.6	13.8	15.1	16.6	18.3
95.0	10.8	11.7	12.7	13.9	15.2	16.7	18.5

Weight-for-height GIRLS
2 to 5 years (z-scores)

World Health Organization

cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
95.5	10.8	11.8	12.8	14.0	15.4	16.9	18.6
96.0	10.9	11.9	12.9	14.1	15.5	17.0	18.8
96.5	11.0	12.0	13.1	14.3	15.6	17.2	19.0
97.0	11.1	12.1	13.2	14.4	15.8	17.4	19.2
97.5	11.2	12.2	13.3	14.5	15.9	17.5	19.3
98.0	11.3	12.3	13.4	14.7	16.1	17.7	19.5
98.5	11.4	12.4	13.5	14.8	16.2	17.9	19.7
99.0	11.5	12.5	13.7	14.9	16.4	18.0	19.9
99.5	11.6	12.7	13.8	15.1	16.5	18.2	20.1
100.0	11.7	12.8	13.9	15.2	16.7	18.4	20.3
100.5	11.9	12.9	14.1	15.4	16.9	18.6	20.5
101.0	12.0	13.0	14.2	15.5	17.0	18.7	20.7
101.5	12.1	13.1	14.3	15.7	17.2	18.9	20.9
102.0	12.2	13.3	14.5	15.8	17.4	19.1	21.1
102.5	12.3	13.4	14.6	16.0	17.5	19.3	21.4
103.0	12.4	13.5	14.7	16.1	17.7	19.5	21.6
103.5	12.5	13.6	14.9	16.3	17.9	19.7	21.8
104.0	12.6	13.8	15.0	16.4	18.1	19.9	22.0
104.5	12.8	13.9	15.2	16.6	18.2	20.1	22.3
105.0	12.9	14.0	15.3	16.8	18.4	20.3	22.5
105.5	13.0	14.2	15.5	16.9	18.6	20.5	22.7
106.0	13.1	14.3	15.6	17.1	18.8	20.8	23.0
106.5	13.3	14.5	15.8	17.3	19.0	21.0	23.2
107.0	13.4	14.6	15.9	17.5	19.2	21.2	23.5
107.5	13.5	14.7	16.1	17.7	19.4	21.4	23.7
108.0	13.7	14.9	16.3	17.8	19.6	21.7	24.0
108.5	13.8	15.0	16.4	18.0	19.8	21.9	24.3
109.0	13.9	15.2	16.6	18.2	20.0	22.1	24.5
109.5	14.1	15.4	16.8	18.4	20.3	22.4	24.8
110.0	14.2	15.5	17.0	18.6	20.5	22.6	25.1
110.5	14.4	15.7	17.1	18.8	20.7	22.9	25.4

Weight-for-height GIRLS
2 to 5 years (z-scores)

World Health Organization

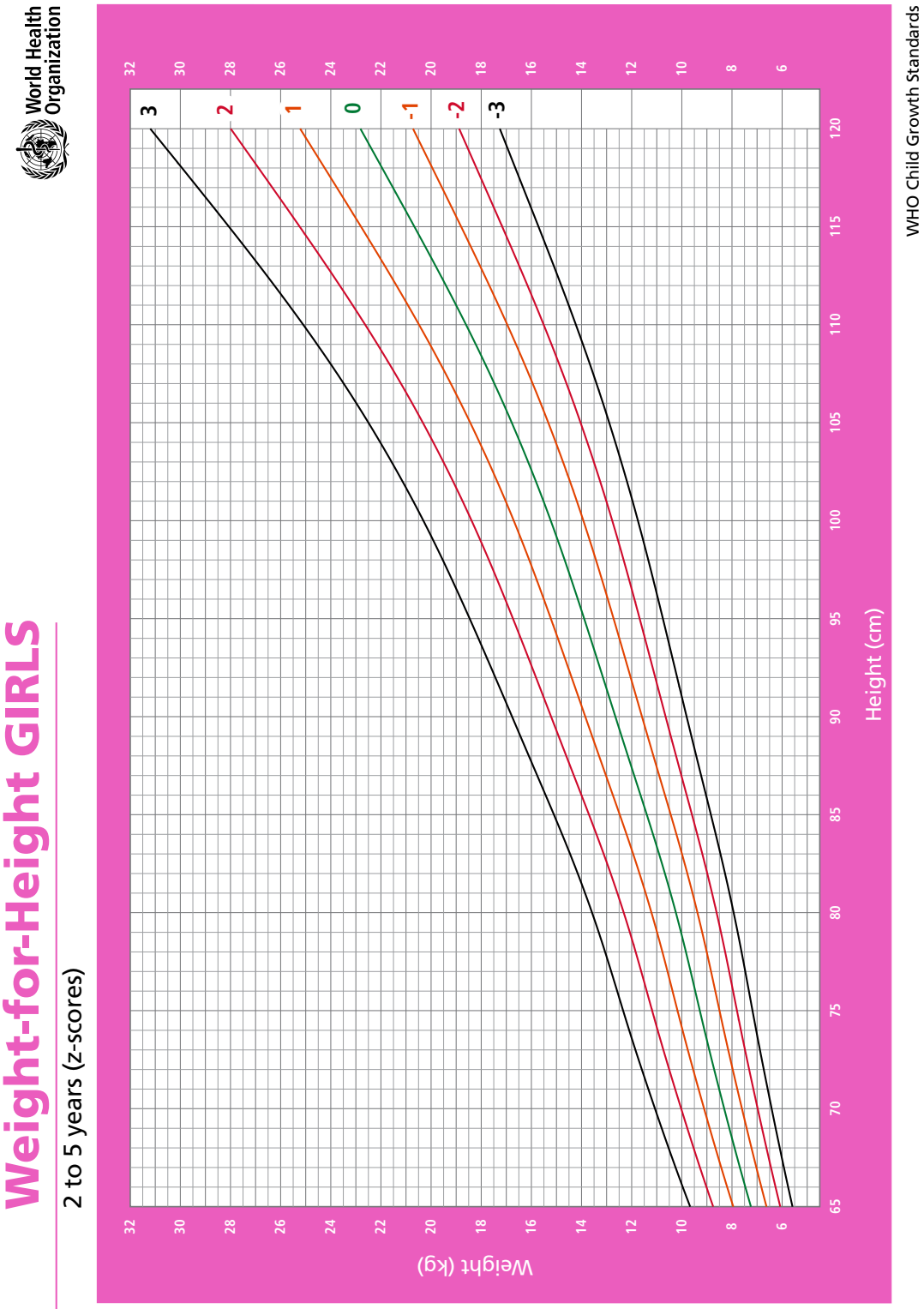
cm	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
111.0	14.5	15.8	17.3	19.0	20.9	23.1	25.7
111.5	14.7	16.0	17.5	19.2	21.2	23.4	26.0
112.0	14.8	16.2	17.7	19.4	21.4	23.6	26.2
112.5	15.0	16.3	17.9	19.6	21.6	23.9	26.5
113.0	15.1	16.5	18.0	19.8	21.8	24.2	26.8
113.5	15.3	16.7	18.2	20.0	22.1	24.4	27.1
114.0	15.4	16.8	18.4	20.2	22.3	24.7	27.4
114.5	15.6	17.0	18.6	20.5	22.6	25.0	27.8
115.0	15.7	17.2	18.8	20.7	22.8	25.2	28.1
115.5	15.9	17.3	19.0	20.9	23.0	25.5	28.4
116.0	16.0	17.5	19.2	21.1	23.3	25.8	28.7
116.5	16.2	17.7	19.4	21.3	23.5	26.1	29.0
117.0	16.3	17.8	19.6	21.5	23.8	26.3	29.3
117.5	16.5	18.0	19.8	21.7	24.0	26.6	29.6
118.0	16.6	18.2	19.9	22.0	24.2	26.9	29.9
118.5	16.8	18.4	20.1	22.2	24.5	27.2	30.3
119.0	16.9	18.5	20.3	22.4	24.7	27.4	30.6
119.5	17.1	18.7	20.5	22.6	25.0	27.7	30.9
120.0	17.3	18.9	20.7	22.8	25.2	28.0	31.2

WHO Child Growth Standards

Appendix E-2

Weight-for-Length/Height Growth Chart Girls (2-5 years)

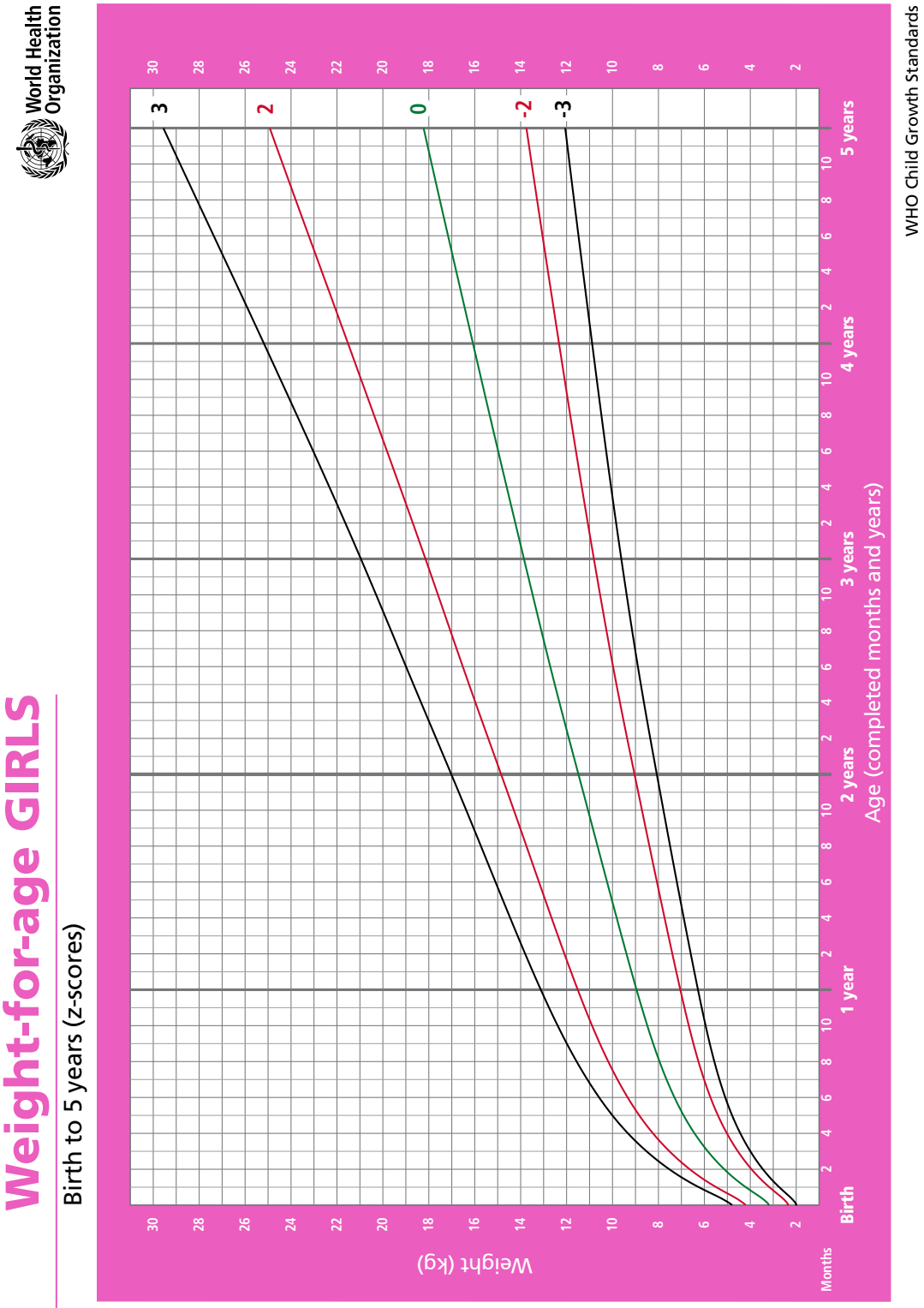
http://www.who.int/childgrowth/standards/cht_wfh_girls_z_2_5.pdf



Appendix F

Weight-for-Age Growth Chart Girls (0-5 years)

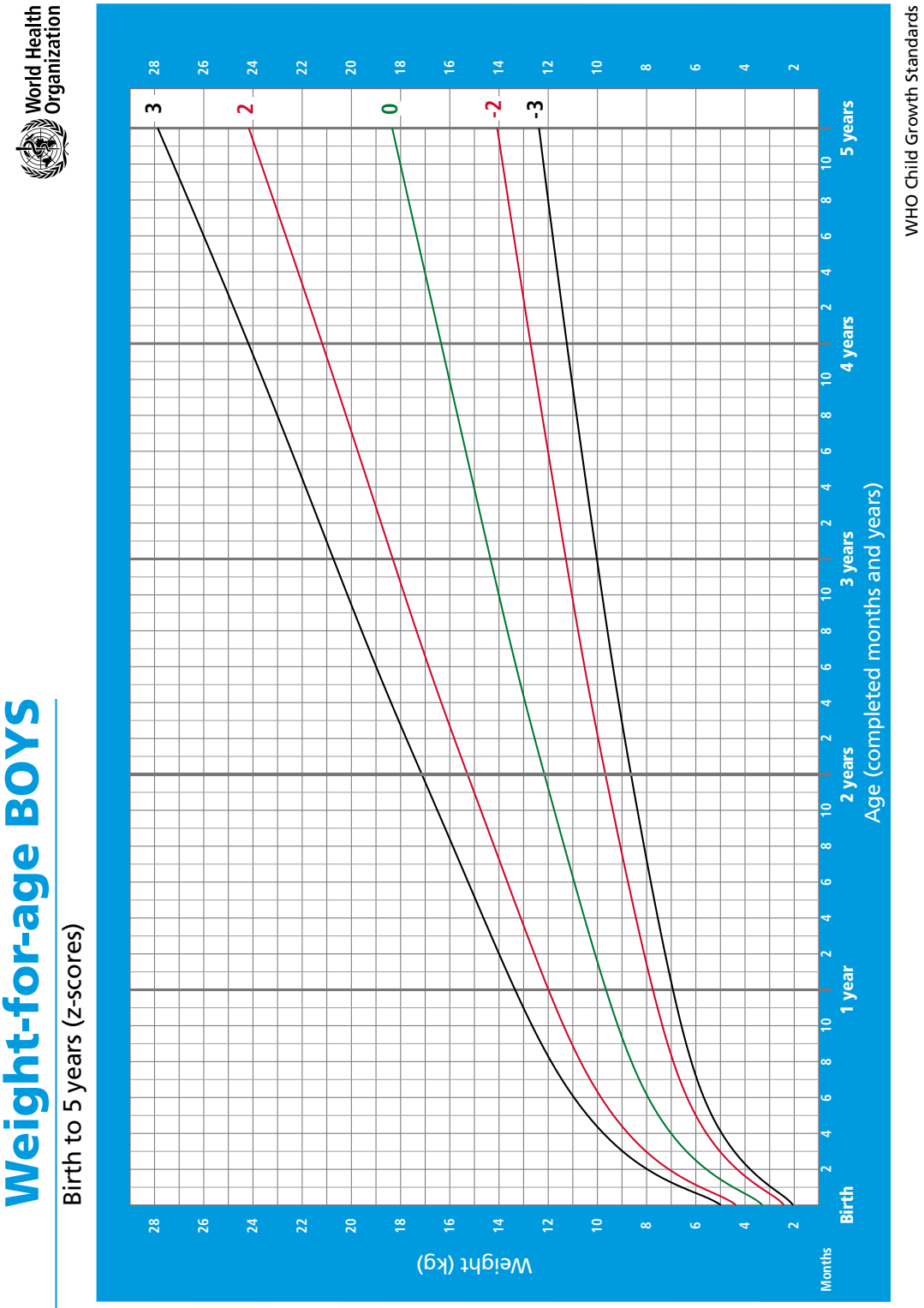
http://www.who.int/childgrowth/standards/cht_wfa_girls_z_0_5.pdf



Appendix G

Weight-for-Age Growth Chart Boys (0-5 years)

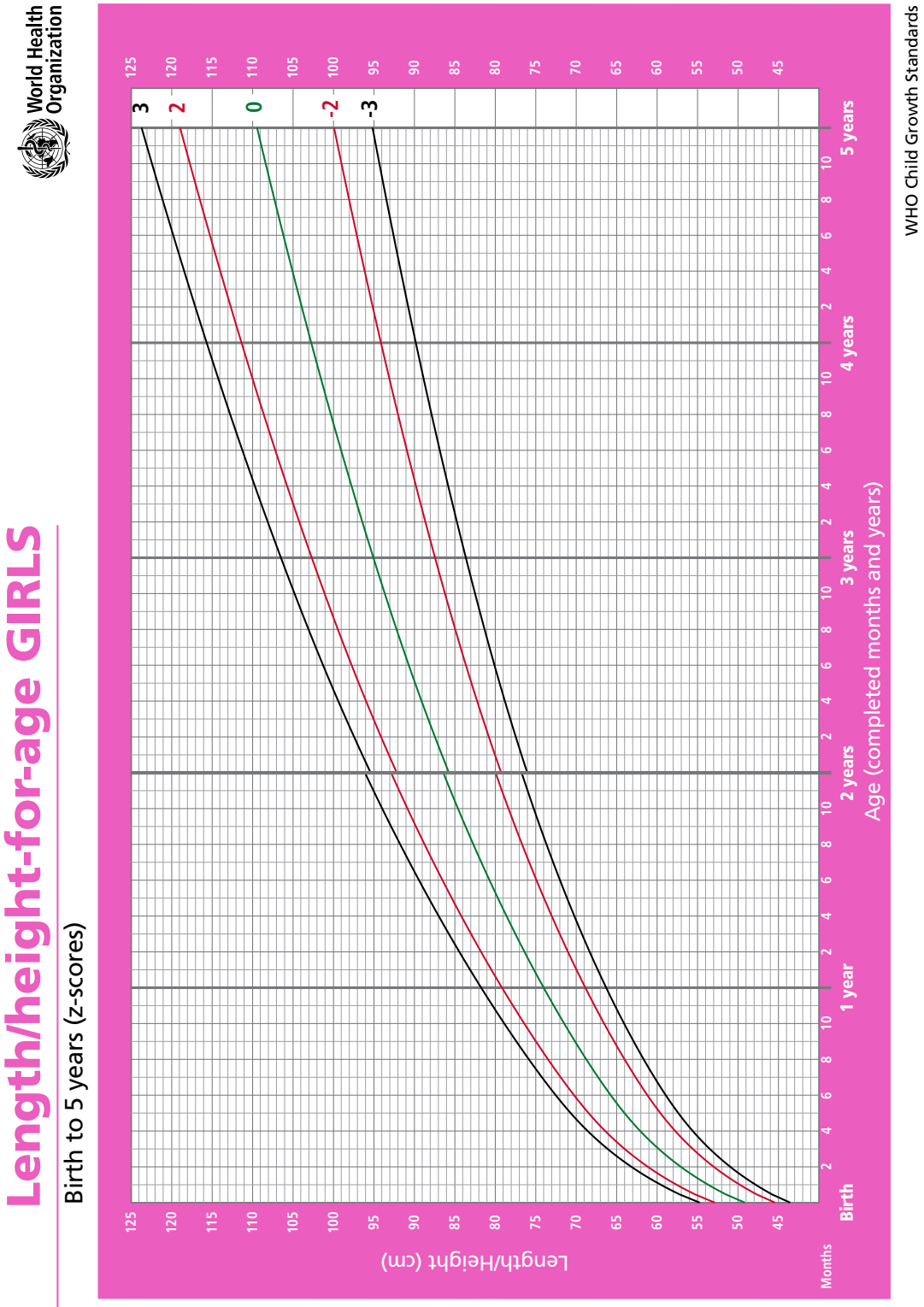
http://www.who.int/childgrowth/standards/cht_wfa_boys_z_0_5.pdf



Appendix H

Length/Height-for-Age Growth Chart Girls (0-5 years)

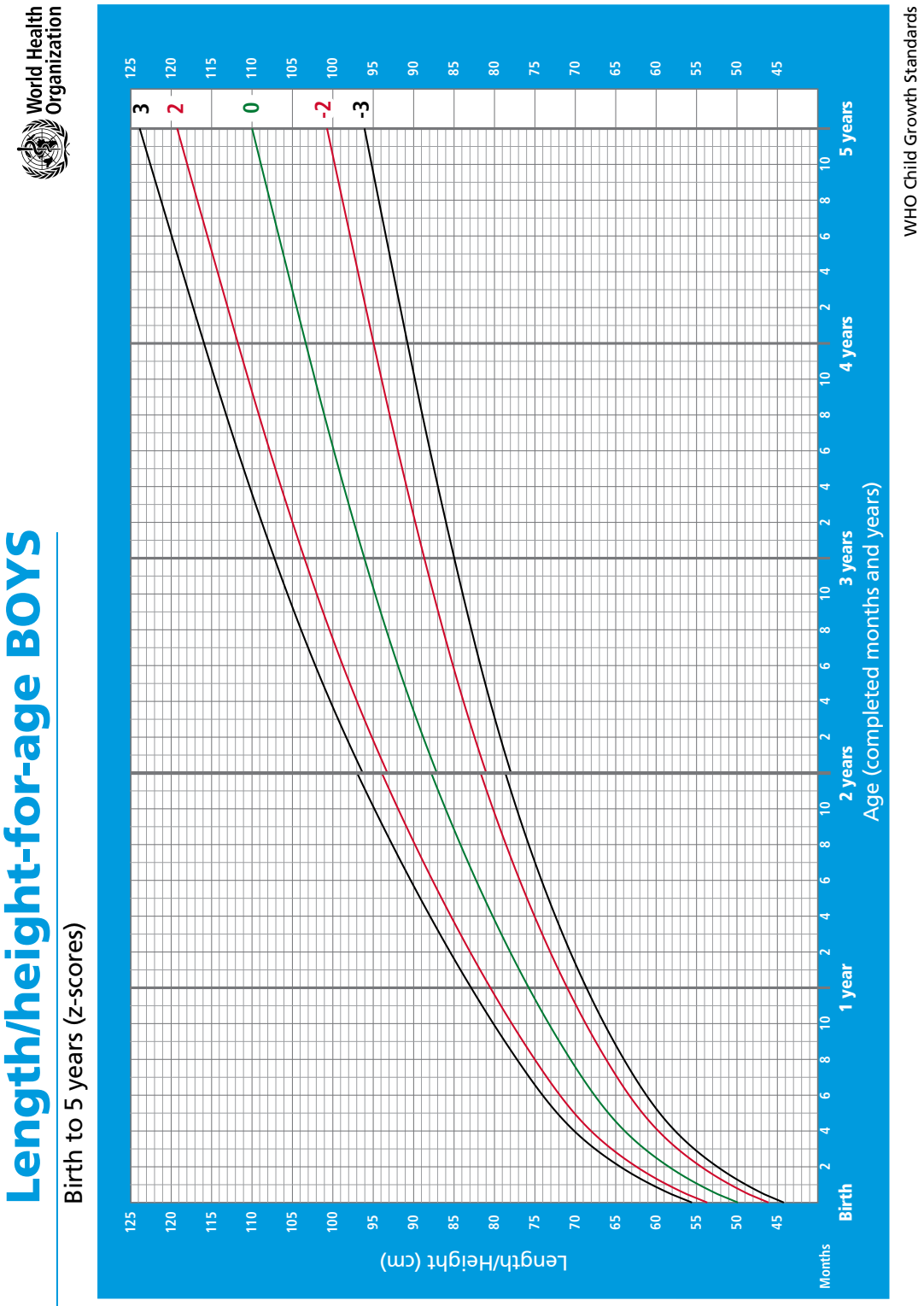
http://www.who.int/childgrowth/standards/cht_lhfa_girls_z_0_5.pdf



Appendix I

Length/Height-for-Age Growth Chart Boys (0-5 years)

http://www.who.int/childgrowth/standards/cht_lhfa_boys_z_0_5.pdf



Appendix J

Sample Speaking Points for Discussions with Community Leaders

Intended audience: Village chiefs, notables, religious leaders, and important and influential individuals in the community/village.

I would like to request to collaborate with leaders and community members in using an approach that looks at EXISTING solutions to infant and young child health and nutrition issues in the community.

Working side by side with community members, I want to uncover existing solutions to infant and young children nutrition and health problems within the community, and help the community develop activities to improve the health and well-being of the children in the village.

(It would be great to quote a local proverb on self-reliance here…)

We would be learners and students, not teachers and experts to:

- *Listen to villagers (husbands, fathers, single head of households, TBAs, women's groups, traditional healers, local medicine men, and ANY other individuals or groups who are connected with caring of young children).*
- *Facilitate group conversations where the above community members discuss the nutrition issues that matter to them* ***among themselves.***
- *Help the community discover what already works, solutions that already exist, and*
- *Facilitate the development of community-created activities based on these solutions to solve some of the problems facing families, women, and infants.*

It is the hope that this will result in community-owned activities that will improve the health and well-being of the children in partnership with existing resources, including the local health providers and district health authorities.

I respectfully ask for your permission to carry out the activities with you in your community.

Appendix K

Sample Agenda of First Communitywide meeting

Introductions

Explain why everyone is invited

The importance of everyone being aware of the problem and a communitywide effort to address the problem

Review of Agenda

Community Profile:

Explanation of GMP and presentation of the chart

Numbers in the community who are well nourished, moderately malnourished, and severely malnourished

Causes and Consequences of Malnutrition

Characteristics of well-nourished and malnourished children – small group discussion with distribution of meta plan

Positive Deviance Explanation – learning from community using growth monitoring chart – there are those who come from very poor families, but who are healthy

Description of next steps – ask for invitation to talk with everyone to find out about common behaviors, Positive Deviance behaviors

Agreement to report back to community what we have learned

Appendix L

Optional Group Activities

Coping Mechanism

Purpose: To illustrate that some people are better at coping in situations with little (or decreasing) resources than their neighbors may be.

Materials: Several large pieces of paper/cloth

Time needed: Approximately 10 minutes

Steps:

1. Divide participants into groups of three or four and give each group an identically-sized piece of paper or cloth. (Ideally there should be a minimum of three groups for this exercise.)
2. Explain that members of each team will need to arrange themselves so their feet are all on the piece of paper. The group that manages to do so will win.
3. Once the teams successfully complete the exercise, congratulate them. Then, ask them to step off, fold each of their papers in half, and ask them to repeat the exercise. Repeat this step until the papers grow so small that only one group is able to keep their feet on the piece of paper or material. Congratulate the winning group.
4. Ask participants to explain the relevance of the exercise to the topic under discussion. For example: How do people manage when resources are dwindling? What coping skills or innovations do some individuals or groups develop to face a crisis? What are the characteristics of a PD behavior?

Blind Game

Purpose: Demonstrate the role reversal in PD for "experts" learning from the community

Materials: Blindfolds

Time needed: 5 - 10 minutes

Steps:

1. Divide participants into pairs and explain that one member of each pair will be "blind" and the other will lead them around the room. The blind person may not open his/her eyes (remove blindfold). Talking is not allowed.
2. After three minutes, instruct them to switch roles.
3. Initiate discussion:
   - Ask participants how they felt when they were blind and how they felt when they were leading the blind person.
   - Ask them why they think this game is relevant to PD.

In the PD approach, "experts" experience a role reversal from being the leader/expert ("leading the blind, i.e., the villagers, students, hospital staff.") to being blind and being led by them. This exercise can lead to interesting discussions on issues such as control and power.

Observation Game

Purpose: To illustrate how to improve your observation skills

Materials: None

Time needed: Approximately 10 minutes

Steps:

1. To demonstrate the game, invite a participant to stand with you. Instruct the person to study you well for 20 seconds. Then tell him/her to turn his/her back to you and change something about his/her appearance. While s/he does that, you also turn your back and change one thing. After 30 seconds, turn back to face each other and try and guess what has changed.
2. Break the group into pairs and call out times to observe, change, and observe again. Repeat 2-3 more times and then have everyone sit down.
3. Ask if anyone was able to observe all the changes. See how the group did.
4. Ask how this is related to the PD inquiry

Appendix M

Wealth Ranking Matrix

The grid below sets up wealth by three categories (columns) according to characteristics of wealth in a community, based upon asset categories (rows). Though it is advised to fill the matrix out using all categories of assets and all categories of wealth, individual bulleted items in the asset boxes are just examples of what could be covered in the group discussion. This portion of the wealth-ranking exercise may cover only some of the bulleted items contained within each of the asset categories.

	Wealth Categories		
Asset Categories	**Doing OK**	**Poor, but a bit better off**	**Very Poor**
Human • Education • Health • Family Size • Family Labor			
Natural • Land • Water • Location of Home			
Physical • Shelter/Housing • Livestock • Amenities • Communication • Tools • Energy			
Financial • Income • Remittances • Savings • Production			
Social • Religion • Clan/Tribe • Culture • Race • Political			

Appendix N

Group Facilitation Tipsheet

Agreements for a Great Conversation:

Open-mindedness: Listen to and respect all points of view
Acceptance: Suspend judgment as best you can
Curiosity: Seek to understand rather than persuade
Discovery: Question old assumptions, look for new insights
Sincerity: Speak for yourself about what has personal heart and meaning
Brevity: Go for honesty and depth but don't go on and on

Setting up the climate

- Choose an informal or familiar setting for participants.
- Make a circle so everyone can see one another.
- Create a congenial atmosphere by using jokes, casual conversation, and small talk to make people feel comfortable.
- Introduction: Make sure everybody knows everybody.
- Be relaxed, direct, and confident.

Explaining the purpose of the meeting/activity

- Begin the conversation after introductions with a statement, such as:
  "We are here together because of our common concern about……"; "We want to learn from you about your experience with (issue/problem)…… so that TOGETHER we can address it."

Facilitator nonverbal behavior

- Maintain eye contact with everyone as you speak.
- Practice active listening: nodding, smiling, showing interest.
- Listen carefully and show interest in participants' responses and exchange.
- Be observant and notice participants' level of comfort or discomfort.
- Sit in the group, not higher or away from the group.

Facilitator verbal behavior

- Be sure participants talk more than you do and exchange ideas among themselves.
- Refrain from making suggestions and giving advice unless specifically asked.
- Ask open-ended questions with "What, how, what if."
- Invite participants to tell their story or share their experience with the issue at hand.
- Share relevant personal experience with participants to make them feel comfortable and develop trust by evoking feelings, beliefs, needs, and own vulnerability.
- Let the conversation guide the group.

- Let silence reign: "20 seconds silence rule."

Encourage everyone to participate in the discussion by:

- Acknowledging individual's willingness to talk, even if the statement is incorrect, beside the point, by saying, "This is interesting," "That's a good question," or "I never thought of it that way..."
- Not answering questions from the group yourself, but asking other participants to answer them.
- Ensuring that everyone can voice his or her ideas or opinion.
- Not letting one person dominate the discussion: Acknowledge that person's contribution to the group, but stress the need to learn and hear from EVERYONE.

Quote participants ideas, remarks and opinion to:

- Single out ideas from participants.
- Summarize ideas, opinion from the group.
- Broaden the discussion.
- Let people know that you listened carefully to what they said.

Closure

- Summarize what has been said and action taken.
- Emphasize contribution from the group.
- Thank participants and relate the activity to the larger PD project.

Appendix O

Sample Agenda for Focus Group Discussion

AGENDA ITEM	DESCRIPTION	
Welcome and Introduction	Introduce the organizers and allow all participants the opportunity to introduce themselves. Take the time to introduce the concept of Positive Deviance.	
Expectations	Lay out the expectations of this group and draw some simple rules that govern the group's ability to hear everyone's voices and to converse in a mutually respectful manner without passing judgment.	
For the following items, the group should be advised to discuss these topics from the perspective of what "usually" or "normally" is done or occurs. All should be discussed in the context of the community or community group being discussed.		
Discussion Topics and Questions	Breast-feeding Habits	When does a mother start breast-feeding after delivery?
		What do women in your village do with the colostrum? Why?
		Up to what age does a mother usually breast-feed a child?
		Who is involved in deciding how to breast-feed the child (how long, until what age, etc.)?
	Complementary Feeding	At what age (month) are food or liquids other than milk introduced?
		What is the first complementary food made of? How long is it used?
		What foods are considered healthy for young children? Why?
		What foods do mothers avoid feeding young children? Why?
		How many times a day do young children get fed (meals and snacks)?
		Do people other than the family also feed the child?
		What problems do you have feeding your young children?
		Who decides what the child can or cannot eat in the household?
		For porridges, what is the consistency? Are they typically thick? Thin/watery?

Table continued on next page

AGENDA ITEM	DESCRIPTION	
	Water, Sanitation, and Hygiene	How often are young children bathed? When do you bathe them?
		Is soap used when people wash their hands? When they wash their children's hands?
		When do people wash their hands? Their children's?
		What is the water source that most people use?
		Do people treat their water?
		How do most people store their drinking water?
		In the spaces that children play, is there typically chicken or other animal feces?
	Caring Practices	How much time daily do caregivers spend away from their children?
		Who takes care of the children when the primary caregiver is not home?
		What are sick children typically fed? Are any foods typically avoided for sick children? What are they?
		When a child is sick, where is help first sought?
		When a child has diarrhea, what is typically done to treat the child? How about when s/he has a cough or cold?
		What remedies do people use against common illnesses?
		What is a common remedy for diarrhea?
		What do parents traditionally do to protect their children from illnesses?
		Do parents typically get their children vaccinated?
Wrap-up	Tell the group that these discussions have provided information about the community and have helped this PD Nutrition effort to learn about the specific details regarding behaviors of caregivers.	

Appendix P

Sample Positive Deviant Inquiry Interview Questionnaire Tool

	QUESTIONS	RECORDED RESPONSES
General Household Information	How many people live in your house?	
	How many children are there? How old are they? How many are under 5 years old?	
	Do the older children go to school?	
	What does the family do for a living? Mother's work? Father's work? Other relatives living in house work? Children's work? What do GIRLS do? What do BOYS do?	
	How long does father work? How long does mother work? All morning, all day? Where do they work? How long does it take to travel to their workplace? Does the young child also go to their workplace or stay with a caretaker?	

	QUESTIONS	RECORDED RESPONSES
Infant and Young Child Feeding	Is the child still breastfeeding? If yes how often/still feeding at night?	
	What food do you give your child in addition to breastfeeding?	
	What age was your child when you first started giving your child other foods in addition to breast milk? What did you give?	
	How many times a day does your child eat now?	
	How much food do you give your child at each meal – please show me the amount	
	Who feeds your child? How does your child eat (spoon, hand)?	
	Please tell me about all the foods your child ate yesterday. What have you fed your child today so far? List all the foods, including breast milk. Probe – is there anything else? A snack?	
	What will you feed your child this evening?	
	Does your child get fed by other people (older siblings, neighbors)? Who are they?	
	What do you do when your child doesn't want to eat or has a poor appetite?	
	What foods do you think are good foods to give your child? Why?	
	What foods do you think are not good for your child? Why?	
	How do you feed your child when he/she has diarrhea? Please explain.	

	QUESTIONS	RECORDED RESPONSES
Caring Practices	Who is the main person who cares for your child?	
	Besides the person mentioned above, who else takes care of your child?	
	Who does your child play with? Where does your child often play?	
	What do you think is the most important thing a child needs?	
	What is the role of a mother in child care? What is the role of a father in child care?	
	What do you do to keep your child safe?	

	QUESTIONS	RECORDED RESPONSES
Hygiene Practices	How often in one day do you bathe your child?	
	How do you toilet train your child?	
	When do you wash your child's hands?	
	Does he/she wear shoes when playing outdoors?	
	In the spaces that children play, are there typically chicken or other animal feces?	

	QUESTIONS	RECORDED RESPONSES
Health-Seeking Behavior	Is your child immunized? How many times? Do you have records? May I see them?	
	What kind of illnesses does your child get?	
	How often does your child go to GMP activates? Who takes him/her?	
	What do you do when your child has a cold?	
	What do you do when your child has diarrhea?	
	Has your child had diarrhea in the last two weeks? What did you do?	
	How do you feed your child when he/she has diarrhea?	
	What do you do when your child has a fever or a cough?	
	How do you know if your child is sick?	
	Where do you take your child when he/she is sick	
	Who decides what to do if your child is very sick?	
	What health problems do you most worry about for your child?	

Appendix Q

Sample Positive Deviant Inquiry Observation Guide for Home Visits

Sample Questions that can be used/modified to facilitate observations:

"You said that you did _____. How were you able to do that?"

"Some people have problems with ___ and ___. How have you been able to overcome these?"

"Can you show us how?"

"What do you do when _____ (problem) happens or you are faced by _____ (challenge)?"

Name of child: _____ Date:_____

Name of family:_____ Village/town:_____

Family status: Very Poor / Poor But a Bit Better Off / Doing OK _____

#	Things to Observe	Observation results
	CHILD	
1	Does child look nourished or malnourished?	
2	What is child doing and what is his/her mood (energetic, smiling, sad, crying, energetic, sleepy)?	
3	Describe her/his cleanliness (body/hands/clothes)	
4	Other observations	
#	**Things to Observe**	**Observation results**
	CAREGIVER	
5	Who is she/he (mother or someone else)?	
6	Describe her/his cleanliness (body/hands/clothes)	
7	How does she/he interact with the child?	
8	Other observations	
#	**Things to Observe**	**Observation results**
	SECONDARY CAREGIVER	
9	Who else takes care of the child?	
10	Describe her/his cleanliness (body/hands/clothes)	
11	How does she/he interact with the child?	
12	Other observations	

#	Things to Observe	Observation results
	SIBLINGS OF YOUNGEST CHILD	
13	Are they well-nourished or malnourished?	
14	Describe their cleanliness (body/hands/clothes)	
15	How do they interact with the child?	
16	Other observations	
#	**Things to Observe**	**Observation results**
	FATHER OF CHILD	
17	What does he do for a living?	
18	Describe his cleanliness (body/hands/clothes)	
19	How does he interact with the child?	
20	Other observations	
#	**Things to Observe**	**Observation results**
	FEEDING PRACTICES	
21	Does caregiver wash hands with soap before feeding child?	
22	Are child's hands washed with soap before feeding?	
23	Are feeding utensils clean?	
24	Is eating place clean? Describe (animals, flies, etc.)	
25	Other observations	
#	**Things to Observe**	**Observation results**
	ACTIVE OR PASSIVE FEEDING	
26	Child eating by him/herself without support – has own bowl?	
27	Child fed by caretaker	
28	How is child fed? (e.g., spoon, caretaker fingers)	
29	What is child eating? (describe food/content)	
30	Consistency of food/porridge (dry, thick, watery?)	
31	Time it takes to feed child	
32	What is done to encourage the child to eat?	
33	Estimated amount of food (number of spoonfuls)	

#	Things to Observe	Observation results
	FAMILY EATING PRACTICES	
35	Family eats together (who participates when eating the meal?)	
36	Distractions during mealtime?	
37	Priority of food to males/quantity and frequency	
38	Other observations	
#	**Things to Observe**	**Observation results**
	HYGIENE	
39	Washes hands before preparing food?	
40	Keeps food covered after cooking?	
41	Washes raw fruit and vegetables?	
42	Bathes the child?	
43	Child's nails clean and trimmed?	
44	Caregiver washes hands with soap after toileting child?	
45	Water source – near or far?	
46	Boiled, filtered, or treated drinking water?	
47	Drinking water kept covered?	
48	Home and yard environment (kitchen/cooking utensils /animals in house/latrine)	
49	If no latrine, where is excrement disposed?	
50	Mosquito net used when child sleeps?	
51	Child play space has noticeable animal feces or other contaminants?	
52	Other observations	

Appendix R

Sample PD Hearth Preparation Worksheet

1. ***Choose PD Hearth starting date, location, and times***
   - When is the next GMP activity? Attempt to hold the 12-day PD Hearth activity soon after the next GMP activity with the participants who are moderately and severely malnourished.
   - Where is a central location for all the participants – with room for everyone and access to water and room to cook?
   - When do people normally eat their meals? What time would be a good ***supplemental*** mealtime –between these usual times?

2. ***Discuss with community volunteers and caregivers what should be done during holidays/ events:***
   - What are important dates?
   - When is the main wedding and/or circumcision or initiation season?
   - When is Ramadan or other holidays?

3. ***Liaise with health partners to arrange for checkup of participants prior to start of the activity – assure that deworming will be conducted in addition to a check for compliance with immunization and vitamin A supplementation schedules.***

4. ***Notify the participants' families and caregivers about the time, location, and their first day contribution***

5. ***Practice menu preparation***

6. ***Choose a facilitator***

7. ***Create monitoring tools for:***
   - Attendance
   - Weigh and MUAC assessment Day 1 and Day 12
   - PD Behaviors – visual list
   - Contributions from participants
   - Chore schedule – cooking, cleaning

8. ***Practice weighing and measuring MUAC***

9. ***Decide on health topics and discussions for 12-day schedule***

10. ***Determine materials needed and who will contribute them for the PD Hearth activities***

Appendix S

Sample training model for community volunteers who will help with PD Hearth activities

PD HEARTH SESSION PREPARATION TRAINING WITH COMMUNITY VOLUNTEERS		
	Before each session: PD INQUIRY Review and Behavior Change Review	Materials needed
Session 1	**GROWTH MONITORING CHARTS skill review – charting, counseling** Role-playing Child gain Child stayed the same Child lost weight	Growth monitoring session data
Session 2	**Identification of who should attend** Review of most recent growth monitoring session data Role-play meeting wit future participants Contribution Attendance Cooking Why they should come – TO LEARN NEW BEHAVIORS	Growth monitoring session data
	Negotiation skills for attendance, contribution Role-play different scenarios: *I'm too busy to come every day* = How will you learn this new behavior if you don't practice every day? Do you have an older child or your husband or mother who can come? *I don't have any money to buy the contribution*= These foods have been identified as possible for poor families, can you spend less on snacks, can you sell eggs to get this? What might be a strategy for you to obtain this food?	

Table continued on next page

Session 3	**Meal plan (attempt to have 3-4 menus which are dense in calories and protein and reflect findings from PD inquiry)** Three sources of protein – 1. Fish, egg, chicken 2. Tofu 50 gms. 3. Coconut milk, ground peanuts, fried small fish Colorful bowl contents (orange, green vegetables) One spoonful of oil already used in frying over rice Small amount of rice – 40 gms. Fruit Make sure PD findings are reflected in menu How to adapt this to very young children – porridge Total stomach capacity for a 2- to 3-year-old small sick child (the size of a woman's fist) Break into groups to create the four menus for PD Hearth – 500-800 cal. 25 gms protein Exercise on how to calculate calories and protein **Snack Menu** 400-500 cal. 15 gms protein **Role-play snacking exercise** Every caregiver is instructed to bring in her child's favorite snack for the next day, in addition to the price it costs On the floor of the room, place a flip chart with a line through the center. Label each half – healthy snack/unhealthy snack and costs Have each caregiver explain if the snack she brings in is healthy or unhealthy for the child under 5 and why Gain agreement from the others about the classification Ask participants if they have any observations about the findings	Small plastic bag, food scale, PD food, food table chart handout, calculator, pencils, erasers, notebooks, flip charts
Session 4	Review of PD INQUIRY Findings (5 main ones, maximum) and make posters	Poster board, paint, markers, pencils, erasers…
Session 5	**Record Keeping** Weigh Growth monitoring session, Day 1, Day 12, next growth monitoring session with observations if child did not gain Contributions Cooking Schedule Attendance (for caregivers to maintain)	Poster boards, flip charts, notebooks, magic markers

Table continued on next page

Session 6	**Protocol** Cooking Attendance Singing Praying Washing hands (mothers, children, community volunteers) Active feeding Health discussion about one PD behavior – breast-feeding, immunizations, healthy snacks, meal frequency, hygiene Meal planning and contributions for the next day Cleanup	Flip chart
Session 7	**Home Visit** Goal of home visit: not a policeman, but as a friend, how are you doing practicing a few of the new behaviors – choose 1-2 behaviors to focus on each month; handwashing with soap before eating, more frequency of meals, healthier snacks and visit those participants who have lost weight during the PD Hearth or not gained a lot, if time, visit the families who have been gaining	List of PD behaviors, Record keeping book of weight for participants
Session 8	**Community meeting (suggest every 2-3 months)** **Prepare community meeting by role-play** Report on progress of the participants Report on progress of growth monitoring session participation Report on challenges and successes	Growth monitoring chart, healthy snacks

Appendix T

PD Hearth Attendance Form

Form 2		Hearth Attendance Form																
Name of PCV:						Name of Counterpart:												
Community:						Session No.:												
Opening Date:						Closing Date:												
#of participating caregivers			Attendance (mark with "x" if present)															
No.	Name of Child	Start Weight	Start MUAC	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Final Weight	Final MUAC	Attendance rate
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
Daily Attendance Rate																		

Appendix U

PD Hearth Monitoring Tool

FORM 3	QUALITATIVE FORM (PD HEARTH, SESSION NO. 1)		
Name of PCV:		GMP dates:	
Name of Counterpart:		Session 2 dates:	

12-Day Hearth			
Day	**Health Topic**	**Meal Prepared**	**Comments/Behavior Changes Observed**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

1-Month Follow-up	
1.	Have caregivers continued to prepare nutritious meals?
2.	Have PD Hearth caregivers shared information with other mothers?
3.	Have you observed any behavior change among mothers and fathers?
4.	Other observations/comments:

2-Month Follow-up	
1.	Have mothers continued to prepare nutritious meals?
2.	Have Hearth participants shared information with other mothers?
3.	Have you observed any behavior change among mothers and fathers?
4.	Other observations/comments:

Overseas Programming and Training Support

The Peace Corps Office of Overseas Programming and Training Support (OPATS) develops technical resources to benefit Volunteers, their co-workers, and the larger development community.

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