Kingdom of Cambodia
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Ministry of Health

INTERIM GUIDELINES ON GROWTH MONITORING AND PROMOTION (GMP) FOR CHILDREN UNDER 5 YEARS OLD IN CAMBODIA

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Preface

Malnutrition continues to affect many Cambodian children. The 2014 Cambodia Demographic and Health Survey (CDHS) revealed that 32% of children under five years of age were stunted; 24% were underweight and 10% were wasted. More stunted children can be found in rural areas than in urban areas and those who belong to poor households.

The cost of under nutrition for Cambodia was reported at 2.5% of the Gross Domestic Product (GDP) (ASEAN, UNICEF & WHO, 2016). It is estimated that more than 400 million US dollar lost annually due to malnutrition (Bagriansky et al., 2014). Key risk factors for malnutrition in Cambodia are poverty, gender inequity, food insecurity, poor access to improved water and sanitation, as well as parasitic infections and poor caring practices (Ikeda, Ire & Shibuya, 2013; Chhoun et al., 2016). The consequences of malnutrition include poor health, impaired cognitive and physical growth, reduced learning capacity, and ultimately lower work performance, productivity, and earnings (Moench-Pfanner et al., 2016).

The Royal Government of Cambodia has demonstrated its commitment to improving the nutrition situation of Cambodian children. While significant progress in the improvement of health care services has been achieved, malnutrition among young children needs to be continuously addressed in a more integrated manner. The policies and programs that have been formulated in response are focused on reducing malnutrition and being implemented by the Ministry of Health (MOH) in collaboration with other ministries, UN partners, and Non-Governmental Organizations (NGOs). These documents include the National Strategic Framework for Food Security and Nutrition, National Nutrition Strategy (NNS 2009-2015), National Action Plan for the Zero Hunger Challenge in Cambodia (NAP/ZHC 2016-2025), National Action Plan on Early Childhood Care and Development (2014-2018), National Policy on Infant and Young Feeding (2008), Third Health Strategic Plan (2016–2020), Fast Track Roadmap for Improving Nutrition (2014-2020), and Maternal, Infant, and Young Child Nutrition (MIYCN) Social and Behavior Change Communication Strategy (2019-2025). These policies are supportive and complementary to each other and include children's protection, survival, health, and nutrition as common objectives. In addition, these policies are contributory to the achievement of the objectives of the National Social Development Plan (NSDP) and the Sustainable Development Goals (SDGs).

Growth Monitoring and Promotion (GMP) is a preventive and promotional action to address malnutrition. It gives focus to children from birth to 2 years of age. The first five years of life are important for a child's growth and development especially within the first 1000 days (from pregnancy to birth to 2 years of age). Children represent Cambodia's economic and social development future; thus, it is just right to ensure their health and nutrition.

The MOH has drawn up these guidelines to provide direction for the effective implementation of GMP as part of the routine primary health care delivery of services and comprehensive maternal, newborn, and child health in the country. The organization and

management including roles and responsibilities of health care workers, materials and logistics, and monitoring and evaluation are described. These guidelines provide the protocol for implementing GMP at the health center and community through outreach activities and in hospitals. These guidelines also present steps on how to monitor growth through weight and length/height proper use of the Child Health Card (Yellow Card), and promotion of growth and development.

Phnom Penh, 05 March 2021

Minister of Health

Professor MAM BUNHENG

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Least but not last, MOH would like to express deep thanks to WHO for its supporting in both technical and financial in the development and publication of the guidelines.

Phnom Penh, 02 March 2021

Secretary of State, Ministry of Health

H.E Dr. Prak Sophonneary

List of Acronyms

ANC	Antenatal Care
CARD	Council for Agricultural and Rural Development
CCWC	Commune Council for Women and Children
CDHS	Cambodia Demographic and Health Survey
CPA	Complementary Package of Activities
ECCD	Early Childhood Care and Development
GM	Growth Monitoring
GMP	Growth Monitoring and Promotion
HC	Health Center
HCMC	Health Center Management Committee
HEF	Health Equity Fund
HF	Health Facility
HKI	Helen Keller International
IMCI	Integrated Management of Childhood Illnesses
IPD	In-patient Department
IYCF	Infant and Young Child Feeding
MAM	Moderate Acute Malnutrition
MIYCN	Maternal Infant and Young Child Nutrition
MIYCN-SBCC	Maternal Infant and Young Child Nutrition Social and Behavior Change Communication Strategy
MNCHN	Maternal, Newborn, Child Health and Nutrition
MPA	Minimum Package of Activities
MOH	Ministry of Health
MUAC	Mid-Upper Arm Circumference
MS	Micronutrient Supplementation
NAP/ZHC	National Action Plan Zero Hunger Challenge
NGO	Non-Governmental Organization
NIP	National Immunization Program
NNP	National Nutrition Program
NNS	National Nutrition Strategy
NSDP	National Strategic Development Plan
OD	Operational District
OPD	Outpatient Department
PHC	Primary Health Care
PHD	Provincial Health Department
PNC	Postnatal Care
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SDGs	Sustainable Development Goals
VHSG	Volunteer Health Support Group
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

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I. Introduction

The Interim Guidelines on Growth Monitoring and Promotion (GMP) for children under 5 years of age provide the framework and protocols for comprehensive and integrated implementation of growth monitoring and promotion in the country. GMP shall be implemented as an integral part of the Primary Health Care system. It describes how GMP should be implemented in the health center and through outreach in communities and in hospitals. The implementation of GMP requires commitment, coordination, planning, and monitoring and evaluation. It also requires policies and guidelines, capacity building, organization and management, and involvement of the community and families to strengthen access to and availability of GMP services.

The purpose of these guidelines is to guide and facilitate implementation and coordination of an effective GMP program within the Cambodian health delivery system. These guidelines also aim to provide information on how to conduct GMP targeting children under 5 years old in a systematic and standard way.

Who should use these guidelines?

The guidelines should be used by:

- Policy makers and program managers in government and NGOs as a guide in designing and planning GMP services;
- Nurses, midwives, and doctors as a reference on how to deliver complete and quality GMP services at the health center and community through outreach activities and in hospitals; and
- Village Chief, Commune Chief, Commune Council, and Health Center Management Committee (HCMC) and volunteers as a guide in providing support to health facility staff providing GMP services.

When to use these guidelines?

The guidelines should be used for planning, coordinating, and implementing GMP at the national and subnational levels. The guidelines provide clear steps for providers implementing GMP within the MOH at all levels and NGOs.

How to use these guidelines?

The guidelines are written in an instructional manner so that it can easily be followed by users such as health center and hospital staff. These guidelines will not give the details of implementing programs such as National Immunization Program (NIP), Integrated Management of Childhood Illness (IMCI), and management of severe acute malnutrition (SAM); thus, it would be best to refer to the guidelines or policies specific for each program.

II. Overview of growth monitoring and promotion

This section presents the definition of terms to be used in this guidelines, goals and objectives, framework and package, target group, link with Primary Health Care/Maternal, Newborn and Child Health and Nutrition/National Nutrition Program (PHC/MNCHN/NNP), and key points about child growth and nutrition.

Every country in the world is affected by malnutrition and the prevalence rates remain high. There are approximately 149 million children under 5 suffer from stunting and over 49 million children under 5 were wasted and nearly 17 million were severely wasted and over 40 million overweight children (UNICEF, WHO, and WB, 2019). Malnutrition remains a health and development problem in Cambodia. Results of the CDHS showed that the prevalence of stunting among children under 5 years old is 32%, of which 9% are severely stunted, with children in rural areas, poor households and whose mothers have low levels of education disproportionately affected. In addition, 24% of children under the age of 5 are underweight and 10% are wasted, including 2% who are severely wasted. While the percentage is quite low at 2%, overweight/obesity is affecting Cambodian children already (National Institute of Statistics, Directorate General for Health & ICF International, 2015). In Southeast Asia, it is estimated that 14.4 million (25%) of children under 5 are stunted, wasting at 5.0 million (8.7%), and overweight at 4.4 million (7.7%) (UNICEF, WHO, and WB, 2019). Micronutrient deficiencies also affect children under 5 years old, with 56% found to be anemic, 9% with vitamin A deficiency and 66% having insufficient urinary iodine concentrations (National Institute of Statistics, Directorate General for Health & ICF International, 2015).

In recognition of the malnutrition problem in Cambodia, the MOH has been implementing a range of health and nutrition services, such as immunization, micronutrient supplementation, growth monitoring and promotion and counseling, among others. GMP is an essential aspect of comprehensive maternal, newborn and child health care and it is to be delivered as part of a continuum of care in the Cambodian health care system, not as a stand-alone activity. The mandate to implement GMP is explicitly stated in several National Nutrition Program (NNP) policies and strategies, including the Program National Infant and Young Child Feeding (IYCF) Policy, Fast-Track Roadmap for Improving Nutrition, and Maternal, Infant, and Young Child Nutrition Social and Behavior Change Communication Strategy (MIYCN-SBCC).

Since as early as 2004, MOH has been implementing GMP through health centers. Some NGOs have also implemented GMP and pilot tested innovative strategies, such as the use of the length mat by the NOURISH project in Pursat Province and community based GMP activities, with strong participation from Village Health Support Groups (VHSG) and involvement of conditional cash transfer schemes (USAID & URC, 2012). However, effective implementation of GMP has been hampered by several challenges and barriers, including low capacity of health center staff, inadequate equipment, non-adherence to measurement protocols, incorrect use of the Child Health Card (Yellow Card), low participation of community volunteers, lack of promotional activities such as counseling, and lack of GMP guidelines. Moreover, awareness of GMP services among community members is low and there is a lack of focus on promotion in particular. The Village Health

Support Group (VHSG) members are not yet trained and permitted by the MOH to offer GMP services. Taking the current situation into consideration, GMP will continue to be implemented in health facilities (fixed sites) with periodic outreach activities in the communities.

A. Definition of terms

The definitions of growth assessment, growth monitoring, and growth promotion to be used in these guidelines are listed below.

Growth assessment: Measurement of child's growth (i.e., weight-for-age, length/height-for-age, and weight-for-length/height) at a single point in time, in comparison to the standard growth expected of a well-nourished child at the same age (MOH, 2008 National Policy on IYCF, page 8).

Growth monitoring: Regular and repeated assessments of growth (e.g., weight-for-age, length/height-for-age, weight-for-length/height) in comparison to the growth standards, and in comparison, to a recent and previous weight assessment for the same child (MOH, 2008 National Policy on IYCF, page 8).

Growth promotion: The delivery of the essential package of proven interventions that address the immediate causes of poor growth, including: vitamin A & other micronutrient supplementation, deworming, prevention & treatment of illness (acute respiratory infection, diarrhea, malaria) and health and nutrition education, including IYCF counseling (MOH, 2008 National Policy on IYCF, page 8).

Growth monitoring and promotion (GMP) is a prevention activity, comprised of growth monitoring linked with growth promotion (usually counseling), that increases awareness about child growth and development; improves caring practices; increases demand for other services, as needed; and serves as the core activity in an integrated child health and nutrition program, when appropriate (Griffiths & Rosso, 2007).

B. Goal and objectives

The overall goal of GMP is to improve child growth and wellbeing, particularly among children0 to less than 24 months' old.

The specific objectives are as follows:

1. To detect growth faltering through regular and periodic anthropometric measurements in order to intervene through counseling and promotion;
2. To analyze the causes of growth faltering and take appropriate action;
3. To promote optimal child growth and development; and
4. To maintain regular contact with healthcare providers so as to use GMP as an entry point for other services and to increase access to and use of health and nutrition services.

C. GMP Conceptual Framework and Services

The framework shows that implementation of GMP through hospitals and health centers (fixed-site and outreach activities) will ensure that children living in remote areas are covered. It is expected that with the increased contact of the child/mothers/caregivers with the health staff (i.e., nurses, midwives, doctors), detection of growth faltering and implementation of promotion activities will lead to improvement in the nutritional status of children, thereby reducing child mortality and morbidity.

The GMP services include:

1. Measuring child's weight, length/height, and mid-upper arm circumference (MUAC);
2. Plotting measurements in the Child Health Card (Yellow Card), recording in the GMP Registration Book, and analyzing growth trends;
3. Promoting optimal child growth and development, providing treatment, services and counseling on the care and feeding of the child; and
4. Referring the child for appropriate services.

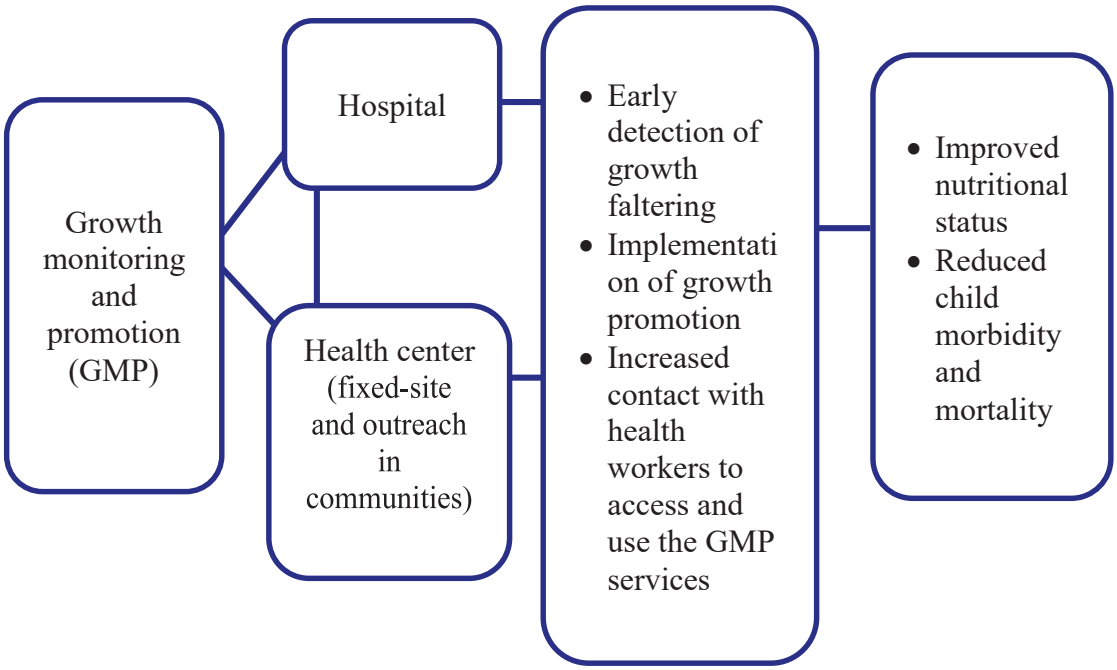


Figure 1. GMP Conceptual Framework

D. Target group

The primary target group is infants and young children aged0 to less than 24 months. The secondary target group is children aged 24 to 59 months old. Emphasis is placed on children aged 0 to less than 24 months because of the rapid growth and development that occurs during this period, which is a critical window of opportunity for addressing growth faltering. The health and nutritional status of a woman during pregnancy is critical to achieve optimal child growth and development. However, this Guideline covers the period beginning with the delivery of the infant. Guidance on the promotion of optimal nutritional status and weight gain during pregnancy can be found in other relevant MOH guidance such as the Fast

Track Roadmap for Improving Nutrition (2014-2020), the Safe Motherhood Protocol, and the Maternal, Infant, and Young Child Nutrition Social and Behavior Change a Strategy.

E. Key points about growth and growth faltering

1. Growth represents an increase in size (e.g. weight, height) and is a continuous process (WHO, 1986). Weight gain is the most important sign that a child is healthy and is growing and developing well (UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP & World Bank, 2010).
2. The critical elements of healthy child development are
   a) stable, responsive, and nurturing care-giving;
   b) safe, supportive, environments; and
   c) appropriate nutrition (WHO, n.d.).
3. Growth of a child is internationally recognized as an important indicator of nutritional status and health in populations (de Onis and Blossner, 2003).
4. Growth monitoring can identify problems in a child's health and nutrition long before a child becomes malnourished, as well as detect when a child is malnourished (Cervinskas, Gerein, & George, 1992).
5. Knowledge of what adequate growth is, how it can be properly observed, and how deviations from it can be recognized in good time is useful in childcare (WHO, 1986).
6. GMP requires an existing well-managed and well-supervised system for taking regular and periodic anthropometric measurements (Mangasaryan et al., 2011).
7. Measuring weight and height is useful in stimulating a dialogue that enables the identification of what might be causing under-nutrition and how to address those identified causes so as prevent further growth faltering (Mangasaryan et al., 2011).

F. Link of GMP with PHC, MNCHN and NIP

The MOH has been implementing Primary Health Care (PHC) and encouraging and promoting the implementation of health and nutrition interventions in an integrated manner. As part of routine PHC and comprehensive maternal, newborn and child health and nutrition (MNCHN)services, the MOH provides a range of services such as immunization, micronutrient supplementation, and growth monitoring to address malnutrition among children0-59 months old. GMP implementation requires coordination and communication in the delivery of services. This provides opportunities for the integrated delivery of health and nutrition services to children, particularly those aged 0 - under 24 months old. For example, IYCF counseling is provided during visits for GMP, NIP, IMCI or MAM/SAM treatment, and during antenatal care (ANC) and postnatal care (PNC).

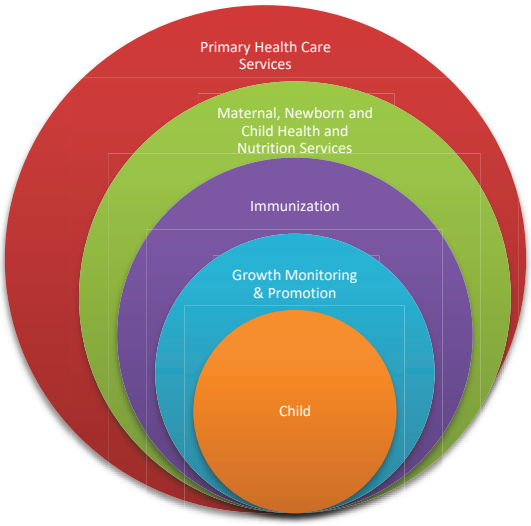


Figure 2. Link of GMP with PHC, MNCHN and NIP

It is important to note that the MOH's implementation of nutrition services are linked to social protection services in order to improve child nutrition. Social protection involves policies and programs that protect people against vulnerability, mitigate the impacts of shocks, improve resilience and support people whose livelihoods are at risk (Council for Agricultural and Rural Development, 2017). Safety nets such as cash transfers and food-based approaches intend to avert starvation and reduce undernutrition. For example, improving mothers' knowledge and practices on IYCF is critical for ensuring healthy growth and early childhood development. However, mothers are often unable to adhere to ideal IYCF practices because they do not have resources to provide diverse foods or they lack the knowledge on how to prepare complementary foods. Due to this, poor families should have access and control of available resources to benefit their children, including utilizing health and nutrition services. Social protection instruments such as food for work, cash for work, and cash transfer schemes are implemented to enhance nutrition. The NOURISH project, where 15,000 food-insecure poor "first 1,000 days' families from Siem Reap, Pursat, and Battambang have been enrolled in conditional cast transfer, is an example of a social protection program that have positive impact on nutrition (CARD, 2017).

III. Strengthening delivery of GMP services

This section presents where GMP services can be received by children, the general procedures for implementing GMP services in health facilities, and how to deliver GMP services in health centers, in communities through outreach and in hospitals.

A. Sites where GMP services will be provided

GMP services can be implemented in fixed sites, namely, (1) **hospital,** (2) **health centers**, and (3) **outreach activities** (Figure 3). All growth monitoring, counseling, treatment, and services provided to the child should be recorded in the Child Health Card (Yellow Card). Thus, the mother/caregiver must always bring the Child Health Card (Yellow

Card) to every health facility visit to ensure that growth data is monitored, and treatment and services are provided, while duplications in reporting are avoided.

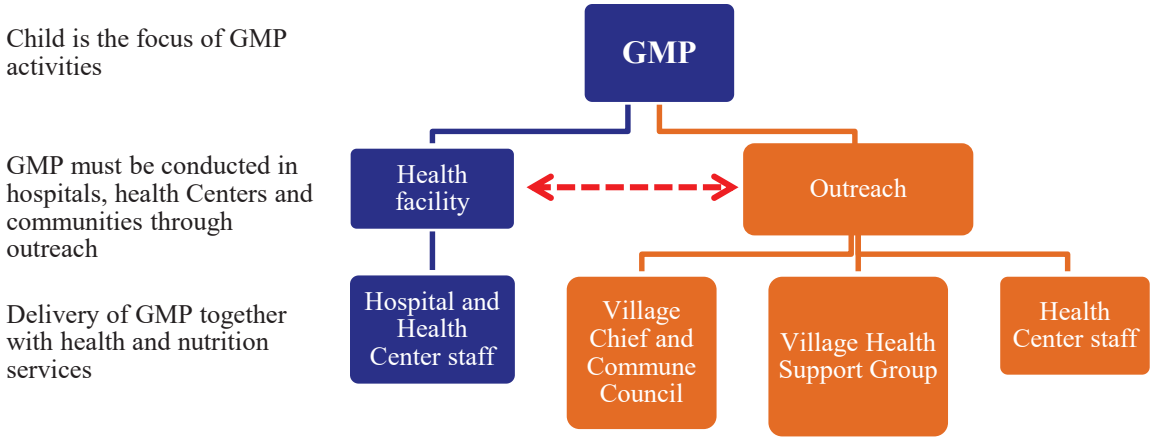


Figure 3. Delivery of GMP services in health facilities and outreach

B. General procedure for delivery of GMP services

The general steps in delivering GMP services can divided into five steps, namely: 1) Anthropometric measurement, 2) Register child in the Central Registration Book, plot measurements in the Child Health Card (Yellow Card), record in Prescription Paper, and refer the child to appropriate services, 3) Record measurement in GMP Registration Book, analyze the growth trend, explain to the mother/caregiver, and counsel the mothers/caregivers on importance of child growth, IYCF, and prevention of illness, 4) Deliver services such as vitamin A & other micronutrient supplementation, deworming, and treatment of illness, and refer child to appropriate services as needed; and 5) Conducting follow up visits (Figure 4). In addition, Figure 5 shows the general flow chart of activities for GMP services. Note that the same GMP services shall be received wherever the child seeks health care either in health center or hospital or in communities during outreach at a health post or elsewhere in the village. The health facility staff providing GMP services can be midwives, nurses, or doctors. Health facility staff should refer to specific procedures for delivering other services, such as immunization and treatment of childhood diseases, as these will not be discussed in these guidelines.

Step 1: Measure child's weight, length/height, and MUAC following standard protocol (refer to Section III: Anthropometric measurements: Procedures, plotting and interpreting growth trends).

Step 2: Register child in the Central Registration Book, plot measurements in the Child Health Card (Yellow Card), record in Prescription Paper, and refer the child to appropriate services.

Step 3: Record measurement in GMP Registration Book. Analyze the growth trend, explain to the mother/caregiver, counsel the mothers/caregivers on importance of child growth, IYCF and prevention of illness.

Step 4: Deliver services such as vitamin A & other micronutrient supplementation, deworming, and treatment of illness. Refer child to appropriate services as needed.

Step 5: Schedule the next visit/follow up

Figure 4. General steps in delivering GMP

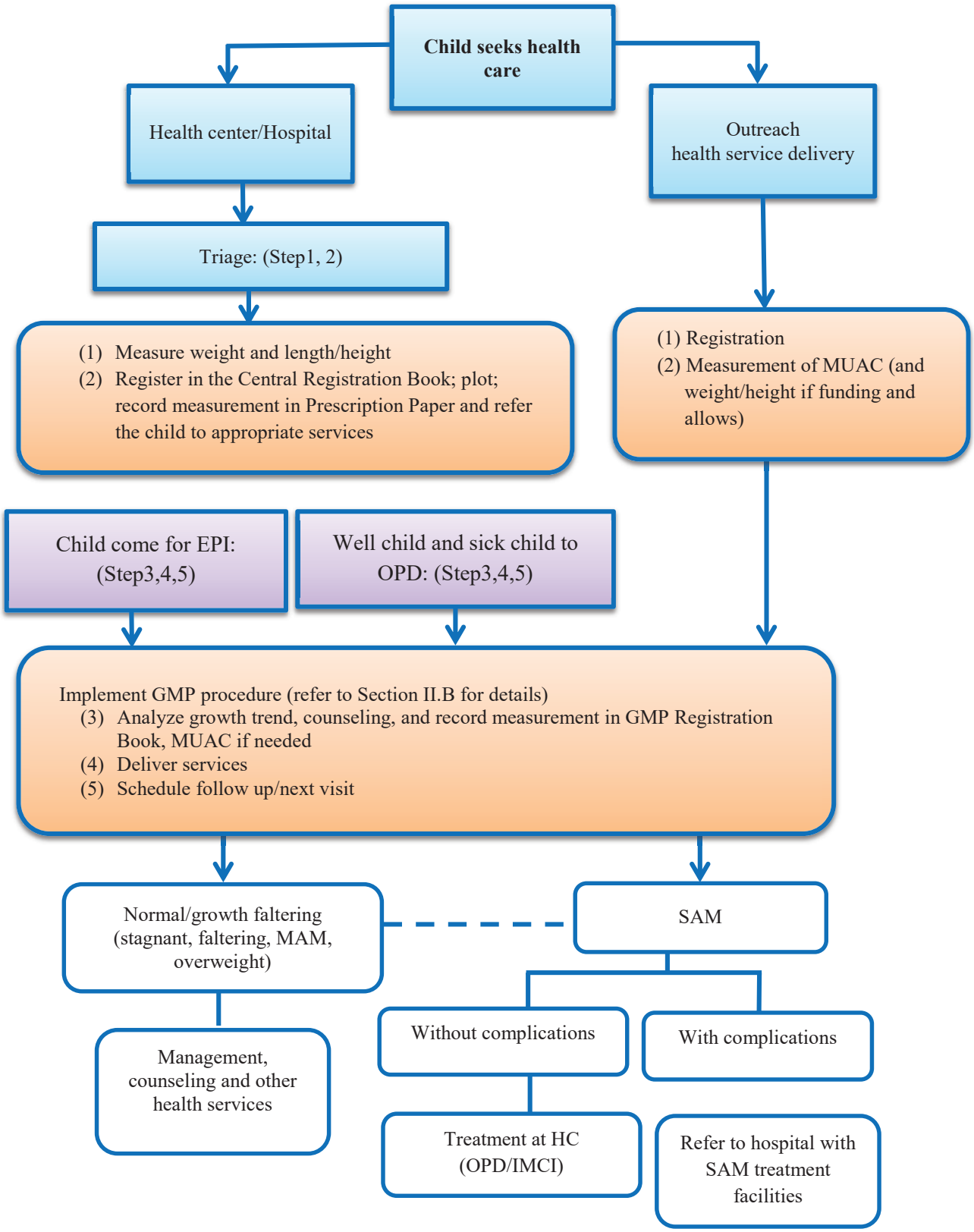


Figure 5. Flow chart of activities for GMP services

C. Delivery of GMP services in hospital

A child may access GMP services and, where necessary, a range of treatments in the Outpatient Department (OPD) of a hospital (Figure 6). The Child Health Card (Yellow Card) used in the health center and during outreach will also be used in the hospital as well.

If a **child with moderate acute malnutrition (MAM)** visits the hospital, he/she will be further assessed for appropriate treatment and other services. If a **child with SAM** is referred to the hospital or visits the hospital directly from home, he/she will be given treatment and services in either out-patient (OPD) or the in-patient department (IPD). **Children with SAM who are admitted to IPD can be transferred to OPD in hospital or the health center OPD/IMCI when their condition improves**. Transfer may occur when their medical complications are resolving, they have a good appetite and are clinically well and alert. Hospital staff shall be trained on how to provide GMP services and treat SAM cases, especially those with complications. Refer to the MOH's Handbook on Outpatient Management of Acute Malnutrition.

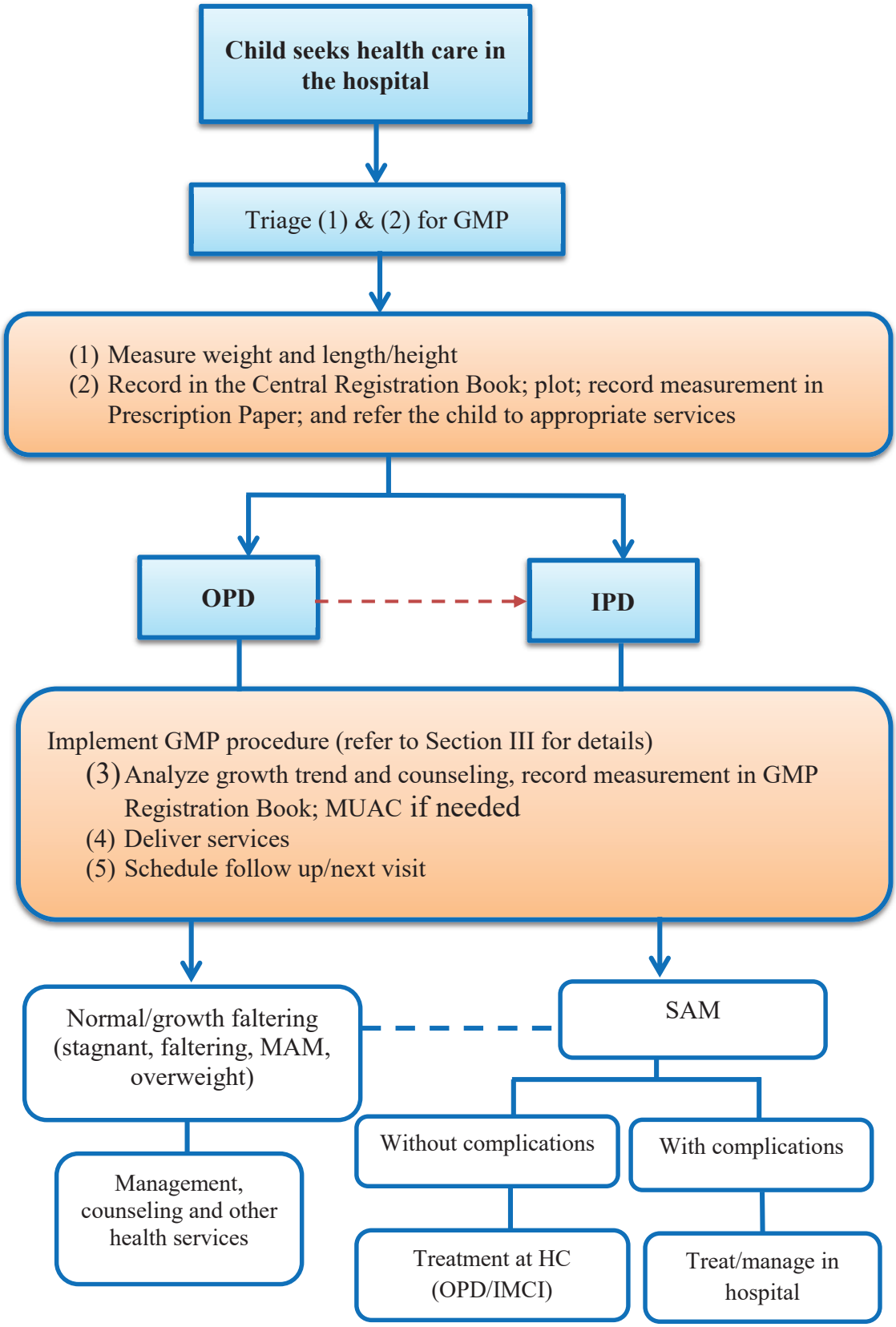


Figure 6. Flow chart for the delivery of services in the hospital

D. Delivery of Services in Health Center

Figure 7 shows the health center structure. This organizational structure situates where GMP services can be availed of in the health center, either at the OPD (5) or Maternal and Child Health (6) or Immunization (7). Presently, the number of health center staff and services across provinces are varied. Thus, GMP services are provided as may be applicable to the situation in the health center.

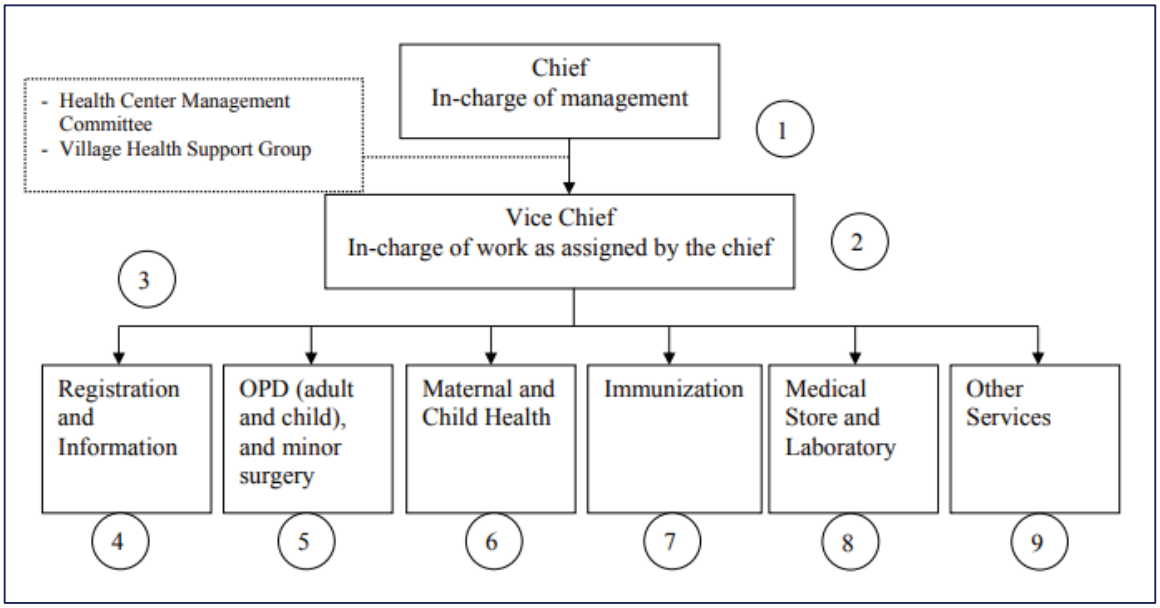


Figure 7. Health center structure

Source: MOH, 2007

All children visiting the health center will receive growth monitoring services at triage, including those coming with their mothers for prenatal checkup. The flow of services that a child will receive in the health center is described below and shown in Figure 8.

At triage (Step 1,2) weight and length/height measurement and Register child in the Central Registration Book, plot measurements in the Child Health Card (Yellow Card), record in Prescription Paper, and refer the child to appropriate services.

If the child comes for the immunization (Immunization and GMP services) or child is sick/malnourished or visits for GMP follow up, in OPD/IMCI (SAM) services (Step 3,4,5). In Step 3, record measurement in GMP Registration Book, analyze the growth trend, explain to the mother/caregiver, counsel the mothers/caregivers on importance of child growth, IYCF and prevention of illness. In Step 4, deliver services such as vitamin A & other micronutrient supplementation, deworming, and treatment of illness. Refer child to appropriate services as needed. In the last step, conduct the follow up visit.

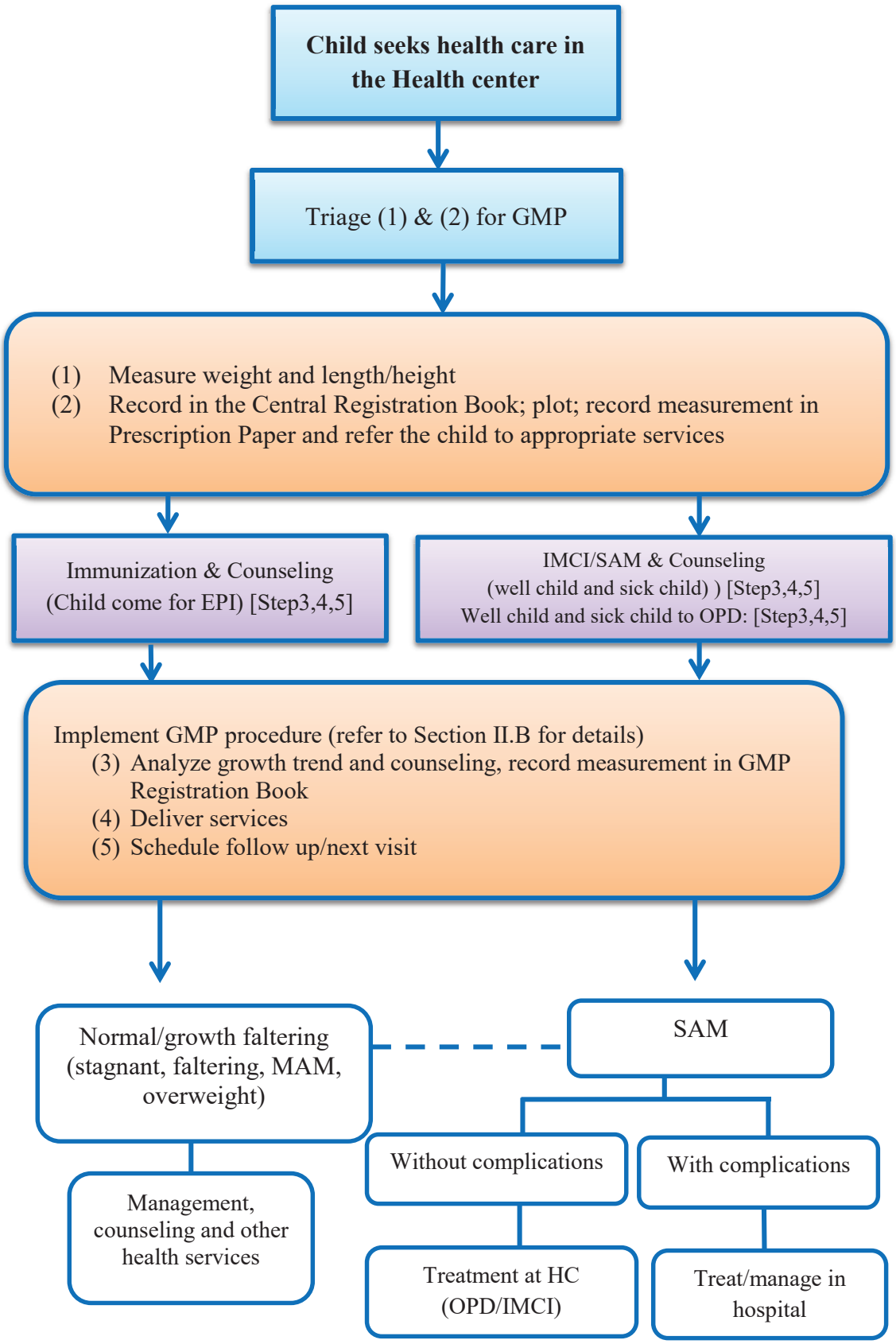


Figure 8. Flow chart of activities for GMP services in the health center

E. Delivery of GMP services through outreach activities

Outreach GMP services should be provided together with other services in order to maximize the limited time of health center staff during outreach visits. The same Child Health Card (Yellow Card) used in the health center must be used to record growth data, counseling and treatment and services provided during outreach activities.

Outreach activities are conducted by health center staff, VHSG, and the Commune Council for Women and Children (CCWC) at the community level as a way to provide access to the essential health services provided at health centers, especially preventative services, to all citizens regardless of their location (Ministry of Health, 2007). A complementary service package is delivered to villages more than one hour from a health center (remote villages). The package should be delivered to remote villages at least once every 2 months, refer to MPA Operational Guidelines 2018 (page 27-29).

With support from Health Center Management Committee (HCMC), Health Center shall plan, and conduct outreach activities based on their capacity and resources. Outreach activities will be conducted in close coordination with the village and commune council leaders, VHSGs and mothers/parents/caregivers, and carried out by a team of 3-4 health center staff and community volunteers. The number of days needed to implement the outreach activity depends on the remoteness of the villages, number of target villages and estimated number of households and children.

Figure 9 shows the flow chart of activities during community outreach. **During GMP outreach services, only MUAC will be measured. Where there is support from NGOs or available funding from the commune for GMP, weight and length/height can also be measured.** If weight and length/height will be measured, the general procedure for conducting GMP services will be followed. If a SAM child is identified, he/she shall be referred to the nearest hospital or health center depending on the presence of complications.

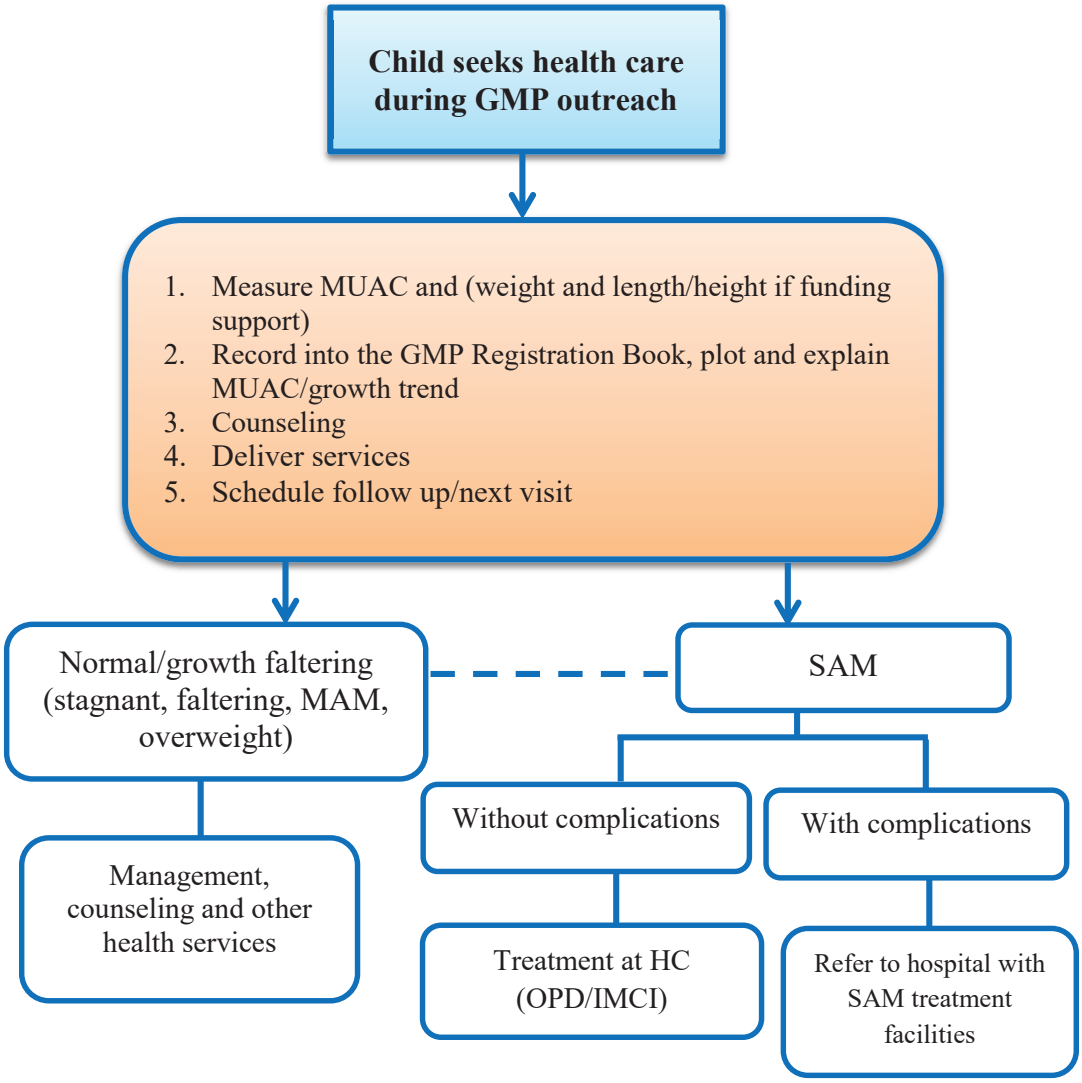


Figure 9. Flow chart for the delivery of services during community outreach

The general steps for implementing GMP outreach activities in communities are detailed below in Figure 10.

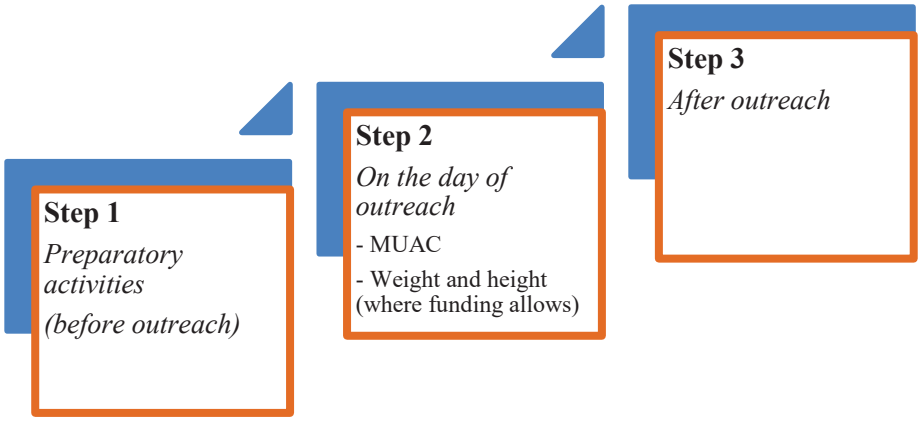


Figure 10. Activities before, during and after the outreach

The specific process to be followed for outreach activities is described below:

1. Preparatory activities

The preparatory activities to be carried out by health center staff are as follows:

1.1. Prepare a master list and village map of households with children aged 0 to 59 months old children, with support from VHSG and Village Chief;

1.2. Identify services to be delivered in addition to measurement of MUAC, such as Vitamin A supplementation, deworming and anemia and night blindness examination;

1.3. Ensure supplies and equipment are available; and

1.4. Plan for mobilization and engage community members through coordination with VHSG, Village Chief and other volunteers using commune budget.

2. Carrying out GMP on the day of outreach

The HCMC shall monitor and supervise the implementation of outreach activities. On the actual day/s of the outreach activity, health center staff shall carry out service delivery according to the steps outline in Figure 9. The MUAC measurement should be explained to the mother/caregiver. After which, the child should be provided with the appropriate GMP services such as counseling.

3. After outreach

The team carrying out the outreach activities must give feedback on and report the results to the Health Center Chief and HCMC. For example, information on the number of SAM cases, particularly among children aged 0- under 24 months, can be of interest to the Village Chief and HCMC as a basis for action.

IV. Anthropometric measurements: procedures, plotting and interpreting growth trends

This section presents a summary of the standard protocols for measuring weight, length, height and MUAC, determining edema, timing, and frequency of measurement, and how to plot and analyze growth trends. Details of the procedures are described in **Annex1**

A. What to measure

Weight reflects the total body mass of a child, while length/height shows the total length or stature of the child. Weight is more responsive to short-term changes in nutritional status while height is a more stable measure. Length refers to the measurement, in recumbent position, of children below 2 years of age or less than 85 cm tall, whereas height refers to a standing height measurement (WHO, 1986). Mid-upper arm circumference is another anthropometric measurement that is used to screen children for SAM (Ministry of Health, 2012). The procedures for the measurement of weight, length, height, and MUAC and for determining edema are presented in this section. Children can

be measured in both fixed sites and during outreach, and all measurements and checks for edema shall be conducted by health staff and VHSG who have received training on GMP for children under 5 years old.

B. When to measure (timing and frequency of measurement and other services)

The period between 0-under 24 months of age is critical for child growth and development, as this is a period when there is rapid growth, changes in the diet, exposure to environment and risk for inadequate child care. The first anthropometric measurements taken should be the child's birth weight and length, as this is essential for identifying children that are at risk of malnutrition and for proper interpretation of the child's growth trends/changes over time.

Refer to Table 1 for the timing and frequency of conducting measurements, which aligns with the Service Package for Women During Pregnancy, Delivery, and Postnatal Care (**Annex 2**). The health facility staff should adhere to the suggested frequency of measurements.

Table 1. Frequency of measurements according to age group

0 - under 24 months	24 – 59 months
Weight and length • At birth and monthly (0 – under 24 months) – *Delivery and PNC 3, 4, 5, 6, 7, 8, 9, 10 and continuing*	Weight and height • Every three months (24 - 59 months)
MUAC • During outreach (6- 24 months)	MUAC • During the outreach (24- 59 months)

Nutrition during the first 1000 days – from pregnancy through to a child's second birthday – is the most crucial time to meet a child's nutritional requirements and for preventing undernutrition (ASEAN, UNICEF, WHO, 2016). Undernutrition, especially in this period, hinders the cognitive and physical development of children. A package of services is to be delivered during the first 1000 days, and for poor households it is implemented using the Health Equity Fund (HEF) (Table 2). The provision of 10 GMP visits aligned with the first 1000 days' package of services should be considered the minimum required number. Health staff should strive to use every point of contact with the child as an opportunity to provide GMP services, i.e., when the child visits the health center or hospital for medical treatment, for immunization and during outreach.

Table 2. Relevant Services for Growth Monitoring and Promotion from the Service Package for Women during Pregnancy, Delivery and Postnatal Care in the first 1000 days using Health Equity Fund for poor households

Stage	Services	Time to receive services	Time to provide GMP
1st stage	1st Antenatal check	Pregnancy of less than 12 weeks	
	2nd Antenatal check	Pregnancy of 20-24 weeks	
	3rd Antenatal check	Pregnancy of 30-32 weeks	
	4th Antenatal check	Pregnancy of 36-38 weeks	
2nd stage	Delivery	Based on actual time	Measurement at birth; identification of low birth weight
3rd stage	1st Postpartum checkup (both mother and child)	7 days after delivery	GMP
	2nd Postpartum checkup (both mother and child)	14 days after deliver	GMP
	3rd Postpartum checkup (both mother and child)	Child is 1.5 months old	GMP
	4th Postpartum checkup (both mother and child)	Child is 2.5 months old	GMP
	5th Postpartum checkup (both mother and child)	Child is 3.5 months old	GMP
	6th Postpartum checkup (both mother and child)	Child is 6 months old	GMP
	7th Postpartum checkup (both mother and child)	Child is 9 months old	GMP
	8th Postpartum checkup (both mother and child)	Child is 12 months old	GMP
	9th Postpartum checkup (both mother and child)	Child is 18 months old	GMP
	10th Postpartum checkup (both mother and child)	Child is 24 months old	GMP

Source: MOH, 2019

C. How to measure weight, length, height, MUAC and edema

Recommended equipment

To measure weight, height/length, and MUAC, it is important to use the recommended equipment. For measuring weight, (a) infant scale for 0-12 month can be used. For children older than 12 months, (b) hanging scale can have used. For children under 5, (c) digital scale (UNISCALE) can be used. The recommended equipment for measuring length or height is a length/height board (c).

Procedures in measuring weight, height/length, and MUAC

To get accurate measurements, it is important that the internationally recommended procedures for measuring weight, height/length, and MUAC are followed. The procedures were extracted from the Training Course on Child Growth Assessment (WHO, 2008) and MOH Cambodia's *Handbook on Outpatient Management of Acute Malnutrition* (2018). These existing documents were used for consistency and avoidance of confusion among end users, particularly health facility staff.

Measuring weight

Before weighing a child, it is necessary to remove heavy clothing, shoes and toys or jewelry of mothers. Check if the weighing scale has been calibrated, cleaned, and the needle points at zero (for hanging scale). Ideally, infants should be weighed using infant scale. Children under 2 years old can be measured with the hanging weighing scale or tared weighing. "Tared weighing" means that the scale can be re-set to zero ("tared") with the person just weighed still on it (WHO, 2008). Thus, a mother can be weighed, and the scale tared. While remaining on the scale, if the mother is given her child to hold, the child's weight alone appears on the scale. Children 2 years or older can be weighed alone if he/she can stand still. When weighing a child, make sure that he/she is not moving or standing still so as to have an accurate reading. Then record the child's weight in the Child Health Card (Yellow Card) and GMP Registration Book.

Measuring recumbent length and height

Depending on the child's age, recumbent length or standing height is measured. If a child is less than 2 years old or less than 87cm in length, measure their length lying down (recumbent). If the child is 2 years or older or more than 87cm in length, measure their standing height. Ideally, there should be two health center staff to measure length/height.

Before measuring a child's recumbent length, make sure that the length board is clean, and the child does not have shoes or hair braid or ornaments that could affect the measurement. When measuring a child's length, make sure that the child is lying straight along the length board, shoulders touching the board, with the head positioned such that an imaginary vertical line can be seen from the ear canal to the lower border of the eye socket, and is perpendicular to the board, and the child's eyes should be looking straight up. Measure the child's length, read the measurement, and record the child's length in centimeters in the GMP Registration Book.

Similar to measuring length, before measuring a child's standing height, check that the height board is clean, and the child does not have shoes, hair braid or ornaments. Use a height board mounted at a right angle against a level floor and a straight, vertical surface such as a wall or pillar. When measuring height, check if the back of the head, shoulder blades, buttocks, calves, and heels are all touching the vertical board and position the child's head so that a horizontal line that runs parallel to the baseboard can be visualized from the ear canal to the lower border of the eye socket runs. Read the measurement and record the child's height in centimeters in the GMP Registration Book.

Measuring Mid-Upper Arm Circumference (MUAC)

Measure the child's MUAC on his/her left arm. Find the midpoint between the shoulder and elbow and mark using a pen. Wrap the MUAC tape around the arm at the midpoint. Read the measurement and record GMP Registration Book.

Determining edema

Bilateral pitting edema always occurs in both feet. Edema in only one foot is not of nutritional origin. Edema can be measured by holding the child's feet and pressing the thumbs on the top of both feet simultaneously. Count for 3 seconds (101, 102, and 103) and lift the thumbs from the feet. If a mark is left in both feet, the child has edema. Note: Once a child with edema is identified, follow the SAM management protocol.

D. Plotting and interpreting growth data and trends

1. Child Health Card (Yellow Card)

Each child should have a Child Health Card (Yellow Card). The health facility staff should write the name, birthday, sex, birth weight and other information about the child and his/her parents (e.g., occupation and address). In addition, services provided to the child during visits to the health facility, such as measurement of weight and length/height, immunization, vitamin A supplementation, deworming and counseling should be recorded in the Child Health Card (Yellow Card).

2. Nutritional anthropometric indices

The three most commonly used anthropometric indices to identify a child's growth status are weight-for-height, length/height-for-age, and weight-for-age (WHO, 2008). The presence of undernutrition in children is assessed using the said three indices and by comparing them with the WHO Child growth Standards.

Weight-for-age: This index reflects body mass relative to age. It is influenced by both the height of the child (length/height-for-age) and their weight (weight-for-height), and its composite nature makes interpretation complex.

Length/height-for-age: This index is an indicator of linear growth retardation and cumulative growth deficits. For children in the age group below 2-3 years, low height-for-age probably reflects a continuing process of 'failing to grow' or 'stunting'; for older children it reflects a state of 'having failed to grow' or 'being stunted' (WHO, 2008).

Weight-for-length/height: This index measures body mass in relation to body length/height and describes current nutritional status. Wasting or thinness indicates, in most cases, a recent and severe process of weight loss that is often associated with acute starvation and/or severe disease. Overweight and obesity should be identified using this index.

3. Growth chart

The Child Health Card (Yellow Card) also contains the **growth chart**, which is a visual tool to inform the mother/caregivers about a child's growth and development and the consequences of an inadequate diet and infectious diseases (WHO, 1986). In addition, the growth chart can be used to encourage mothers/caregivers to provide and support childcare and for the family to be self-reliant in health matters.

There are three growth charts, namely, weight-for-age, weight-for-length/height and length/height-for-age. The current Child Health Card (Yellow Card) includes the growth chart for weight-for-age. The growth chart for boys and girls is different since boys and girls grow to different sizes (WHO, 2008). Thus, they need to be assessed by standards that reflect normal differences in their sizes. Ideally, each child should have their growth tracked from birth. Refer to **Annex 3** for copy of the Child Health Card (Yellow Card) with weight-for-age growth chart for boys and girls.

4. How to plot growth data on the growth chart?

In plotting weight data in the weight-for-age chart, plot weight on a horizontal line or in the space between lines to show weight measurement to 0.1 kg. When points are plotted for two or more visits, connect adjacent points with a straight line to better observe trends. In plotting length/height data in the length/height-for-age growth chart, plot length/height on or between the horizontal lines as precisely as possible. When points are plotted for two or more visits, connect adjacent points with a straight line to better observe the trend. In plotting weight and length/height data in the weight-for-length/height growth chart, plot length/height on a vertical line and round the measurement to the nearest whole centimeter and follow the line up from the x-axis to wherever it intersects with the weight measurement. When points are plotted for two or more visits, connect adjacent points with a straight line to better observe the trend.

5. Interpretation of plotted points

The growth charts have curved lines that helps in the interpretation of the plotted growth data, i.e., weight, length/height. The z-scores (also referred to as standard deviation scores) describe how far and in what direction an individual's measurement is from the reference populations' median value. Z-scores also provide information on current nutritional status and used to follow an individual child's growth over time (Cashin and Oot, 2018). The z-score lines on the growth charts are numbered positively (+1, +2, +3) or negatively (−1, −2, −3). The line labeled 0 on the chart represents the median. The other curved lines are z-score or standard lines, which indicate distance from the average. In general, children who are growing and developing normally will have a plotted data on or between -2 and 2 z-scores of a given indicator, e.g., weight-for-age. On the other hand, a plotted point that is far from the median in either direction (e.g., close to the +3 or −3 z-score line) may represent a growth problem (WHO, 2008). Growth problems can be stunting, underweight, wasting, and overweight/obesity. Refer to **Annex 4** for more details of the growth problems.

6. Interpreting growth trends

A single measurement will only give information on a child's size but not their growth. Determine growth trends by looking at the series of measurements of the child's growth plotted on a growth chart. The growth trends may indicate if a child is growing normally or has a growth problem, or that a child is "at risk" of a problem. The following situations may indicate a problem or suggest risk: a) a child's growth line crosses a z-score line, b) there is a sharp incline or decline in the child's growth line, c) the child's growth line remains flat (stagnant). Refer to **Annex 5** for the interpretation of the growth chart for length/height-for-age and weight-for-length/height.

Using the weight-for-age growth chart, the possible growth trends are listed below. If a child's weight is within the:

- **GREEN track** of the growth chart, the child is normal;
- **ORANGE track** of the growth chart, the child is moderately underweight;
- **RED track** of the growth chart, the child is severely underweight. Note: Severe underweight triggers the implementation of the SAM Management Guidelines.

It is important that the growth data are accurate. Otherwise, the erroneous measurements or miscalculation of age in months can result in incorrect plotting and subsequently misinterpretation of growth trends. Refer **Annex 6** for examples of how to interpret growth trends.

V. Counseling and Key messages

Counseling is an important part of GMP. Counseling should constitute dialogue and negotiation for behavior change in order to promote optimal growth and development. Health facility staff shall be trained on counseling and provided with counseling and information, education, and communication (IEC) materials. Similar materials shall be developed and provided to mothers/caregivers/parents.

The GATHER technique of counseling will be used, as shown in Figure 11 (Ministry of Health, 2007). The GATHER technique is also used in the Nutrition Module (Ministry of Health, 2009). In each step, specific activities are to be implemented as detailed below.

Step 1 **Greeting &introduction:** Greet the mother/caregiver.

Step 2 **Asking:** Ask mother/caregiver how the child is doing, if the child has been eating/breastfeeding well, and if the child is sick or has any other health problems/concerns.

Step 3 **Telling:** If the child's weight/height increased and they are growing well, praise mother/caregiver and encourage them to continue good practices. If the child has lost weight or had no change in weight/height, ask the mother/caregiver if the child has been sick or has had trouble eating. If the child is overweight, ask the mother/caregiver the kinds and amounts of food the child is eating.

Step4 **Helping:** Based on the mother/caregiver's response, counsel them on small, practical actions they can take at home to help the child grow.

Step 5 **Explaining:** If the child was sick or had diarrhea, talk about handwashing and proper use of latrines. If the child was not eating well, talk about breastfeeding, food groups and frequency of feeding. If the child is overweight, talk about the foods that should not be given to the child such as sugar rich foods/beverages.

Step 6 **Returning:** Remind all mothers/caregivers about the importance of continued breastfeeding and diet diversity.

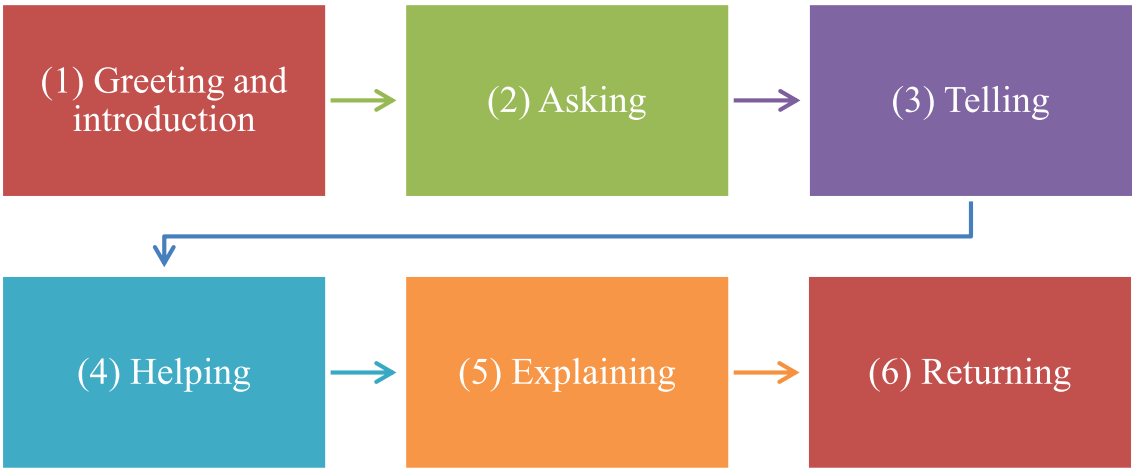


Figure 11. GATHER technique for counseling

Source: MOH, 2007 (MPA Nutrition Module 10)

In general, the key messages that shall be promoted will be focused on, but not limited to: (1) growth promotion and development, (2) developmental milestones, (3) IYCF, and (4) oral health. The **GMP key messages** shall focus on the behavior of observing how children growths and promoting behaviors and practices that promote optimal child growth and development. Complementary to GMP are messages on the importance of children meeting the **developmental milestones** (e.g., motor, cognitive and language) and acting early (e.g., referral, treatment) if signs of developmental delay are identified. The promotion of **IYCF key messages** shall be strengthened because proper feeding of infants and young children can increase their chances of survival and can also promote optimal growth and development, especially in the critical window from birth to 2 years of age. Refer to the Infant and Child Feeding Program, Monitoring and Improvement of Child Growth Program and Guidelines on Minimum Package of Activities for Health Center Development 2008-2015 for more details. The focus of the **oral health** messages shall be on prevention of oral diseases, reduce the impact of oral health disease among infants and young children, and practices to maintain good oral health.

1. Child Growth Monitoring and Promotion

- Importance of normal weight gain and good physical and mental development of children (Ministry of Health, 2009).
- From birth to age 2, children should be weighed regularly to assess growth. If regular weighing shows that the child is not gaining weight or the mother/

caregiver sees the child is not growing, or the child is gaining excess weight, there is a problem. The child needs to be seen by a trained health worker to be provided with appropriate interventions and counseling.

- Every child should have a Child Health Card (Yellow Card) that records and tracks their growth, treatment and health services received.
- Very thin and/or edematous children need special medical care and should be taken to a health facility for assessment and treatment.
- Proper nutrition for pregnant women, as a woman who is malnourished during pregnancy can give birth to a low-birth-weight baby. Similarly, if her child is malnourished during the first two years of life the child's physical and mental growth and development will be slowed.
- It is difficult to determine if a child is malnourished just by looking at him/her, visit the health center or hospital or community outreach for regular growth monitoring and promotion to make sure the baby is growing well.

2. Developmental milestones

- Elements of child development: 1) stable, responsive, and nurturing caregiving; 2) safe, supportive environments; and 3) appropriate nutrition.
- Stages of child development to help parents know what to expect and how to best support the child as they grow and develop (UNICEF et al., 2010).
- Importance of the early years, which is a time of rapid cognitive, linguistic, social, emotional, and motor development, in building the child's brain.
- Child's right to protection, to survive, to be safe, to belong, to be heard, to receive adequate care and to grow up in a protective environment.
- Child development milestones at 3 months, 6 months, 1 year, 2 years, 3-4 years, and 5-6 years which include fine motor, gross motor, social, cognition, language, hearing, and self-care. Refer to **Annex 7** for examples of the child development milestones.
- Assessing if a child is meeting the developmental milestones and using the CDMAT tool for community-based developmental delay monitoring. Refer to **Annex 7a for** the *Community-based Cambodian Developmental Milestones Assessment Tool.* For details of how to use the CDMAT tool, use the Family Stimulation Guide for Child Development.
- Role of parents in bringing up a brilliant and happy children focused on quality education, good nutrition, and health care **(Annex 8).**
- Playing as a method of helping child meet developmental milestones **(Annex 9)** and other methods for parents to encourage child development (**Annex 9a**).

3. Infant and young child feeding

- Initiate breastfeeding within the first hour after birth.
- Provide exclusive breastfeeding for the first 6 months of a child's life.

- Start complementary feeding the child after 6 months old and continue breastfeeding until 2 years old or beyond.
- Complementary feeding is the process of giving timely, nutritionally adequate, safe, and appropriate food, such as *bobor kroeung* for 6-under 24-month-old children and family foods for children more than 1-year-old, in addition to breastfeeding.
- During illness, children need additional fluids and encouragement to eat regular meals, and breastfeeding infants need to breastfeed more often. After an illness, children need to be offered more food than usual to replenish the energy and nourishment lost due to the illness.
- Provide information about infant feeding to all HIV positive mothers, especially at key points such as when the mother brings the baby for vaccinations or changes, feeding methods/habits. Also provide ARV, Cotrimoxazole and HIV tests for children.

VI. Referral

A referral is undertaken by a health facility or health staff member in response to their inability to provide the necessary intervention or services. For GMP, this means that during routine services some children may be identified as in need of services that are not available in the health center or outreach setting. Thus, said children can be referred to district referral hospital, or provincial or national level hospitals that have the expertise and capability to address their conditions.

In addition to direct health care services, referrals can also provide support services such as transportation to transfer a child/patient from one health facility to another. Referral also requires coordination and communication between the health center and the referral hospital during the referral and discharge of child/patient from the hospital.

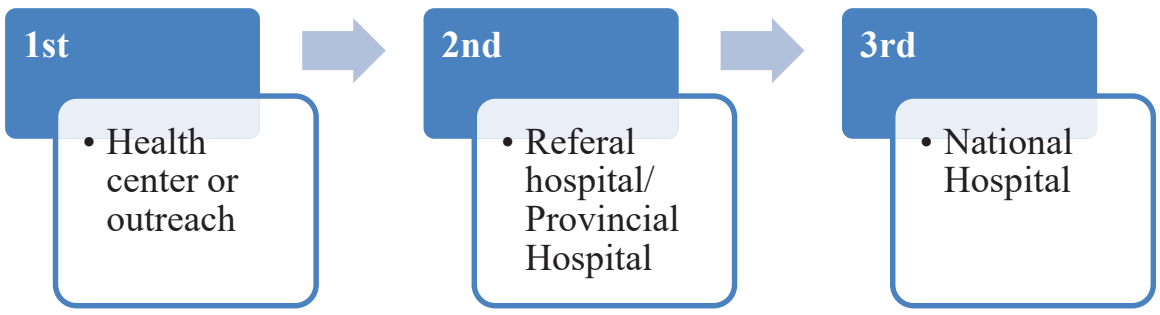


Figure 12. Process of referring a child from health center to hospital

As an example, a child with SAM can be referred to a referral health facility either:

1) As a new case (patient has not been treated in any facility);
2) As a relapsed case (was treated for SAM and discharged as cured, but has relapsed within 2 months);

3) As a readmission (a defaulter who returns for management within 2 months of defaulting); or
4) As an internal transfer (has transferred from another facility or from Inpatient Management). The health worker from the referring health facility should complete the referral slip (refer to Referral Form, page 26, Outpatient Management of SAM), which will be given to the caregiver to present to the referral health facility on arrival. The referral process to be followed is shown in Figure 13. Refer to the Guidelines for the Outpatient Management of SAM and Guidelines for the Inpatient Management of SAM for more details.

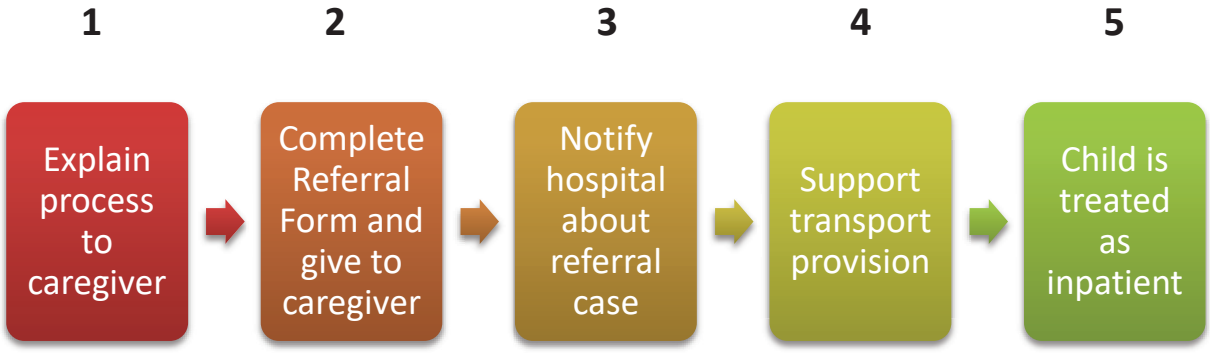


Figure 13. Process for referral for SAM cases

Source: MOH, 2018

VII. Management and Coordination

The MOH is responsible for overseeing the implementation of GMP, including planning, resource mobilization and allocation, monitoring, evaluation, providing training to support the provinces and coordination of internal/external aid facilities (Ministry of Health & WHO, 2012). In the Fast-Track Roadmap for Nutrition, there are three strategies related to the management of GMP: 1) removing financial and human resource barriers to scale up efficient interventions; 2) leveraging support through outreach activities; and 3) improving nutrition data in health information systems.

Health Centers are the first point of entry into the health system and are the first point for referrals to district hospitals and then provincial hospitals (Annear et al., 2015). The **Operational District (OD)** implement national, provincial and district health objectives, deliver services according to the community's needs, ensure equitable distribution and effective utilization of resources, mobilize additional resources (from NGOs, for example), and work with communities and local and administrative authorities. The **Provincial Health Department (PHD)** is the link between the MOH and OD. The patients/consumers participate in health service delivery through VHSGs, HCMCs, and through third party financing mechanisms.

The roles and responsibilities relative to GMP activities at each level are as follows:

1. National Nutrition Program

At the national level, the overall management and coordination of GMP is the responsibility of the NNP (Ministry of Health, 2009b). The NNP is responsible for the following:

- Dissemination of the guidelines to national and sub-national levels (including provinces, ODs and HC and development partners;
- Development of strategies and implementation plans to meet the stated objectives of GMP;
- Integrating GMP into outreach guidelines and services;
- Provision of technical assistance to relevant stakeholders at the sub-national level to build consensus among key parties;
- Preparation of an action plan and budget plan each year, including strategies for implementation and tasking;
- Ensuring that measuring equipment that is internationally recommended is made available to health centers and hospitals;
- Ensuring proper data management, analysis and documentation of lessons learned and best practices;
- Providing training, monitoring, and coaching to sub-national level;
- Developing tools for evaluating the quality of GMP services delivered; and
- Developing documents for training and IEC materials.

2. Provincial Health Department

At the provincial level, the PHD Director and the Nutrition Focal Point shall be responsible for:

- Dissemination of GMP interim guidelines to ODs, hospitals and Health Centers and local authorities;
- Supporting OD staff in conducting training for the Health Centers;
- Leading and coordinating implementation of guidelines in each province;
- Providing Operational Districts with equipment needed for anthropometric measurements, and other supplies for implementing GMP;
- Conducting regular monitoring and supervision and provide feedback to districts, hospitals, and Health Centers; and
- Reporting to NNP regarding important indicators not yes included in the health management information system (HIMS).

3. Operational District

At the District Level, the OD Chief and Nutrition Focal Point shall be responsible for:

- Dissemination of GMP Interim Guidelines to staff at ODs and Health Centers and to other relevant authorities;
- Training Health Center staff and Village Health Support Group (VHSG)on GMP;
- Leading and coordinating implementation of GMP within the OD;
- Providing Health Centers with equipment needed for anthropometric measurements, and other supplies for implementing GMP;
- Conducting regular monitoring and supervision and provide feedback to Health Centers; and
- Reporting important indications to the NNP that are not yet included in HIMS.

4. Hospital

Hospitals are responsible for:

- Implementing GMP services in all hospitals;
- Accepting referral cases from the Health Center and Referral Hospital; and
- Counter-referring recovering children back to Health Center or Referral Hospital for follow up.

5. Health Center

At the Health Center level, the Health Center Chief, together with the midwives and nurses, shall be responsible for:

- Raising awareness of GMP services available to the community during Health Center visits and outreach;
- Implementation of this GMP Guidelines at the health center and during outreach;
- Integrating GMP into NIP and IMCI; and
- Referring SAM children to hospital for appropriate treatment.

6. Heath Center Management Committee (HCMC)

The HCMC shall be responsible for:

- Ensuring GMP topics, such as GMP coverage, progress, challenges and more, are included in quarterly HCMC meeting agendas and discussed;
- Coordinating and encouraging effective implementation of GMP at health center and during outreach; and
- Disseminating GMP implementation results to the community to encourage further participation.

7. Commune Council for Women and Children (CCWC) Focal Point

The CCWC shall be responsible for:

- Including GMP in annual Commune Investment Plans and Budget Plans;
- Collaborating with Health Centers, Village Chief, VHSGs and development partners to implement GMP;

- Monitoring and ensuring complete coverage of GMP within the commune; and
- Disseminating GMP implementation results to the community to encourage further participation.

8. Village Chief

The Village Chief shall be responsible for:

- Disseminating information about GMP services to the community; and
- Coordinating and supporting the mobilization of target groups to access GMP services.

9. Village Health Support Groups (VHSGs) or Volunteers

The VHSGs or Volunteers shall be responsible for:

- Disseminating information about GMP services to the community;
- Mobilizing the target groups to access GMP and other health services during outreach;
- Encouraging community members to access GMP services at the Health Center;
- Storing and maintaining equipment and other materials for GMP; and
- Attending meetings at Health Centers when invited by HCMC.

VIII. Capacity building for GMP service providers

Health facility staff will be trained on GMP. The training can be integrated into existing trainings for other health and nutrition programs, such as NIP, IMCI and SAM Management Services. Another option is to include GMP in the pre-service or in-service training of health care workers. The GMP training topics, but not limited to, are as follows:

1. Concept of growth and the factors that promote or inhibit normal growth;
2. Protocol for measuring weight, length, height, MUAC;
3. Determining edema;
4. Calculating age in months;
5. Recording information required in the Child Health Card (Yellow Card);
6. Plotting and interpretation of growth data and growth trends;
7. Using the growth chart as an integral part of the health care system;
8. Nutrition indices/indicators and classification of nutritional status;
9. Counseling, vitamin A supplementation, etc.;
10. Referral of children to a higher level of the health system or to other services that promote growth and development;
11. How to record/report in the HC-1 form; and
12. Linkage of GMP to other health and nutrition services.

The Village Chief and Commune Council leaders and members should be oriented on GMP and how they can provide assistance in delivering not only GMP, but health and

nutrition services in general. Village Health Support Group (VHSG) and village and commune council are also able to organize GMP. They are permitted to conduct GMP activities themselves and share the results and nutrition and health condition of children under 2 years old within the catchment HC.

To avoid GMP implementation becoming inactive, training should be conducted every year, especially for newly hired health workers. For those who have been trained before, refresher courses can be designed for them. In addition, supervision and coaching of trained health workers can be carried out, especially after the attendance to training. The vignette and competency test for GMP can be implemented.

IX. Supervision, Monitoring and Evaluation

Regular monitoring and evaluation of GMP is important so that planners, implementers, and decision-makers can measure the progress and identify problems to be addressed. Monitoring is the continuous collection of program data in order to determine whether or not children's growth and development is monitored effectively. Evaluation is the periodic assessment of progress toward GMP goals and objectives. The monitoring and evaluation system for GMP shall be integrated with existing program monitoring (e.g., health center- and hospital-based health information systems, NGO- and donor-reporting systems) and periodic surveys (e.g., Cambodia Demographic and Health Survey). At the national level, evaluation can be done every five (5) years through the Cambodia Demographic and Health Survey (CDHS) and additional questions on GMP can be added to the CDHS. At the province or district level, small household surveys of GMP coverage and knowledge and practices can conduct every 2 to 3 years. In addition, facility-based surveys of the quality of GMP services can be conducted every 3 years.

In the health facilities, accomplishments in the implementation of GMP services will be reported using the HC-1format Health Center and HO-2 form at the hospital and using GMP Registration Book. In addition, monitoring activities can be conducted through the regular review of:

1. Health Center scores on GMP Competency and GMP vignettes as part of MCHN Scorecard
2. Availability of anthropometric equipment, guidelines, and Child Health Cards (Yellow Card); and
3. Provision of counseling.

The health facility staff will be responsible for collecting, recording, and reporting accomplishments using the identified output, impact, and measurement indicators. **Table 3** shows the output and impact indicators to be used including the methodology, type of indicator, frequency of collection, and sources. The measurement Indicators for the procedure in conducting GMP are listed below.

1. Number of health facilities received on-site coaching on GMP conducted by PHDs, ODs, NNP
2. Number of HC staff trained on GMP
3. Number of HC with at least 3 health staff trained on GMP
4. Number of Hospital staff trained on GMP with at least 3 health staff

Table 3. List of indicators

Indicators	Methodology	Type of Indicator	Frequency	Sources
% of child U5 severely wasted (<-3SD) (Severe acute malnutrition)	**Numerator:** Number of children U5 severely wasted (<-3SD) **Denominator:** Total number children of the coverage areas age <5 years old under coverage areas	Impact indicator	Every year/ every 5 years	HMIS CDHS
% of child U5 severely wasted (MUAC <11.5 cm) (Severe acute malnutrition)	**Numerator:** Number of children U5 severely wasted (MUAC <11.5 cm) **Denominator:** Total number children of the coverage areas age <5 years old under coverage areas	Impact indicator	Every year/ every 5 years	HMIS CDHS
% of child U5 severely underweight (<-3SD)	**Numerator:** Number of children U5 severely underweight (<-3SD) **Denominator:** Total number children of the coverage areas age <5 years old under coverage areas	Impact indicator	Every year/ every 5 years	HMIS CDHS
% of child U5 wasted (<-2SD) (Moderate acute malnutrition)	**Numerator:** Number of children U5 wasted (<-2SD) **Denominator:** Total number children of the coverage areas age <5 years old under coverage areas	Impact indicator	Every year/ every 5 years	HMIS CDHS
% of child U5 wasted (MUAC from 11.5 cm to <12.5 cm) (Moderate acute malnutrition)	**Numerator:** Number of children U5 wasted (MUAC from 11.5 cm to <12.5 com) **Denominator:** Total number children of the coverage areas age <5 years old under coverage areas	Impact indicator	Every year/ every 5 years	HMIS CDHS
% of child U5 underweight (<-2SD)	**Numerator:** Number of children U5 underweight (<-2SD) **Denominator:** Total number children of the coverage areas age <5 years old under coverage areas	Impact indicator	Every year/ every 5 years	HMIS CDHS

Indicators	Methodology	Type of Indicator	Frequency	Sources
% of child aged 0- under 23m received GMP at the Hospital (weighed, height, and counselling)	**Numerator:** Number of children aged 0- under 23m received GMP at the Hospital (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 0-23 months	Output indicator	Every month/every year	HMIS
% of child aged 24- under 59m received GMP at the Hospital (weighed, height, and counselling)	**Numerator:** Number of children aged 24- under 59m received GMP at the Hospital (weighed, height, and counselling **Denominator:** Total number children of the coverage areas age from 24-59 months	Output indicator	Every month/every year	HMIS
% of child aged 0- under 59m received GMP at the Hospital (weighed, height, and counselling)	**Numerator:** Number of children aged 0- under 59m received GMP at the Hospital (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 0-59 months	Output indicator	Every month/every year	HMIS
% of child aged 06- under 23 months received MUAC and counseling (at the Hospital)	**Numerator:** Number of children aged 06- 23 months received MUAC and counseling (at the Hospital) **Denominator:** Total number children of the coverage areas age from 06- 23 months	Output Indicator	Every month/every year	HMIS
% of child aged 24-59 months received MUAC and counseling (at the Hospital)	**Numerator:** Number of children aged 24- 59 months received MUAC and counseling (at the Hospital) **Denominator:** Total number children of the coverage areas age from 24-59 months	Output indicator	Every month/every year	HMIS
% of child aged 6-59 months received MUAC and counseling (at the Hospital)	**Numerator:** Number of children aged 6- 59 months received MUAC and counseling (at the Hospital)	Output indicator	Every month/every year	HMIS

Indicators	Methodology	Type of Indicator	Frequency	Sources
	Denominator: Total number children of the coverage areas age from 6-59 months			
% of child aged 0- under 23m received GMP at the HC (weighed, height, and counselling)	**Numerator:** Number of children aged 0- under 23m received GMP at the HC (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 0-23 months	Output indicator	Every month/every year	HMIS
% of child aged 24- under 59m received GMP at the HC (weighed, height, and counselling)	**Numerator:** Number of children aged 24- under 59m received GMP at the HC (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 24-59 months	Output indicator	Every month/every year	HMIS
% of child aged 0- under 59m received GMP at the HC (weighed, height, and counselling)	**Numerator:** Number of children aged 0- under 59m received GMP at the HC (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 0-59 months	Output indicator	Every month/every year	HMIS
% of child aged 06- under 23 months received MUAC and counseling (at the HC)	**Numerator:** Number of children aged 06- 23 months received MUAC and counseling (at the outreach) **Denominator:** Total number children of the coverage areas age from 06- 23 months	Output Indicator	Every month/every year	HMIS
% of child aged 24-59 months received MUAC and counseling (at the HC)	**Numerator:** Number of children aged 24- 59 months received MUAC and counseling (at the outreach) **Denominator:** Total number children of the coverage areas age from 24-59 months	Output indicator	Every month/every year	HMIS

Indicators	Methodology	Type of Indicator	Frequency	Sources
% of child aged 6-59 months received MUAC and counseling (at the HC)	**Numerator:** Number of children aged 6- 59 months received MUAC and counseling (at the outreach) **Denominator:** Total number children of the coverage areas age from 6-59 months	Output indicator	Every month/every year	HMIS
% of child aged 0- under 23m received GMP at the Community (weighed, height, and counselling)	**Numerator:** Number of children aged 0- under 23m received GMP at the Community (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 0-23 months	Output indicator	Every month/every year	HMIS
% of child aged 24- under 59m received GMP at the Community (weighed, height, and counselling)	**Numerator:** Number of children aged 24- under 59m received GMP at the Community (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 24-59 months	Output indicator	Every month/every year	HMIS
% of child aged 0- under 59m received GMP at the Community (weighed, height, and counselling)	**Numerator:** Number of children aged 0- under 59m received GMP at the Community (weighed, height, and counselling) **Denominator:** Total number children of the coverage areas age from 0-59 months	Output indicator	Every month/every year	HMIS
% of child aged 06- under 23 months received MUAC and counseling (at the Community)	**Numerator:** Number of children aged 06- 23 months received MUAC and counseling (at the outreach) **Denominator:** Total number children of the coverage areas age from 06- 23 months	Output Indicator	Every month/every year	HMIS
% of child aged 24-59 months received MUAC and counseling	**Numerator:** Number of children aged 24- 59 months received MUAC and counseling (at the outreach)	Output indicator	Every month/every year	HMIS

Indicators	Methodology	Type of Indicator	Frequency	Sources
(at the Community)	**Denominator:** Total number children of the coverage areas age from 24-59 months			
% of child aged 6-59 months received MUAC and counseling (at the Community)	**Numerator:** Number of children aged 6- 59 months received MUAC and counseling (at the outreach) **Denominator:** Total number children of the coverage areas age from 6-59 months	Output indicator	Every month/ever y year	HMIS

In addition, supervision is a process of guiding, monitoring, and coaching workers (health facility staff) to promote compliance with standards of practice and assure the delivery of quality care service (Gergen et al., 2013). For GMP implementation, supervision of health facility staff shall be supportive rather than disciplinary. Supervision shall involve solving problems, determining equipment and supplies needed, and coaching on skills needed for providing GMP services. On the other hand, coaching shall include guided practice in measuring weight/height/MUAC, plotting in the Child Health Card (Yellow Card), and counseling.

Monitoring and supervision are a routine part of health service delivery. GMP monitoring and supervision shall be conducted at a health facility by the next highest level of the MOH structure, such as the operational district (OD) – for health centers, provincial health department (PHD) - for referral hospitals, or NNP – for all sub-national levels. Health center staff shall be monitored and supervised to ensure they are plotting in the Child Health Card (Yellow Card), recording in the GMP Registration Book, counseling mothers/caregivers and promoting child growth monitoring accurately and consistently. In addition, reporting of accomplishments related to GMP services should be done by the health center and hospital staff, following the existing reporting system using HC-1 and HO-2 forms.

X. Recording and Reporting

Correct recording of the measurements of weight, length/height, and MUAC taken by the health center staff is important since it will be used in classifying the nutritional status of children and in monitoring or tracking the child's growth. The health center staff should clearly write the measurements. GMP recording can be done at the hospital, the health center and during outreach activities.

A. Recording at HC

At the health center, the health staff will:

1. plot weight, and record length/height in Child Health Card (Yellow Card) and
2. record in GMP Registration Book at EPI/OPD.

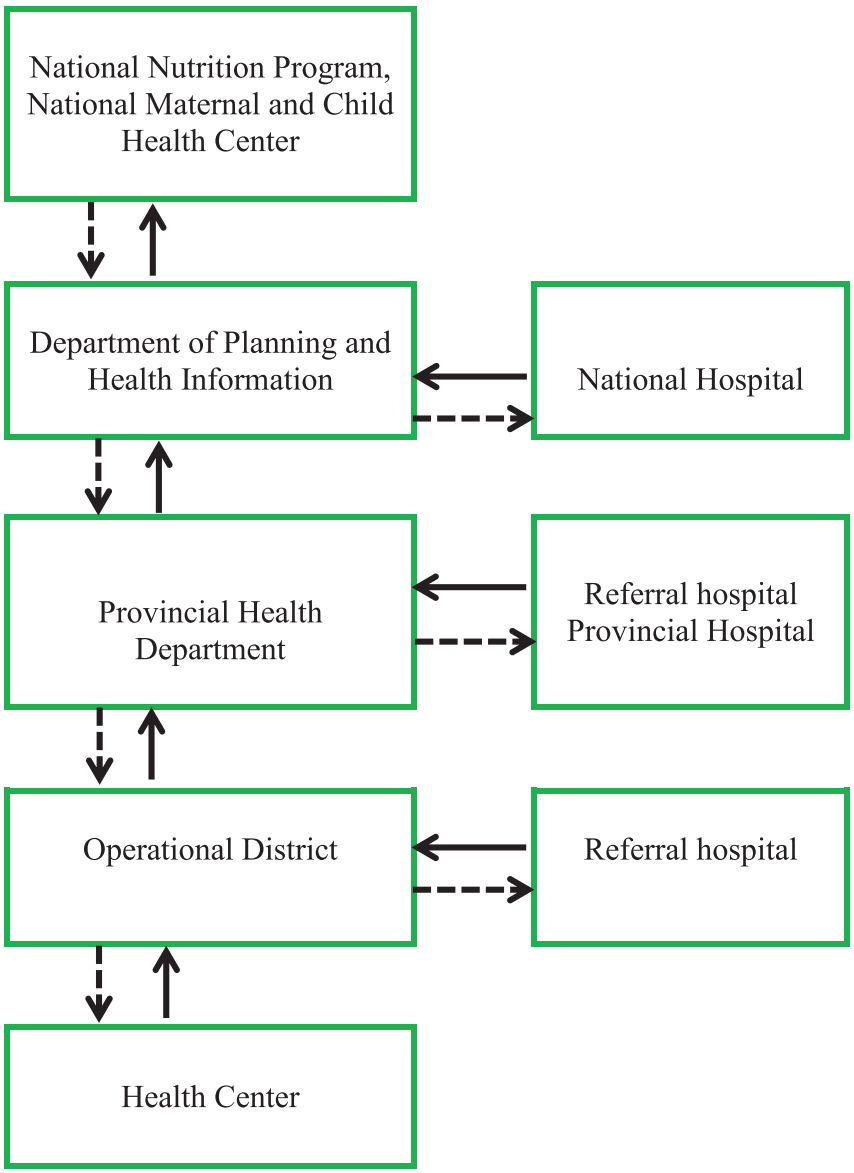
B. GMP Recording during outreach activities

During outreach, the health staff will:

1. record MUAC in GMP Registration Book;
2. record weight and length/height, if funding is allowed; and
3. plot weight, length/height, and MUAC in Child Health Card (Yellow Card).

C. Reporting

For reporting GMP services, the existing Health Information System shall be followed in reporting accomplishments. The flow of reporting using the Health Center HIS Monthly Report (HC-1) form shall be used. The health center staff will complete the HC-1 form and be responsible for submitting the report.



Legend:
Reporting: ——— Feedback: - - - - -

Figure14. Flow chart for reporting GMP services

XI. Materials and Logistics

The provision of materials, logistics and funding support to health centers and hospitals is necessary for effective delivery of GMP services. Support is necessary for purchasing and repair of measuring equipment and updating, printing and distribution of Child Health Cards (Yellow Card) in the amounts required. The volunteer workers who are involved in outreach activities can be given training, free health services, transportation allowances, food/meals, and personal equipment such as an umbrella and uniform so that they can be easily identified in the community.

Visits to health centers and hospitals by OD, PHD and National Staff can be done to check GMP implementation and for supervision, mentoring, and coaching purposes. The basic supplies, tools and equipment needed are listed below.

1. Measuring equipment
   - Uniscale or hanging scale or infant weighing scale
   - Length/height board
   - MUAC tape (WHO Standard)
2. Child Health Card (Yellow Card) (weight-for-age)
3. SD-score table (or Child Growth Reference Tables)
4. GMP registration books and report forms (HC-1 and HO-2)
5. SBCC materials such as posters, flipcharts, pamphlets, and flyers for counseling on child growth or home visit tools
6. Age calculation sheet, other documents such as BFCI flipchart, weight-for-age table, and length-for-age table (for outreach), GMP Registration Books, referral forms, GMP Guidelines and other relevant guidelines prepared by MOH

Annexes:

Annex 1. List of Steering Committee Members Who Contributed to the Development of the GMP interim guideline for Children under 5

NAME	TITLE AND ORGANIZASION	ROLE IN THE COMMITTEE
H.E. Dr. Prak Sophonneary	Secretary of State of MoH	Deputy director CNP
Dr. Kim Rattana	NMCHC Director	Project manager
Dr. Chea Mary	NNP Manager	Chair
Dr. Phim Loan	MPA 10 Coordinator, NNP	Member
Mr. Hou Kroeun	Deputy Director, Helen Keller International (HKI)	Member
Ms. Ly Sokhoing	Program Manager, Helen Keller International (HKI)	Member
Mr. UN Sam Oeurn	Nutrition Officer, UNICEF	Member
Ms. Selamawit Negas	Nutrition Specialist, UNICEF	Member
Ms. Anne Marie Provo	Nutrition Specialist, World Bank	Member
Dr. Sao Sovanratnak	Health Analyst, World Bank	Member
Assistant Prof. Phal Sano	National Professional Officer (NPO), WHO	Member
Mr. Hun Vannary	Technical Program Lead, WVI	Member
Ms. Chan Theary	Executive Director, RACHA	Member
Dr. Kreal Dara	Health and Nutrition Coordinator, GIZ	Member
Ms. Mieko Morgan	Country Representative, SHARE	Member
Ms. Jennifer Cashin	Regional Technical Specialist, Alive and Thrive.	Member

Annex 2. Procedures in measuring weight, length, height, MUAC and edema

1. Weighing children using UNI scale

a. Measuring the weight of children under 2 years' old

If the child is less than 2 years old, conduct tare weighing.

1. Turn on the scale by momentarily covering the solar panel. When the number 0.0 appears, the scale is ready.
2. Have someone undress and hold the baby including diaper and any jewelry, and ask the mother to remove her shoes and step on the scale alone.
3. Ask the mother to stand in the middle of the scale, feet slightly apart (on the footprints, if marked), and to remain still. The mother's clothing must not cover the display or the solar panel. Remind her to remain on the scale even after her weight appears, until the baby has been weighed in her arms.
4. With the mother still on the scale and her weight displayed, tare the scale by covering the solar panel for a second. The scale is tared when it displays the number 0.0.
5. Hand the undressed baby to the mother and ask her to remain still.
6. The baby's weight will then appear on the display. Record this weight.

Figure 1. Measuring weight of children less than 2 years' old
Source: MOH, 2018

b. Measuring the weight of children 2-5 years' old

If the child is 2 years or older and will stand still, weigh the child alone.

1. Ask the mother to help the child remove shoes, outer clothing and any heavy items such as jewelry. Talk with the child about the need to stand still.
2. To turn on the scale, cover the solar panel for a second. When the number 0.0 appears, the scale is ready.
3. Ask the child to stand in the middle of the scale, feet slightly apart (on the footprints, if marked), and to remain still until the weight appears on the display. Record the child's weight.

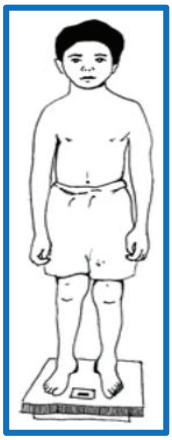


Figure 2. Measuring weight of children 2 years or older
Source: WHO, 2008

2. Hanging weight scale

1. **Before weighing a child, complete the following:**
   - Hang the scale securely and firmly, ensuring it is at eye level.
   - Hang the weighing bag, pants or other apparatus to the hook of the scale.
   - Check if the needle points to zero. If not, adjust so it is.
   - Make sure the dial is at eye level so that the weight is read correctly, but that it is also not too high off the ground to avoid injury to the child in case of accidental fall.

Figure 3. Example of a hanging weight scale (from HC)

2. **When weighing a child:**
   - Before beginning the weighing session, check accuracy of the scale using a known standard weight to avoid errors in weighing.
   - Ensure the child is wearing minimum clothing before weighing.
   - Sit or lay the child in the basket.
   - Read the weight of the child when the dial is stable. Record the child's weight.

3. Measuring length using length board

If a child is less than 2 years old or less than 87cm in length, measure their length lying down (recumbent).

1. Cover the length board with a clean, thin cloth or soft paper for hygiene and for the baby's comfort.
2. Explain to the mother/caregiver that they will need to place the baby on the length board and then help to hold the baby's head in place while you take the measurement. Show them where to stand when placing the baby down, i.e. kneeling opposite you, on the side of the length board away from the tape. Also show them where to hold the baby's head (against the fixed headboard).

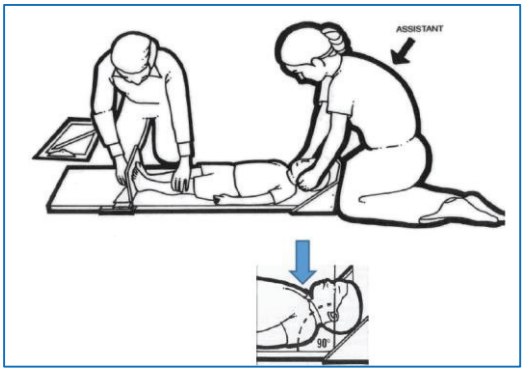


Figure 4. Measuring recumbent length
Source: MOH, 2018

3. Ask the mother/caregiver to lay the child on their back with their head against the fixed headboard.
4. Position the head so that an imaginary vertical line can be seen from the ear canal to the lower border of the eye socket and is perpendicular to the board. The child's eyes should be looking straight up.
5. Stand on the side of the length board where you can see the measuring tape and move the footboard:
   - Check that the child is lying straight along the board and has not changed position. Shoulders should touch the board and the spine should not be arched. Ask the

mother/caregiver to inform you if the child arches their back or moves out of position.

- Hold the child's legs down with one hand and move the footboard with the other. Apply gentle pressure to the knees to straighten the legs as far as possible without causing injury. *Note: it is not possible to straighten the knees of newborns to the same degree as older children. Their knees are fragile and could be injured easily, so apply minimal pressure. If a child is extremely agitated and both legs cannot be held in position, measure with one leg in position.*
- While holding the knees, pull the footboard against the child's feet. The soles of the feet should be flat against the footboard with the toes pointing upwards. If the child bends their toes and prevents the footboard from touching the soles, scratch the soles of their feet slightly and slide the footboard in quickly when the child straightens their toes.
- Read the measurement and record the child's length in centimeters in the Yellow Card and GMP Registration Book.
- If the child is 2 years old or more, and being measured in the recumbent position, subtract 0.7 cm from the length and record the result as height in the Yellow Card and GMP Registration Book.

4. Measuring height

If the child is aged 2 years or older or more than 87cm in length measure their standing height. Use a height board mounted at a right angle against a level floor and a straight, vertical surface such as a wall or pillar.

1. **Check that shoes, socks and hair ornaments have been removed.**
2. **Kneel down in order to be on the same level as the child:**
    - Help the child to stand on the baseboard with feet slightly apart. The back of the head, shoulder blades, buttocks, calves, and heels should all touch the vertical board.
    - Ask someone to assist with holding the child's knees and ankles to help keep their legs straight and feet flat, with heels and calves touching the vertical board.
    - Position the child's head so that a horizontal line that runs parallel to the baseboard can be visualized from the ear canal to the lower border of the eye socket runs. To keep the head in this position, hold the bridge between your thumb and forefinger over the child's chin.
    - If necessary, push gently on the tummy to help the child stand to full height.
    - Still keeping the head in position use your other hand to pull the headboard down to compress the hair and rest firmly on top of the child's head.
    - Read the measurement and record the child's height in centimeters in the Yellow Card and GMP Registration Book.

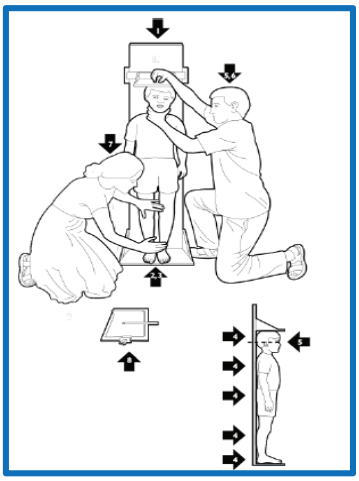


Figure 5. Measuring standing height
Source: MOH, 2018

- If the child is less than 2 years old, add 0.7cm to the height and record the result as length in the Yellow Card and GMP Registration Book.

5. Measuring Mid-Upper Arm Circumference (MUAC)

Below are the steps to be taken in measuring MUAC.

1. Touch the skull on the left arm according to the child put his hands down parallel to his body.
2. Find the tip of the shoulder.
3. Find the elbow.
4. Place the end of the tape on the tip of the shoulder.
5. Pull the tape out to the elbow.
6. Mark the mid-way point between the shoulder and elbow with a pen.
7. Wrap the MUAC tape around the arm at the midpoint.
8. Do not wrap the tape too tight.
9. Do not wrap the tape too lightly.
10. Read the measurement in the window of the tape measure

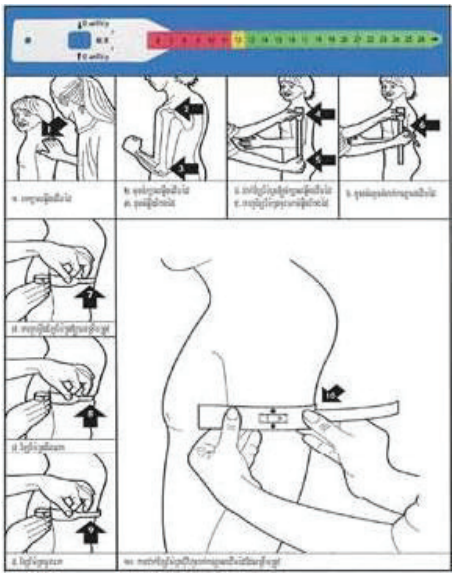


Figure 6. Measuring MUAC
Source: MOH, 2018

1. Determining edema

Bilateral pitting edema always occurs in both feet. Edema in only one foot is not of nutritional origin. Edema can be measured by holding the child's feet and pressing the thumbs on the top of both feet simultaneously. Count for 3 seconds (101, 102, and 103) and lift the thumbs from the feet. If a mark is left in both feet, the child has edema.

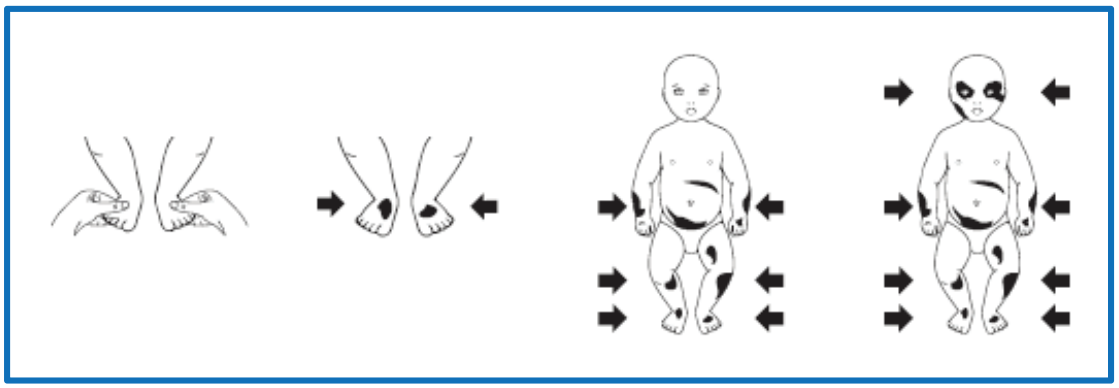
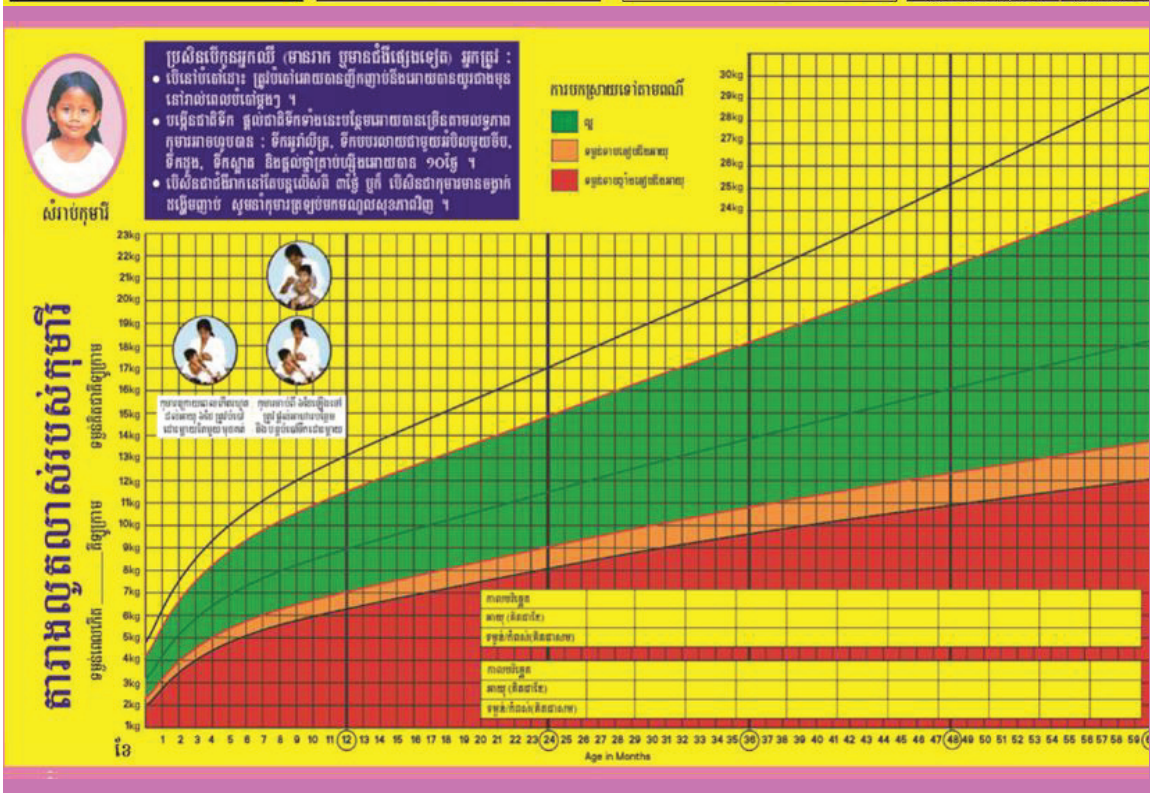


Figure 7. Determining edema
Source: MOH, 2018

Annex 3. Child health cards for boys

3a. Child health cards for boys

3b. Child health cards for girls



Annex 4. WHO growth problems

- Measurements in the shaded boxes are in the normal range. In general, a plotted point that is far from the median in either direction (for example, close to the 3 or -3 z-score line) may represent a growth problem.
- If the indicator is plotted exactly on the z-score line, it is considered in the less severe category. For example, weight-for-age on the -3 line is considered 'underweight' as opposed to 'severely underweight'.
- Measurements in the shaded boxes are in the normal range.

Growth problems (WHO, 2008)

Z-score	Growth indicators		
	Length/height-for-age	**Weight-for-age**	**Weight-for-length/height**
Above 3	See note 1	See note 2	Obese
Above 2			Overweight
Above 1			Possible risk of overweight (see note 3)
Median			
Below -1			
Below -2	Stunted (see note 4)	Underweight	Wasted
Below -3	Severely stunted (see note 4)	Severely underweight (see note 5)	Severely wasted

Source World Health Organization. Training Course on Child Growth Assessment. Geneva, WHO, 2008.

In using the above table to identify growth problems, take note of the following as indicated in the table:

Note 1. A child in this range is very tall. Tallness is rarely a problem, unless it is so excessive that it may indicate an endocrine disorder such as a growth-hormone-producing tumor. Refer a child in this range for assessment if you suspect an endocrine disorder (e.g., if parents of normal height have a child who is excessively tall for his or her age).

Note 2. A child whose weight-for-age falls in this range may have a growth problem, but this is better assessed from weight-for-length/height or BMI-for-age.

Note 3. A plotted point above 1 shows possible risk. A trend towards the 2 z-score line shows definite risk.

Note 4. It is possible for a stunted or severely stunted child to become overweight.

Note 5. This is referred to as very low weight in IMCI training modules (Integrated Management of Childhood Illness, In-service training. WHO, Geneva, 1997).

Annex 5. Child Growth Chart Interpretation

GROWTH CHART FOR WEIGHT-FOR-AGE

1. If the child's weight is within the **GREEN** track the growth chart, the child is of a normal weight-for-age. Praise the mother/caregiver for their good child-care practices and give advice about appropriate feeding practices for the child's upcoming age group.

2. If the weight is in the **ORANGE** track of the growth chart, the child has weight-for-age of ≤-2SD (moderate underweight). Inform the mother/caregiver that the child is underweight. Investigate the possible causes. Follow the IMCI protocol for treatment and provide growth promotion messages:

    a. Find out if the child is currently ill and if this is the result of recurrent illnesses – treat as per IMCI guidelines and advise the mother/caregiver to feed during and after illness.
    b. If the child is not currently ill, discuss with the mother/caregiver to identify possible causes of underweight in an interactive and constructive way, e.g., ask about breastfeeding status and any recent changes in breastfeeding or eating, and discuss age-specific questions about the child's feeding, the child's appetite, types and variety of foods given (snacks and sweetened beverages), frequency of feeding and family meal time habits.
    c. Assess possible underlying social and environmental causes, including sanitation and hygiene practices. In breastfed children consider the health and nutritional status of the mother. If the child is not with their mother, ask the caregiver about the mother's health.
    d. Promote vitamin A, iron and iodine rich foods and give age-appropriate complementary feeding advice.
    e. Counsel and support the mother/caregiver to set goals to improve feeding behaviors, to be achieved by the next follow up visit.

3. If the child's weight is in the **RED** track of the growth chart, the child has weight-for-age of ≤-3SD (severe underweight). Severe underweight triggers the implementation of the SAM Guidelines. Explain the condition of the child to the mother/caregiver. Use the child's length/height measurement to calculate the weight-for-length/height standard deviation.
    a. If WHZ <-3SD, follow SAM Guidelines for identification of SAM and referral.
    b. If WHZ is between <-2SD and -3SD, take MUAC.
        i. If MUAC is <11.5cm **(RED)**, meaning that the child is suffering SAM, follow SAM Guidelines for identification and referral of SAM.
        ii. If MUAC is ≥11.5cm and <12.5cm **(YELLOW)**, the child suffers moderate acute malnutrition and SAM Guidelines must be followed (Moderate Acute Malnutrition, then provide counseling on nutrition and IYCF: SAM POCKET BOOK FOR HC).

Annex 6. Examples of Interpreting Growth Trends

1. There is a sharp incline or decline in the child's growth line (Figure 1).

    - If a child has been ill or severely undernourished, a sharp incline is expected during the refeeding period as the child experiences 'catch-up' growth. Otherwise, a sharp incline is not good as it may signal a change in feeding practices that will result in overweight.
    - A sharp decline in the growth line of a normal or undernourished child indicates a growth problem to be investigated and remedied.

2. A child growth line crosses a z-score line, +2SD or -2SD. It indicates possible risk. Figure 2 shows two lines. The first line generally tracks along 2 z-scores, crossing the line from time to time in a pattern that indicates no risk. The other line shows a boy's weight falling away from his expected growth track. Although his growth line remains between -1 and -2 z-score, this child has in fact crossed z-scores following a systematic trend that indicates risk. If the trend in the lower growth line continues, it will soon cross the cut-off line (-2 z-score) that defines underweight. It is important to notice trends towards stunting, overweight or underweight so that interventions can be implemented in good time to prevent a problem.

3. The child's growth line remaining flat indicates a problem (Figure 3). If a child's weight stays the same over time as age increases, the child most likely has a growth problem.

4. Figure 4 is an example of a weight gain trend.

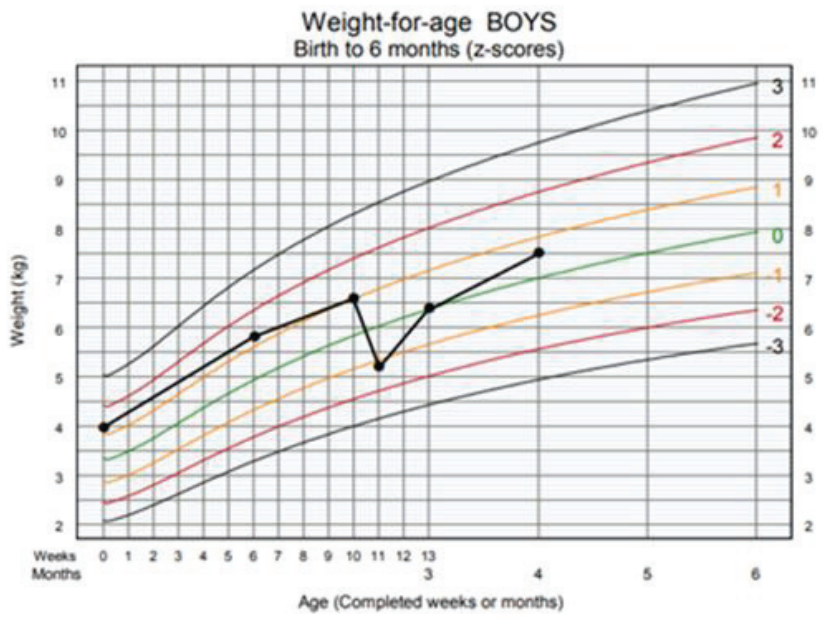


Figure 1. Example of growth trend - sharp incline or decline

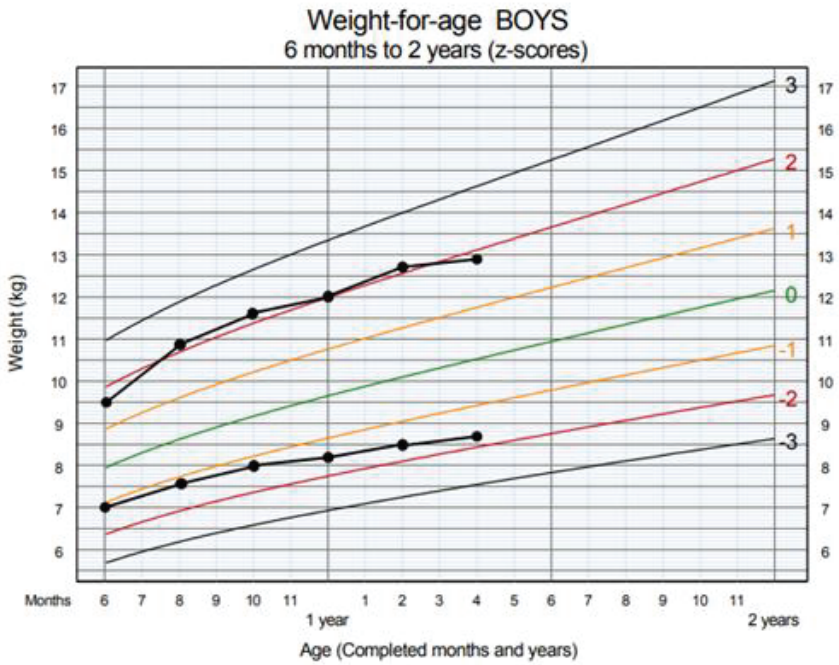


Figure 2. Example of growth trend - crossing z-score lines

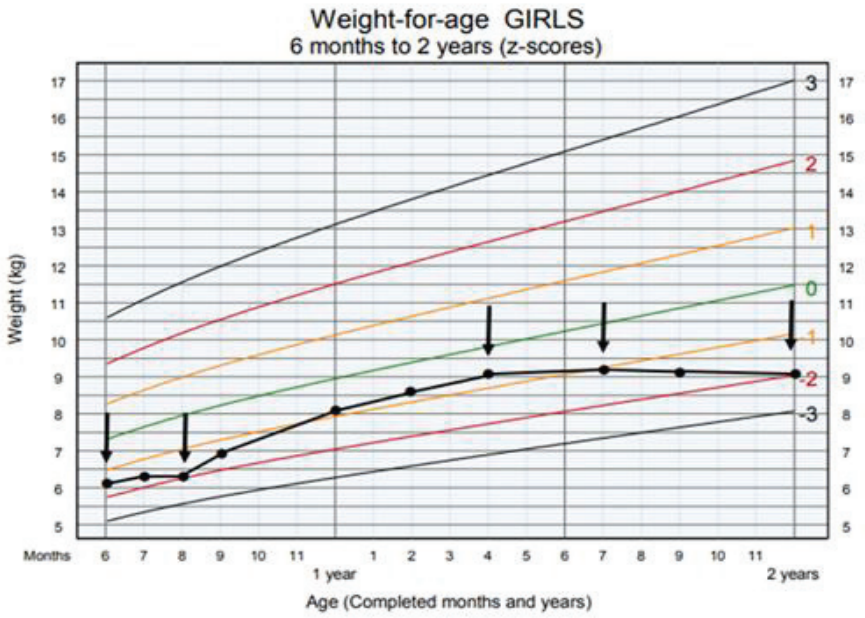


Figure 3. Example of growth trends - flat/stagnant

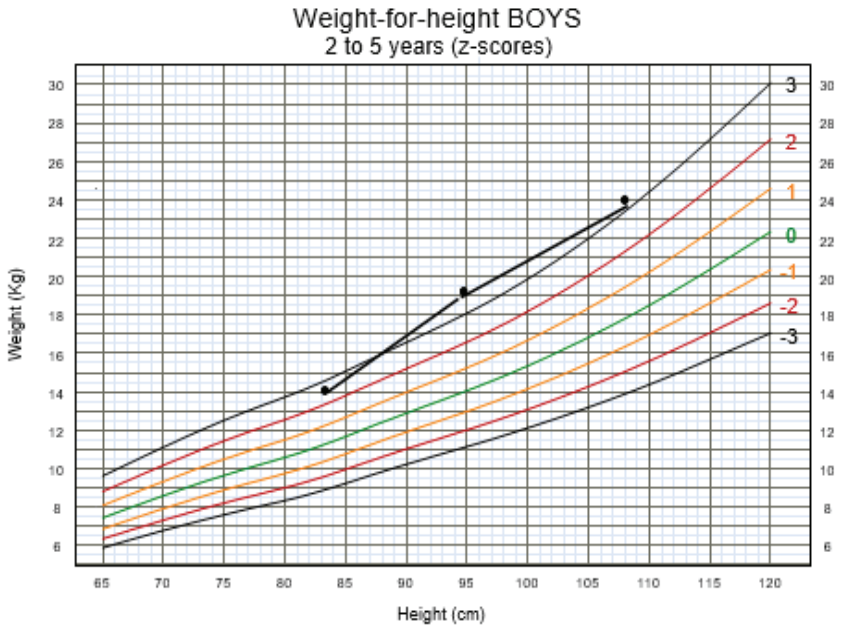


Figure 4. Example of growth trends – overweight/obese

Source: WHO, 2008.

Annex 7. Child growth standard tables, 0-60 months

A. WEIGHT-FOR-AGE

How to use the weight-for-age table?

- In the weight-for-age table, look for the point where the child's age in months intersects with the actual weight of the child, use the appropriate table that is for boy or girl.
- Assess the nutritional status of the child using the suggested cut-off points for normality.

How to interpret results using the weight-for-age table

Each age under the first column of the weight-for-age table has a corresponding ±2SD (plus or minus 2 standard deviation) values in the succeeding columns for both sexes. The ±2SD values represent the minimum and maximum "boundaries" for the measurement of the child to be classified as within the acceptable limits of normality. Thus, if the weight of the child is less than the -2SD value, the child is considered underweight for his/her age. The nutritional status of children using the weight-for-age indicator is classified into:

a. **Normal** has a ±2SD (plus or minus 2 standard deviation) value, meaning the child's weight is within the normal limits.
b. **Underweight** has a <-2SD (less than minus 2 standard deviation) value, meaning the child's weight is lower or below the normal weight for his/her age.
c. **Severely Underweight** has a <-3SD (less than minus 3 standard deviation) value, meaning the child's weight is very much lower than normal for his/her age.

Annex 8. Weight-for-age and length/height for age for boys and girls, 0-60 months (birth to 5 years)

Table 4. Child growth standards table, weight-for-age, boys

Age (months)	Severely Under-weight	Moderately Underweight		Normal	
		From	To	From	To
	<-3SD	-3SD	<-2SD	-2SD	+2SD
0	2.1	2.2	2.4	2.5	4.4
1	2.9	3.0	3.3	3.4	5.8
2	3.8	3.9	4.2	4.3	7.1
3	4.4	4.5	4.9	5.0	8.0
4	4.9	5.0	5.5	5.6	8.7
5	5.3	5.4	5.9	6.0	9.3
6	5.7	5.8	6.3	6.4	9.8
7	5.9	6.0	6.6	6.7	10.3
8	6.2	6.3	6.8	6.9	10.7
9	6.4	6.5	7.0	7.1	11.0
10	6.6	6.7	7.3	7.4	11.4
11	6.8	6.9	7.5	7.6	11.7
12	6.9	7.0	7.6	7.7	12.0
13	7.1	7.2	7.8	7.9	12.3
14	7.2	7.3	8.0	8.1	12.6
15	7.4	7.5	8.2	8.3	12.8
16	7.5	7.6	8.3	8.4	13.1
17	7.7	7.8	8.5	8.6	13.4
18	7.8	7.9	8.7	8.8	13.7
19	8.0	8.1	8.8	8.9	13.9
20	8.1	8.2	9.0	9.1	14.2
21	8.2	8.3	9.1	9.2	14.5
22	8.4	8.5	9.3	9.4	14.7
23	8.5	8.6	9.4	9.5	15.0
24	8.6	8.7	9.6	9.7	15.3
25	8.8	8.9	9.7	9.8	15.5
26	8.9	9.0	9.9	10.0	15.8
27	9.0	9.1	10.0	10.1	16.1
28	9.1	9.2	10.1	10.2	16.3
29	9.2	9.3	10.3	10.4	16.6
30	9.4	9.5	10.4	10.5	16.9

Age (months)	Severely Under-weight	Moderately Underweight		Normal	
		From	To	From	To
	<-3SD	-3SD	<-2SD	-2SD	+2SD
31	9.5	9.6	10.6	10.7	17.1
32	9.6	9.7	10.7	10.8	17.4
33	9.7	9.8	10.8	10.9	17.6
34	9.8	9.9	10.9	11.0	17.8
35	9.9	10.0	11.1	11.2	18.1
36	10.0	10.1	11.2	11.3	18.3
37	10.1	10.2	11.3	11.4	18.6
38	10.2	10.3	11.4	11.5	18.8
39	10.3	10.4	11.5	11.6	19.0
40	10.4	10.5	11.7	11.8	19.3
41	10.5	10.6	11.8	11.9	19.5
42	10.6	10.7	11.9	12.0	19.7
43	10.7	10.8	12.0	12.1	20.0
44	10.8	10.9	12.1	12.2	20.2
45	10.9	11.0	12.3	12.4	20.5
46	11.0	11.1	12.4	12.5	20.7
47	11.1	11.2	12.5	12.6	20.9
48	11.2	11.3	12.6	12.7	21.2
49	11.3	11.4	12.7	12.8	21.4
50	11.4	11.5	12.8	12.9	21.7
51	11.5	11.6	13.0	13.1	21.9
52	11.6	11.7	13.1	13.2	22.2
53	11.7	11.8	13.2	13.3	22.4
54	11.8	11.9	13.3	13.4	22.7
55	11.9	12.0	13.4	13.5	22.9
56	12.0	12.1	13.5	13.6	23.2
57	12.1	12.2	13.6	13.7	23.4
58	12.2	12.3	13.7	13.8	23.7
59	12.3	12.4	13.9	14.0	23.9
60	12.4	12.5	14.0	14.1	24.2

Source: WHO Child Growth Standards, Methods and Development, 2006

Table 5. Child growth standards table, weight-for-age, girls

Age (months)	Severely Under-weight	Moderately Underweight		Normal	
		From	To	From	To
	<-3SD	-3SD	<-2SD	-2SD	+2SD
0	2.0	2.1	2.3	2.4	4.2
1	2.7	2.8	3.1	3.2	5.5
2	3.4	3.5	3.8	3.9	6.6
3	4.0	4.1	4.4	4.5	7.5
4	4.4	4.5	4.9	5.0	8.2
5	4.8	4.9	5.3	5.4	8.8
6	5.1	5.2	5.6	5.7	9.3
7	5.3	5.4	5.9	6.0	9.8
8	5.6	5.7	6.2	6.3	10.2
9	5.8	5.9	6.4	6.5	10.5
10	5.9	6.0	6.6	6.7	10.9
11	6.1	6.2	6.8	6.9	11.2
12	6.3	6.4	6.9	7.0	11.5
13	6.4	6.5	7.1	7.2	11.8
14	6.6	6.7	7.3	7.4	12.1
15	6.7	6.8	7.5	7.6	12.4
16	6.9	7.0	7.6	7.7	12.6
17	7.0	7.1	7.8	7.9	12.9
18	7.2	7.3	8.0	8.1	13.2
19	7.3	7.4	8.1	8.2	13.5
20	7.5	7.6	8.3	8.4	13.7
21	7.6	7.7	8.5	8.6	14.0
22	7.8	7.9	8.6	8.7	14.3
23	7.9	8.0	8.8	8.9	14.6
24	8.1	8.2	8.9	9.0	14.8
25	8.2	8.3	9.1	9.2	15.1
26	8.4	8.5	9.3	9.4	15.4
27	8.5	8.6	9.4	9.5	15.7
28	8.6	8.7	9.6	9,7	16.0
29	8.8	8.9	9.7	9.8	16.2
30	8.9	9.0	9.9	10.0	16.5

Age (months)	Severely Under-weight	Moderately Underweight		Normal	
		From	To	From	To
	<-3SD	-3SD	<-2SD	-2SD	+2SD
31	9.0	9.1	10.0	10.1	16.8
32	9.1	9.2	10.2	10.3	17.1
33	9.3	9.4	10.3	10.4	17.3
34	9,4	9.5	10.4	10.5	17.6
35	9.5	9.6	10.6	10.7	17.9
36	9.6	9.7	10.7	10.8	18.1
37	9.7	9.8	10.8	10.9	18.4
38	9.8	9.9	11.0	11.1	18.7
39	9.9	10.0	11.1	11.2	19.0
40	10.1	10.2	11.2	11.3	19.2
41	10.2	10.3	11.4	11.5	19.5
42	10.3	10.4	11.5	11.6	19.8
43	10.4	10.5	11.6	11.7	20.1
44	10.5	10.6	11.7	11.8	20.4
45	10.6	10.7	11.9	12.0	20.7
46	10.7	10.8	12.0	12.1	20.9
47	10.8	10.9	12.1	12.2	21.2
48	10.9	11.0	12.2	12.3	21.5
49	11.0	11.1	12.3	12.4	21.8
50	11.1	11.2	12.4	12.5	22.1
51	11.2	11.3	12.6	12.7	22.4
52	11.3	11.4	12.7	12.8	22.6
53	11.4	11.5	12.8	12.9	22.9
54	11.5	11.6	12.9	13.0	23.2
55	11.6	11.7	13.1	13.2	23.5
56	11.7	11.8	13.2	13.3	23.8
57	11.8	11.9	13.3	13.4	24.1
58	11.9	12.0	13.4	13.5	24.4
59	12.0	12.1	13.5	13.6	24.6
60	12.1	12.2	13.6	13.7	24.7

Source: WHO Child Growth Standards, Methods and Development, 2006

B. WEIGHT-FOR-LENGTH/HEIGHT

How to use the weight-for-length/height table?

- In the weight-for-length/height table, look for the point where the child's actual length/height intersects with the actual weight of the child, use the appropriate table that is for boy or girl.
- Assess the nutritional status of the child using the suggested cut-off points for normality.

How to interpret the weight-for-length/height table?

Each length/height under the first column of the weight-for-length/height table has a corresponding ±2SD (plus or minus 2 standard deviation) values in the succeeding columns for both sexes. The ±2SD values represent the minimum and maximum "boundaries" for the measurement of the child to be classified as within the acceptable limits of normality. Thus, if the weight-for-length/height of the child is less than the -2SD value, the child is wasted/thin. However, if the weight-for-length/height of the child falls above the +2SD value, the child is overweight.

The nutritional status of children using the weight-for-length/height indicator is classified into:

a. **Normal** has a ±2SD (plus or minus 2 standard deviation) value, meaning the child's body weight in proportion to length/height is within the normal limits compared to the standard for children his/her weight-for-length/height.
b. **Wasted/Thin** has a < -2SD (less than minus 2 standard deviation) value, meaning the child's body weight in proportion to length/height is low relative to the standard weight-for-length/height.
c. **Severely wasted/thin** has a <-3SD (less than minus 3 standard deviation) value, meaning the child's body weight in proportion to length/height is very low relative to his/her weight-for-length/height.
d. **Overweight** has a > +2SD (more than plus 2 standard deviation) value, meaning the child's body weight in proportion to length is high relative to the standard weight-for-length/height.
e. **Obese** has a > +3SD (more than plus 3 standard deviation) value, meaning the child's body weight in proportion to length/height is very high relative to the normal weight-for-length/height. Note: Obesity is more appropriately determined using weight-for-length/height data.

Table 6. Child growth standards table, weight-for-length, boys

Length (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
45.0	1.8	1.9	1.9	2.0	3.0	3.1	3.3	3.4
45.5	1.8	1.9	2.0	2.1	3.1	3.2	3.4	3.5
46.0	1.9	2.0	2.1	2.2	3.1	3.2	3.5	3.6
46.5	2.0	2.1	2.2	2.3	3.2	3.3	3.6	3.7
47.0	2.0	2.1	2.2	2.3	3.3	3.4	3.7	3.8
47.5	2.1	2.2	2.3	2.4	3.4	3.5	3.8	3.9
48.0	2.2	2.3	2.4	2.5	3.6	3.7	3.9	4.0
48.5	2.2	2.3	2.5	2.6	3.7	3.8	4.0	4.1
49.0	2.3	2.4	2.5	2.6	3.8	3.9	4.2	4.3
49.5	2.4	2.5	2.6	2.7	3.9	4.0	4.3	4.4
50.0	2.5	2.6	2.7	2.8	4.0	4.1	4.4	4.5
50.5	2.6	2.7	2.8	2.9	4.1	4.2	4.5	4.6
51.0	2.6	2.7	2.9	3.0	4.2	4.3	4.7	4.8
51.5	2.7	2.8	3.0	3.1	4.4	4.5	4.8	4.9
52.0	2.8	2.9	3.1	3.2	4.5	4.6	5.0	5.1
52.5	2.9	3.0	3.2	3.3	4.6	4.7	5.1	5.2
53.0	3.0	3.1	3.3	3.4	4.8	4.9	5.3	5.4
53.5	3.1	3.2	3.4	3.5	4.9	5.0	5.4	5.5
54.0	3.2	3.3	3.5	3.6	5.1	5.2	5.6	5.7
54.5	3.3	3.4	3.6	3.7	5.3	5.4	5.8	5.9
55.0	3.5	3.6	3.7	3.8	5.4	5.5	6.0	6.1
55.5	3.6	3.7	3.9	4.0	5.6	5.7	6.1	6.2
56.0	3.7	3.8	4.0	4.1	5.8	5.9	6.3	6.4
56.5	3.8	3.9	4.1	4.2	5.9	6.0	6.5	6.6
57.0	3.9	4.0	4.2	4.3	6.1	6.2	6.7	6.8
57.5	4.0	4.1	4.4	4.5	6.3	6.4	6.9	7.0
58.0	4.2	4.3	4.5	4.6	6.4	6.5	7.1	7.2
58.5	4.3	4.4	4.6	4.7	6.6	6.7	7.2	7.3
59.0	4.4	4.5	4.7	4.8	6.8	6.9	7.4	7.5
59.5	4.5	4.6	4.9	5.0	7.0	7.1	7.6	7.7
60.0	4.6	4.7	5.0	5.1	7.1	7.2	7.8	7.9
60.5	4.7	4.8	5.1	5.2	7.3	7.4	8.0	8.1
61.0	4.8	4.9	5.2	5.3	7.4	7.5	8.1	8.2
61.5	4.9	5.0	5.3	5.4	7.6	7.7	8.3	8.4
62.0	5.0	5.1	5.5	5.6	7.7	7.8	8.5	8.6
62.5	5.1	5.2	5.6	5.7	7.9	8.0	8.6	8.7
63.0	5.2	5.3	5.7	5.8	8.0	8.1	8.8	8.9

Length (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
78.0	7.8	7.9	8.5	8.6	12.0	12.1	13.1	13.2
78.5	7.9	8.0	8.6	8.7	12.1	12.2	13.2	13.3
79.0	8.0	8.1	8.6	8.7	12.2	12.3	13.3	13.4
79.5	8.1	8.2	8.7	8.8	12.3	12.4	13.4	13.5
80.0	8.1	8.2	8.8	8.9	12.4	12.5	13.6	13.7
80.5	8.2	8.3	8.9	9.0	12.5	12.6	13.7	13.8
81.0	8.3	8.4	9.0	9.1	12.6	12.7	13.8	13.9
81.5	8.4	8.5	9.0	9.1	12.7	12.8	13.9	14.0
82.0	8.4	8.5	9.1	9.2	12.8	12.9	14.0	14.1
82.5	8.5	8.6	9.2	9.3	13.0	13.1	14.2	14.3
83.0	8.6	8.7	9.3	9.4	13.1	13.2	14.3	14.4
83.5	8.7	8.8	9.4	9.5	13.2	13.3	14.4	14.5
84.0	8.8	8.9	9.5	9.6	13.3	13.4	14.6	14.7
84.5	8.9	9.0	9.6	9.7	13.5	13.6	14.7	14.8
85.0	9.0	9.1	9.7	9.8	13.6	13.7	14.9	15.0
85.5	9.1	9.2	9.8	9.9	13.7	13.8	15.0	15.1
86.0	9.2	9.3	9.9	10.0	13.9	14.0	15.2	15.3
86.5	9.3	9.4	10.0	10.1	14.0	14.1	15.3	15.4
87.0	9.4	9.5	10.1	10.2	14.2	14.3	15.5	15.6
87.5	9.5	9.6	10.3	10.4	14.3	14.4	15.6	15.7
88.0	9.6	9.7	10.4	10.5	14.5	14.6	15.8	15.9
88.5	9.7	9.8	10.5	10.6	14.6	14.7	15.9	16.0
89.0	9.8	9.9	10.6	10.7	14.7	14.8	16.1	16.2
89.5	9.9	10.0	10.7	10.8	14.9	15.0	16.2	16.3
90.0	10.0	10.1	10.8	10.9	15.0	15.1	16.4	16.5
90.5	10.1	10.2	10.9	11.0	15.1	15.2	16.5	16.6
91.0	10.2	10.3	11.0	11.1	15.3	15.4	16.7	16.8
91.5	10.3	10.4	11.1	11.2	15.4	15.5	16.8	16.9
92.0	10.4	10.5	11.2	11.3	15.6	15.7	17.0	17.1
92.5	10.5	10.6	11.3	11.4	15.7	15.8	17.1	17.2
93.0	10.6	10.7	11.4	11.5	15.8	15.9	17.3	17.4
93.5	10.6	10.7	11.5	11.6	16.0	16.1	17.4	17.5
94.0	10.7	10.8	11.6	11.7	16.1	16.2	17.6	17.7
94.5	10.8	10.9	11.7	11.8	16.3	16.4	17.7	17.8
95.0	10.9	11.0	11.8	11.9	16.4	16.5	17.9	18.0
95.5	11.0	11.1	11.9	12.0	16.5	16.6	18.0	18.1
96.0	11.1	11.2	12.0	12.1	16.7	16.8	18.2	18.3

Length (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
63.5	5.3	5.4	5.8	5.9	8.2	8.3	8.9	9.0
64.0	5.4	5.5	5.9	6.0	8.3	8.4	9.1	9.2
64.5	5.5	5.6	6.0	6.1	8.5	8.6	9.3	9.4
65.0	5.6	5.7	6.1	6.2	8.6	8.7	9.4	9.5
65.5	5.7	5.8	6.2	6.3	8.7	8.8	9.6	9.7
66.0	5.8	5.9	6.3	6.4	8.9	9.0	9.7	9.8
66.5	5.9	6.0	6.4	6.5	9.0	9.1	9.9	10.0
67.0	6.0	6.1	6.5	6.6	9.2	9.3	10.0	10.1
67.5	6.1	6.2	6.6	6.7	9.3	9.4	10.2	10.3
68.0	6.2	6.3	6.7	6.8	9.4	9.5	10.3	10.4
68.5	6.3	6.4	6.8	6.9	9.6	9.7	10.5	10.6
69.0	6.4	6.5	6.9	7.0	9.7	9.8	10.6	10.7
69.5	6.5	6.6	7.0	7.1	9.8	9.9	10.8	10.9
70.0	6.5	6.6	7.1	7.2	10.0	10.1	10.9	11.0
70.5	6.6	6.7	7.2	7.3	10.1	10.2	11.1	11.2
710	6.7	6.8	7.3	7.4	10.2	10.3	11.2	11.3
71.5	6.8	6.9	7.4	7.5	10.4	10.5	11.3	11.4
72.0	6.9	7.0	7.5	7.6	10.5	10.6	11.5	11.6
72.5	7.0	7.1	7.5	7.6	10.6	10.7	11.6	11.7
73.0	7.1	7.2	7.6	7.7	10.8	10.9	11.8	11.9
73.5	7.1	7.2	7.7	7.8	10.9	11.0	11.9	12.0
74.0	7.2	7.3	7.8	7.9	11.0	11.1	12.1	12.2
74.5	7.3	7.4	7.9	8.0	11.2	11.3	12.2	12.3
75.0	7.4	7.5	8.0	8.1	11.3	11.4	12.3	12.4
75.5	7.5	7.6	8.1	8.2	11.4	11.5	12.5	12.6
76.0	7.5	7.6	8.2	8.3	11.5	11.6	12.6	12.7
76.5	7.6	7.7	8.2	8.3	11.6	11.7	12.7	12.8
77.0	7.7	7.8	8.3	8.4	11.7	11.8	12.8	12.9
77.5	7.8	7.9	8.4	8.5	11.9	12.0	13.0	13.1

Length (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
96.5	11.2	11.3	12.1	12.2	16.8	16.9	18.4	18.5
97.0	11.3	11.4	12.2	12.3	17.0	17.1	18.5	18.6
97.5	11.4	11.5	12.3	12.4	17.1	17.2	18.7	18.8
98.0	11.5	11.6	12.4	12.5	17.3	17.4	18.9	19.0
98.5	11.6	11.7	12.5	12.6	17.5	17.6	19.1	19.2
99.0	11.7	11.8	12.6	12.7	17.6	17.7	19.2	19.3
99.5	11.8	11.9	12.7	12.8	17.8	17.9	19.4	19.5
100.0	11.9	12.0	12.8	12.9	18.0	18.1	19.6	19.7
100.5	12.0	12.1	12.9	13.0	18.1	18.2	19.8	19.9
101.0	12.1	12.2	13.1	13.2	18.3	18.4	20.0	20.1
101.5	12.2	12.3	13.2	13.3	18.5	18.6	20.2	20.3
102.0	12.3	12.4	13.3	13.4	18.7	18.8	20.4	20.5
102.5	12.4	12.5	13.4	13.5	18.8	18.9	20.6	20.7
103.0	12.5	12.6	13.5	13.6	19.0	19.1	20.8	20.9
103.5	12.6	12.7	13.6	13.7	19.2	19.3	21.0	21.1
104.0	12.7	12.8	13.8	13.9	19.4	19.5	21.2	21.3
104.5	12.8	12.9	13.9	14.0	19.6	19.7	21.5	21.6
105.0	12.9	13.0	14.0	14.1	19.8	19.9	21.7	21.8
105.5	13.1	13.2	14.1	14.2	20.0	20.1	21.9	22.0
106.0	13.2	13.3	14.3	14.4	20.2	20.3	22.1	22.2
106.5	13.3	13.4	14.4	14.5	20.4	20.5	22.4	22.5
107.0	13.4	13.5	14.5	14.6	20.6	20.7	22.6	22.7
107.5	13.5	13.6	14.6	14.7	20.8	20.9	22.8	22.9
108.0	13.6	13.7	14.8	14.9	21.0	21.1	23.1	23.2
108.5	13.7	13.8	14.9	15.0	21.2	21.3	23.3	23.4
109.0	13.9	14.0	15.0	15.1	21.4	21.5	23.6	23.7
109.5	14.0	14.1	15.2	15.3	21.7	21.8	23.8	23.9
110.0	14.1	14.2	15.3	15.4	21.9	22.0	24.1	24.2

Source: WHO Child Growth Standards, Methods and Development, 2006

SAM - Severely Acute Malnutrition; also referred to as severely wasted; MAM - Moderately Acute Malnutrition; also referred to as moderately wasted

Table 7. Child growth standards table, weight-for-length, girls

Length(cm)	Weight(kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
45.0	1.8	1.9	2.0	2.1	3.0	3.1	3.3	3.4
45.5	1.9	2.0	2.0	2.1	3.1	3.2	3.4	3.5
46.0	1.9	2.0	2.1	2.2	3.2	3.3	3.5	3.6
46.5	2.0	2.1	2.2	2.3	3.3	3.4	3.6	3.7
47.0	2.1	2.2	2.3	2.4	3.4	3.5	3.7	3.8
47.5	2.1	2.2	2.3	2.4	3.5	3.6	3.8	3.9
48.0	2.2	2.3	2.4	2.5	3.6	3.7	4.0	4.1
48.5	2.3	2.4	2.5	2.6	3.7	3.8	4.1	4.2
49.0	2.3	2.4	2.5	2.6	3.8	3.9	4.2	4.3
49.5	2.4	2.5	2.6	2.7	3.9	4.0	4.3	4.4
50.0	2.5	2.6	2.7	2.8	4.0	4.1	4.5	4.6
50.5	2.6	2.7	2.8	2.9	4.2	4.3	4.6	4.7
51.0	2.7	2.8	2.9	3.0	4.3	4.4	4.8	4.9
51.5	2.7	2.8	3.0	3.1	4.4	4.5	4.9	5.0
52.0	2.8	2.9	3.1	3.2	4.6	4.7	5.1	5.2
52.5	2.9	3.0	3.2	3.3	4.7	4.8	5.2	5.3
53.0	3.0	3.1	3.3	3.4	4.9	5.0	5.4	5.5
53.5	3.1	3.2	3.4	3.5	5.0	5.1	5.5	5.6
54.0	3.2	3.3	3.5	3.6	5.2	5.3	5.7	5.8
54.5	3.3	3.4	3.6	3.7	5.3	5.4	5.9	6.0
55.0	3.4	3.5	3.7	3.8	5.5	5.6	6.1	6.2
55.5	3.5	3.6	3.8	3.9	5.7	5.8	6.3	6.4
56.0	3.6	3.7	3.9	4.0	5.8	5.9	6.4	6.5
56.5	3.7	3.8	4.0	4.1	6.0	6.1	6.6	6.7
57.0	3.8	3.9	4.2	4.3	6.1	6.2	6.8	6.9
57.5	3.9	4.0	4.3	4.4	6.3	6.4	7.0	7.1
58.0	4.0	4.1	4.4	4.5	6.5	6.6	7.1	7.2
58.5	4.1	4.2	4.5	4.6	6.6	6.7	7.3	7.4
59.0	4.2	4.3	4.6	4.7	6.8	6.9	7.5	7.6
59.5	4.3	4.4	4.7	4.8	6.9	7.0	7.7	7.8
60.0	4.4	4.5	4.8	4.9	7.1	7.2	7.8	7.9
60.5	4.5	4.6	4.9	5.0	7.3	7.4	8.0	8.1
61.0	4.6	4.7	5.0	5.1	7.4	7.5	8.2	8.3
61.5	4.7	4.8	5.1	5.2	7.6	7.7	8.4	8.5
62.0	4.8	4.9	5.2	5.3	7.7	7.8	8.5	8.6
62.5	4.9	5.0	5.3	5.4	7.8	7.9	8.7	8.8
63.0	5.0	5.1	5.4	5.5	8.0	8.1	8.8	8.9

Length(cm)	Weight(kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
78.0	7.4	7.5	8.1	8.2	11.7	11.8	12.9	13.0
78.5	7.5	7.6	8.1	8.2	11.8	11.9	13.0	13.1
79.0	7.6	7.7	8.2	8.3	11.9	12.0	13.1	13.2
79.5	7.6	7.7	8.3	8.4	12.0	12.1	13.3	13.4
80.0	7.7	7.8	8.4	8.5	12.1	12.2	13.4	13.5
80.5	7.8	7.9	8.5	8.6	12.3	12.4	13.5	13.6
81.0	7.9	8.0	8.6	8.7	12.4	12.5	13.7	13.8
81.5	8.0	8.1	8.7	8.8	12.5	12.6	13.8	13.9
82.0	8.0	8.1	8.7	8.8	12.6	12.7	13.9	14.0
82.5	8.1	8.2	8.8	8.9	12.8	12.9	14.1	14.2
83.0	8.2	8.3	8.9	9.0	12.9	130	14.2	14.3
83.5	8.3	8.4	9.0	9.1	13.1	13.2	14.4	14.5
84.0	8.4	8.5	9.1	9.2	132	133	14.5	14.6
84.5	8.5	8.6	9.2	9.3	13.3	13.4	14.7	14.8
85.0	8.6	8.7	9.3	9.4	13.5	136	14.9	15.0
85.5	8.7	8.8	9.4	9.5	13.6	13.7	15.0	15.1
86.0	8.8	8.9	9.6	9.7	13.8	13.9	15.2	15.3
86.5	8.9	9.0	9.7	9.8	13.9	14.0	15.4	15.5
87.0	9.0	9.1	9.8	9.9	14.1	14.2	15.5	15.6
87.5	9.1	9.2	9.9	10.0	14.2	14.3	15.7	15.8
88.0	9.2	9.3	10.0	10.1	14.4	14.5	15.9	16.0
88.5	9.3	9.4	10.1	10.2	14.5	14.6	16.0	16.1
89.0	9.4	9.5	10.2	10.3	14.7	14.8	16.2	16.3
89.5	9.5	9.6	10.3	10.4	14.8	14.9	16.4	16.5
90.0	9.6	9.7	10.4	10.5	15.0	15.1	16.5	16.6
90.5	9.7	9.8	10.5	10.6	15.1	15.2	16.7	16.8
91.0	9.8	9.9	10.6	10.7	15.3	15.4	16.9	17.0
91.5	9.9	10.0	10.7	10.8	15.5	15.6	17.0	17.1
92.0	10.0	10.1	10.8	10.9	15.6	15.7	17.2	17.3
92.5	10.0	10.1	10.9	11.0	15.8	15.9	17.4	17.5
93.0	10.1	10.2	11.0	11.1	15.9	16.0	17.5	17.6
93.5	10.2	10.3	11.1	11.2	16.1	16.2	17.7	17.8
94.0	10.3	10.4	11.2	11.3	16.2	16.3	17.9	18.0
94.5	10.4	10.5	11.3	11.4	16.4	16.5	18.0	18.1
95.0	10.5	10.6	11.4	11.5	16.5	16.6	18.2	18.3
95.5	10.6	10.7	11.5	11.6	16.7	16.8	18.4	18.5
96.0	10.7	10.8	11.6	11.7	16.8	16.9	18.6	18.7

Length (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
63.5	5.1	5.2	5.5	5.6	8.1	8.2	9.0	9.1
64.0	5.2	5.3	5.6	5.7	8.3	8.4	9.1	9.2
64.5	5.3	5.4	5.7	5.8	8.4	8.5	9.3	9.4
65.0	5.4	5.5	5.8	5.9	8.6	8.7	9.5	9.6
65.5	5.4	5.5	5.9	6.0	8.7	8.8	9.6	9.7
66.0	5.5	5.6	6.0	6.1	8.8	8.9	9.8	9.9
66.5	5.6	5.7	6.1	6.2	9.0	9.1	9.9	10.0
67.0	5.7	5.8	6.2	6.3	9.1	9.2	10.0	10.1
67.5	5.8	5.9	6.3	6.4	9.2	9.3	10.2	10.3
68.0	5.9	6.0	6.4	6.5	9.4	9.5	10.3	10.4
68.5	6.0	6.1	6.5	6.6	9.5	9.6	10.5	10.6
69.0	6.0	6.1	6.6	6.7	9.6	9.7	10.6	10.7
69.5	6.1	6.2	6.7	6.8	9.7	9.8	10.7	10.8
70.0	6.2	6.3	6.8	6.9	9.9	10.0	10.9	11.0
70.5	6.3	6.4	6.8	6.9	10.0	10.1	11.0	11.1
710	6.4	6.5	6.9	7.0	10.1	10.2	11.1	11.2
71.5	6.4	6.5	7.0	7.1	10.2	10.3	11.3	11.4
72.0	6.5	6.6	7.1	7.2	10.3	10.4	11.4	11.5
72.5	6.6	6.7	7.2	7.3	10.5	10.6	11.5	11.6
73.0	6.7	6.8	7.3	7.4	10.6	10.7	11.7	11.8
73.5	6.8	6.9	7.3	7.4	10.7	10.8	11.8	11.9
74.0	6.8	6.9	7.4	7.5	10.8	10.9	11.9	12.0
74.5	6.9	7.0	7.5	7.6	10.9	11.0	12.0	12.1
75.0	7.0	7.1	7.6	7.7	11.0	11.1	12.2	12.3
75.5	7.0	7.1	7.7	7.8	11.1	11.2	12.3	12.4
76.0	7.1	7.2	7.7	7.8	11.2	11.3	12.4	12.5
76.5	7.2	7.3	7.8	7.9	11.4	11.5	12.5	12.6
770	7.3	7.4	7.9	8.0	11.5	11.6	12.6	12.7
77.5	7.3	7.4	8.0	8.1	11.6	11.7	12.8	12.9

Length (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
96.5	10.8	10.9	11.7	11.8	17.0	17.1	18.7	18.8
97.0	10.9	11.0	11.9	12.0	17.1	17.2	18.9	19.0
97.5	11.0	11.1	12.0	12.1	17.3	17.4	19.1	19.2
98.0	11.1	11.2	12.1	12.2	17.5	17.6	19.3	19.4
98.5	11.2	11.3	12.2	12.3	17.6	17.7	19.5	19.6
99.0	11.3	11.4	12.3	12.4	17.8	17.9	19.6	19.7
99.5	11.4	11.5	12.4	12.5	18.0	18.1	19.8	19.9
100.0	11.5	11.6	12.5	12.6	18.1	18.2	20.0	20.1
100.5	11.6	11.7	12.6	12.7	18.3	18.4	20.2	20.3
101.0	11.7	11.8	12.7	12.8	18.5	18.6	20.4	20.5
101.5	11.8	11.9	12.9	13.0	18.7	18.8	20.6	20.7
102.0	11.9	12.0	13.0	13.1	18.9	19.0	20.8	20.9
102.5	12.0	12.1	13.1	13.2	19.0	19.1	21.0	21.1
103.0	12.2	12.3	13.2	13.3	19.2	19.3	21.3	21.4
103.5	12.3	12.4	13.4	13.5	19.4	19.5	21.5	21.6
104.0	12.4	12.5	13.5	13.6	19.6	19.7	21.7	21.8
104.5	12.5	12.6	13.6	13.7	19.8	19.9	21.9	22.0
105.0	12.6	12.7	13.7	13.8	20.0	20.1	22.2	22.3
105.5	12.7	12.8	13.9	14.0	20.2	20.3	22.4	22.5
106.0	12.9	13.0	14.0	14.1	20.5	20.6	22.6	22.7
106.5	130	13.1	14.2	14.3	20.7	20.8	22.9	23.0
107.0	13.1	13.2	14.3	14.4	20.9	21.0	23.1	23.2
107.5	13.2	13.3	14.4	14.5	21.1	21.2	23.4	23.5
108.0	13.4	135	14.6	14.7	21.3	21.4	23.6	23.7
108.5	13.5	13.6	14.7	14.8	21.6	21.7	23.9	24.0
109.0	136	13.7	14.9	15.0	21.8	21.9	24.2	24.3
109.5	13.8	13.9	15.0	15.1	22.0	22.1	24.4	24.5
110.0	13.9	14.0	15.2	15.3	22.3	22.4	24.7	24.8

Source: WHO Child Growth Standards, Methods and Development, 2006

SAM - Severely Acute Malnutrition; also referred to as severely wasted; MAM - Moderately Acute Malnutrition; also referred to as moderately wasted

Table 8. Child growth standards table1, weight-for-height, boys

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
65.0	5.8	5.9	6.2	6.3	8.8	8.9	9.6	9.7
65.5	5.9	6.0	6.3	6.4	8.9	9.0	9.8	9.9
66.0	6.0	6.1	6.4	6.5	9.1	9.2	9.9	10.0
66.5	6.0	6.1	6.5	6.6	9.2	9.3	10.1	10.2
67.0	6.1	6.2	6.6	6.7	9.4	9 5	10.2	10.3
67.5	6.2	6.3	6.7	6.8	9 5	9.6	10.4	10.5
68.0	6.3	6.4	6.8	6.9	9.6	9.7	10.5	10.6
68.5	6.4	6.5	6.9	7.0	9.8	9.9	10.7	10.8
69.0	6.5	6.6	7.0	7.1	9.9	10.0	10.8	10.9
69.5	6.6	6.7	7.1	7.2	10.0	10.1	11.0	11.1
70.0	6.7	6.8	7.2	7.3	10.2	10.3	11.1	11.2
70.5	6.8	6.9	7.3	7.4	10.3	10.4	11.3	11.4
71.0	6.8	6.9	7.4	7.5	10.4	10.5	11.4	11.5
71.5	6.9	7.0	7.5	7.6	10.6	10.7	11.6	11.7
72.0	7.0	7.1	7.6	7.7	10.7	10.8	11.7	11.8
72.5	7.1	7.2	7.7	7.8	10.8	10.9	11.8	11.9
73.0	7.2	7.3	7.8	7.9	11.0	11.1	12.0	12.1
73.5	7.3	7.4	7.8	7.9	11.1	11.2	12.1	12.2
74.0	7.3	7.4	7.9	8.0	11.2	11.3	12.2	12.3
74.5	7.4	7.5	8.0	8.1	11.3	11.4	12.4	12.5
75.0	7.5	7.6	8.1	8.2	11.4	11.5	12.5	12.6
75.5	7.6	7.7	8.2	8.3	11.6	11.7	12.6	12.7
76.0	7.6	7.7	8.3	8.4	11.7	11.8	12.8	12.9
76.5	7.7	7.8	8.4	8.5	11.8	11.9	12.9	13.0
770	7.8	7.9	8.4	8.5	11.9	12.0	13.0	13.1
77.5	7.9	8.0	8.5	8.6	12.0	12.1	13.1	13.2
78.0	7.9	8.0	8.6	8.7	12.1	12.2	13.3	13.4
78.5	8.0	8.1	8.7	8.8	12.2	12.3	13.4	13.5
79.0	8.1	8.2	8.7	8.8	12.3	12.4	13.5	13.6
79.5	8.2	8.3	8.8	8.9	12.4	12.5	13.6	13.7

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
93.0	10.7	10.8	11.5	11.6	16.0	16.1	17.5	17.6
93.5	10.8	10.9	11.6	11.7	16.2	16.3	17.6	17.7
94.0	10.9	11.0	11.7	11.8	16.3	16.4	17.8	17.9
94.5	11.0	11.1	11.8	11.9	16.5	16.6	17.9	18.0
95.0	11.0	11.1	11.9	12.0	16.6	16.7	18.1	18.2
95.5	11.1	11.2	12.0	12.1	16.7	16.8	18.3	18.4
96.0	11.2	11.3	12.1	12.2	16.9	17.0	18.4	18.5
96.5	11.3	11.4	12.2	12.3	17.0	17.1	18.6	18.7
97.0	11.4	11.5	12.3	12.4	17.2	17.3	18.8	18.9
97.5	11.5	11.6	12.4	12.5	17.4	17.5	18.9	19.0
98.0	11.6	11.7	12.5	12.6	17.5	17.6	19.1	19.2
98.5	11.7	11.8	12.7	12.8	17.7	17.8	19.3	19.4
99.0	11.8	11.9	12.8	12.9	17 9	18.0	19.5	19.6
99.5	11.9	12.0	12.9	13.0	18.0	18.1	19.7	19.8
100.0	12.0	12.1	13.0	13.1	18.2	18.3	19.9	20.0
100.5	12.1	12.2	13.1	13.2	18.4	18.5	20.1	20.2
101.0	12.2	12.3	13.2	13.3	18.5	18.6	20.3	20.4
101.5	12.3	12.4	13.3	13.4	18.7	18.8	20.5	20.6
102.0	12.4	12.5	13.5	13.6	18.9	19.0	20.7	20.8
102.5	12.5	12.6	13.6	13.7	19.1	19.2	20.9	21.0
103.0	12.7	12.8	13.7	13.8	19.3	19.4	21.1	21.2
103.5	12.8	12.9	13.8	13.9	19.5	19.6	21.3	21.4
104.0	12.9	13.0	13.9	14.0	19.7	19.8	21.6	21.7
104.5	13.0	13.1	14.1	14.2	19.9	20.0	21.8	21.9
105.0	13.1	13.2	14.2	14.3	20.1	20.2	22.0	22.1
105.5	13.2	13.3	14.3	14.4	20.3	20.4	22.2	22.3
106.0	13.3	13.4	14.4	14.5	20.5	20.6	22.5	22.6
106.5	13.4	13.5	14.6	14.7	20.7	20.8	22.7	22.8
107.0	13.6	13.7	14.7	14.8	20 9	21.0	22.9	23.0
107.5	13.7	13.8	14.8	14.9	21.1	21.2	23.2	23.3

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
80.0	8.2	8.3	8.9	9.0	12.6	12.7	13.7	13.8
80.5	8.3	8.4	9.0	9.1	12.7	12.8	13.8	13.9
81.0	8.4	8.5	9.1	9.2	12.8	12.9	14.0	14.1
81.5	8.5	8.6	9.2	9.3	12.9	13.0	14.1	14.2
82.0	8.6	8.7	9.2	9.3	13.0	13.1	14.2	14.3
82.5	8.6	8.7	9.3	9.4	13.1	13.2	14.4	14.5
83.0	8.7	8.8	9.4	9.5	13.3	13.4	14.5	14.6
83.5	8.8	8.9	9.5	9.6	13.4	13.5	14.6	14.7
84.0	8.9	9.0	9.6	9.7	13.5	13.6	14.8	14.9
84.5	9.0	9.1	9.8	9.9	13.7	13.8	14.9	15.0
85.0	9.1	9.2	9.9	10.0	13.8	13.9	15.1	15.2
85.5	9.2	9.3	10.0	10.1	13.9	14.0	15.2	15.3
86.0	9.3	9.4	10.1	10.2	14.1	14.2	15.4	15.5
86.5	9.4	9.5	10.2	10.3	14.2	14.3	15.5	15.6
87.0	9.5	9.6	10.3	10.4	14.4	14.5	15.7	15.8
87.5	9.6	9.7	10.4	10.5	14.5	14.6	15.8	15.9
88.0	9.7	9.8	10.5	10.6	14.7	14.8	16.0	16.1
88.5	9.8	9.9	10.6	10.7	14.8	14.9	16.1	16.2
89.0	9.9	10.0	10.7	10.8	14.9	15.0	16.3	16.4
89.5	10.0	10.1	10.8	10.9	15.1	15.2	16.4	16.5
90.0	10.1	10.2	10.9	11.0	15.2	15.3	16.6	16.7
90.5	10.2	10.3	11.0	11.1	15.3	15.4	16.7	16.8
91.0	10.3	10.4	11.1	11.2	15.5	15.6	16.9	17.0
91.5	10.4	10.5	11.2	11.3	15.6	15.7	17.0	17.1
92.0	10.5	10.6	11.3	11.4	15.8	15.9	17.2	17.3
92.5	10.6	10.7	11.4	11.5	15.9	16.0	17.3	17.4

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
108.0	13.8	13.9	15.0	15.1	21.3	21.4	23.4	23.5
108.5	13.9	14.0	15.1	15.2	21.5	21.6	23.7	23.8
109.0	14.0	14.1	15.2	15.3	21.8	21.9	23.9	24.0
109.5	14.2	14.3	15.4	15.5	22.0	22.1	24.2	24.3
110.0	14.3	14.4	15.5	15.6	22.2	22.3	24.4	24.5
110.5	14.4	14.5	15.7	15.8	22.4	22.5	24.7	24.8
111.0	14.5	14.6	15.8	15.9	22.7	22.8	25.0	25.1
111.5	14.7	14.8	15.9	16.0	22.9	23.0	25.2	25.3
112.0	14.8	14.9	16.1	16.2	23.1	23.2	25.5	25.6
112.5	149	15.0	16.2	16.3	23.4	23.5	25.8	25.9
113.0	15.1	15.2	16.4	16.5	23.6	23.7	26.0	26.1
113.5	15.2	15.3	16.5	16.6	23.9	24.0	26.3	26.4
114.0	15.3	15.4	16.7	16.8	24.1	24.2	26.6	26.7
114.5	15.5	15.6	16.8	16.9	24.4	24.5	26.9	27.0
115.0	15.6	15.7	17.0	17.1	24.6	24.7	27.2	27.3
115.5	15.7	15.8	17.1	17.2	24 9	25.0	27.5	27.6
116.0	15.9	16.0	17.3	17.4	25.1	25.2	27.8	27.9
116.5	16.0	16.1	17.4	17.5	25.4	25.5	28.0	28.1
117.0	16.1	16.2	17.6	17.7	25.6	25.7	28.3	28.4
117.5	16.3	16.4	17.8	17.9	25 9	26.0	28.6	28.7
118.0	16.4	16.5	17.9	18.0	26.1	26.2	28.9	29.0
118.5	16.6	16.7	18.1	18.2	26.4	26.5	29.2	29.3
119.0	16.7	16.8	18.2	18.3	26.6	26.7	29.5	29.6
119.5	16.8	16.9	18.4	18.5	26 9	27.0	29.8	29.9
120.0	17.0	17.1	18.5	18.6	27.2	27.3	30.1	30.2

Source: WHO Child Growth Standards, Methods and Development, 2006

SAM - Severely Acute Malnutrition; also referred to as severely wasted; MAM - Moderately Acute Malnutrition; also referred to as moderately wasted

Table 9. Child growth standards table, weight-for-height, girls

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
65.0	5.5	5.6	6.0	6.1	8.7	8.8	9.7	9.8
65.5	5.6	5.7	6.1	6.2	8.9	9.0	9.8	9.9
66.0	5.7	5.8	6.2	6.3	9.0	9.1	10.0	10.1
66.5	5.7	5.8	6.3	6.4	9.1	9.2	10.1	10.2
67.0	5.8	5.9	6.3	6.4	9.3	9.4	10.2	10.3
67.5	5.9	6.0	6.4	6.5	9.4	9 5	10.4	10.5
68.0	6.0	6.1	6.5	6.6	9 5	9.6	10.5	10.6
68.5	6.1	6.2	6.6	6.7	9.7	9.8	10.7	10.8
69.0	6.2	6.3	6.7	6.8	9.8	9.9	10.8	10.9
69.5	6.2	6.3	6.8	6.9	9.9	10.0	10.9	11.0
70.0	6.3	6.4	6.9	7.0	10.0	10.1	11.1	11.2
70.5	6.4	6.5	7.0	7.1	10.1	10.2	11.2	11.3
71.0	6.5	6.6	7.0	7.1	10.3	10.4	11.3	11.4
71.5	6.6	6.7	7.1	7.2	10.4	10.5	11.5	11.6
72.0	6.6	6.7	7.2	7.3	10.5	10.6	11.6	11.7
72.5	6.7	6.8	7.3	7.4	10.6	10.7	11.7	11.8
73.0	6.8	6.9	7.4	7.5	10.7	10.8	11.8	11.9
73.5	6.9	7.0	7.5	7.6	10.8	10.9	12.0	12.1
74.0	6.9	7.0	7.5	7.6	11.0	11.1	12.1	12.2
74.5	7.0	7.1	7.6	7.7	11.1	11.2	12.2	12.3
75.0	7.1	7.2	7.7	7.8	11.2	11.3	12.3	12.4
75.5	7.1	7.2	7.8	7.9	11.3	11.4	12.5	12.6
76.0	7.2	7.3	7.9	8.0	11.4	11.5	12.6	12.7
76.5	7.3	7.4	7.9	8.0	11.5	11.6	12.7	12.8
77.0	7.4	7.5	8.0	8.1	11.6	11.7	12.8	12.9
77.5	7.4	7.5	8.1	8.2	11.7	11.8	12.9	130
78.0	7.5	7.6	8.2	8.3	11.8	11.9	13.1	13.2
78.5	7.6	7.7	8.3	8.4	12.0	12.1	13.2	13.3
79.0	7.7	7.8	8.3	8.4	12.1	12.2	13.3	13.4
79.5	7.7	7.8	8.4	8.5	12.2	12.3	13.4	13.5

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
93.0	10.3	10.4	11.2	11.3	16.1	16.2	17.8	17.9
93.5	10.4	10.5	11.3	11.4	16.3	16.4	17.9	18.0
94.0	10.5	10.6	11.4	11.5	16.4	16.5	18.1	18.2
94.5	10.6	10.7	11.5	11.6	16.6	16.7	18.3	18.4
95.0	10.7	10.8	11.6	11.7	16.7	16.8	18.5	18.6
95.5	10.7	10.8	11.7	11.8	16.9	17.0	18.6	18.7
96.0	10.8	10.9	11.8	11.9	17.0	17.1	18.8	18.9
96.5	10.9	11.0	11.9	12.0	17.2	17.3	19.0	19.1
97.0	11.0	11.1	12.0	12.1	17.4	17.5	19.2	19.3
97.5	11.1	11.2	12.1	12.2	17.5	17.6	19.3	19.4
98.0	11.2	11.3	12.2	12.3	17.7	17.8	19.5	19.6
98.5	11.3	11.4	12.3	12.4	17.9	18.0	19.7	19.8
99.0	11.4	11.5	12.4	12.5	18.0	18.1	19.9	20.0
99.5	11.5	11.6	12.6	12.7	18.2	18.3	20.1	20.2
100.0	11.6	11.7	12.7	12.8	18.4	18.5	20.3	20.4
100.5	11.8	11.9	12.8	12.9	18.6	18.7	20.5	20.6
101.0	11.9	12.0	12.9	13.0	18.7	18.8	20.7	20.8
101.5	12.0	12.1	13.0	13.1	18.9	19.0	20.9	21.0
102.0	12.1	12.2	13.2	13.3	19.1	19.2	21.1	21.2
102.5	12.2	12.3	13.3	13.4	19.3	19.4	21.4	21.5
103.0	12.3	12.4	13.4	13.5	19.5	19.6	21.6	21.7
103.5	12.4	12.5	13.5	13.6	19.7	19.8	21.8	21.9
104.0	12.5	12.6	13.7	13.8	19 9	20.0	22.0	22.1
104.5	12.7	12.8	13.8	13.9	20.1	20.2	22.3	22.4
105.0	12.8	12.9	13.9	14.0	20.3	20.4	22.5	22.6
105.5	12.9	13.0	14.1	14.2	20.5	20.6	22.7	22.8
106.0	13.0	13.1	14.2	14.3	20.8	20 9	23.0	23.1
106.5	13.2	13.3	14.4	14.5	21.0	21.1	23.2	23.3
107.0	13.3	13.4	14.5	14.6	21.2	21.3	23.5	23.6
107.5	13.4	13.5	14.6	14.7	21.4	21.5	23.7	23.8

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
80.0	7.8	7.9	8.5	8.6	12.3	12.4	13.6	13.7
80.5	7.9	8.0	8.6	8.7	12.4	12.5	13.7	13.8
81.0	8.0	8.1	8.7	8.8	12.6	12.7	13.9	14.0
81.5	8.1	8.2	8.8	8.9	12.7	12.8	14.0	14.1
82.0	8.2	8.3	8.9	9.0	12.8	12.9	14.1	14.2
82.5	8.3	8.4	9.0	9.1	13.0	13.1	14.3	14.4
83.0	8.4	8.5	9.1	9.2	13.1	13.2	14.5	14.6
83.5	8.4	8.5	9.2	9.3	13.3	13.4	14.6	14.7
84.0	8.5	8.6	9.3	9.4	13.4	13.5	14.8	14 9
84.5	8.6	8.7	9.4	9.5	13.5	13.6	14.9	15.0
85.0	8.7	8.8	9.5	9.6	13.7	13.8	15.1	15.2
85.5	8.8	8.9	9.6	9.7	13.8	13.9	15.3	15.4
86.0	8.9	9.0	9.7	9.8	14.0	14.1	15.4	15.5
86.5	9.0	9.1	9.8	9.9	14.2	14.3	15.6	15.7
87.0	91	9.2	9.9	10.0	14.3	14.4	15.8	15.9
87.5	9.2	9.3	10.0	10.1	14.5	14.6	15.9	16.0
88.0	9.3	9.4	10.1	10.2	14.6	14.7	16.1	16.2
88.5	9.4	9.5	10.2	10.3	14.8	14.9	16.3	16.4
89.0	95	9.6	10.3	10.4	14.9	15.0	16.4	16.5
89.5	9.6	9.7	10.4	10.5	15.1	15.2	16.6	16.7
90.0	9.7	9.8	10.5	10.6	15.2	15.3	16.8	16.9
90.5	9.8	9.9	10.6	10.7	15.4	15.5	16.9	17.0
91.0	9.9	10.0	10.8	10.9	15.5	15.6	17.1	17.2
91.5	10.0	10.1	10.9	11.0	15.7	15.8	17.3	17.4
92.0	10.1	10.2	11.0	11.1	15.8	15.9	17.4	17.5
92.5	10.2	10.3	11.1	11.2	16.0	16.1	17.6	17.7

Height (cm)	Weight (kg)							
	SAM	MAM		Normal		Overweight		Obese
		From	To	From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD	+3SD	>+3SD
108.0	13.6	13.7	14.8	14.9	21.7	21.8	24.0	24.1
108.5	13.7	13.8	14.9	15.0	21.9	22.0	24.3	24.4
109.0	13.8	13.9	15.1	15.2	22.1	22.2	24.5	24.6
109.5	14.0	14.1	15.3	15.4	22.4	22.5	24.8	24.9
110.0	14.1	14.2	15.4	15.5	22.6	22.7	25.1	25.2
110.5	14.3	14.4	15.6	15.7	22.9	23.0	25.4	25.5
111.0	14.4	14.5	15.7	15.8	23.1	23.2	25.7	25.8
111.5	14.6	14.7	15.9	16.0	23.4	23.5	26.0	26.1
112.0	14.7	14.8	16.1	16.2	23.6	23.7	26.2	26.3
112.5	14.9	15.0	16.2	16.3	23.9	24.0	26.5	26.6
113.0	15.0	15.1	16.4	16.5	24.2	24.3	26.8	26.9
113.5	15.2	15.3	16.6	16.7	24.4	24.5	27.1	27.2
114.0	15.3	15.4	16.7	16.8	24.7	24.8	27.4	27.5
114.5	15.5	15.6	16.9	17.0	25.0	25.1	27.8	27.9
115.0	15.6	15.7	17.1	17.2	25.2	25.3	28.1	28.2
115.5	15.8	15.9	17.2	17.3	25.5	25.6	28.4	28.5
116.0	15.9	16.0	17.4	17.5	25.8	25 9	28.7	28.8
116.5	16.1	16.2	17.6	17.7	26.1	26.2	29.0	29.1
117.0	16.2	16.3	17.7	17.8	26.3	26.4	29.3	29.4
117.5	16.4	16.5	17.9	18.0	26.6	26.7	29.6	29.7
118.0	16.5	16.6	18.1	18.2	26.9	27.0	29.9	30.0
118.5	16.7	16.8	18.3	18.4	27.2	27.3	30.3	30.4
119.0	16.8	16.9	18.4	18.5	27.4	27.5	30.6	30.7
119.5	17.0	17.1	18.6	18.7	27.7	27.8	30 9	31.0
120.0	17.2	17.3	18.8	18.9	28.0	28.1	31.2	31.3

Source: WHO Child Growth Standards, Methods and Development, 2006

SAM - Severely Acute Malnutrition; also referred to as severely wasted; MAM - Moderately Acute Malnutrition; also referred to as moderately wasted

C. LENGTH/HEIGHT-FOR-AGE

How to use the length/height-for-age table?

- In the length/height-for-age table, look for the point where the child's age in months intersects with the actual length/weight of the child, use the appropriate table that is for boy or girl.
- Assess the nutritional status of the child using the suggested cut-off points for normality.

How to interpret results using the length/height-for-age table

Each age under the first column of the length/height-for-age table has a corresponding ±2SD (*plus* or minus 2 standard deviation) values in the succeeding columns for both sexes. The ±2SD values represent the minimum and maximum "boundaries" for the measurement of the child to be classified as within the acceptable limits of normality. Thus, if the length/height of the child is below the -2SD value, the child is short/stunted for his/her age. If the length/height of the child falls above the +2SD value, the child is tall for his/her age.

The nutritional status of children using the length/height-for-age indicator is classified into:

a. **Normal** has a ±2SD (plus or minus 2 standard deviation) value, meaning the child's length/height is within the normal limits.

b. **Short stunted** has a <-2SD (less than minus 2 standard deviation) value, meaning the child's length/height is lower or below the normal length/height for his/her age.

c. **Severely stunted/short** has a <-3SD (less than minus 3 standard deviation) value, meaning the child's length/height is very much lower the normal length/height for his/her age.

d. **Tall (height)** has a >+2SD (more than plus 2 standard deviation) value, meaning the child's length/height is higher than the normal length/height for his/her age

Table 10. Child growth standards table, length -for-age, boys

Age (months)	Length/Height (cm)					
	Severely Stunted	Moderately Stunted		Normal		Tall
		From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD
0	44.1	44.2	46.0	46.1	53.7	53.8
1	48.8	48.9	50.7	50.8	58.6	58.7
2	52.3	52.4	54.3	54.4	62.4	62.5
3	55.2	55.3	57.2	57.3	65.5	65.6
4	57.5	57.6	59.6	59.7	68.0	68.1
5	59.5	59.6	61.6	61.7	70.1	70.2
6	61.1	61.2	63.2	63.3	71.9	72.0
7	62.6	62.7	64.7	64.8	73.5	73.6
8	63.9	64.0	66.1	66.2	75.0	75.1
9	65.1	65.2	67.4	67.5	76..5	76.6
10	66.3	66.4	68.6	68.7	77.9	78.0
11	67.5	67.6	69.8	69.9	79.2	79.3
12	68.5	68.6	70.9	71.0	80.5	80.6
13	69.5	69.6	72.0	72.1	81.8	81.9
14	70.5	70.6	73.0	73.1	83.0	83.1
15	71.5	71.6	74.0	74.1	84.2	84.3
16	72.4	72.5	74.9	75.0	85.4	85.5
17	73.2	73.3	75.9	76.0	86.5	86.6
18	74.1	74.2	76.8	76.9	87.7	87.8
19	74.9	75.0	77.6	77.7	88.8	88.9
20	75.7	75.8	78.5	78.6	89.8	89.9
21	76.4	76.5	79.3	79.4	90.9	91.0
22	77.1	77.2	80.1	80.2	91.9	92.0
23	77.9	78.0	80.9	81.0	92.9	93.0
24	77.9	78.0	80.9	81.0	93.2	93.3
25	78.5	78.6	81.6	81.7	94.2	94.3
26	79.2	79.3	82.4	82.5	95.2	95.3
27	79.8	79.9	83.0	83.1	96.1	96.2
28	80.4	80.5	83.7	83.8	97.0	97.1
29	81.0	81.1	84.4	84.5	97.9	98.0
30	81.6	81.7	85.0	85.1	98.7	98.8

Age (months)	Length/Height (cm)					
	Severely Stunted	Moderately Stunted		Normal		Tall
		From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD
31	82.2	82.3	85.6	85.7	99.6	99.7
32	82.7	82.8	86.3	86.4	100.4	100.5
33	83.3	83.4	86.8	86.9	101.2	101.3
34	83.8	83.9	87.4	87.5	102.0	102.1
35	84.3	84.4	88.0	88.1	102.7	102.8
36	84.9	85.0	88.6	88.7	103.5	103.6
37	85.4	85.5	89.1	89.2	104.2	104.3
38	85.9	86.0	89.7	89.8	105.0	105.1
39	86.4	86.5	90.2	90.3	105.7	105.8
40	86.9	87.0	90.8	90.9	106.4	106.5
41	87.4	87.5	91.3	91.4	107.1	107.2
42	87.9	88.0	91.8	91.9	107.8	107.9
43	88.3	88.4	92.3	92.4	108.5	108.6
44	88.8	88.9	92.9	93.0	109.1	109.2
45	89.3	89.4	93.4	93.5	109.8	109.9
46	89.7	89.8	93.9	94.0	110.4	110.5
47	90.2	90.3	94.3	94.4	111.1	111.2
48	90.6	90.7	94.8	94.9	111.7	111.8
49	91.1	91.2	95.3	95.4	112.4	112.5
50	91.5	91.6	95.8	95.9	113.0	113.1
51	92.0	92.1	96.3	96.4	113.6	113.7
52	92.4	92.5	96.8	96.9	114.2	114.3
53	92.9	93.0	97.3	97.4	114.9	115.0
54	93.3	93.4	97.7	97.8	115.5	115.6
55	93.8	93.9	98.2	98.3	116.1	116.2
56	94.2	94.3	98.7	98.8	116.7	116.8
57	94.6	94.7	99.2	99.3	117.4	117.5
58	95.1	95.2	99.6	99.7	118.0	118.1
59	95.5	95.6	100.1	100.2	118.6	118.7
60	96.0	96.1	100.6	100.7	119.2	119.3

Source: WHO Child Growth Standards (WHO-CGS) 2004 and WHO Reference Data, 2006

Table 11. Child growth standards table, length/height-for-age, girls

Age (months)	Length (cm)					
	Severely Stunted	Moderately Stunted		Normal		Tall
		From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD
0	43.5	43.6	45.3	45.4	52.9	53.0
1	47.7	47.8	49.7	49.8	57.6	57.7
2	50.9	51.0	52.9	53.0	61.1	61.2
3	53.4	53.5	55.5	55.6	64.0	64.1
4	55.5	55.6	57.7	57.8	66.4	66.5
5	57.3	57.4	59.5	59.6	68.5	68.6
6	58.8	58.9	61.1	61.2	70.3	70.4
7	60.2	60.3	62.6	62.7	71.9	72.0
8	61.6	61.7	63.9	64.0	73.5	73.6
9	62.8	62.9	65.2	65.3	75.0	75.1
10	64.0	64.1	66.4	66.5	76.4	76.5
11	65.1	65.2	67.6	67.7	77.8	77.9
12	66.2	66.3	68.8	68.9	79.2	79.3
13	67.2	67.3	69.9	70.0	80.5	80.6
14	68.2	68.3	70.9	71.0	81.7	81.8
15	69.2	69.3	71.9	72.0	83.0	83.1
16	70.1	70.2	72.9	73.0	84.2	84.3
17	71.0	71.1	73.9	74.0	85.4	85.5
18	71.9	72.0	74.8	74.9	86.5	86.6
19	72.7	72.8	75.7	75.8	87.6	87.7
20	73.6	73.7	76.6	76.7	88.7	88.8
21	74.4	74.5	77.4	77.5	89.8	89.9
22	75.1	75.2	78.3	78.4	90.8	90.9
23	75.9	76.0	79.1	79.2	91.9	92.0
24	75.9	76.0	79.2	79.3	92.2	92.3
25	76.7	76.8	79.9	80.0	93.1	93.2
26	77.4	77.5	80.7	80.8	94.1	94.2
27	78.0	78.1	81.4	81.5	95.0	95.1
28	78.7	78.8	82.1	82.2	96.0	96.1
29	79.4	79.5	82.8	82.9	96.9	97.0
30	80.0	80.1	83.5	83.6	97.7	97.8

Age (months)	Length (cm)					
	Severely Stunted	Moderately Stunted		Normal		Tall
		From	To	From	To	
	<-3SD	-3SD	<-2SD	-2SD	+2SD	>+2SD
31	80.6	80.7	84.2	84.3	98.6	98.7
32	81.2	81.3	84.8	84.9	99.4	99.5
33	81.8	81.9	85.5	85.6	100.3	100.4
34	82.4	82.5	86.1	86.2	101.1	101.2
35	83.0	83.1	86.7	86.8	101.9	102.0
36	83.5	83.6	87.3	87.4	102.7	102.8
37	84.1	84.2	87.9	88.0	103.4	103.5
38	84.6	84.7	88.5	88.6	104.2	104.3
39	85.2	85.3	89.1	89.2	105.0	105.1
40	85.7	85.8	89.7	89.8	105.7	105.8
41	86.2	86.3	90.3	90.4	106.4	106.5
42	86.7	86.8	90.8	90.9	107.2	107.3
43	87.3	87.4	91.4	91.5	107.9	108.0
44	87.8	87.9	91.9	92.0	108.6	108.7
45	88.3	88.4	92.4	92.5	109.3	109.4
46	88.8	88.9	93.0	93.1	110.0	110.1
47	89.2	89.3	93.5	93.6	110.7	110.8
48	89.7	89.8	94.0	94.1	111.3	111.4
49	90.2	90.3	94.5	94.6	112.0	112.1
50	90.6	90.7	95.0	95.1	112.7	112.8
51	91.1	91.2	95.5	95.6	113.3	113.4
52	91.6	91.7	96.0	96.1	114.0	114.1
53	92.0	92.1	96.5	96.6	114.6	114.7
54	92.5	92.6	97.0	97.1	115.2	115.3
55	92.9	93.0	97.5	97.6	115.9	116.0
56	93.3	93.4	98.0	98.1	116.5	116.6
57	93.8	93.9	98.4	98.5	117.1	117.2
58	94.2	94.3	98.9	99.0	117.7	117.8
59	94.6	94.7	99.4	99.5	118.3	118.4
60	95.1	95.2	99.8	99.9	118.9	119.0

Source: WHO Child Growth Standards (WHO-CGS) 2004 and WHO Reference Data, 2006

Table 12. Weight-for-age for boys and girls, 0-60 months (birth to 5 years)

GIRLS			BOYS		
Age	**Normal range**	**-3 SD severe underweight: Refer to HC**	**Age**	**Normal range**	**-3SD severe underweight: Refer to HC**
0 month	2.4 to 4.2 kg	< 2.0	0 month	2.5 to 4.4 kg	< 2.1
1 month	3.2 to 5.5 kg	< 2.7	1 month	3.4 to 5.8 kg	< 2.9
2 months	3.9 to 6.6 kg	< 3.4	2 months	4.3 to 7.1 kg	< 3.8
3 months	4.5 to 7.5 kg	< 4.0	3 months	5.0 to 8.0 kg	< 4.4
4 months	5.0 to 8.2 kg	< 4.4	4 months	5.6 to 8.7 kg	< 4.9
5 months	5.4 to 8.8 kg	< 4.8	5 months	6.0 to 9.3 kg	< 5.3
6 months	5.7 to 9.3 kg	< 5.1	6 months	6.4 to 9.8 kg	< 5.7
7 months	6.0 to 9.8 kg	< 5.3	7 months	6.7 to 10.3 kg	< 5.9
8 months	6.3 to 10.2 kg	< 5.6	8 months	6.9 to 10.7 kg	< 6.2
9 months	6.5 to 10.5 kg	< 5.8	9 months	7.1 to 11.0 kg	< 6.4
10 months	6.7 to 10.9 kg	< 5.9	10 months	7.4 to 11.4 kg	< 6.6
11 months	6.9 to 11.2 kg	< 6.1	11 months	7.6 to 11.7 kg	< 6.8
12 months	7.0 to 11.5 kg	< 6.3	12 months	7.7 to 12.0 kg	< 6.9
13 months	7.2 to 11.8 kg	< 6.4	13 months	7.9 to 12.3 kg	< 7.1
14 months	7.4 to 12.1 kg	< 6.6	14 months	8.1 to 12.6 kg	< 7.2
15 months	7.6 to 12.4 kg	< 6.7	15 months	8.3 to 12.8 kg	< 7.4
16 months	7.7 to 12.6 kg	< 6.9	16 months	8.4 to 13.1 kg	< 7.5
17 months	7.9 to 12.9 kg	< 7.0	17 months	8.6 to 13.4 kg	< 7.7
18 months	8.1 to 13.2 kg	< 7.2	18 months	8.8 to 13.7 kg	< 7.8
19 months	8.2 to 13.5 kg	< 7.3	19 months	8.9 to 13.9 kg	< 8.0
20 months	8.4 to 13.7 kg	< 7.5	20 months	9.1 to 14.2 kg	< 8.1
21 months	8.6 to 14.0 kg	< 7.6	21 months	9.2 to 14.5 kg	< 8.2
22 months	8.7 to 14.3 kg	< 7.8	22 months	9.4 to 14.7 kg	< 8.4
23 months	8.9 to 14.6 kg	< 7.9	23 months	9.5 to 15.0 kg	< 8.5
24 months	9.0 to 14.8 kg	< 8.1	24 months	9.7 to 15.3 kg	< 8.6
25 months	9.2 to 15.1 kg	< 8.2	25 months	9.8 to 15.5 kg	< 8.8
26 months	9.4 to 15.4 kg	< 8.4	26 months	10.0 to 15.8 kg	< 8.9
27 months	9.5 to 15.7 kg	< 8.5	27 months	10.1 to 16.1 kg	< 9.0
28 months	9.7 to 16.0 kg	< 8.6	28 months	10.2 to 16.3 kg	< 9.1
29 months	9.8 to 16.2 kg	< 8.8	29 months	10.4 to 16.6 kg	< 9.2
30 months	10.0 to 16.5 kg	< 8.9	30 months	10.5 to 16.9 kg	< 9.4
31 months	10.1 to 16.8 kg	< 9.0	31 months	10.7 to 17.1 kg	< 9.5

GIRLS			BOYS		
Age	**Normal range**	**-3 SD severe underweight: Refer to HC**	**Age**	**Normal range**	**-3SD severe underweight: Refer to HC**
32 months	10.3 to 17.1 kg	< 9.1	32 months	10.8 to 17.4 kg	< 9.6
33 months	10.4 to 17.3 kg	< 9.3	33 months	10.9 to 17.6 kg	< 9.7
34 months	10.5 to 17.6 kg	< 9.4	34 months	11.0 to 17.8 kg	< 9.8
35 months	10.7 to 17.9 kg	< 9.5	35 months	11.2 to 18.1 kg	< 9.9
36 months	10.8 to 18.1 kg	< 9.6	36 months	11.3 to 18.3 kg	< 10.0
37 months	10.9 to 18.4 kg	< 9.7	37 months	11.4 to 18.6 kg	< 10.1
38 months	11.1 to 18.7 kg	< 9.8	38 months	11.5 to 18.8 kg	< 10.2
39 months	11.2 to 19.0 kg	< 9.9	39 months	11.6 to 19.0 kg	< 10.3
40 months	11.3 to 19.2 kg	< 10.1	40 months	11.8 to 19.3 kg	< 10.4
41 months	11.5 to 19.5 kg	< 10.2	41 months	11.9 to 19.5 kg	< 10.5
42 months	11.6 to 19.8 kg	< 10.3	42 months	12.0 to 19.7 kg	< 10.6
43 months	11.7 to 20.1 kg	< 10.4	43 months	12.1 to 20.0 kg	< 10.7
44 months	11.8 to 20.4 kg	< 10.5	44 months	12.2 to 20.2 kg	< 10.8
45 months	12.0 to 20.7 kg	< 10.6	45 months	12.4 to 20.5 kg	< 10.9
46 months	12.1 to 20.9 kg	< 10.7	46 months	12.5 to 20.7 kg	< 11.0
47 months	12.2 to 21.2 kg	< 10.8	47 months	12.6 to 20.9 kg	< 11.1
48 months	12.3 to 21.5 kg	< 10.9	48 months	12.7 to 21.2 kg	< 11.2
49 months	12.4 to 21.8 kg	< 11.0	49 months	12.8 to 21.4 kg	< 11.3
50 months	12.6 to 22.1 kg	< 11.1	50 months	12.9 to 21.7 kg	< 11.4
51 months	12.7 to 22.4 kg	< 11.2	51 months	13.1 to 21.9 kg	< 11.5
52 months	12.8 to 22.6 kg	< 11.3	52 months	13.2 to 22.2 kg	< 11.6
53 months	12.9 to 22.9 kg	< 11.4	53 months	13.3 to 22.4 kg	< 11.7
54 months	13.0 to 23.2 kg	< 11.5	54 months	13.4 to 22.7 kg	< 11.8
55 months	13.2 to 23.5 kg	< 11.6	55 months	13.5 to 22.9 kg	< 11.9
56 months	13.3 to 23.8 kg	< 11.7	56 months	13.6 to 23.2 kg	< 12.0
57 months	13.4 to 24.1 kg	< 11.8	57 months	13.7 to 23.4 kg	< 12.1
58 months	13.5 to 24.4 kg	< 11.9	58 months	13.8 to 23.7 kg	< 12.2
59 months	13.6 to 24.6 kg	< 12.0	59 months	14.0 to 23.9 kg	< 12.3
60 months	13.7 to 24.9 kg	< 12.1	60 months	14.1 to 24.2 kg	< 12.4

Reference: WHO Child Growth Standards, 2006

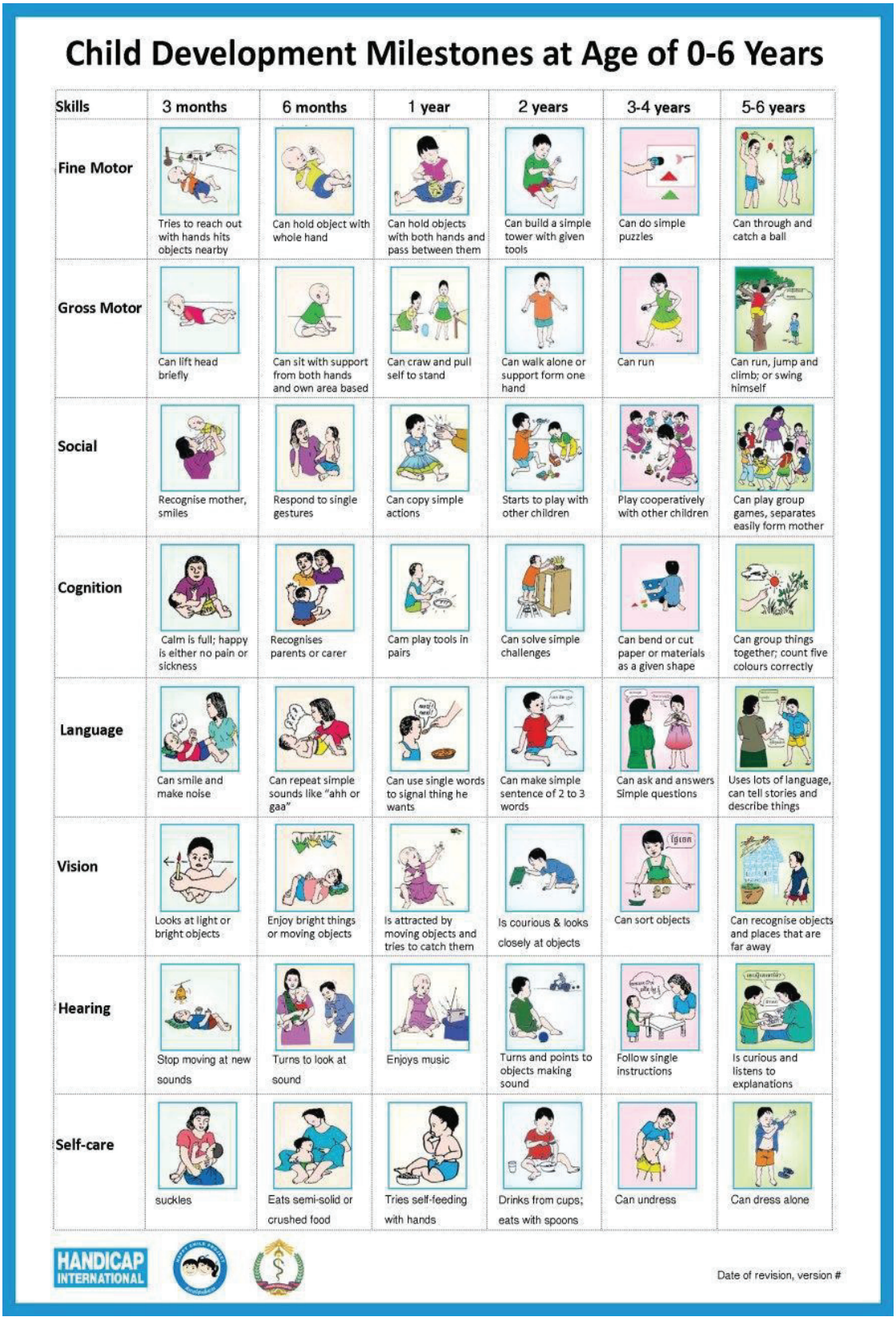
Table 13. Length/height-for-age for boys and girl, 0-60 months (birth to 5 years)

GIRLS			BOYS		
Age	**Normal range**	**-3 SD severe stunted**	**Age**	**Normal range**	**-3SD severe stunted**
0 month	45.4 to 52.9	< 43.5	0 month	46.1 to 53.7	< 44.1
1 month	49.8 to 57.6	< 47.7	1 month	50.8 to 58.6	< 48.8
2 months	53.0 to 61.1	< 50.9	2 months	54.4 to 62.4	< 52.3
3 months	55.6 to 64.0	< 53.4	3 months	57.3 to 65.5	< 55.2
4 months	57.8 to 66.4	< 55.5	4 months	59.7 to 68.0	< 57.5
5 months	59.6 to 68.5	< 57.3	5 months	61.7 to 70.1	< 59.5
6 months	61.2 to 70.3	< 58.8	6 months	63.3 to 71.9	< 61.1
7 months	62.7 to 71.9	< 60.2	7 months	64.8 to 73.5	< 62.6
8 months	64.0 to 73.5	< 61.6	8 months	66.2 to 75.0	< 63.9
9 months	65.3 to 75.0	< 62.8	9 months	67.5 to 76.5	< 65.1
10 months	66.5 to 76.4	< 64.0	10 months	68.7 to 77.9	< 66.3
11 months	67.7 to 77.8	< 65.1	11 months	69.9 to 79.2	< 67.5
12 months	68.9 to 79.2	< 66.2	12 months	71.0 to 80.5	< 68.5
13 months	70.0 to 80.5	< 67.2	13 months	72.1 to 81.8	< 69.5
14 months	71.0 to 81.7	< 68.2	14 months	73.1 to 83.0	< 70.5
15 months	72.0 to 83.0	< 69.2	15 months	74.1 to 84.2	< 71.5
16 months	73.0 to 84.2	< 70.1	16 months	75.0 to 85.4	< 72.4
17 months	74.0 to 85.4	< 71.0	17 months	76.0 to 86.5	< 73.2
18 months	74.9 to 86.5	< 71.9	18 months	76.9 to 87.7	< 74.1
19 months	75.8 to 87.6	< 72.7	19 months	77.7 to 88.8	< 74.9
20 months	76.7 to 88.7	< 73.6	20 months	78.6 to 89.8	< 75.7
21 months	77.5 to 89.8	< 74.4	21 months	79.4 to 90.9	< 76.4
22 months	78.4 to 90.8	< 75.1	22 months	80.2 to 91.9	< 77.1
23 months	79.2 to 91.9	< 75.9	23 months	81.0 to 92.9	< 77.9
24 months	79.3 to 92.2	< 75.9	24 months	81.0 to 93.2	< 77.9
25 months	80.0 to 93.1	< 76.7	25 months	81.7 to 94.2	< 78.5
26 months	80.8 to 94.1	< 77.4	26 months	82.5 to 95.2	< 79.3
27 months	81.5 to 95.0	< 78.0	27 months	83.1 to 96.1	< 79.8
28 months	82.2 to 96.6	< 78.7	28 months	83.8 to 97.0	< 80.4
29 months	82.9 to 96.9	< 79.4	29 months	84.5 to 97.9	< 81.0
30 months	83.6 to 97.7	< 80.0	30 months	85.1 to 98.7	< 81.6
31 months	84.3 to 98.6	< 80.6	31 months	85.7 to 99.6	< 82.2
32 months	84.9 to 99.4	< 81.2	32 months	86.4 to 100.4	< 82.7

GIRLS			BOYS		
Age	**Normal range**	**-3 SD severe stunted**	**Age**	**Normal range**	**-3SD severe stunted**
33 months	85.6 to 100.3	< 81.8	33 months	86.9 to 101.2	< 83.3
34 months	86.2 to 101.1	< 82.4	34 months	87.5 to 102.0	< 83.8
35 months	86.8 to 101.9	< 83.2	35 months	88.1 to 102.7	< 84.3
36 months	87.4 to 102.7	< 83.5	36 months	88.7 to 103.5	< 84.9
37 months	88.0 to 103.4	< 84.1	37 months	89.2 to 104.2	< 85.4
38 months	88.6 to 104.2	< 84.6	38 months	89.8 to 105.0	< 85.9
39 months	89.2 to 105.0	< 85.2	39 months	90.3 to 105.7	< 86.4
40 months	89.8 to 105.7	< 85.7	40 months	90.9 to 106.4	< 86.9
41 months	90.4 to 106.4	< 86.2	41 months	91.4 to 107.1	< 87.4
42 months	90.9 to 107.2	< 86.7	42 months	91.9 to 107.8	< 87.9
43 months	91.5 to 107.9	< 87.3	43 months	92.4 to 108.5	< 88.3
44 months	92.0 to 108.6	< 87.8	44 months	93.0 to 109.1	< 88.8
45 months	92.5 to 109.3	< 88.3	45 months	93.5 to 109.8	< 89.3
46 months	93.1 to 110.0	< 88.8	46 months	94.0 to 110.4	< 89.7
47 months	93.6 to 110.7	< 89.2	47 months	94.4 to 111.1	< 90.2
48 months	94.1 to 111.3	< 89.7	48 months	94.9 to 111.7	< 90.6
49 months	94.6 to 112.0	< 90.2	49 months	95.4 to 112.4	< 91.1
50 months	95.1 to 112.7	< 90.6	50 months	95.9 to 113.0	< 91.5
51 months	95.6 to 113.3	< 91.1	51 months	96.4 to 113.6	< 92.0
52 months	96.1 to 114.0	< 91.6	52 months	96.9 to 114.2	< 92.4
53 months	96.6 to 114.6	< 92.0	53 months	97.4 to 114.9	< 92.9
54 months	97.1 to 115.2	< 92.5	54 months	97.8 to 115.5	< 93.3
55 months	97.6 to 115.9	< 93.0	55 months	98.3 to 116.1	< 93.8
56 months	98.1 to 116.5	< 93.3	56 months	98.8 to 116.7	< 94.2
57 months	98.5 to 117.1	< 93.8	57 months	99.3 to 117.4	< 94.6
58 months	99.0 to 117.1	< 94.3	58 months	99.7 to 118.0	< 95.1
59 months	99.5 to 118.3	< 94.6	59 months	100.2 to 118.6	< 95.5
60 months	99.9 to 118.9	< 95.1	60 months	100.7 to 119.2	< 96.0

Reference: WHO Child Growth Standards, 2006

Annex 9. Child development milestones at age of 0-6 years



Source: Handicap International, Happy Child Project, and MOH, n.d

Annex 10. Do's and don'ts for parents in bringing up brilliant, good and happy child

Child's age	DO's for parents	DON'TS for parents
Birth – 1 year	Gently hold, snuggle with. Caress your child to form the sense of security While holding, talk and sing a lullaby to your child to sleep Frequent playing and talking to your child will make him//her become cheerful and grow fast. If your child prefers to do things on his/her own, allow him/her to do so and learn from trial and error.	Ignore, be inattentive, abandon and be emotionally violent to your child. Be irritable with your child's crying. If unable to cope with it, try to relax and ask someone to take care of your child and calm down for a while. Overprotect and spoil your child, making him/her immature, self-determined, impatient.
1-3 years	Allow your child to do more his/her own routines. If your child turns exaggerated, draw his/her attention to something else. Talk, tell stories, answer your child's questions. If your child refuses, explain to him/her the reason. Teach your child to keep toys in place.	Do not allow your child to do things by him/herself. Deceive or scare your child to fear for no reasons. Irritable for the child's asking question or naughty. Tease your child to get angry. Force the child to stay inactive.
3-5 years	Teach your child right from wrong and dare to say when making mistakes. Teaching your child to be accustomed to using words of thanks, apology, and kindness. Encourage your child to play with other children. Teach the child to refuse others from touching personal organ.	- Compare your child with those of other siblings, making him/her feel slighted and value-less. - When children are in a quarrel, do not determine who are right and wrong, as children. will not get angry toward one another for too long. - Teach your child while you are unable to be a good role model yourself. - Make forceful quarrel between parents in front of your child.
General	Provide physical and mental safety to children at all times Praise and show love or encouragement when child does something good Be patient and talk with the child how to solve problems Understanding child's feelings and be a role model	Punish, scream, beat, or slap the child Order the child to do something bad Intimidate, verbally or physically abuse children Leave children alone or in unsafe places

Source: Ministry of Public Health-Thailand, 2005; https://www.koanchlaat.org/article/5/48

Annex 11. Use of play to help a child meet milestone

Age	Activities
0-6 months	Show baby interesting objects such as a brightly colored mobile or toy Talk to baby often to familiarize baby with your voice, respond when they coo and babble Place baby in different positions so they can see the world from different angles Let baby bring objects to mouth to explore and experience new texture Vary facial expressions and gestures so baby has the opportunity to imitate them
7-12 months	Use a mirror to show faces to baby Provide baby with a safe environment to crawl and explore Place baby in a variety of positions such as on tummy, side, etc. Give baby opportunities to learn actions have effects, e.g., when they drop a toy and it falls to the ground
1-3 years	Allow child to spend time with objects and toys they enjoy Give child pens, markers, or crayons so they can practice scribbling Encourage your child to interact with peers Help child explore their body through different movements, e.g., walking, jumping, and standing on one leg Provide opportunities to create make-believe situations with objects, e.g., pretending to drink out of empty cup Respond when child speaks, answer questions, and provide verbal encouragement
4-6 years	Provide opportunities for child to sing and dance Tell stories to child and ask them questions about what they remember Give child time and space to act out imaginary scenes, roles and activities Allow child to move between make-believe games and reality, e.g., playing house and helping you with chores Schedule time for child to interact with friends to practice socializing and building friendships Encourage child to try a variety of movements, e.g., hopping, swinging, climbing and doing summersaults
General	Parents can play with children and lead them to language development activities, problem solving, etc. Set specific time to play Do not let children play games that are harmful to the body, health and can do harm to others

Source: Handicap International, Happy Child Project, and MOH, n.d.; https://www.koanchlaat.org/article/5/43

Annex 11a. Methods for parents to help child development

Child's age	Child development	Methods which the parents can use to help the child develop well
1 month	Eye contacts, look at the mother's face Responds with noises, makes sound in his/her throat Moves arms and legs	Hold your child, the child's face is on the same level as that of the mother's face. Smile at your child, make eye contact, frequently talk with your child during breastfeeding time. Frequently talk with your child or carry him/her and sing lullaby. Lay the child down, let the child move his/her arms and legs by him/herself. Breastfeeding exclusively for 6 months.
1-2 months	- Smile or smile back - Show excitement when he/she is hold onto his/her mother's hand - Make cooing noises, listen and locate the mother's voice - Lock and follow moving things - Lifts head when lying on his/her stomach	- While the mother sits down, hold child closely and turn his/her face to mother's face, talk to the child, smile to the child, frequently use eye contact with the child. Slowly move the mother's face and let the child follow the mother's face. Gently touch the child. -While the child is awake, lay the child on his/her stomach, talk to the child, or shake toys that make a lot of sounds over his/her head in order to make him/her lift head and look at the toy.
3-4 months	The child can move towards the laughing sound and make the sound back; hold his/her hands together; move his/her eyes from one side to the other side.	- Always talk to your child, touch, play and laugh with your child. - Talk back to the child, stop and listen to him/her, wait for the child to make a noise. - Let the child hold your finger with both of his/her hands.
7-8 months	-Afraid of strangers. Bonds with the caregiver. -Shows his/her hand indicating the desires to be picked up. -Can say one word, e.g., pa, ma; and can locate the voice correctly	- Whenever your child encounters other people, you should hold your child closely for warmth and to let him/her know that he/she is safe. - Give plenty of time to your child to become accustomed to other people. - Use gestures or words to communicate to your child every time you want to hold him/her.

Child's age	Child development	Methods which the parents can use to help the child develop well
	-Looks at the falling object -Holds one object in each hand -Sits without using any hand for support	- Talk about the activities you are doing with your child or the activities that your child are interested in. Whenever you talk to your child, you should call out his/her name. - Hold your child in a sitting position, hold colorful toys to attract him/her. Let the child hold the toy. -Reduce the number of times you carry your child. Allow child to play with various objects which he/she can hold or grab on to. Carefully follow and watch your child when playing. - Teach your child to sit and move around to grab the objects,
9-10 months	-Can play peek-a-boo, clap hands, locate hidden objects -Can hold small pieces of food with hands -When the needs something, he/he will point out to the object or use his/her gestures -Understands the language face's appearance and response	-Play peek-a-boo, make different gestures and play clap hands with your child frequently -Allow child to put small pieces of foods into his/her mouth like cooked rice, boiled squash. Do not give peanuts or any other kinds of food that can induce choking. Give small pieces of food so that child can eat by him/herself. - Teach your child to use his/her facial/body gestures, e.g., pointing to items. - Talk to child with a soft tone.
11-12 months	- Imitate varieties of posture, e.g., pay respect, kiss the cheek - Drink water from glass with some help - Can say one word correctly, understands No and Stop - Can hold 2 items in both hands and knock it together - Can stand alone for a while	- Parents should be a role model for the child to imitate the postures, e.g., greeting. The parents should praise the child whenever he/she can do it. - Allow the child to hold a plastic cup with small amount of water for the child to drink. The parents can help by holding the cup. - Teach your child to say short, correct words about people and the surrounding environment such as papa, mama, grandma.

Child's age	Child development	Methods which the parents can use to help the child develop well
		- Parents should say NO to stop the child whenever he/she want to do something dangerous or serious misbehavior. - Allow child to hold unbreakable items in both hands and one by one. - Prepare a safe place (flat and not slippery) for the child to crawl or stand. Pay careful attention and encourage child when he/she attempts to stand.
13-15 months	- Able to imitate easy activities, e.g., comb hair, give and take objects - Hold a spoon and put food into his/her moth - Able to some things, e.g., point out body part or picture, speak 1-3 correct words - Catch 2-3 pieces of objects or boxes - Able to walk by him/herself	- Allow your child to imitate easy activities, e.g., comb hair, pick some objects for you. Praise the child when he/she can do it. - Allow your child to hold a spoon and help your child to put food into his/her mouth. The spoon should be small and should not be sharp. - Teach your child about his/her face and body, name of objects in the house. - Expose the child with the objects of different sizes and surface. Teach the child to keep them in the box after playing. - -Provide close care during the child playing.
16-18 months	- The child feels good when he/she is interested in something. Knows how to say no, e.g., shakes face -Able to hold a cup of water or milk by him/herself and can spill some -Able to some easy things when ordered by parents -Can say 5 meaningful words Able to put 2-3 blocks of wood	- Parents should have time to play with their child and take care of him/her. - While giving instruction, use positive words - Allow child to drink small amount of water from a cup, follow commands given by parents like putting back the toys in a box. If the child do not understand, parents can do it first as a model and always talk with your child. - Find some open area or safe place for your child to move, climb and run freely. Hold his/her hand when climbing up the stairs. Place objects on the top of the stairs and encourage him/her to walk up the stairs.

Child's age	Child development	Methods which the parents can use to help the child develop well
	Can find hidden items Able to run, walk up the steps by holding on to something with one hand	
19-24 months	Shows emotions, e.g., fear, anger, jealousy, and empathy Able to use spoon to dig into the food and eat by him/herself. Small amounts of food will spill out of the dish. Can say 2-3 words together or say 50-100 meaningful words. Can open a book page by page Can draw a crossed line Can kick the ball Can stand up and pick up objects without falling down	- Talk to your child to let him/her express his/her feelings such as anger, happiness - Train your child to help him/herself to the daily tasks such as putting on clothes, going to the toilet, washing hands before eating, brushing teeth - Always talk to your child clearly about the things that you are doing. Teach child how to greet, when to say thank you and when to say sorry - Tell your child a short story with gestures. Encourage child to open the books and look at the pictures. Provide opportunities for the child to write and draw - Allow your child to play and exercise. Parents should exercise and be a good role model for the child to follow. Train your child to help him/herself in doing daily tasks, e.g., putting clothes, washing hands, going to toilet

Source: Ministry of Public Health-Thailand, 2005

References

AHC and GIZ. (2019). Family Stimulation Guide for Child Development (Draft). Phnom Penh, Cambodia.

AAP. (2014) Maintaining and Improving the Oral Health of Young Children: Section on Oral Health Pediatrics, 134 (6) 1224-1229; DOI: 10.1542/peds.2014-2984.

Annear P.L., Grundy J., Ir, P., Jacobs, B., Men, C., Nachtnebel, M., et al. (2015). The Kingdom of Cambodia health system review. 5(2). Manila: World Health Organization Regional Office for the Western Pacific.

ASEAN, UNICEF & WHO. (2016). Regional Report on Nutrition Security in ASEAN, Volume 2. Bangkok, Thailand: UNICEF.

Bagriansky J., Champa, N., Pak, I., Whitney, S., and Laillou, A. (2014) The economic consequences of malnutrition in Cambodia, more than 400 million lost annually. Asia Pac J Clin Nutr; 23(4):524-531.

Cashin, K. and Oot, L. (2018). Guide to Anthropometry: A Practical Tool for Program Planners, Managers, and Implementers. Washington, DC: Food and Nutrition Technical Assistance III Project (FANTA)/FHI 360.

Cervinskas, J., Gerein, N.M., & George, S. (Eds.). (1992). Growth Promotion for Child Development Proceedings of a colloquium held in Nyeri, Kenya, 12-13 May 1992. Ithaca, NY: International Development Research Centre (Canada).

Chhoun, P., Pal, K., Oy, S., Collins, C., Tout, S., & Yi, S. (2016). Social Determinants of Maternal and Child Under-nutrition in Cambodia: A Systematic Review. International Journal of Food and Nutritional Science 3:2331-337.

Council for Agricultural and Rural Development. (2017). Midterm and Strategic Review of the National Strategy of Food Safety and Nutrition 2014-2018. Phnom Penh, Cambodia: CARD.

De Onis, M. and Blössner, M. (2003). The World Health Organization Global Database on Child Growth and Malnutrition: methodology and applications, *International Journal of Epidemiology*, Volume 32, Issue 4, August 2003, Pages 518–526, https://doi.org/10.1093/ije/dyg099

FDI World Dental Federation. (2015). Oral Health Worldwide: A Report. Retrieved from https://www.fdiworlddental.org/sites/default/files/media/documents/2015_wohd-whitepaper-oral_health_worldwide.pdf; April 5, 2020

Griffiths, M. & Rosso, J.D. (2007). GMP of healthy young child growth: evidence of effectiveness and potential to prevent malnutrition. Washington, DC: Manoff Group.

Handicap International, Happy Child Project and MOH. (n.d.) Child Development Milestones Leaflet. Phnom Penh, Cambodia.

Ikeda, N., Irie, Y., & Shibuya, K. (2013). Determinants of reduced child stunting in Cambodia: analysis of pooled data from three Demographic and Health Surveys. Bulletin of the World Health Organization 2013; 91:341-349.

Koan Chlaat. (n.d.) Actions to and should not be done for young children. Retrieved from https://www.koanchlaat.org/article/5/48, April 10. 2020.

Koan Chlaat. (n.d.) How can parents make children's play useful. Retrieved from https://www.koanchlaat.org/article/5/43, April 10. 2020.

Koan Chlaat. (n.d.) What are activities effective for children? Retrieved from https://www.koanchlaat.org/article/5/41, April 10. 2020.

Mangasaryan, N., Arabi, M., and Schultink, W. (2011). Revisiting the concept of growth monitoring and its possible role in community-based nutrition programs. Food and Nutrition Bulletin, vol. 32, no. 1.

Ministry of Health. (2007). Guidelines on Minimum Package of Activities for Health Center Development 2008-2015. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2008). National Policy on Infant and Young Child Feeding. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2009a). MPA Module 10: Nutrition. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2009b). National Nutrition Strategy 2009-2015. Phnom Penh, Cambodia: National Nutrition Program, National Maternal and Child Health Center.

Ministry of Health. (2011). National Policy and Guidelines for Micronutrient Supplementation to Prevent and Control Deficiencies in Cambodia. Phnom Penh, Cambodia, MOH.

Ministry of Health. (2012). National Guidelines for the Management of Acute Malnutrition. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2016). Health Strategic Plan: 2016-2020. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2017). Community Engagement Handbook. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2018). Handbook on Outpatient Management of Acute Malnutrition. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2019). Antenatal, Delivery and Postpartum Care Package Guidelines. Phnom Penh, Cambodia: MOH.

Ministry of Health. (2020). National Guidelines on Oral Health. Phnom Penh, Cambodia: MOH.

Ministry of Public Health. (2005). Mother and Child Health Book. Bangkok, Thailand: MPH.

Ministry of Health & WHO. (2012). Cambodia Health Service Delivery Profile. Phnom Penh, Cambodia: MOH.

Moench-Pfanner, R., Silo, S., Laillou, A., Wieringa, F., Hong, R., Hong, R., et al. (2016). The economic burden of malnutrition in pregnant women and children under 5 years of age in Cambodia. Nutrients, 8(5), 292.

National Institute of Statistics, Directorate General for Health & ICF International. (2015). Cambodia Demographic and Health Survey 2014. Phnom Penh, Cambodia, and Rockville, Maryland, USA: National Institute of Statistics, Directorate General for Health, and ICF International.

Ngoun, C. Stoey, L.M., Basel, K., and de Mey, P. (2019). Community-Based Developmental Milestones Assessment Tool for Cambodian Children. Angkor Hospital for Children (AHC) and Gesellschaft fur Internationale Zusammenarbeit (GIZ), Phnom Pehn, Cambodia.

Turton, B., Chher, T., Sabbah, W. et al. (2019). Epidemiological survey of early childhood caries in Cambodia. *BMC Oral Health*, 19, 107. Retrieved from https://doi.org/10.1186/s12903-019-0800-y.

UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP & World Bank. (2010). Facts for Life. New York, NY: UNICEF.

USAID & URC. (2012). Better Health Services Project: Conditional Cash Transfers: Better Health for Women and Children Technical brief. Phnom Penh, Cambodia: USAID.

Verma, N., Bansal, A., Tyagi, P., Nashine, N., Kulkarni, A., and Gupta, A. Effect of Developmental Milestones on Patterns of Teeth Eruption. Int J Sci Stud 2015;3(5):14-17.

WHO. (1986). The Growth Chart: A tool for use in infant and child health care. Geneva: WHO.

WHO. (2005). Handbook : IMCI integrated management of childhood illness. Geneva: WHO.

WHO. (2008). Training Course on Child Growth Assessment: Module C and Job Aid. Retrieved from https://www.who.int/childgrowth/training/jobaid_weighing_measuring.pdf?ua=1W

WHO (2008). Training Course on Child Growth Assessment: Module B. Geneva, WHO. Retrieved from https://www.who.int/childgrowth/training/module_b_measuring_growth.pdf.

WHO. (2010.) 10 Facts About Early Child Development. Retrieved from https://www.who.int/maternal_child_adolescent/topics/child/development/10facts/en/

WHO. (2016). Promoting oral health in Africa: prevention and control of oral diseases and noma as part of essential noncommunicable disease interventions. WHO Regional Office for Africa.

WHO. (2020). Fact Sheet: Oral Health. Retrieved from https://www.who.int/news-room/fact-sheets/detail/oral-health, April 5, 2020.

Yost, J. and Li, Y. (2008). Promoting Oral Health from Birth Through Childhood: Prevention of Early Childhood Caries. The American Journal of Maternal/Child Nursing: January-February 2008 - Volume 33 - Issue 1 - p 17-23. doi: 10.1097/01.NMC.0000305652.01743.8d