Ministère de la Santé Publique
et de la Population

REPUBLIC OF HAITI
MINISTRY OF PUBLIC HEALTH AND POPULATION

NATIONAL FOOD AND NUTRITION PROGRAMME
COORDINATION UNIT

PROTOCOL FOR THE PREVENTION AND MANAGEMENT OF GLOBAL ACUTE MALNUTRITION IN INFANTS AND CHILDREN UNDER 5 YEARS OF AGE, HAITI

June 2025

TRANSLATED FROM FRENCH TO
ENGLISH VIA MICROSOFT WORD

ACRONYMS

AC : Complementary Foods
SOUL : Exclusive breastfeeding
IYCFA : Infant and Young Child Feeding
ARV **:** Anti Retro Viral
ASCP : Multi-Purpose Community Health Worker
ASF : Specially formulated foods
ASPE **:** Ready-to-use supplementary food **RUTF**
: Ready-to-Use Therapeutic Food **BSFP**
: Blanket Supplementary Feeding
Program
CCC : Communication for Behaviour Change
NCC : Nutrition Advisory Committee
CDAI : Departmental Input Supply Centre
CollVols : Volunteer collaborators
Compass : Combined Protocol for Acute Malnutrition Study
ANC : Prenatal Clinics **ONPC**
: Postnatal Clinics **CSB**
: Corn Soy Blend
CTN : Nutrition Technical Committee
ECBU **:** Cytobacteriological examination of urine
EMMUS : Morbidity, Mortality and Service Utilization Survey
IN : Nutrition Education
AND **:** Standard Deviation
EUM : End-User Monitoring
FAO : United Nations Food Fund
DPF **:** Women of childbearing potential
FEFA : Pregnant and Breastfeeding Women
CNG **:** Global Nutrition Cluster
GTT **:** Technical Working Group **Hb**
:Haemoglobin
UNHCR **:** Community Referral Hospital
HD **:** Departmental Hospital
HU : University Hospital
IHME : Institute for Health Metrics and Evaluation
BMI **:** Body Mass Index
IRA **:** Acute respiratory infection
ISF : Total fertility rate
IVRI : Lower Respiratory Tract Infections
LANPE **:** Ready-to-Use Artificial Milk
MAG : Global Acute Malnutrition
MAM : Moderate acute
malnutrition **RANCH** : Severe acute
malnutrition
Masc : Severe Acute Malnutrition with Complications
MC **:** Chronic Malnutrition
MFK : Meds and Food for Kids
MQ-LNS **:** Medium Quantity Lipid-based Nutrient Supplements
MSPP : Ministry of Public Health and Population
MUAC : Middle Under Arm Circumference

ODD : Sustainable Development Goals
ILO : International Labour Organization
MDGs : Millennium Development Goals
WHO : World Health Organization **NGO** : Non-Governmental Organization **OPS** : Pan American Health Organization **P/A** : Weight-Age Ratio Index
PAM : World Food Programme
PB : Brachial circumference
IMCI : Integrated Management of Childhood Illnesses
PCMAG : Management of Global Acute Malnutrition **NBPCP** **:** Nutrition Counseling Point for Mother and Baby **PEC** **:** Pickup
EPI : Expanded Programme on Immunization
PF : Family Planning
PFDN : Departmental Nutrition Focal Points
GDP **:** Gross domestic product
PMNs : Micronutrient Powders
SNP **:** Supplemental Nutrition Program
PSN : Multisectoral Strategic Plan for Nutrition
PT **:** Weight-to-Size Index
PTA **:** Outpatient Therapeutic Program
PTZ : Weight/Size in Z score
PHA **:** Person living with HIV
RESOMAL **:** Rehydration Solution for Severely Malnourished People
SC : Community System
AIDS : Acquired Immunodeficiency Syndrome
SISNU **:** Single Health Information System
SLEAC **:** Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage
SLM : Breast Milk Substitutes
SMART : Standardized Monitoring and Assessment of Relief and Transitions
SNC **:** Community-Based Nutritional Care
SNG **:** Nasogastric tube
SQ-LNS **:** Small Quantity Lipid-based Nutrient Supplements
SQUEAC **:** Semi-Quantitative Evaluation of Access and Coverage **ORS** : Oral Rehydration Serum
SSPE **:** First echelon health structure
SUN : Scaling Up Nutrition
TBP **:** Pulmonary tuberculosis
TDCI **:** Iodine Deficiency Disorders
TDR : Rapid test
TOE **:** Extrapulmonary tuberculosis
TSS **:** Suction Supplementation Technique
UCNPV : Coordination Unit of the National Immunization Programme
UCPNANu **:** Coordination Unit of the National Food and Nutrition Programme
EU :European Union

UI	**:** International Unity
UNICEF	**:** United Nations Children's Fund
USAID	: United Nations Agency for International Development
USD	**:** Dollars US
USN	**:** Nutritional Stabilization Unit
Vad	**:** Home Visits
HIV	: Human Immunodeficiency Virus
WASH	**:** Water, Sanitation, Hygiene (Eau, Hygiène et Assainissement)
WHA	**:** World Health Assembly

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DEFINITION OF TERMS

Active Screening: Systematic screening for malnutrition in the community.

Passive Screening: Systematic screening for malnutrition in health centres and other facilities (Health Centre and Advanced Strategy Activities).

Systematic screening : This involves the measurement of the upper arm circumference and clinical diagnosis of common pathologies (fever, anorexia, malaria, cough, AKI) of children aged 0 to 59 months with a view to identifying cases of malnourished children.

Food diversification through dietary pathways : This consists of fortification and dietary diversification to sustainably address malnutrition problems and treat micronutrient deficiencies.

Supplementary Nutrition Programme (SNP): Component of a first-level health facility (dispensary, health centre, hospital outpatient clinic) offering services to children suffering from moderate acute malnutrition.

Outpatient Therapeutic Program (PTA): Component of a first-level health facility (dispensary, health center, hospital outpatient clinic) offering services to children suffering from severe acute malnutrition, with a preserved appetite and no medical complications.

Nutritional Stabilization Unit (NSU) A component of the paediatric unit of a hospital providing services to children aged 0 to 5 years suffering from severe acute malnutrition with poor lack of appetite and/or medical complications.

B. OVERVIEW

A.1. General presentation of Haiti

Haiti is a Caribbean country located on the island it shares with the Dominican Republic, to the east. The capital is Port-au-Prince and Haiti is characterized by an area of 27,750 km2, an estimated population of 11,867,032 inhabitants in 2024 with a growth rate of 1.28% per year (IHSI), a total fertility rate (TFR) of 3.00 children/woman (EMMUS-VI) and an estimated life expectancy of 68 years for women and 62 years for men. The proportion of children aged zero to fourteen is estimated at 32.3% and that under five years of age at 21%. Women represent 50.4% of the overall population compared to 49.6% of men1.
In 2023, Haiti had a GDP of USD 1,693 per capita with an annual variation of 0.4% (World Bank 2023) and a fertility rate of 2.77 children per woman (World Bank 2023). Haiti is hit by chronic natural disasters (earthquakes, hurricanes, cyclones, El Nino drought, landslides). In addition to these natural disasters, there are political crises that have become chronic since 2021. The socio-economic situation in Haiti is rapidly deteriorating, marked by gang violence and widespread insecurity, leading to internally displaced populations, a massive departure of populations to North and South America and an increase in humanitarian needs in the country.

A.2. Overview of the Policy of the Ministry of Public Health and Population (MSPP)

In July 2012, Haiti drew up a National Health Policy document with the following vision: "Over the next 25 years, in a context of articulated and dynamic socio-economic development, the Haitian health system will evolve and morbidity and mortality will decrease significantly. Haitians have equitable access to the quality services and care defined in the Essential Service Package, adjusted as needed, taking into account changes in the epidemiological and demographic profile." The health situation in Haiti is characterized by a crude mortality rate of 8.0‰ in 2023, a maternal mortality rate of 850 per 100,000 live births in 2023, a neonatal mortality rate of 23.0‰ in 2023, and infant and child mortality of 55‰ in 202323. Several causes can be mentioned to explain infant and child mortality. Complete data on this issue are not available for the country of Haiti as a whole, but it is known that overall, malnutrition is an underlying cause of death in 35% of cases. Overall, 9/10 of the ten leading causes of death in Haiti cited by the Institute for Health Metrics and Evaluation (IHME), namely ischemic heart disease, stroke, lower respiratory tract infections (UTRI), HIV/AIDS, neonatal disorders, diabetes, diarrheal diseases, birth defects, acts of interpersonal violence and chronic acute kidney failure, are related to nutrition.

[1] Haitian Institute of Statistics and Informatics (IHSI). 2021

[2] World Bank, WHO, EMMUS VI
[3] United Nations World Population Prospects

A.3. Overview of the Nutrition Policy and Strategies in Haiti

The Government of Haiti, through the Ministry of Public Health and Population (MSPP), has adopted a holistic approach to malnutrition, addressing its many determinants, an approach that is intended to be preventive and multisectoral. To achieve this, it has been essential to complement the institutional approach with a community-based approach to ensure better geographical coverage of nutrition activities. The Nutrition Strategic Plan for the last 5 years (2012-2017) has supported the national nutrition policy towards the achievement of the Millennium Development Goals (MDGs), five (5) of the 8 MDGs of which are related to nutrition. Indeed, malnutrition is one of the most significant obstacles to achieving the MDGs and affects human capital as a whole. To date, Haiti has halved the prevalence of underweight children under five. In 2024, a new Multisectoral Strategic Plan for Nutrition (NSP) from 2024 to 2029 is being developed.

A.4. Overview of the new Multisectoral Strategic Plan for Nutrition (NSP)

The objective of the national nutrition policy is "*to improve the nutritional and health status of the Haitian population, particularly those of vulnerable groups such as pregnant women, lactating women and children under 5 years of age, while strengthening strategies to combat the double burden of malnutrition and micronutrient deficiencies*".

At the national level, Haiti's Multisectoral Strategic Plan for Nutrition is based on national commitments, including:

- Haiti's Strategic Development Plan (2012-2030), in particular on its third major project, which is the social refoundation, which is divided into 9 programs;
- It is also part of the Health Master Plan of the Ministry of Public Health and Population (2021-2031);
- The new Plan currently being developed will also benefit from the achievements of the implementation of policies and strategies developed by nutrition-sensitive sectors (cited in section 4.) in terms of improving the nutritional situation of the population;
- The new Plan will be based on international frameworks and guidelines aimed at improving the nutritional status of populations, namely:
    - The Scaling Up Nutrition (SUN) movement in which Haiti has been involved since 2012;
    - The Sustainable Development Goals (SDGs), Goal 2 of which aims to "End hunger, achieve food security and improved nutrition and promote sustainable agriculture";
    - The Goals of the 2012 World Health Assembly;
    - The country's food systems roadmap, an outcome of the United Nations Global Food Systems Summit held in September 20214.
    - Countries' commitments at *the Nutrition for Growth Summit in December 2021* , aimed at accelerating the achievement of the 2025 nutrition goals.
    - The new WHO guidelines for the prevention and management of acute malnutrition published in 2023.

[4] https:// www.un.org/en/food-systems-summit/news/making-food-systems-work-people-planet-and-prosperity

A.5. Nutritional status

Malnutrition is both a cause and a consequence of poverty in that it negatively affects all aspects of the person, namely health and development, by limiting economic progress and social development. Chronic malnutrition is the ultimate point of impact of all interventions, it is a key indicator of a nation's development.

In Haiti, the nutritional situation in particular remains precarious. According to the SMART surveys from 2012 to 2023 (11 years), global acute malnutrition (GAM) has always been around 5%, varying in ups and downs between 4.1%, 6.0% and 5.1% with a peak in 2020 at 6.0%. However, given the cyclical nature of the GAM indicator and the seesaw evolution of prevalences in Haiti, it would be appropriate to work to reduce and maintain the prevalence of GAM at 3% by 2030, targeting actions to strengthen routine nutrition activities in which the management of GAM is integrated. The most widespread form of malnutrition in Haiti is stunting (deficit in height in relation to age) with a prevalence of 22% (EMMUS-VI 2017) in children under 5 years of age, i.e. one in five children. This level has remained unchanged since 2012 and has, on average, decreased by 0.4 percentage points per year since the early 2000s. This annual rate of reduction will remain insufficient for Haiti to achieve the global target5 of reducing stunting by 50% by 2030, i.e. reaching a prevalence of 11%.

Exclusive breastfeeding (UMA) during the first 6 months of a child's life is a key indicator of Infant and Young Child Feeding (IYCF) practices and is very important for the child's growth. In Haiti from 1995 to 2017, the rate of EI varied from 4 to 40% and never reached the 70% mark that is the global target by 2030. However, this rate rose sharply between 1995 and 2006, rising from 4% to 40% with an annual gain of 3.3 percentage points. From 2006 to 2017, the EI rate stagnated at 40%, i.e. 11 years of non-progress. So, to reach the 70% target by 2030, considerable efforts must be made in the promotion of EA.

On the other hand, micronutrient deficiencies are also widespread in Haiti. Nevertheless, iron deficiency anaemia represents the most serious problem with a national prevalence of 68% in children under 5 years of age, i.e. 2 out of 3 children. The situation is even more worrying among young children in the 6-23 month age group with a prevalence of 79% (i.e. 4 out of 5 children). These levels have remained largely unchanged since the early 2000s, and this lack of progress highlights the urgency of addressing the problem of iron deficiency throughout the life cycle, and more specifically in these children.

According to the WHO classification, a prevalence of anaemia above 40% represents a serious public health problem. In view of the very high prevalence of anaemia in children under 5 years of age (1.5 times the severity threshold of 40% according to the WHO), the fight against micronutrient deficiencies in general should be made a priority in order to compensate for all the other known deficiencies that are also public health problems in Haiti and others for which data are not yet available to measure the extent of the problem.

[5] The extension of the 2025 Maternal, infant and young child nutrition targets to 2030. WHO/UNICEF, discussion paper.

To prevent and treat global acute malnutrition, Haiti has adopted a protocol for the management of global acute malnutrition since 2010. The first international protocol for the management of global acute malnutrition was developed in 2005 following the severe nutritional crisis in Niger in 2005.
In 2013, the WHO published new PCMAG guidelines and subsequently research initiatives on the simplified protocol and then simplified approaches that are not WHO 2013 recommendations were developed. Starting in 2016, Haiti through the ComPAS (Combined Protocol for Acute Malnutrition Study) implemented in emergency areas (drought with El Nino effect and Hurricane Matthew) the simplified protocol which constituted in a continuum of care to treat SAM and MAM children with the same RUTF product (SAM: 2 sachets/child/day and MAM: 1 sachet/child/day). To this day, Haiti continues to implement this simplified protocol in the continuum of care in very vulnerable and insecure areas.

In 2023, the WHO published new PCMAG guidelines that present changes from the 2013 guidelines and its two guidelines are not integrated into Haiti's *PCMAG* Protocol. This is why and in order to update Haiti's 2010 PCMAG Protocol, revised in 2016, the MSPP requested UNICEF's technical and financial support for the revision of the PCMAG protocol to take into account the practices of implementation of the PCMAG protocol in Haiti since 2010 and also the new 2023 WHO PCMAG guidelines.

To provide technical support to the MSPP, UNICEF and all partners (WFP, PAHO/WHO, FAO, and national and international NGOs) under the leadership of the MSPP have contributed effectively to the transition to a new PCMAG protocol in Haiti.

A.6. Situation of the Management of Global Acute Malnutrition (PCMAG)

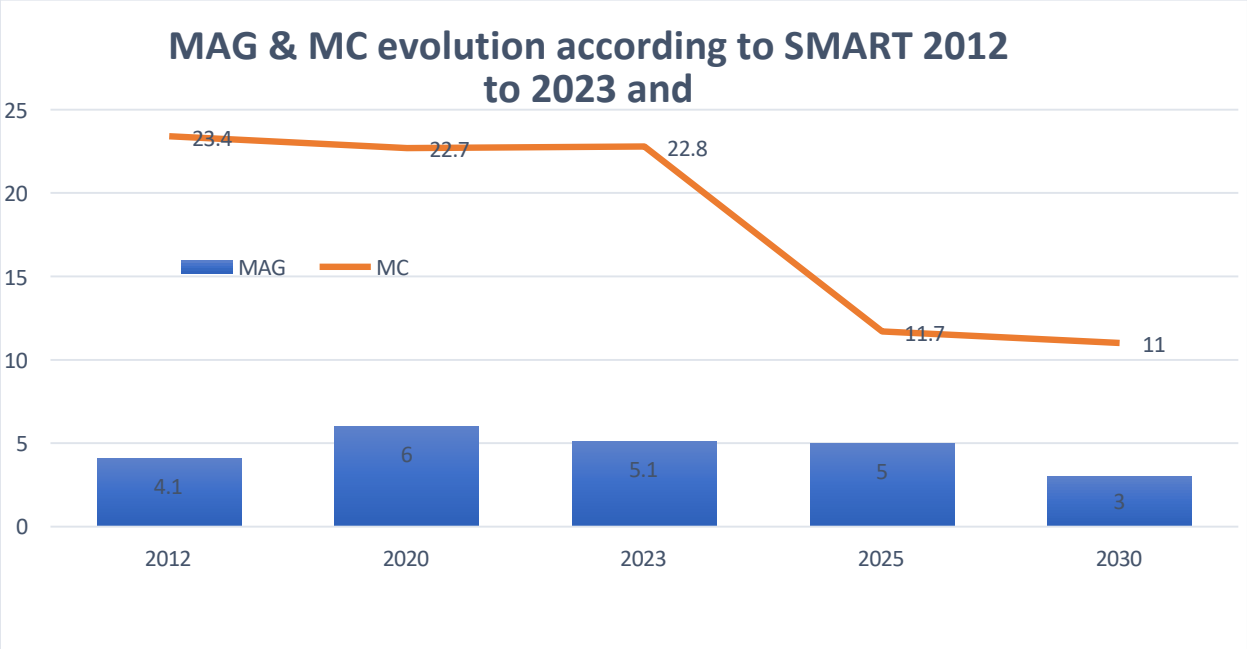
A.6.1. PCMAG Retrospective Analysis

Evolution of MAG admission coverage versus nutritional status.
Although the completeness of the data remains low, which partly explains this low coverage of GAM admissions (less than 50%), but the low coverage is consistent with the nutritional status of children, which has not improved since 2012.

Figures I: Evolution of coverage of children under 5 years of age (2018 – 2022)

Source : Elaboration propre à partir des rapports statistiques des départements

Figures II: SMART MAG and MC evolution 2022 to 2023 and WHA2025/ODD2030 targets



From 2012 to 2023 (11 years) according to the SMART surveys, global acute malnutrition (GAM) has always been around 5%, varying in a sawtooth between 4.1%, 6.0% and 5.1% with a peak in 2020 at 6.0%. Hence our goal to reduce the prevalence of GAM to 3% by 2030.

A.6.2. Roles and responsibilities of the PCMAG actors

At the national level, nutrition is a unit housed within the Ministry of Health. The national unit for the coordination of nutrition activities is called UCPNANu (Coordination Unit of the National Food and Nutrition Programme). At the decentralized level, i.e. in the 10 departments, the UCPNANu is represented by ten (10) Nutrition Focal Points (NFPs) who are in charge of the management of nutritional inputs in the CDAI (Departmental Input Supply Center) in close collaboration with the health centers. Nutrition activities in Haiti are integrated with those of health at the health center level and at the community level using the same ASCP (Multipurpose Community Health Agent).

A.6.2.1. National level

The UCPNANu, in partnership with the sectoral ministries (MAST, MARNDR, MPCE, MENFP/PNCS, MCFDF), the United Nations agencies (UNICEF, WFP, PAHO/WHO, FAO, IAEA), the European Union, the World Bank, USAID and national and international NGOs, defines the priorities of the nutrition sector, ensures the coordination and monitoring and evaluation of nutrition actions and interventions through field visits and especially the implementation of the monthly meeting platform of the CTN (Technical Committee for Nutrition) which is held every last Friday of the month.

A.6.2.2. Departmental level

The UCPNANu is represented at the level of the ten (10) departments of Haiti by ten (10) Nutrition Focal Points (NDPs) and their assistants. The ten (10) NDTCs ensure the

Coordination of all nutrition activities, including the management of nutrition inputs, in collaboration with intervention partners.

A.7. Nutrition in Emergencies

A.7.1. Promotion and Protection of Breastfeeding

Breastfeeding is of paramount importance for the growth and development of the child. In emergency situations, children under 2 years of age of breastfeeding age are the most vulnerable as the psychosocial stress experienced by mothers can deprive children of breast milk. In emergency situations, nutrition programs are often inclined to promote breastmilk substitutes. However, international and national recommendations on breastfeeding in emergencies are clear and specific on the promotion and protection of breastfeeding. Haiti strongly recommends compliance with Codex Alimentarius standards and the promotion of breastfeeding at all times and in all places, including Exclusive Breastfeeding (AME) during the first 6 months of the child's life, which is very important for the child's growth.

A.7.2. Maternal and Baby Nutrition Counselling Points (MCNPC)

The MBNPC is part of a Haiti-specific strategy for the promotion of breastfeeding even in emergency situations. This strategy, implemented in tents in Haiti after the earthquake of January 12, 2010, has proven to be very effective and has allowed the promotion and continuity of breastfeeding among women who have suffered post-traumatic shock. Since then, the NBPNP strategy has spread throughout the country and has continued even in normal situations.

A.7.3. Ready-to-Use Artificial Milk (LANPE)

Ready-to-use Artificial Milk (LANPE) was used in Haiti after the earthquake of January 12, 2010 as a breastmilk substitute for women who are unable to breastfeed. Since 2010, Haiti has selected LANPE as a breastmilk substitute product in emergency situations, if necessary.

A.7.4. Management of acute malnutrition

The care of malnourished children is done in emergency situations in the 3 units: severe malnourished children with medical complications in the USN, severe children without medical complications in the PTA and moderate malnourished children in the PNS. The admission and examination criteria, and the performance of the nutritional units are described below in the Management section.

A.8. Coordination and Partnership

A.8.1. Central and decentralized coordination

The Ministry of Public Health and Population, through the UCPNANu, ensures the coordination of all nutrition activities at the national and international levels. This unit, together with the sectoral ministries (MAST, MARNDR, MPCE, MENFP/PNCS, MCFDF), the United Nations agencies (UNICEF, WFP, PAHO/WHO, FAO, IAEA), the European Union, the World Bank, USAID and national and international NGOs, defines the priorities of the nutrition sector, ensures the coordination and monitoring and evaluation of actions and interventions in nutrition through field visits and especially the implementation of the monthly meeting platform of the CTN (Technical Committee for Nutrition). All actors and partners participate in this monthly coordination meeting in person or remotely. In an emergency situation,

UCPNANu activates the nutrition cluster and in collaboration with the Global Nutrition Cluster, represented by a coordination cluster in Haiti, conducts more frequent nutrition cluster coordination meetings.

At the level of the ten (10) departments of Haiti, ten (10) Nutrition Focal Points (NFPs) and their assistants, ensure the coordination of all nutrition activities including the management of nutritional inputs in collaboration with intervention partners. Monthly coordination meetings are also instituted in each of the 10 departments. Nutrition interventions take place at the institutional level in health institutions and at the community level through assembly posts or home visits conducted by Multipurpose Community Health Workers (CSHWs) and support groups (volunteer collaborators and mothers' and fathers' clubs).

A.8.2. Inter-stakeholder partnership and the private sector

The commitment and participation of the private sector in achieving nutrition goals is necessary and indispensable. The role of the private sector is key in the local production of Ready-to-Use Therapeutic Foods (RUTF), compliance with Codex Alimentarius standards for breastmilk substitutes, infant flours, and fortified foods. In Haiti, a strategic partnership has been developed with MFK for the local production of RUTF in the Nord department. This partnership with MFK has made it possible to supply at least 80% of the RUTF consumed in Haiti.

D. COMMUNITY SYSTEM

B.1. Organization of the Community system

The community system (CS) that ensures the continuity of health and nutrition services between health centres and communities consists of CHAs, community leaders, influencers, and support groups including Collaborating Volunteers (CollVols), mothers' and fathers' clubs. The SC is organized around the ASCPs according to a ratio of at least 20 ASCPs to 1 health institution. However, there are times when there are fewer than 10 CHWs per health centre. According to the ASCP's specifications (screening, referencing, home follow-ups and case finding, awareness-raising and cooking demonstrations), it is recommended to have 1 ASCP for 20 households/20 children. In the event that the number of ASCPs is insufficient, less than 20 ASCPs/health centre, the SC should be organized by including the support groups in the mode of five (5) support groups under the coordination of 1 ASCP in order to cover the specifications of the 20 CHAs recommended for a health institution.

B.2. Community Involvement

Community engagement consists of federating the entire community system around a project or program in order to obtain the greatest community participation and involvement. It will therefore be necessary, through information, awareness-raising and training sessions, to explain and involve the entire community system in the programme so that the community can take ownership of the programme.

B.3. Community activities

B.3.1. Systematic community-based screening

The entire community system is involved in screening activities. If it is well carried out and recurrent, screening makes it possible to detect malnourished children early and prevent the complication of malnutrition cases.
Systematic screening, with a view to identifying malnourished children, is carried out both at the community level (active screening by the MUAC and the search for oedema) and in all existing health institutions (passive screening during routine activities with the Weight/Height ratio, the MUC and the search for oedema), for their admission to malnutrition management programs (PNS/PTA/USN).

Tools and materials

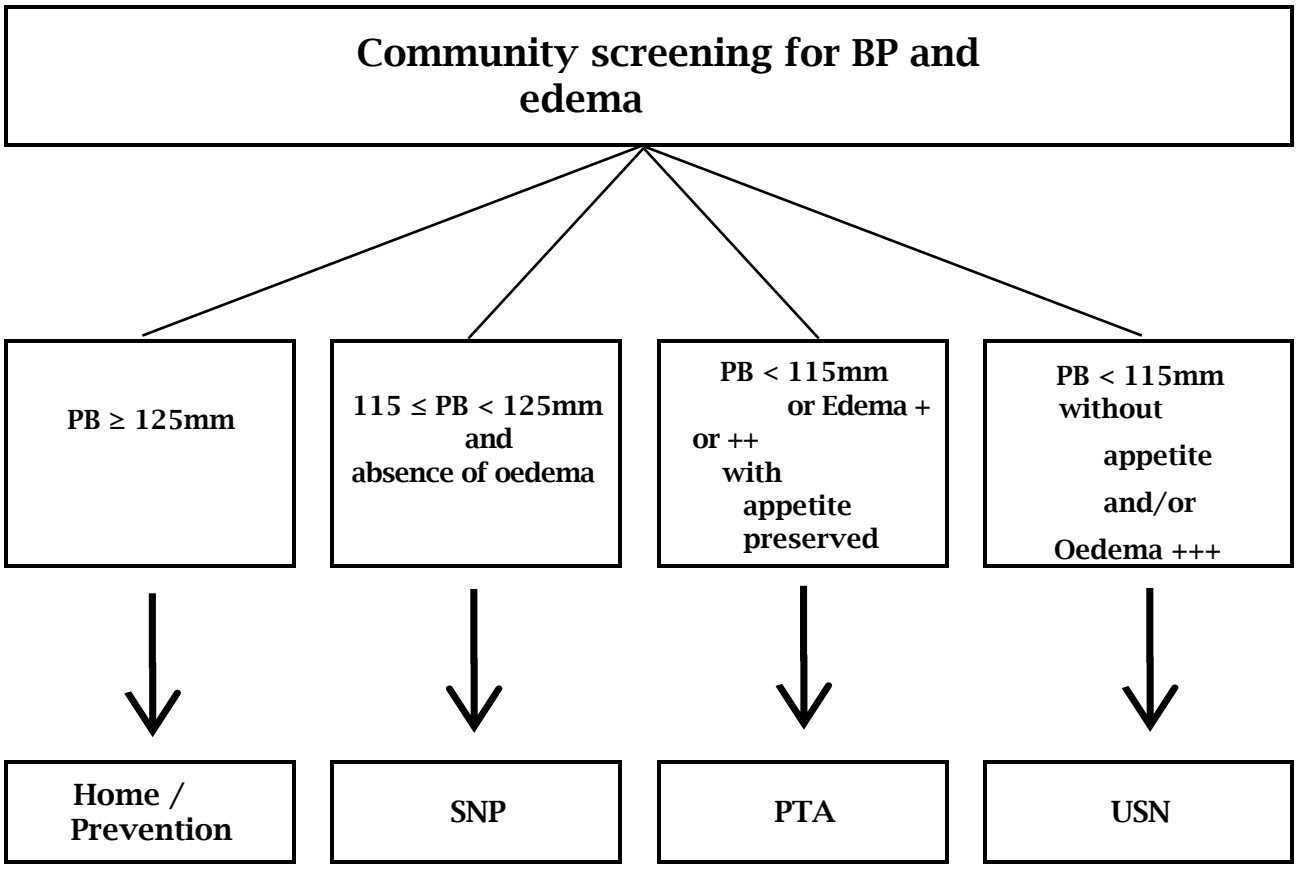
Community level: PB/MUAC, screening sheet, ASCP register, reference and counter-reference sheet, pencil, sharpener, eraser;
Institutional level: PB/MUAC, toise, scale with at least an accuracy of 100g, screening sheet, WHO 2006 unisex weight/height ratio table, consultation register, PCMAG register, reference/counter-reference/transfer card, pencil, sharpener, eraser, handwashing devices plus soap.

In a normal situation, all cases detected at the community level will be confirmed at the level of the health centers by health professionals, who will assess the nutritional status of all the children who present to the centers. Children screened in the community are referred to the nearest health centre for

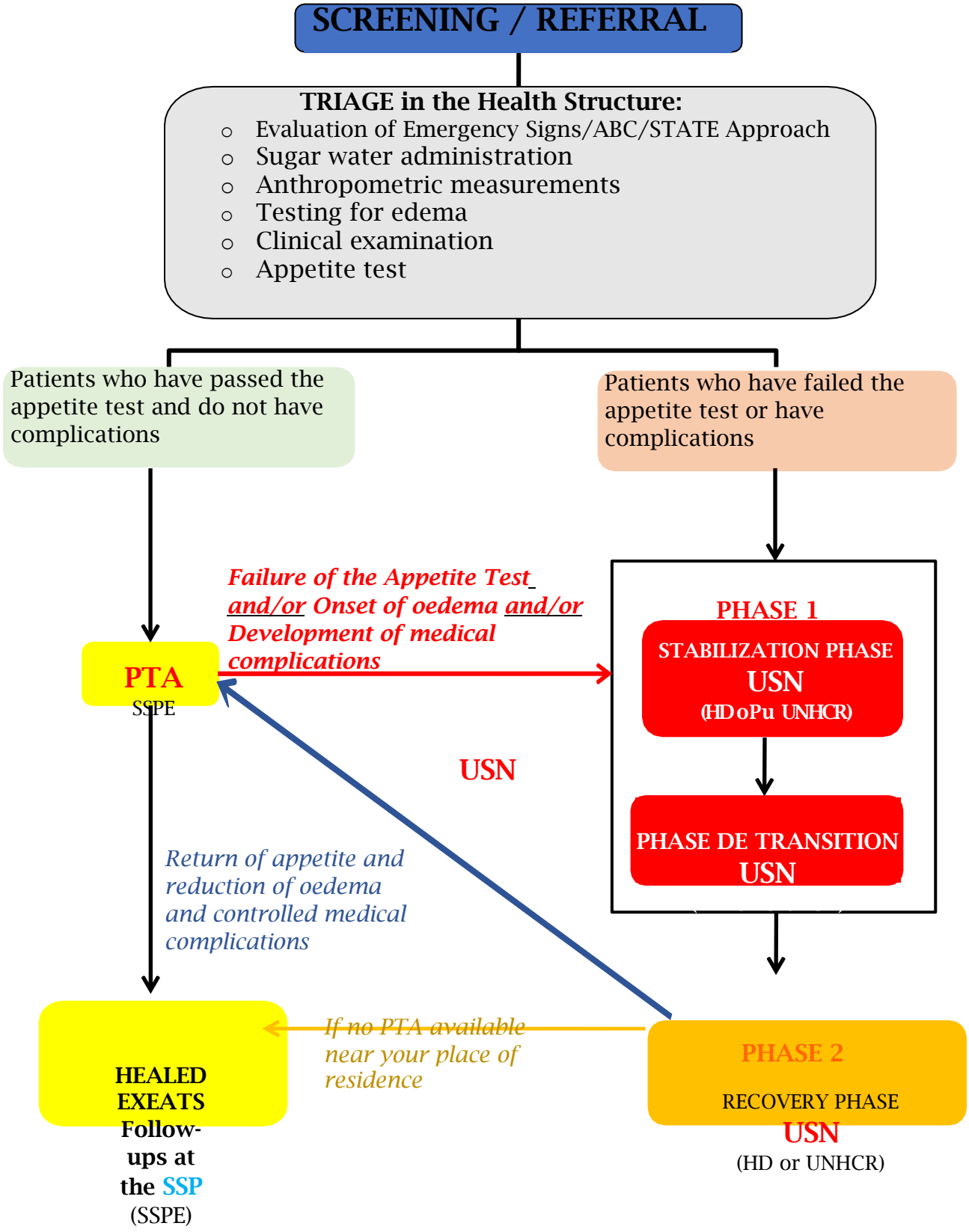
confirmation of cases diagnosed by ASCP, to differentiate between SAM or MAM patients and those who are not malnourished:

- Patients with a weight/height index between ≥ - 3 and < - 2 SD or Z-score, and/or MUAC between ≥ 115 and < 125 mm must be taken care of at the PNS;
- Patients with a weight/height index < -3 SD or Z-score without medical complications or a MUAC < 115 mm and oedema + or ++ with retained appetite are managed on an outpatient basis at the PTA;
- Patients with a MUAC < 115 mm or a Weight/Height index < -3 SD or Z score with medical complications or patients with bilateral edema +++ or loss of appetite are referred to the USN.

Figure III: Community-level screening



Figures IV: Screening at the level of health institutions



B.3.2. Awareness and Nutrition Education (IYCF, WASH, Health, Food Security)

Community participation is essential in raising awareness among households. Awareness-raising activities involve communication and capacity building at the community level involving opinion leaders and all local authorities (administrative, customary, religious and community), with the collaboration of ASCPs and support groups. The involvement of the entire SC is essential and will make it possible to set up effective awareness-raising for a change in behavior in the communities.

B.3.3. Cooking demonstration

The culinary demonstration activities are part of the reinforcement of complementary feeding through food diversification. Indeed, by using local food products, ASCPs and support groups accompany and sensitize women in households on the preparation of porridge and other complementary foods. In view of the eating habits of young children, particular emphasis will be placed on the consumption of fruits, vegetables and eggs while targeting the most affordable and locally available foods.

B.3.4. Home Tracking

Malnourished children requiring home follow-up are identified by the health centre staff who inform the ASCP. Home follow-up is necessary for acutely malnourished children with:

- Poor response to treatment;
- Weight loss or stationary weight;
- Minor medical complications that could lead to a rapid deterioration in their nutritional status;
- Mothers who doubt their ability to take care of children at home;
- An exit from the PCMAG program;
- The need for IYCF support based on the assessment of feeding practices.

B.3.5. Search for cases of absence and abandonment

Home visits (VaD) are a support for families. It should be done in the following situations:

- Absence from appointments during PTA/SNP visits (to determine if they are travelling, have dropped out of the program or have died);
- Companions who refused admission to the USN, despite raising awareness. VaD

times should be decided by mutual agreement between the nursing staff of the centres, the ASCPs and the people caring for the children.

Any absence from the PTA/SNP should be investigated by the ASCPs and/or support groups. It is important to know the reason for the absence as soon as possible and to encourage parents to return to the centre. The families of absent children should not be reprimanded at the risk of being demotivated.

E. PREVENTION OF MALNUTRITION

C.1. Prevention and control of micronutrient deficiencies

Micronutrient deficiencies are also widespread in Haiti. Nevertheless, iron deficiency anaemia represents the major problem with a national prevalence of 68% in children under 5 years of age, i.e. 2 out of 3 children. The situation is even more worrying among young children in the 6-23 month age group with a prevalence of 79% (i.e. 4 out of 5 children). These levels have remained largely unchanged since the early 2000s, and this lack of progress highlights the urgency of addressing iron deficiency throughout the life cycle, specifically in these children.
According to the WHO classification, a prevalence of anaemia above 40% represents a serious public health problem. In view of the very high prevalence of anaemia in children under 5 years of age (1.5 times the threshold of severity according to the WHO, 68% compared to 40%), the fight against micronutrient deficiencies in general should be made a priority in order to compensate for all the other known deficiencies that are also public health problems in Haiti and others for which data are not yet available to measure the extent of the disease. problem.

C.1.1. Vitamin A supplementation of children aged 6-59 months

The 2023 SMART surveys show that the diet of young children aged 6 to 59 months is poor and not very diversified to be able to cover vitamin A needs. Only 40% of children aged 6 to 23 months had a good dietary diversity (at least five out of 8 food groups). The minimum acceptable frequency of meals consumed the day before the survey among children aged 6 to 23 months was only 16.3%, and access to a minimum acceptable diet was only 16.4%.

The MSPP and its partners (PAHO/WHO and UNICEF) have set up a vitamin A supplementation (2 annual doses) and deworming program for children aged 6 to 59 months in all ten (10) departments. However, given the high prevalence of Vitamin A deficiency in Haiti, it was decided to have 3 annual doses, because at 4 months the hepatic depletion of retinol reserves has already begun, without risk of overdose; especially since the consumption of foods that are sources of Vitamin A of animal and plant origin is very low, according to the results of the study on the prevalence of vitamin A deficiency /IHE 2005 and EMMUS-VI. The schedule to follow is as follows for the 3 annual doses 4 months apart:

- For children 6 to 11 months of age, give 1 capsule of 100,000 IU of Vitamin A, or 1/2 capsule of 200,000 IU (4 drops)
- For children 12 to 83 months of age, give 2 capsules of 100,000 IU of Vitamin A, or 1 capsule of 200,000 IU

C.1.2. Supplementation of children from 6 to 59 months with Multi Micronutrient Powders (BB VANYAN)

Micronutrient deficiencies are associated with:
1) very reduced bioavailability of plant-based nutrients, and
2) food insecurity.

Anaemia is present in all age groups: 65% of children aged 6-59 months; 56% of adolescent girls and 35% of adolescents aged 15-19; iodized salt is consumed in 18% of households (EMMUS-VI 2016-2017).
There are two main ways to improve the nutritional status of young children: supplementation and dietary pathways. Supplementation, generally used to address micronutrient deficiencies (Iron, Zinc, Iodine and Vitamin A), is an effective strategy because the micronutrients used are highly absorbable and bioavailable. However, for developing countries like Haiti, this strategy creates a certain dependence on micronutrient capsules and does not provide a sustainable response to micronutrient deficiency issues.
Since 2010, the MSPP and its partners have adopted a 15-micronutrient powder called BB VANYAN based on the micronutrient deficiencies identified, which is used in multi-micronutrient supplementation programs in healthy children over 6 months of age. For its use:

- ❖ Mix the contents of the VANYAN BB packet in a small portion of solid or soft food before serving to the child.
- ❖ Do not give a child more than one (1) sachet per day.
- ❖ Start feeding the child with the portion containing the BB VANYAN, and then continue with the rest of the plate.

C.1.3. Iron and folic acid supplementation in pregnant and breastfeeding women

Iron deficiency anaemia, the most serious problem of micronutrient deficiencies, has a national prevalence of 48% among women of reproductive age (FAP), or about one in two women (EMMUS-VI 2017). This prevalence of anaemia in FAP has hardly changed since the early 2000s, and this lack of progress compromises the achievement of the target of 24%, i.e. 50% reduction in anaemia in FAP by 2025[6]. According to the WHO classification, a prevalence of anaemia above 40% represents a serious public health problem.
This is why the MSPP and its partners (PAHO/WHO and UNICEF) have set up an iron and folic acid supplementation programme for pregnant and breastfeeding women in all 10 departments, from the first antenatal visit to weaning:

- 1 tablet per day of ferrous sulphate + folic acid (60mg + 400µg) if haemoglobin ≥ 10 g/dl;
- 2 tablets per day of ferrous sulphate + folic acid (60mg + 400µg) if anaemia, 7 ≤ haemoglobin < 10 g/dl
- If hemoglobin < 7 g/dl, referred to the hospital.

Prenatal multivitamin supplementation is also done on a large scale and helps reduce iron deficiency anemia in pregnant women.

C.1.4. Promoting the consumption of iodized salt and combating CIDD

Iodine deficiency and iodine deficiency disorders have multiple causes, the major ones being insufficient dietary iodine intake and excessive consumption of goitrogenic foods. The consequences are:

- Goiter
- Cretinism

[6] 2015 Global Targets to improve maternal, infant and young child nutrition. WHO.

- Stunting,
- Delayed intellectual development.

In Haiti, household consumption of iodized salt remains very low despite the national iodized salt promotion programs set up by the MSPP and its partners (USAID, through the RANFÒSE project, UNICEF). Indeed, the lowest levels of iodized salt consumption according to EMMUS-VI are:

- 8.1% nationally (91.9% of households do not consume iodized salt);
- 5.5% in the South (94.5% of households do not consume iodized salt);
- By 5% in the North-West (95% of households do not consume iodized salt).

The MSPP strongly encourages the promotion and use of iodized salt for all family needs, at a rate of 3 to 5 g per person per day.

C.1.5. Promoting dietary diversification through food

According to the 2023 SMART surveys, the introduction of complementary feeding (solid, semi-solid or soft) from the age of 6 months was observed in 93% of children aged 6 to 23 months. Only 40% of children in this age group had a good dietary diversity (at least 5 out of 8 food groups). The minimum acceptable frequency of meals consumed the day before the survey among children aged 6 to 23 months affected only 16.3%, and access to a minimum acceptable diet was only 16.4%. This shows that the diet of young people aged 6 to 59 months is poor and not very diversified. In parallel with supplementation, it is necessary to implement the second strategy, known as dietary pathways, which consists of fortification and dietary diversification. The food-based strategy has the merit of providing a sustainable response to the problems of malnutrition, but its implementation requires time, the involvement of several actors and the resulting results are often difficult to assess. Dietary pathways can also be used to treat micronutrient deficiencies by:

- Increasing the production and availability and marketing of foods rich in these micronutrients at affordable prices;
- The possibility of making vitamin A and iron easily absorbed by the body through deworming and the production and consumption of foods rich in bioavailable iron and vitamin A;
- Promoting the cultivation of new plant varieties that contain high amounts of micronutrients with greater bioavailability;
- Micronutrient fortification of locally consumed foods;
- Nutrition education programs to change eating behavior to increase the consumption of these foods.

C.1.5.1. Public Health Agriculture linked to livelihoods

One of the ways to improve nutrition would be the implementation of the Public Health Agriculture approach, which consists of orienting agricultural production towards products rich in micronutrients whose deficiencies have been identified. Indeed, the promotion of vegetable gardens also called "Jaden Lakou", the production of red palm oil, yellow-fleshed potatoes to name but a few examples can help fight against vitamin A deficiencies and other micronutrients.

C.1.5.2. Large-scale fortification (iron flour, vitamin oil)

A)

To strengthen the fight against micronutrient deficiencies, Haiti has adopted large-scale fortification of certain vectors, including soft wheat flour with iron, cooking oil with vitamin A and salt with iodine for human and animal food.

C.1.5.3. Distribution of dietary nutritional supplements (Plumpy Doz or Corn Soy Blend (CSB) in emergency situations

The MSPP and its main partner WFP are implementing a programme for the prevention of acute malnutrition in emergency situations based on the distribution of food nutrition products such as Plumpy Doz or super cereal flour (CSB) to all children aged 6 to 59 months during the 3-month lean season. This program, commonly known as the Family Nutritional Supplementation Program, is set up specifically in emergency areas. The rations are used as follows:

- Plumpy Doz: 1 sachet of 50g per child per day;
- CSB: 100 g per person per day

C.2. Breastfeeding promotion

C.2.1 Analysis of the situation

Exclusive breastfeeding (AME) during the first 6 months of the child's life is very important for the child's growth. Breastfeeding immediately after birth and the continuation of exclusive breastfeeding (only breast milk, without water or other liquids or solids apart from medication in the form of syrup) allows the child to benefit from colostrum (first milk) rich in immunoglobulins or antibodies, hence the child's first vaccine, but also and above all all all the nutrients and benefits of breast milk to ensure its optimal growth during the first 6 years months of life. Breast milk is the unique, specific food that is very well adapted to all the nutritional needs of the child during the first 6 months of life. In Haiti from 1995 to 2017 the AME rate varied from 4 to 40% and never reached the 50% mark, the global target of SDG2. **From 2006 to 2017, the AME rate stagnated at 40%, i.e. 11 years of non-progress.** However, this rate experienced a sharp decline between 2017 and 2023 ranging from 40 to 17.5% with a regression of 3.75 percentage points annually. So, in view of this regression and the very critical socio-political context currently in Haiti, it is almost impossible to reach the target of 50% by 2025. As there is no disaggregated data to characterize regional, socio-economic or urban-rural disparities, efforts to promote AME must be carried out at the national level. Given the importance of EI for optimal child survival and growth and the level of regression of the EI rate to 17.5% in 2023, this indicator should be made a top priority.

C.2.2. Nutritional Advice Point for Mother and Baby (PCNMB)

The NBPNPs are part of a Haiti-specific strategy for the promotion of breastfeeding even in emergencies. This CPNB strategy, implemented in tents in Haiti after the earthquake of January 12, 2010, has proven to be very effective and has allowed the promotion and continuation of breastfeeding among women suffering from post-traumatic shock. Since then, the NBPNP strategy has spread throughout the country and has continued even in normal situations.

C.2.3. Breastfeeding Protection and Support

C.2.3.1. Actions at the government level and policy makers To protect and support breastfeeding by creating an enabling environment, important actions are expected from government and policymakers. These actions include:

- Increase funding to strengthen the implementation, monitoring and enforcement of national policies and plans that support breastfeeding;
- Adopt, monitor and enforce legislation that regulates the marketing and promotion of breastmilk substitutes (MLS) and bottled water for infants. The focus should be on the International Code of Marketing of SLMs;
- Work with businesses and social insurance schemes to adopt family- and working-mother-friendly policies, in line with the International Labour Organization (ILO) guidelines on maternity protection.

C.2.3.2. Actions at the level of programme managers

At the level of programme managers, significant actions are expected to protect and support breastfeeding. The main actions are:

- Update breastfeeding training programmes in training schools, health institutions and community health centres;
- Strengthen counselling skills and improve knowledge on the benefits of breastfeeding, especially exclusive breastfeeding;
- Design and implement evidence-based social and behaviour change strategies. This is to promote sustainable changes in behaviours and social norms in favour of breastfeeding;
- Engage mothers, grandmothers, other family members and community networks in the development and implementation of realistic solutions to address barriers to breastfeeding. Emphasis should be placed on not giving water during the first six months of life.

C.2.3.3. Actions at the level of health professionals

Health professionals play a very important role in protecting and supporting breastfeeding. To this end, important actions are expected at their level as follows:

- Comply with laws and regulations that protect and encourage breastfeeding, including the International Code of Marketing of Infant SLM and the Ten Steps (Revised) to Successful Breastfeeding;
- Develop their knowledge of the importance of giving breast milk only and the risks of giving water (and other liquids or foods) to children under six (6) months of age;
- Develop their practical skills in teaching proper positioning and latching, manual expression of breast milk, safe storage, and how to express breast milk to nourish the baby;
- Improve their counselling skills, especially listening, problem-solving, and confidence-building of breastfeeding women;

- Advise family members to give only breast milk to infants during the first six months of life.

C.2.3.4. Actions at the level of the private sector

Engagement with the private sector to protect and support breastfeeding is the key to successful breastfeeding. To this end, important actions are expected at the level of the private sector, as follows:

- Compliance with laws and regulations that protect breastfeeding and the International Code of Marketing of SLM for Infants;
- The implementation of family-friendly policies to support working breastfeeding women, providing them with maternity leave and space, time and support to breastfeed in the workplace.

C.3. Promotion of Complementary Feeding

C.3.1. Analysis of the situation

It is important to understand the context before implementing any program, especially prevention. Understanding the context necessarily requires a good analysis of the situation. The complete and comprehensive analysis of the situation must be done according to the 8 key steps below:

1. Complementary feeding indicators *(Status, trends, and predictors);*
2. Policy landscape of health, nutrition, social protection and agriculture sectors (others as appropriate);
3. Program Service Delivery;
4. Knowledge, attitudes and practices;
5. Mapping of actors;
6. Patterns of food consumption, nutrient deficiencies and diet costs;
7. Barriers to access to adequate complementary foods – *in markets and at the household level;*
8. Composition and marketing of locally prepared commercial complementary foods.

C.3.2. Multi-System Approach (Food, Health, WASH, and Social Protection) to improve young children's diets.

Interventions or programmes that address the underlying determinants, development and nutrition of the fetus and child – food security; adequate care resources at the maternal, household and community levels; and access to health services and a safe and hygienic environment must include specific nutrition goals and measures.
Programmes or interventions from other sectors (WASH, Health, Food, Social Protection and Education) can serve as delivery platforms for nutrition-specific interventions, potentially increasing their scale, coverage and effectiveness

Food system: Improving the availability, geographical and financial accessibility, multisectorality around nutrition, the attractiveness of food for young children.

The food system is quite complex, encompassing all elements and activities related to the production, processing, storage, distribution, marketing, preparation and consumption of food

The food system is essential to ensure healthy, affordable and sustainable food for children. However, the nutritional needs of children are generally not a priority for actors in this system.
It is therefore important to collaborate with the actors in this system with the aim of promoting nutritious, safe, affordable and sustainable complementary diets for young children. The strategic actions proposed in the framework for action for the food system at each of the 3 levels (policy, institutional, community/household/individual) take into account the following determinants subdivided into 2 components:

- **The food supply chain** (including the actors and activities involved in the production, storage, distribution, processing and packaging of food):
    - Lack of nutrition-sensitive agricultural policies, programmes and investment plans;
    - Limited technology and incentives to produce nutrient-rich crops;
    - Limitations of appropriate post-harvest management technologies.

- **Food socio-cultural** (referring to the physical, economic, political, and socio-cultural context in which consumers interact with food systems to procure, prepare, and ultimately consume food):
    - Limited availability and affordability of nutritious food in local markets;
    - Weak regulation of prepared commercial complementary foods and inappropriate marketing of foods with limited nutritional value;
    - The high cost of nutritious and diverse complementary foods.

Health system : Improving the availability, quality, and affordability through multisectoral nutrition and utilization of health and nutrition services for young children

- A strong health system includes preventive and curative services, promotes best practices in health, nutrition and hygiene, and contributes to equitable outcomes (hence the importance of training health professionals);
- The health system offers an important opportunity to improve the availability, quality, affordability and use of health and nutrition services for young children in both health facilities and communities.

Nutrition is integrated into the health system in Haiti using the same CDAI supply chain, health professionals, and ASCP. As a result, vaccination platforms must be used for the nutritional screening of children under 5 years of age and vice versa.

Water, hygiene and sanitation (WASH): Improving the availability, quality, affordability and use of safe drinking water, hygiene and sanitation services and practices for young children.

It is very important to note that good hygiene practices are essential for good nutrition. In this sense, water-related problems and diarrhoeal diseases are directly and indirectly responsible for 45% of malnutrition among the

children under 5 years of age. This is why it is imperative to set up a WASH component in nutrition programmes and especially in the management of malnutrition at the institutional and community levels, to not only speed up treatment but also and above all to avoid relapses. It is said that water is life, so we must improve access to drinking water, hand washing with soap under running water, food and environmental hygiene, stop open defecation to stem the faecal danger.

Social Protection System : **To improve the availability, quality, affordability and use of adequate food and services for young children.**

- The social protection system refers to a set of policies and programmes aimed at protecting all people from poverty, vulnerability and social exclusion throughout their lives, with a focus on vulnerable groups;
- The social protection system can increase household resources, reduce the costs of food and nutrition services;
- Services to strengthen women's empowerment and decision-making about household spending can also improve access to nutritious complementary foods.

In Haiti, social protection programs are essentially food distributions or vouchers and occasionally small cash transfers.

The multi-system approach is essentially aimed at achieving the following key objectives:

- Harness the potential of food, health, water, sanitation, social protection and education systems to achieve results for young children;
- Making key systems more responsive to nutrition outcomes;
- Going beyond coordination – reinforcing the need for shared vision, joint planning and monitoring;
- Strengthen multisectorality around a common vision;
- Leverage the existence of multiple systems to reach as many children as possible and improve their diets in an appropriate and systematic way.

C.4. Comprehensive and multisectoral approaches to the prevention of malnutrition

C.4.1. Post-exercise monitoring with emphasis on multi-system activities for nutrition (e.g. WASH, Food Security and Social Protection)

After nutritional treatment, children should be followed up with post-discharge interventions, including:

- Counselling and education (on infant and young child feeding practices, recognition of common childhood illnesses and appropriate health behaviours); support to provide appropriate care; and clean water, sanitation and hygiene interventions.

C.4.2. Distribute protection rations for 3 months to the households of children discharged from the USN in emergency situations.

To accelerate progress in the care of severely malnourished children with medical complications in hospitals, WFP, in its emergency programme, distributes dry protective rations for 3 months to

families of children discharged from the programme for the management of severe acute malnutrition with medical complications. These discharged children are admitted to the PTA/PNS to continue treatment. It is therefore during PTA/PNS treatment that parents receive these protection rations to reduce the sharing of RUTF with all members of the family and also to increase the care given to these severely malnourished children without medical complications.
For children who have been discharged from PNS, dietary supplements such as AK-1000, super cereals and others should be available to consolidate the gains of treatment in these children.

C.4.3. Refer parents of malnourished children to social protection programs

To speed up the treatment and recovery of malnourished children, the families of these children are supported in a social protection program that consists of increasing household incomes in income-generating activities (goat and cattle breeding, agriculture, gardening, small businesses).

C.4.4. Strengthening health and nutrition education (Promotion of good IYCF practices, Public Health Agriculture)

To change inadequate eating practices in young children, nutrition education can be a motivation and an opportunity for people to adopt healthy eating habits and lifestyles. Nutrition and health education, if done well, can help bring about behaviour change. To do this, it must be made specific and adapted to the context and use influential channels and people. To overcome inadequate practices and improve the nutritional status of Haitian young children, it is important to evaluate and disseminate a Behavior Change Communication (MCC) strategy for mothers on feeding practices through the promotion of appropriate and valued practices on Infant and Young Child Feeding (IYCF). IYCF will be promoted through nutritional education on early initiation of breastfeeding, exclusive breastfeeding and the importance of continuing breastfeeding until at least 24 months; the introduction of adequate complementary foods (CAs) at least twice a day in addition to breast milk from 6 months of age and the adoption of good food hygiene rules for young children. Four approaches are implemented in the overall CCC strategy. These are:

- **Action research**

The action research strategy consists first of all in identifying the obstacles to the promotion of IYCF practices and then developing and applying a CCC strategy on IYCF among mothers. The diagnosis of the existing situation, which is essential to any scientific approach, will be carried out through CAP Baseline surveys, focus groups and semi-structured interviews which will constitute reference situations. This action would be coupled with the promotion and distribution to mothers of micronutrient powders (PMNs) and ORS + zinc for their use in children under 5 years of age and iron and folic acid or prenatal multivitamins for pregnant and breastfeeding women.

- **Partnership approach**

The partnership for integration and efficiency of actions is an essential approach for the success of the CCC strategy. To this end, a strategic partnership strategy will be developed through social safety nets with the decentralised technical structures of the MSPP, local and international NGOs, mayors,

local organizations and religious and customary communities. These social safety nets of partners will be developed with a view to synergy and complementarity of actions. An informal steering committee composed of stakeholder representatives will be set up. This committee, in collaboration with the communities concerned, will launch the project's activities in the health district through a workshop.

- **Community participation**

Information and awareness-raising meetings involving all stakeholders (influencers, health professionals, UCPNANu, NFPs, mayors, community and religious leaders) will be organized to explain the foundations of the strategy, motivate communities to obtain their support and active participation in CCC activities, a guarantee of its success. The goal is for the communities to take ownership of all the activities and adopt good practices.

- **Gender approach**

The gender approach, a topical concept that is increasingly widespread because of its central importance in the process of community development, will be at the heart of the CCC strategy. Indeed, one of the major arguments in favour of the gender approach would be that decision-making power in the household is exclusively reserved for men, while awareness messages on nutrition and health have so far been addressed to women. And so we should involve men more and more in awareness-raising sessions in the hope of having more decisions taken in favor of children and women.

C.4.5. Integrated package of 4 key interventions

According to Lilia Bliznashka, et al., (Global Heath, 2023) [7], there is an integrated package of 4 effective interventions to consolidate healing and avoid relapses which are:

1. Zinc supplementation (associated with a reduction in multiple morbidities after discharge);
2. Conditional cash transfers (associated with a reduction in relapses);
3. Dietary supplement;
4. Psychosocial stimulation.

C.4.5.1. Zinc supplementation over a period of 10 days

Indeed, zinc tablet supplementation during episodes of diarrhea is a practice that exists in Haiti in the prevention of diarrheal diseases. In the programme for the prevention and management of malnutrition, zinc supplementation should be combined with the 3 other interventions to consolidate the cure and avoid relapses in cured children.

C.4.5.2. Cash transfers with parental commitment

The Social Protection System can be defined as a set of policies and programmes aimed at protecting all people from poverty, vulnerability and social exclusion throughout the life course, with a focus on vulnerable groups. It includes non-contributory arrangements (Social transfers,

[7] Analysis of Post discharge Interventions for Children Treated for Moderate or Severe Wasting, Growth Faltering or Failure, or Edema. A Systematic Review. Global Heath, 2023. *Lilia Bliznashka, PhD; Susan M. Rattigan, BA; Christopher R. Sudfeld, ScD; Sheila Isanaka, ScD.*

social services) and contributory services (Social Insurance). Social protection goes far beyond cash transfers.
Cash transfers in addition to routine care can reduce relapses and improve the child's overall health in outpatient care and after discharge from treatment, depending on contextual factors such as cost.

C.4.5.3. Dietary Supplements (MQ-LNS / SQ-LNS: Medium Quantity / Small Quantity Lipid-based Nutrient Supplements)

SQ-LNS is given to young children aged 6-23 months as a supplement and not as a substitute for complementary foods usually consumed in households. The quantities and frequencies of consumption will therefore depend on the usual modes and frequencies of consumption of complementary foods. For the moment there is only LNS in international standard format, no formulation yet made to take into account the consumption levels and eating habits of the specific targeted communities. It would then be recommended to give standard LNS according to the usual frequency of consumption of complementary foods in Haiti (2 meals/day).
From the various studies carried out, it emerges, in order of importance, that the following platforms are the best suited for the implementation of the intervention:

- Community platforms;
- Health centres;
- Mass campaigns.

They can also be used as a means of motivating caregivers to use health services or to promote participation in community activities (IYCF) and follow-up visits at the level of Prenatal Clinics (PNCs).
It is also recommended that the distribution of SQ-LNS be coupled with awareness messages on IYCF best practices.

NB. The use of LNS to improve early childhood complementary feeding is part of the home fortification strategy for complementary foods, which is integrated into the overall IYCF strategy. Therefore, the use of the LNS for its effectiveness must and can only be done in an integrated approach to the improvement of the IYCF in a global way.

C.4.5.4. Psychomotor stimulation

It should continue to be provided by mothers/guardians after transfer from inpatient treatment and discharge from outpatient treatment, with psychomotor stimulation interventions as part of routine care to improve the child's psychological development and anthropometric outcomes.

D. GRIP IN LOAD AMBULATORY FROM THE MALNUTRITION MODERATE ACUTE (MAM)

The management of children diagnosed with moderate acute malnutrition (MAM) consists of supplementing their dietary needs with 40 to 60% of their dietary needs, while ensuring that the remaining 60 to 40% are covered. To achieve this goal, a sustainable approach is one that uses local food products through a partnership enshrined in the Global Action Plan. In Haiti, the MSPP recommends an intake of 500 kcal provided by ready-to-use foods, such as RUTF.

Statements

1. Infants and children aged 6 to 59 months with AMS (defined as weight-for-height between -2 and -3 Z scores and/or a mid-upper arm circumference equal to or greater than 115 mm and less than 125 mm, without edema) should have access to a nutrient-rich diet such as RUTF, in order to fully satisfy their additional needs to regain their weight, height and to improve their survival, health and development.
2. All infants and children 6 to 59 months of age with AMS should be fully assessed and treated, where possible, for the medical and psychosocial problems causing or exacerbating this episode of AMS.

Priorities for MAMs

1. Assess and treat medical problems;
2. Promote/Foster access to a nutrient-rich family diet for healthy growth;
3. Give 1 sachet of RUTF to the MAM child daily to **supplement** their recommended essential daily needs
4. Feed 1 packet of ready-to-use supplementation food (HOSE) daily in place of RUTF if available.

D.1. Admission requirements

Admission criteria for children aged 6 to 59 months with AMS are defined according to the community or institutional level.

- At the community level, screening of MAM children will be done only with the MUAC. It must be **greater than 115 mm and less than or equal to 125 mm (yellow BP, 115 < and ≤ 125), without oedema.**
- At the level of health institutions, the screening of MAM children will be done taking into account the two P/T and MUAC criteria as follows: **a weight-for-height ratio between -2 and -3 Z scores (-3ET < and ≤ -2SD) and/or a mid-upper arm circumference greater than 115 mm and less than or equal to 125 mm (115 < and ≤ 125), without oedema.**

Other types of admission

- Relapse: admission of a MAM child who had already been cared for and executed cured, and who returns in less than 2 months in a state of moderate acute malnutrition;
- Internal transfer: a child with MAM who arrives because he or she has been transferred by another centre while still under treatment for malnutrition;
- Readmission after discontinuation < 2 months: return within 2 months after discontinuation of treatment

D.2. Systematic medical treatment

Before administering the systematic medical treatment, which is not a global recommendation but a choice of Haiti, it would be necessary to first carry out a medical examination which will consist of checking whether the patients have received deworming as part of a national campaign (ditto for vitamin A) and whether they have not received a dose within the recommended national time. either to administer a dose, or to postpone it to the next campaign (if we are sure that it will take place). But it should also be made clear that if there is a clinical indication for deworming, it should be administered for curative purposes.

Table 1: Routine medical treatment of AMS

Age group	Deworming
Child 6 to 11 months (6 to 8 kg)	**Not indicated**
Child 12 to 59 months (>8kg) (at the 2nd visit if not received within the last 6 months)	**Mebendazole**: **500 mg cp** 1 tablet of 500 mg as a single dose **Mebendazole:** 100 mg **cp** 1 tablet X 2 per day for three days **Or** **albendazole:** 12-23 months: CP **400 mg** 1/2 tablet as a single dose 12-23 months: CP **200 mg** 1 tablet in a single dose 24-59 months: CP **400 mg** 1 single-dose tablet

D.3. Curative medical treatment

Iron + Folic Acid will be administered only to anaemic children for 3 months and vitamin A according to the prevention/treatment regimen in force in Haiti, according to the following doses.

Table 2: Dosage of Iron, Folic Acid and Vitamin A in Children Under 5 Years of Age

Giving iron: one dose a day for 3 months			**Give Vitamin A 1 dose on D1, D2 and D15 if there is a sign of deficiency**	
WEIGHT (if not aged)	IRON/FOLATE TABLET 10 mg/kg/day	IRON IN SYRUP Iron Fumarate 100 mg per 5 ml (20 mg iron element per ml)	AGE	Vitamin A capsule 100,000 IU or 200,000 IU
6 to < 10 kg (6 months to 11 months)	**N/A**	1.25 ml (1/4 teaspoon)	6 to 11 month	1 capsule 100,000 IU or 1/2 Capsule (4 drops) 200,000
10 to < 14 kg (12 months to 3 years)	1/2 tablet	2.00 ml (1/2 teaspoon)	12 to 59 month	2 capsules 100,000 IU or 1 capsule 200,000 IU (8 drops)
14 to < 19 kg (3 to 5 years)	1/2 tablet	2.5 ml (1/2 teaspoon)		

D.4 Medical examination

The child's vaccination status is checked and updated if necessary by the ASCP. In the event of a health problem or medical complications, the child should be seen by a qualified health professional (refer to the PTA or USN if complications). At the level of the health institution, verification of vaccination status or other medical complications should be done under the supervision of a qualified health professional.

D.5. Monitoring nutritional status

D.5.1 Measurement of the evolution of anthropometric parameters

The nutritional status will be monitored at each visit for each child, i.e. every 2 weeks. Children's height measurement will be taken at intake, and then each month, weight and MUAC are taken at each visit. The P/T index should be scored according to the interval -3 < and ≤ -2 Z score, the PB 115 mm < and ≤ 125 mm in health institutions. At the community level, monitoring should be done using the MUC only. At the institutional level, monitoring will be done using weight, height and MUAC.

D.5.2 IYCF Consulting

The IYCF advice has been clearly defined in the prevention section of this protocol (*see Part C. Prevention*).

D.6. Treatment failure

In the event of a stable weight after two (2) consecutive follow-ups or weight loss, it is important to discuss with the mother to understand the reasons and adopt a course of action.

Possible causes.

- Other pathologies: malaria, diarrhoea, acute respiratory infections, tuberculosis, HIV/AIDS, etc.;
- A change of child (another member of the siblings, twin);
- The accompanying person tries to keep his child as long as possible in the program because of the advantage of the supplementation ration/food security problem;
- Insufficient quantity and nutritional quality of the ration (inadequate quantity received, sharing of the ration at home, poor preparation of the porridge).

Actions to be taken

Above all, it is necessary to look for the causes of these failures and try to compensate for them as best as possible:

- Make a home visit to check the conditions of hygiene, IYCF, the sharing of the ration to be discouraged, the general conditions of the family;
- Refer as needed.

NB: An analysis of treatment failure must always be carried out before taking any action, and this analysis must be noted in the centre's cards or registers.

D.7. Exit criteria

The exit criteria specify that both PTZ and PB must be standardized (PTZ > -2 SD and PB > 125 mm, respectively).

E. OUTPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION WITHOUT MEDICAL COMPLICATIONS (MAS)

E.1. Outpatient management of severe acute malnutrition without medical complications in children 6 to 59 months of age

We treat SAM children because we will provide them with ready-to-use therapeutic food (RUTF) in sufficient quantities to cover all of their nutrient needs for recovery.

E.1.1. Admission Criteria Table 3:

Admission Criteria for the PTA

AGE	PTA ADMISSION CRITERIA
6 to 59 months	P/T ≤ -3 Z score or PB≤ 115mm or Presence of bilateral oedema + or ++ **And** Good appetite No medical complications Complications Medical not Requiring step hospitalization
NB: children successfully treated at the USN are directly taken care of at the PTA. They are not counted as new admissions.	

Other types of admission to PTA
Relapse : admission of a child with SAM who had already been cared for and exerated/cured, and who returns before 2 months in a state of severe acute malnutrition without complications;
Internal transfer : MAS child from another PTA or USN;
Readmission after discontinuation < 2 months : Return within 2 months after discontinuation of treatment.
At admission, the IYCF assessment of the mother-child pair should be done to assess whether the diet is appropriate for the child's age and weight, the child's usual fluid and food intake, and the mother's perceived feeding difficulties.

E.1.2. Appetite test

This is a very important criterion that determines the care of the SAM child on an outpatient or inpatient basis. A poor appetite means that the child is severely infected and/or suffers from a metabolic disorder. This child is at risk of death and must be referred to the USN.

How to do an appetite test?

- It is important to ask the carers to wash their hands and those of the child before touching the RUTF;
- The appetite test should be done in a quiet place and with caution;
- Explain to the accompanying person the purpose of the test and how it will be carried out;

- The accompanying person should sit comfortably with the child on their lap and offer the RUTF while encouraging them to eat. If the child refuses, he (she) must then continue to encourage the child and take his or her time;
- The test should normally take a short time, however it can take up to an hour;
- The child must never be forced;
- Offer the child enough water in a cup while taking RUTF.

The Appetite Test is considered "passed" if the volume of RUTF consumed by the child is listed in the table below in the "moderate" or "good" column. **The Appetite Test is considered a "fail"** if the volume of RUTF consumed by the child is in the "poor" column in the table below. The child must, at this time, be examined by a health professional and transferred, if necessary, to a hospital/USN structure.

Note : Failure of the appetite test is an indication for a complete evaluation of the patient's condition and helps in the decision to transfer or not.
However, the appetite test has limitations because there are conditions that can lead to a failure of the appetite test without it being an indication of an infection or metabolic problem. The conditions that can lead to a failure of the appetite test are:

- The child may be stressed in this new environment,
- The child is afraid of eating new foods or has just eaten.

NB. It is important to perform the appetite test carefully and to take the time to assess each child to avoid inappropriate transfers to the hospital, which are difficult and costly for families.

Table 4: Appetite test using a sachet

APPETITE TEST "Moderate" is the minimum amount a malnourished patient must take to pass the appetite test				
Body weight (kg)	**ATPE - Dough in a bag**			
	Proportion of a whole sachet of 92g			**Tablespoons***
	Mediocre	**Moderate**	**Good**	**Good**
Less than 4	< 1/8	1/8 – 1/4	>1/4	1/3 to 2/3
4 - 6.9	< 1/4	1/4 - 1/3	>1/3	2/3 to 1
7 - 9.9	<1/3	1/3 – 1/2	>1/2	1 to 1 1/2
10 - 14.9	<1/2	1/2 – 3/4	>3/4	1 1/2 to 2 1/3
				***One tablespoon = 30g RUTF**

Table 5: Appetite test using a precision scale

APPETITE TEST To pass the appetite test, the child must have consumed at least an amount equal to that in the "moderate" column.			
Body Weight (Kg)	Gram of RUTF		
	Mediocre	Moderate	Good
3 - 3.9	< 15	15 - 20	> 20
4 - 5.9	< 20	20 - 25	> 25
6 - 6.9	< 20	20 - 30	> 30
7 - 7.9	< 25	25 - 35	> 35
8 - 8.9	< 30	30 - 40	> 40
9 - 9.9	< 30	30 - 45	> 45
10 - 11.9	< 35	35 - 50	> 50
12 - 14.9	< 40	40 - 60	> 60

E.1.3. Nutritional treatment

For nutritional treatment, RUTF is used. It is important before starting treatment, to make mothers aware of the importance of breastfeeding for all children who are still breastfed. All of these children should **always** be breastfed **on demand before** consuming RUTF.

- Explain to caregivers how to give RUTF at home;
- For breastfed children, **always** offer the breast before giving RUTF;
- RUTF is a food and medicine intended exclusively for severely malnourished children. It should not be shared with other family members even when the patient has not consumed the entire portion offered. Opened RUTF sachets can be stored without any problem (but in a container and preferably airtight) and consumed during the day;
- Wash the child's hands and face with soap and water before and after the meal as well as the hands of the accompanying person;
- Patients usually have a moderate appetite for the first few weeks and eat slowly, but when the child recovers, the child's appetite will be greater so that he or she can finish the entire intake of RUTF given during recovery;
- Giving small meals regularly and quietly encouraging the child to eat as often as possible (every 3 to 4 hours);
- Tell the mother how many sachets to give per day;
- Always offer water to drink when the child is taking RUTF;
- Explain that RUTF is the only food that the child needs to heal during the duration of outpatient care;
- Explain that the disease has weakened the child's intestines and therefore that the food consumed by the family is not suitable for the child and can even cause diarrhoea. Some foods that are usually eaten can delay recovery. If he asks for other foods, small amounts may be given, but RUTF should always be given **before** any other food and outside family meal times;
- Explain that the child should **NEVER** be forced to eat;

- Explain that the caregiver must, while feeding the child, adopt a compassionate attitude, talk to him, sing him a song and play with him in order to stimulate his appetite and development.

Quantity to be given:

- **150 kcal/kg/day until anthropometric recovery** (PTZ ≥ -2 SD and PB ≥125 mm) and resolution of nutritional edema (previous recommendation was to give **150-220 kcal/kg/day**);

OR

- **150kcal/kg/day until the child is no longer severely malnourished and no longer has nutritional edema**, then **the amount can be reduced to provide 100-130 kcal/kg/day**, until anthropometric recovery and resolution of the nutritional edema.

Table 6: Amount of RUTF to be given in PTA according to the weight of the uncomplicated SAM child

PEC MAS/WHO 2023		Choice of 150Kcal/Kg/J 1 sachet = 92g / 500Kcal	
Class Weight (kg)	**Kcal/Kg/d**	**# Sachets/day**	**Rounded # sachets/d**
3.0 - 3.4	480.00	1.0	1
3.5 - 4.9	630.00	1.3	1
5.0 -6.9	892.50	1.8	2
7.0 - 9.9	1267.50	2.5	3
10.0 - 14.9	1867.50	3.7	4

To facilitate community and institutional care, Haiti has decided to give 2 sachets of RUTF per day to children suffering from SAM without medical complications, for the duration of treatment.

E.1.4. Systematic medical treatment

RUTF already contains all the nutrients required to treat the malnourished child. No additional doses of potassium, magnesium or zinc should be given to MAS children. This "double dose", one from food and the other prescription, is potentially toxic. In particular, an additional dose of potassium should never be given with RUTF. For children with diarrhea who are receiving RUTF or other therapeutic foods containing zinc, it is advisable to give a zinc supplement.

E.1.4.1 Antibiotic therapy

Routine antibiotics should be given to children with SAM, even if they do not show clinical signs of systemic infection. Despite the lack of clinical signs, they **suffer greatly from bacterial overgrowth in the small intestine** and other minor infections.
Treatment with PTA should be based on oral amoxicillin (if amoxicillin is not available, use ampicillin with reference to dosage).

Table 7: Amoxicillin Determination

WEIGHT CLASS	DOSAGE - TWO TIME BY DAY / AMOXICILLIN (80 Has 100 MG/KG/day)	
KG	Syrup 125mg/5ml	Syrup (250mg/5ml)
< 5	5ml*2	2.5ml*2
5 - 10	10ml*2	5ml*2
10 - 20	20ml*2	10ml*2

Note: the reconstituted pendant can be kept in the refrigerator of the house if possible.

- Do not routinely administer antibiotics to children transferred to PTA by the USN or who have been transferred to another PTA because they have likely previously received a series of antibiotics;
- Do not give second-line antibiotics to PTA: any patient who requires such treatment or who suffers from serious infections should be treated with the USN;
- Administer the first dose under supervision and inform the mother that treatment should continue for 7 days. For PTA, it is best to administer antibiotics in the form of syrup to be kept cool at home.

E.1.4.2 Antimalarial treatment

All children should be routinely screened with RDTs. Children with a positive RDT will receive antimalarial treatment according to Haiti's national malaria case management protocol, which recommends the use of chloroquine and primaquine as first-line treatment.

Table 8: Protocol for the management of uncomplicated malaria: Chloroquine and primaquine dual therapy

		Jour 1					Jour 2			Jour 3		
		CHLOROQUINE			PRIMAQUINE		CHLOROQUINE			CHLOROQUINE		
Poids (kg)	Age	Co	Cc Sp	mg	7.5mg	mg base	Tab	Cc Sp	mg base	Co	CC SP	mg base
5-6	<6 mois	½ Co	7.5ml	75	NA	NA	¼ Co	3.75ml	37.5	¼ Co	3.75ml	37.5
6-9	6–11mois	½ Co	7.5ml	75	½-1	3.75-7.5	½ Co	7.5ml	75	½ Co	7.5ml	75
9-12	12–24mois	1 Co	15ml	150	1-1½	7.5-11.25	½ Co	7.5ml	75	½ Co	7.5ml	75
12-15	25–36 mois	1 Co	15ml	150	1-1½	7.5-11.25	½ Co	15ml	150	½ Co	7.5ml	75
15-18	3–4 ans	1 Co	15ml	150	1½-2	11.25-15	1 Co	15ml	150	1 Co	15ml	150
18-24	5–7 ans	1½ Co	22.5ml	225	2-2½	15-18.75	1½ Co	22.5ml	225	1 Co	15ml	150
18-24	8–11 ans	2 Co		300	2½-3½	18.75-26.25	2 Co		300	2 Co		300
24-36	12–14 ans	3 Co		450	4-5	30-37.5	3 Co		450	2 Co		300
50	15+ ans	4 Co		600	5-6	37.5-45	3 Co		450	3 Co		450

Refer cases of severe malaria for management at the USN. In cases where companions refuse transfer to the NCU, treat patients with recommended procedures in a hospital setting (see section on complications).

E.1.4.3 Deworming

Administer an antihelmintic to patients transferred from the USN to an ATP (if they did not receive one in the USN) and to direct admissions to the ATP at the same time as measles vaccination is on admission to avoid oversight. To be repeated every 6 months.

Table 9: Antihelminthic therapy

AGE	< 12 months	12 – 23 months	≥ 24 months
Albendazole 400mg	Do not administer	1/2 tablet	1 tablet
Mebendazole8,500mg	Do not administer	1 tablet	1 tablet
Mebendazole 100mg	Do not administer	1 tablet 2 times a day for three days	

E.1.4.4 Measles vaccination

- Administer measles vaccine to all children over 9 months of age coming from the USN if they have not received it or if the vaccination record is not available;
- Give a 2nd injection to patients transferred from the USN who received a dose to the USN 4 months apart.
- Malnourished children should receive the other EPI vaccines according to the vaccination schedule: (see appendix).

E.1.4.5. Vitamin A

Vitamin A is given only if:

- From measles epidemic to children as a preventive measure;
- Children with ocular signs or a history of measles in the last 3 months should receive a curative dose (D1, D2 and D15 or at discharge).

Table 10: Treatment of Vitamin A in case of measles or ocular signs

AGE	Vit A to be administered orally (one preventive dose in the event of a measles outbreak)	Vit A to be administered orally (one curative dose on D1, D2 and D15 or at discharge)
6 to 11 months	100,000 IU (1 blue capsule)	100,000 IU on D1 and D2 and D15 or at the output
12 months and up	200,000 IU (1 red capsule)	200,000 IU on D1 and D2 and D15 or at the output

Table 11: Routine PTA Treatment

Treatment	Administration
Amoxicillin	1 dose on admission + treatment for 7 days at home for **new admissions only**
Pest control	1 dose in the 4th week to all patients

8 Mebendazole and Albendazole are equally effective drugs against roundworms (Ascaris), but Mebendazole is less effective against hookworms and tricocephalus (Trichuris); therefore, it is recommended to use Albendazole whenever possible.

E.1.5. Follow-up and monitoring procedures at the AWP

At each weekly visit, you must:

- Measure MUC, weight and check for the presence or absence of nutritional oedema;
- Check if the child does not meet the criteria for treatment failure;
- Conduct the IYCF assessment: Assess whether the diet is appropriate based on the child's age and weight, the child's usual intake of fluids and food, and the mother's perceived breastfeeding/feeding difficulties;
- Take body temperature;
- Do the appetite test for all children with low weight gain or weight loss;
- Ask the caregiver if symptoms of IMCI target diseases have been observed, and examine him/her;
- Fill in the individual follow-up form;
- Encourage mothers to continue breastfeeding;
- Discuss feeding difficulties encountered and provide appropriate advice;
- Advise Interactive Feeding and Care Practices;
- Initiate 3-step counselling for IYCF on recommended feeding practices when appetite returns.

DO NOT give excess medications to children with SAM, especially if these medications may decrease appetite:

- Zinc should not be administered to patients on RUTF;
- Antiemetics should not be used in PTA (they all act as a depressant on the nervous system);
- Cough suppressants should not be administered;
- Paracetamol should be administered in a reduced dose (not exceeding 30mg/Kg/Day) in case of documented fever (temperature> 39˚C);
- Metronidazole (standard or high-dose) should not be given to children with SAM and also ivermectin should not be given to children with nutritional oedema.

Table 12: Activities to be carried out during individual follow-up and psychomotor stimulation

Activities	Frequency
Take the appetite test	At admission and as needed
Weigh	Each visit
Measuring the upper arm circumference	Each visit
Investigate the presence and degree of nutritional edema	Each visit
Measure Size	At admission, then each month and at discharge
Taking body temperature	Each visit
To check the Symptoms or the Signs of infections	Each visit
Clinical Assessments and IYCF	Each visit
Providing IYCF Advice	Each visit
Leading Action Groups	Each visit
Schedule home visits	Depending on the needs
Check and update vaccination status according to the vaccination schedule if necessary	Each visit
Practice education sessions	Each visit

During each visit, talk to the mothers about the following topics:

- Physical, food and environmental hygiene in general;
- The importance of handwashing with soap and water;
- Breastfeeding and complementary feeding;
- Birth spacing/FP;
- The use of impregnated mosquito nets;
- The use of latrines;
- The importance of continuing to attend the health centre.

E.1.6. Treatment failure

Failure to standard treatment can be due to social, nutritional, psychiatric, or medical problems. An attempt at diagnosis must first be made by the PTA staff, in particular social problems.

Table 13: Criteria for poor response to PTA treatment

Criteria for poor response to treatment	Time after admission
Weight loss or stationary weight (non-edematous children) at the start of treatment	14 days
Weight loss or stationary weight for 2 consecutive visits (non-edematous children) during treatment	2 visits
No onset of edema melting	7 days
Oedema still present	14 days
Weight loss ≥ 5% (non-edematous children)	At each visit
No weight gain after the edema has melted or after 14 days for marasmus	At each visit

Note : Any case determined **to be "treatment failure"** should be investigated and referred to the USN for pediatric evaluation.

Some examples of causes of PTA treatment failure

Causes related to the operation of the center:

- Poor patient selection;
- Appetite test poorly done;
- Failure to comply with the advice given by health professionals;
- Incorrect instructions given to the accompanying person;
- Insufficient amount of RUTF given to the child.

Other possible causes:

- Sharing the ration with other family members;
- Traditional belief;
- Common family dish (the child does not have his or her own dish);
- Accompanying person does not take care of the child because of other activities or responsibilities;
- Inappropriate medical prescription;
- Undiagnosed vitamin or mineral deficiency;
- Traditional medicine/administration of herbs that are toxic or affect appetite;
- Other pathologies: malaria, diarrhoea, acute respiratory infections, tuberculosis,

What to do if treatment fails

If some patients do not respond to treatment:

- Assess the appetite test;
- Carefully monitor and re-examine the MAS child;

- Make a home visit if the MAS child has an appetite but does not gain weight at home.

If the problem remains undiagnosed**, refer the patient to the USN for pediatric evaluation.**

E.1.7. Criteria for transferring from PTA to USN

It is necessary to transfer patients treated at the PTA to the USN when they develop signs of serious medical complications (pneumonia, dehydration, etc.). They must remain at the USN until they are fit to return to the PTA. The medical problems that would constitute a criterion for hospital management are:

— Persistent (measured) hypoglycemia after initial emergency corrective treatment;

— Oxygen saturation< 90%;

— Pneumonia (with subcostal draw; and/or rapid breathing; and, if possible, oxygen saturation < 94%);

— Dehydration (whether moderate or severe);

— Severe persistent diarrhoea (14-day diarrhoea or with dehydration);

— Very serious febrile illness – in a malaria area or with a positive rapid diagnostic test (RDT), it is treated as severe malaria;

— Very serious febrile illness – when there is no risk of malaria or with a negative RDT, it is treated as a bacterial disease, e.g. meningitis, etc.;

— Complicated severe measles;

— Mastoiditis;

— Severe anaemia (severe palmar pallor or Hb < 4 g/dL or Hb 4–6 g/dL with signs of decompensation);

— Serious side effects of antiretroviral therapy (for HIV) – rash, difficulty breathing and severe abdominal pain, yellow eyes, fever, vomiting;

— Open or infected skin lesions associated with nutritional edema;

— Other autonomous "priority clinical signs" not classified as danger signs: hypothermia (< 35˚C axillary or 35.5˚C rectal) or high fever (≥ 38.5˚C axillary or 39˚C rectal).

In addition, transfer to the USN any child treated with the PTA who develops any of the following criteria:

- Failure of the appetite test (see procedure for failing the appetite test);
- Increase/appearance of nutritional edema;
- Onset of renutrition diarrhea leading to weight loss;
- Failure to treatment.

Before the transfer to the USN,

- Write the reason for the transfer on the patient's individual file and in the register;
- Fill in the transfer form that summarizes the treatment administered;
- Give the patient a transfer sheet.

E.1.8. Criteria for exiting the PTA

The exit criteria specify that both the PTZ and the PB must be standardized (PTZ > -3 SD and BP >115 mm, respectively) before a child is exeatated.

It is recognized that there may be individual cases of children admitted on the basis of the admission/enrollment criteria Z score P/T and PB which, after long treatment, normalize on one criterion but not on the other. For example, their Z score P/T may be equal to or greater than 2 standard deviations (SD) below the median of the WHO child growth standards (Z score P/T or Z score P/L ≥ -2), but their MUAC remains stagnant and does not reach 115 mm or more, despite prolonged therapeutic feeding.
These children should be assessed by a health care professional (preferably one who has followed their care throughout the process) and, if it is decided that it is safe and appropriate, they may leave outpatient care.
A follow-up visit should be arranged within one month of the child's discharge to assess whether the child's clinical condition is still good and whether it has not deteriorated nutritionally and clinically.

E.1.9. Follow-up after children leave PTA

Children who have left the PTA must benefit from regular follow-up in PNS to continue their care.

Table 14: Performance criteria for a PTA

PTA	Acceptable values	Alarm values
Cured Rate	> 75%	< 50%
Mortality rate	< 3%	> 10%
Dropout rate	< 15%	> 25%
Weight Gain	5 to 10 g/kg/day	< 8 g/kg/day
Length of Stay	< 6 weeks	> 8 weeks

E.1.10. IYCF advice at the exit

The IYCF advice has been clearly defined in the prevention section of this protocol (*see Part C. Prevention*).

F. GRIP IN LOAD FROM THE MALNUTRITION ACUTE SEVERE WITH MEDICAL COMPLICATIONS (MASc)

F.1. Management of severe acute malnutrition with medical complications in children 6 to 59 months of age

The objective of care at the USN is to stabilize the child by treating all pathologies associated with severe acute malnutrition with complications. The aim is to promote the best possible treatment to reduce the risk of death, shorten the length of hospital stay and facilitate recovery and full recovery.

F.1.1. USN Admission Procedures

The child should be treated in the emergency department for the first 24 to 48 hours, as appropriate, before being transferred to the USN.

- Systematically give the child half or a glass of 10% sugar water (1 tablespoon of sugar in 100ml of water) or F75 due to 5 ml/kg/hour or a 10% Glucose bolus PO or IV as soon as he arrives;
- Take anthropometric measurements (weight, height, MUC) and check if there is nutritional oedema;
- Conduct a brief interview about the patient's history and complaints, symptoms and clinical signs;
- Examine the child;
- Do not bathe the newly arrived child;
- Refer to the nurse or physician in charge of the USN for the management of complications.

F.1.2. Admission requirements

The admission criteria are summarized in the table below:

Table 17: Admission Criteria for the USN

AGE	USN ADMISSION REQUIREMENTS
6 at 59 month	Presence of bilateral oedema +++ **or** P/T ≤ -3 Z score **or** PB≤ 115 mm **or** Presence of bilateral oedema + or ++ **and** Poor appetite **and/or** Presence of medical complications **or** **Kwashiorkor and/or Marasmus**

F.1.3. Principles of USN support

Management at the USN is done in two (2) phases and three (3) stages:

- **Phase 1** or Stabilization Phase, followed by the Transition Phase;
- **Phase 2** or Rehabilitation or Recovery Phase.

F.1.3.1. Phase 1 or Stabilization Phase

Children must be cared for in a separate room from other patients because of their fragility. The length of stay depends on the patient's progress.

NB. In the event that we cannot have separate rooms, then we can have malnourished children on one side and non-malnourished children on the other side of the room, using screens to separate the areas, which could further reduce the

spread of infection or malnourished children seeing normal hospital meals.

Nutritional processing: Different types of products

Table 18: The different products for nutritional processing

Product [9]	Description
F75 milk	Therapeutic milk that provides 75 Kcal per 100 ml of milk. Dilute the contents of a sachet or a box of F75 (i.e. 410g of milk powder) in 2 liters of boiled, warm water. This milk should be used during the first few days of treatment of severe malnutrition only in Phase 1, in USN. **It is not intended to make the child gain weight**, but rather to stabilize the child and maintain vital functions.
Milk F10010	Therapeutic milk that provides 100 Kcal per 100 ml of milk. Dilute the contents of a sachet or a can (i.e. 456g of milk powder) in 2 liters of boiled water, lukewarm.
RUTF	Ready-to-use therapeutic food made from peanut paste, with a nutritional value similar to that of F100 milk and which should only be given from 6 months of age. Avoid giving in phase 1 because it contains iron. It is advisable to drink plenty of water when using RUTF.
BP-100	Ready-to-use therapeutic food in compact form. It has the same nutritional value as F100 milk or ATPE. Children under 2 years of age should consume it in the form of porridge, which increases the risk of contamination by water and hygiene. It is therefore best to give it in the form of chewable cookies only to severely malnourished children over 2 years old. **NB. ATPE has a paste-like shape and BP-100 has a biscuit shape.**
ReSoMal	Rehydration solution for malnourished children. It has been specially developed to respond to dehydration in severely malnourished patients (less sodium and more potassium than ORS).

NB: These products are enriched with vitamins and minerals, specifically for the treatment of severe malnutrition.

9 The composition of therapeutic milks, ATP and RESOMAL are specified in Annexes 10, 11 and 12

10 **Diluted F100 milk used for infants under 6 months:** In phase 1 if you do not have F 75, you can use diluted F 100 milk; i.e. one sachet of F 100 milk in 2.7 litres of boiled, lukewarm water. The F100 is also used for children under 6 months or over 6 months with weight < 3.5 kg

Notes:

- Therapeutic milks are medicines. So they are ONLY intended for people suffering from severe acute malnutrition;
- Therapeutic milks should ONLY be used in a hospital setting (USN);
  Sachets or cans of powdered therapeutic milk are not given to parents;
- Dilution is IMPORTANT and should only be done CORRECTLY at the USN;
  Once reconstituted, milks should not be kept at room temperature for more than 2
- HOURS because they degrade and become unfit for consumption.
- It is preferable to give therapeutic milk with a cup, avoiding the use of a spoon (to prevent the risk of aspiration to the lungs);
  The use of bottles is strongly discouraged for the risk of contamination (difficult
- to clean).

The renutrition product used is F75 (130ml => 100kcal) due to 130 ml/kg per day. This product helps to initiate the restoration of metabolic functions and nutritional balance. F75 is different from F100-diluted; Its nutrient composition is totally different and it was designed for patients with complicated severe malnutrition, often with infections and impaired liver and kidney functions. They should not gain weight with the F75. This product allows biochemical, physiological and immunological functions to begin to recover before being exposed to the additional stress of rebuilding new tissues.

Preparation

In health facilities where few children are treated, small volumes can be prepared using the small scoop in the box (Appendix 1: F75 Therapeutic Milk Preparation Data Sheet).
NB : The water used for milk reconstitution must be boiled and cooled before adding it to the F75 milk powder.

Activities

- Ask the mother, half an hour before the meal, to put her child to the breast, if the child is breastfed;
- Calculate the total amount of F75 to be prepared based on the number of patients, their weights and the number of meals per day;
- Prepare the amount of drinking water at the right temperature (70°) and F75 necessary for the meal (see paragraph below);
- Ask the mother to wash her hands and those of her child;
- Giving patients 6 to 8 meals a day (post a meal schedule chart on the wall);
- Giving 8 meals in 24 hours (night and day) in the acute phase to children with cSA
- Children with the following problems will need more than 8 meals in 24 hours:
  - Renutrition diarrhea;
  - Who find it difficult to tolerate too large volumes;
  - Very severely ill;
  - Having had very little milk during the day (e.g. new arrivals);
  - Having vomited during one or more meals during the day;

- Having had an episode of hypoglycemia;
- Having had hypothermia;
- If there is a sufficient number of nursing staff at night to prepare meals at night.

Renutrition technique

If the child is breastfed, breast milk should always be offered before the meal and given at any time.

Child's feeding position

- Muscle weakness and slowing of the swallowing reflex in these children easily cause miscarriage;
- The child should be placed on the mother's lap and rested against the mother's chest.
- The child's arm should be placed behind the mother's back. The mother's arm encircles the child and holds the saucer under the child's chin. The child should sit upright on his back;
- The F75 is fed to the cup, and any excess F75 that flows from the child's mouth is collected in the saucer and put back into the cup. The child must not be forced to be fed. Similarly, never feed these children in a lying position.

Table 19: Amount of F75 to be given (130 ml/kg/day)

Weight Class (kg)	8 meals per day (ml per meal)	6 meals per day (ml per meal)
2.0 to 2.1 kg	40 ml per meal	50 ml per meal
2.2 to 2.4	45	60
2.5 to 2.7	50	65
2.8 to 2.9	55	70
3.0 to 3.4	60	75
3.5 to 3.9	65	80
4.0 to 4.4	70	85
4.5 to 4.9	80	95
5.0 to 5.4	90	110
5.5 to 5.9	100	120
6 to 6.9	110	140
7 to 7.9	125	160
8 to 8.9	140	180
9 to 9.9	155	190
10 to 10.9	170	200
11 to 11.9	190	230
12 to 12.9	205	250
13 to 13.9	230	275
14 to 14.9	250	290
15 to 19.9	260	300
20 to 24.9	290	320
25 to 29.9	300	350
30 to 39.9	320	370
40 to 60	350	400

Note : Children on F75 do not usually gain weight.
Mealtime should be a time for socialization. Mothers should give milk under the supervision of a nurse. The doctor encourages them, talks to them, corrects poor feeding techniques and observes how the child takes F75 milk.
The accompanying person should not eat their own meals next to the child, as it is very difficult, if not impossible, to ask mothers not to share their meal with the child. This can be dangerous for the child. Indeed, the addition of salts or condiments can be enough to cause a heart problem in malnourished children.

The nasogastric tube (NGS) may be necessary for some children, but its placement is subject to specific conditions.
Nasogastric tube (see how to place an NGS in Appendix 22). The nasogastric tube (SNG) is used when the patient is not taking enough F75. This is defined as consuming less than 75% of the prescribed diet.

The reasons for prescribing the implementation of an NSE are as follows:
- Intake of less than 3/4 (75%) of the prescribed volume over 2 to 3 consecutive meals in Phase I;
- Pneumonia with polypnea;
- Painful lesions of the mouth;
- Hare's beak or other physical deformity of the oral cavity;
- Altered consciousness (need to split the meal and control the gastric residue);
- Paralytic ileus (to empty gastric contents).

Precautions to take:
F75 should be patiently given by mouth every day before using the NGS. The use of the NGS should not exceed 3 days ideally and in Phase 1. Always check the position of the SNG before feeding the child (it is best to suck a small amount and use pH paper to ensure positioning).

Contraindications of NGS:
- Epiglottitis;
- Recent ingestion of caustic products;
- Esophageal stenosis;
- Active bleeding from the digestive tract...

F.1.3.2. Criteria for moving from Phase 1 to the Transition Phase
There is no time limit for phase 1, it all depends on the patient's condition. The criteria for moving from phase 1 to the transition phase are:
- Resumption of appetite (withdrawal of the SNG);
- NGS may be needed in transition or phase 2 if the child tolerates milk well and needs more calories but there is a physical or other reason why the child cannot take the milk orally;
- The beginning of the melting of the oedema;
- Clinical improvement (controlled medical pathologies);
- Patients with generalized bilateral edema (+++) should remain in Phase 1 until their edema has been reduced to 2 degrees (++). These patients are particularly vulnerable.

F.1.4. The transition phase

During this transition phase, a new dietary diet is introduced: ATPE or F100
This phase prepares the patient for phase 2 treatment or outpatient treatment (PTA). The transition phase lasts between 1 to 3 days; but it can be longer, especially when another pathology is associated such as TB or HIV.

F.1.4.1. Nutritional treatment

The only difference with Phase 1 is the change in diet: from the use of F75 to RUTF or F100 if RUTF is not accepted by the patient.

Produce

The products used are RUTF or F100 (100 ml =>100 kcal) at a rate of 130 ml/kg per day11 . However, it is preferable to use RUTF during the transition phase. Patients who will continue treatment on an outpatient basis must get used to RUTF before returning home.

Preparation (See technical sheet on the preparation of the F75 and F100 in Appendices 1 and 2).

A 456 g can of F100 is reconstituted with 1.850 ml of warm drinking water.
For small volumes refer to the table below:

Table 20: Preparation of small quantities of F75 and F100

Preparation of small quantities of F75 and F100	
Milk Powder quantity	Water quantity
2 scoops, levelled	50 ml
4 scoops, levelled	100 ml
8 scooped spoons	200 ml
10 scooped spoons	250 ml
Preparing a whole can of F75	
Whole F75 Box	2.2 L (2200 ml)
Preparing an entire box of F100	
Whole F100 Box	1.850 L (1850 ml)

The RUTF is in a bag and ready to use.

Diet

Two options for transitioning children from F75 to RUTF are suggested:

a) Begin feeding by giving RUTF as prescribed for the transition phase. If the child does not take the prescribed amount, supplement the diet with F75. Increase the amount of RUTF over 2 to 3 days until the child takes the appropriate amount of RUTF to meet their energy needs.

OR

b) Give the child the prescribed amount of RUTF for the transition phase. If the child does not take at least half of the prescribed amount within the first 12 hours, stop giving RUTF and give F75 again.

[11]The volumes can be the same as in phase 1, if the calories are higher because F100 and ATPE are used instead of F75.

Try the same approach again after one to two more days until the child takes the appropriate amount of RUTF to meet their energy needs.

If the child refuses RUTF at the beginning, he or she should be given F100 for one to two days at that time and then try to reintroduce RUTF.

Breastfed children should always be breastfed 30 minutes before feeding RUTF or F100; The number of meals, schedules and volume of the diet remain exactly the same as in phase 1.

With the change in the type of diet, energy intake increases from 100 kcal/kg/day to 130 kcal/kg/day. This is enough to allow the child to gain weight (about 5 to 10g/kg/day);

- Children with bilateral edema taking the cup should be switched to RUTF when appetite returns and edema subsides;
- Children who take F100 and gain weight rapidly during nutritional rehabilitation should switch to RUTF. Ensure they finish the appropriate amount of RUTF before transferring them for outpatient care;
- The patient should not be given any other foods during this time. They must have as much drinking water available before and after taking their RUTF;
- Some children have preferences for one or the other of these two foods, it is recommended to give the patient the diet he prefers, these two foods are strictly equivalent in terms of nutrition.
- Give the total volume of RUTF and F100 for the day according to Tables 22 and 23
- Instruct the mother to wash her hands before giving RUTF or F100;
- Ask the mother to give the child a drink at will;
- Advise the mother to keep the rest in a box (away from insects and rodents) when the child has finished his meal;
- Evaluate 5 times a day the volume that the mother/companion has given during the day. It is important for caregivers to assess it regularly and advise the mother on how much RUTF to give to the child. It is helpful to have regular meal times for the patient where mothers/caregivers gather for meals.

For patients not taking enough RUTF (stationary weight):

- Give F100 for a few days and then reintroduce RUTF;
- If unsuccessful, bring the patient back to phase 1 for a few days and give him F75 and continue the investigations;
- DO NOT give any other food during this period;
- Monitor the mother/caregiver and other children, so that they do not eat the patient's RUTF;
- Ensure the availability of unlimited drinking water in the ward and at the patient level. The mother/caregiver must offer him water at will at the time of or after taking RUTF
- Transcribe on the USN tracking sheet the volume given and consumed.

Table 21: Amount of RUTF to be given per 24 hours in transition

Weight Class	Paste Grams	Paste Bags	Bars Bars	Total Kcal
3 to 3.4	90	1,00	1,5	500
3.5 to 3.9	100	1,00	1,5	550
4 to 4.9	110	1,00	2,0	600
5 to 5.9	130	1,50	2,5	700
6 to 6.9	150	2,00	3,0	800
7 to 7.9	180	2,00	3,5	1000
8 to 8.9	200	2,00	3,5	1100
9 to 9.9	220	2,50	4,0	1200
10 to 11.9	250	3,00	4,5	1350
12 to 14.9	300	3,50	6,0	1600
15 to 24.9	370	4,00	7,0	2000
25 to 39	450	5,00	8,0	2500
40 to 60	500	6,00	10,0	2700

Table 22: Volume of F100 to be donated in the transition phase

Weight Class (kg)	6 meals a day	8 meals a day
Less than 3.0	To give of the	<60 ml per meal
3.0 to 3.4	75 ml per meal	60 ml per meal
3.5 to 3.9	80	65
4.0 to 4.4	85	70
4.5 to 4.9	95	80
5.0 to 5.4	110	90
5.5 to 5.9	120	100
6 to 6.9	140	110
7 to 7.9	160	125
8 to 8.9	180	140
9 to 9.9	190	155
10 to 10.9	200	170
11 to 11.9	230	190
12 to 12.9	250	205
13 to 13.9	275	230
14 to 14.9	290	250
15 to 19.9	300	260
20 to 24.9	320	290
25 to 29.9	350	300
30 to 39.9	370	320
40 to 60	400	350

F.1.4.2. Criteria for return from Transition Phase to Phase I The child will be returned from the Transition Phase to Phase 1 if any of these conditions are met:

12 Add water according to the prescribed volume of water; the term "diluted" is reserved for F100 to which 1/3 of water has been added in addition to the normal amount (135 ml per 100 kcal): this milk is called "F100-diluted".

- Weight gain of more than 10g/kg/day (weight gain of this order is usually linked to excess fluid retention because, at this stage, there is not enough energy intake for such a high weight gain);
- An increase in oedema or the appearance of renutrition oedema when there was no longer oedema;
- A rapid increase in liver volume and sensitivity;
- Any signs of fluid overload, heart failure, or respiratory distress;
- The development of abdominal distension;
- The development of renutrition diarrhea with weight loss (Be careful, you can have liquid stools without weight loss in this case, do not act);
- The development of a complication requiring intravenous infusion and/or medication, and/or rehydration therapy;
- Weight loss.

NB: It is common for children to have an increase in the number of bowel movements when they change their diet, but without showing weight loss. Several liquid stools without weight loss is not a criterion for returning to phase 1.

F.1.4.3. Systematic medical treatment

The following medications should be given routinely

Vitamin A

Vitamin A is present sufficiently in RUTF to manage any mild deficiency and to replace hepatic stores of vitamin A during treatment. Give vitamin A to the exeat for children in outpatient treatment since at this time the child, already in the recovery phase, must be able to store enough vitamin A in the liver.

In the event of a measles outbreak, any child admitted directly to the outpatient clinic must receive his or her dose of vitamin A on admission.

Note : Any child with signs of vitamin A deficiency should be treated in hospitalization because the condition of their eyes can deteriorate very quickly. Doses depend on the age of the child and are specified in the table below.

Table 23: Vitamin A Dosage by Age

Age (months)	Oral Vitamin A IU*
<6 months (for non-breastfed children)	50,000 UI (i.e. four Drops of a capsule at 100,000 IU or two drops from a 200,000 IU capsule)
6 to 11 months	100,000 IU (or 4 drops from a 200,000 IU capsule)
>=12 months	200,000 IU

*200,000IU capsule contains 8 drops of vitamin A

Folic acid 5 mg as a single dose on day 1. Crush and dilute before administration.

IRON. Do not give iron at the beginning of treatment

Because of reductive adaptation,[13] the severely malnourished child produces less hemoglobin than usual; iron not used for this production is stored. The body therefore has this "excess" reserve, even if the child appears anaemic. Also, giving iron at the beginning of the treatment will not cure the anemia, since the child already has it.

Administering iron too early in treatment can also lead to the presence of "free iron" in the body. This free shoe may pose three types of problems:

- Free iron, which is highly reactive, promotes the formation of free radicals, which can lead to uncontrolled and damaging chemical reactions
- Free iron promotes bacterial proliferation and may aggravate certain infections;
- The body tries to protect itself from free iron by converting it into ferritin, which requires energy and amino acids, and diverts them from other essential activities.

Later, when the child recovers and begins to make new tissue and produce more red blood cells, iron stores will be depleted and supplements will become necessary.

Antibiotic therapy

Antibiotics, which must be adjusted according to glomerular filtration, are given to patients suffering from SAM systematically, even if the patient does not present clinical signs of generalized infections. This is not a prophylactic treatment.

Treatment of asymptomatic children who are able to drink:

Oral amoxicillin3 40-50 mg/kg every 12 h for 5 to 7 days.

For any apparent signs of systemic infection without signs of guidance:

Give gentamicin (4mg/kg/day) and amoxicillin (80 to 100mg/kg/day) or injectable ampicillin (80 to 100 mg/kg/day) and gentamicin (4 mg/kg/day) in phase 1;

If there is no improvement after 48 to 72 hours, switch to ceftriaxone (50mg/kg to 100mg/kg per day) IM or IV;

If no improvement, combine ceftriaxone with ciprofloxacin (not to exceed 5 days) orally or IV (10 to 30 mg/kg/day) twice daily.

For any apparent signs of systemic infection with signs of orientation :

If a staphylococcal infection is suspected, add oxacillin or cloxacillin IV (100 to 200 mg/kg/day in 3 doses);

If a digestive infection is suspected, combine ceftriaxone (50 to 100 mg/kg) with metronidazole (10 mg/kg/day in 2 oral or IV doses for 5 days);

The duration of antibiotic therapy is 7 to 10 days. Oral relay should be done as soon as there is improvement.

13 In a state of severe malnutrition, the body systems begin to "shut down." Their functioning slows down, and they become less active in order to allow survival with a minimum caloric intake. This slowdown is known as reductive adjustment.

Table 24: Amoxicillin Dosage: 15mg/kg every 8 hours

Weight class	Amoxicillin suspension			
Kg	125mg/5ml		250mg/5ml	
3 – < 6	2.5 ml	* 3	1.25 m	* 3
6 – < 10	5.0 ml	* 3	2.5 ml	* 3
10 – < 15	10 ml	* 3	5.0 ml	* 3
15 - < 20	15 ml	* 3	7.5 ml	* 3
20 - < 30	20 ml	* 3	10 ml	* 3
30 or more	30 ml	* 3	15 ml	* 3

Table 25: Ampicillin - Gentamycin Dosage

Weight class	Ampicillin		Gentamicin	
Kg	500mg/5ml		40mg/ml	
2 – <6	1 ml	*4	0.2 ml	*3
6 – <10	2 ml	*4	0.3 ml	*3
10 – <15	3 ml	*4	0.5 ml	*3
15 - <20	4 ml	*4	0.7 ml	*3
20-<30	6 ml	*4	1 ml	*3

Amoxicillin is active against bacterial overgrowth of the small intestine in most patients. This is why its use as a first-line antibiotic means that metronidazole is not used. However, if metronidazole is used, it is important to give doses at a rate of 10mg/kg/day and *not the normal dose* given to normally fed children (which is 3 times the dose).
The elimination of gentamicin is prolonged in malnutrition; This means that one injection per day of 5mg/kg makes it possible to reach adequate blood thresholds. Considering the renal toxicity of gentamicin, it is suggested that this dose should not be exceeded.

In case of candidiasis
Nystatin: 100,000 IU orally 4 times daily in cases of oral candidiasis for 2 to 3 weeks or Fluconazole (3mg/kg once daily).
Any child with signs of severe sepsis or systemic candidiasis should be treated with fluconazole according to the doses indicated, although there are mild hepatic risks.

NOTE : Co-trimoxazole is given to SAM patients with HIV/AIDS as a prophylactic treatment for pneumocyte pneumonia. Other antibiotics should be given in addition to co-trimoxazole doses.

Measles vaccination
During hospital care, any child over 6 months of age without a measles vaccination card must be vaccinated on the day of admission. It should be noted that

The effectiveness of vaccination in severely malnourished children has not been proven, and a second vaccination against measles is recommended at the end of treatment. The vaccination record (Child Health and Nutrition Record) must be completed before discharge if the child has not received all his or her vaccinations.

F.1.4.4. Non-routine medical treatment

MAS - Rehydration

- **MAS:** ReSoMal first preference but if not available ➔ use ORS diluted to 50%;
- **MAM:** Rehydrate with a 50% diluted ORS solution;
- ORS can be used at home. ReSoMal is used in hospitals;
- In case of cholera - ORS for all (guidelines in force).

Antifungal treatment

Be alert for fungal infections and consider adding an antifungal for a child who is critically ill and does not respond to first- or second-line antibiotics or malaria treatment. Otherwise, too many children could be given an antifungal and it could be counterproductive to their intestines.

Gentian violet should only be used if other medications are not available.

Curative treatment of malaria according to the national protocol

If rapid test is available:

- If the test is negative: do not do treatment. But if there are clinical signs suggestive of malaria upon admission, see a doctor; repeat the test if symptoms appear during management.
- If the test is positive: treat according to the national protocol.

In the absence of a rapid test (such as Paracheck [14]), make the thick drop and systematically treat the children according to the result (follow the national malaria treatment protocol).

F.1.4.5. Patient Follow-up / Monitoring

- The weight is taken every day, at the same time, preferably before milk intake, transcribed on the follow-up sheet and the curve is drawn;
- The degree of oedema is assessed every day (0 to +++);
- Body temperature is taken twice a day and whenever the mother says that the child is very hot or very cold or a staff member notices it;
- The standard clinical signs (number of bowel movements, vomiting, hydration status, cough, respiratory rate) are noted on the form every day;
- The upper upper arm circumference (MUAC) is measured once a week;
- The size is measured, once a month (or when changing individual sheets);

14 The Paracheck test detects Plasmodium Falciparum infection (sensitivity 95.5%, specificity 96%). It is quick (15 minutes) and does not require a cold chain. It gives a qualitative result but remains positive about 15 days after the start of treatment because it detects a residual protein. During this time, only a thick drop (if a reliable and available laboratory) will be able to confirm a diagnosis of malaria.

- Meal monitoring should be noted on the sheet each day: if the patient is absent during a meal, if he vomits or if he refuses his meal.

Notes :

- Only use intravenous infusions when there is a clear clinical need as any intravenous treatment is very DANGEROUS – it should only be prescribed in exceptional circumstances (hypovolaemic shock with loss of consciousness and very severe anaemia).
- No IV infusions should be routinely given to conscious dehydrated patients – or to prevent dehydration – or to a patient who can drink – or to a patient who has a gastric tube.
- When an intravenous infusion is inserted, it should be very carefully monitored with a precise guide to the amount to be administered; The infusion should be stopped as soon as possible, as soon as the patient regains consciousness.

F.1.4.6. Evaluation and advice in IYCF

At this stage, an IYCF assessment should be carried out on admission or shortly thereafter and IYCF counselling should be provided throughout the hospital stay.
An assessment of the child's diet may be done as follows:

- Assess whether the diet is appropriate according to the age and weight of the child, the child's usual intake of fluids and food, and the mother's perceived breastfeeding difficulties;
- Initiate a 3-step counseling for IYCF on recommended breastfeeding practices when appetite returns, practice interactive feeding and educate on Care Practices;
- Lead the action group (story, play, use of visual aids) and facilitate IYCF support groups at the transition phase (see how to facilitate an IYCF support group in Appendix 5).

F.1.5. Criteria for moving from the Transition Phase to Phase 2 or the PTA

For those who will remain in phase 2 at the USN:

- PTA far from home;
- Inability for the caregiver to follow the child's treatment on an outpatient basis;
- Certain chronic pathologies (e.g. HIV, TB, etc.).

NB. Note that this only applies if these conditions cannot be managed on an outpatient basis.

For those who are referred to PTA:

- Clinically well (stabilized pathologies, no IV treatment, no fever for 24 hours...);
- Absence or discreet oedema (0 or +);
- Alert child;
- Child consumes at least 75% of the proposed daily amount of ready-to-use therapeutic food (RUTF);
- Up-to-date vaccination;
- Availability of the PTA;
- The agreement of the accompanying person.

NB : the decision must be determined by the evaluation of the clinical condition and not by anthropometric results.

F.1.6. Phase 2 or Rehabilitation/Recovery Phase

Products: F100 or RUTF

The child in the "recovery" phase can feed freely with ATPE or F100 up to a maximum of 185 kcal/kg/day (equivalent to 185 ml/kg/day). Most children consume at least 150 kcal/kg/day. Any amount below that indicates that the child is not being fed freely, or that he or she is not doing well.

Medical treatment

- First make an assessment of each child beforehand;
- Administration of mebendazole or albendazole;
- Antibiotic therapy if necessary;
- Antifungal if necessary.

F.1.6.1. IYCF Consulting

- Continue IYCF counselling on recommended breastfeeding practices, interactive feeding and Care Practices;
- Lead the action group (story, play, sketch, use of visual aids) and facilitate IYCF support groups at the level of phase 2.

F.1.6.2. Procedures prior to the transfer from the USN to the PTA

- Check whether all the topics of health education have been discussed with the accompanying person during the care of the malnourished child;
- Adequate arrangements must be made for a good follow-up of the patient: give the mother/companion the transfer form with the full address of the PTA and a supply of RUTF until the next appointment of the PTA;
- The follow-up form must be duly completed with the date of discharge, the mode of transfer and the anthropometric measurements of the day of the transfer;
- The register must also be completed on the same day of the transfer.

Criteria for non-improvement at the USN

Table 26: Criteria for non-improvement at the USN

Criteria	Post-admission deadlines
Lack of improvement or failure to regain appetite	4 Days
The melting of the edema has not begun.	4 Days
Edema still present	10 Days
Doesn't gain weight	10 Days

When children meet the above criteria, they need to have a thorough history and clinical examination and/or laboratory tests.

Investigation of Causes of Non-Improvement (USN)

Institution-related causes :

- Poor application of the protocol;
- Environment not conducive to patients suffering from SAM;
- Overly strict and intimidating staff;
- Poorly trained staff, excessive turnover or head of department not trained in protocol;
- Insufficient staff (especially at night);
- Treatment of patients in an open place, in the middle of other patients;
- Incomplete and incorrectly completed follow-up form (or use of the patient's ordinary file);
- Inaccurate and unreliable scales (or irregular and uncharted weighings);
- Incorrectly prepared F75, F100 or RUTF;
- Insufficient follow-up;
- A poorly managed medical complication;
- Insufficient motivation of staff.

Causes related to malnourished children

- Drug toxicity;
- Insufficient volume of food (criteria for SNG);
- Food eaten by siblings or accompanying persons;
- Sharing the food of the accompanying person with the child;
- Malabsorption;
- Psychological trauma;
- Rumination (and other types of severe psychosocial trauma);
- Infection of viral origin, bacterial resistant to the antibiotics used, candidiasis, diarrhoea, dysentery, pneumonia, TB, urinary tract infection, otitis media, malaria, HIV/AIDS, schistosomiasis, leishmaniasis, hepatitis/cirrhosis, etc.;
- Other important underlying diseases: congenital anomalies (e.g. Down syndrome or trisomy 21), neurological disorders (e.g. cerebral palsy of cerebral origin (IMOC)) congenital metabolic diseases.

When the patient's clinical condition deteriorates after initially progressing satisfactorily, this is usually due to:

- Fluid overload;
- Inappropriate dosage or use of drugs in malnourished people;
- A wrong turn (food, medicine, drinks, etc.);
- One infection Nosocomial the reactivation of the system immune and inflammatory, during the rehabilitation phase;
- A state of shock and/or dehydration not recognized/identified.

What to do

- Note the diagnosis on the follow-up sheet and refer the patient to a doctor;
- Assess the patient's condition by analyzing the clinical history and making a thorough examination of the patient using the clinical examination sheet;
- Take your temperature, heart rate and respiratory rate accurately;
- Do the HIV test, thick drop systematically.
- Perform an ECBU, blood cultures, sputum examination, gastric tubing and stool examination by GENE Xpert for BK testing, retinal examination for tuberculous spots in semi-darkness;

- Take an X-ray of the chest;
- Have a stool examination to look for giardia (amoebas or cysts), stool culture,
- Doing liver tests;
- Perform a lumbar puncture for examination and culture of the cerebrospinal fluid;
- Ask parents if traditional medicines and other treatments have been used at the USN and ask them to bring them (this is often done to reassure them);
- Systematically review the list of causes of treatment failure (see: box above);
- If resolution of the cause does not have immediate effects, request an external evaluation by another experienced physician:
- Review staff supervision with practical training if necessary;
- Refer patients with chronic diseases (congenital heart disease, hydrocephalus, hemiplegia, bronchopulmonary dysplasia, chronic kidney failure, etc.) to the most appropriate pediatric service for malnourished children who are at that time medically referred out of the program and any treatment and management will be done by another department.

F.1.6.2.1. Criteria for exeat

Patients are discharged when they meet the criteria shown in the table below: it is important to note that this is only for children who have stayed in the USN long enough to be classified as cured and that the majority of children are discharged from the hospital to complete their treatment in a PTA and then discharge cured.

Table 27: USN Exit Criteria

AGE	CRITERIA FOR CURE AT THE USN
6 to 59 months	P/T > -3 Z score after 2 consecutive days **and** PB > 115 mm after 2 consecutive days **and** Absence of nutritional oedema for 14 days

NB: The anthropometric indicator used to confirm severe acute malnutrition should also be used to assess whether a child has achieved nutritional recovery. Children admitted with only bilateral edema taking the bucket
+++ must be withdrawn from treatment according to the anthropometric indicator routinely used in the programs. Percentage weight gain should not be used as an exit criterion.

IYCF Consulting in the USN

- Encourage mothers to continue breastfeeding;
- Support, encourage and strengthen recommended feeding practices;
- Work with the mother/caregiver to resolve any anticipated child feeding issues;
- Support, encourage and strengthen recommended complementary feeding practices using locally available foods;
- Promote Interactive Feeding and Care Practices;
- Encourage monthly growth monitoring visits;
- Improve health-related behaviors;
- Encourage mothers to participate in IYCF support groups at the community level;
- To put the mother in touch with a local CSA.

F.1.6.2.2. Follow-up after exeat

MASc children who have left the USN are admitted to the nearest PTA for care. If it happens that the PTA is very far away, then the MASc children continue their treatment in the same institution.

F.1.7. USN Performance Criteria

Table 28: Baselines for Key Indicators

USN	Acceptable values	Alarm values
Healing/Stabilization Rate	> 75%	< 50%
Mortality rate	< 10%	> 15%
Dropout rate	< 5%	> 25%

NB : The goal of the USN is to stabilize cSAM children and transfer them to PTAs, so it is not necessarily necessary to achieve nutritional cure to transfer them. However, patients who cannot be transferred should be managed at the USN until recovery. These will be recorded as "cured" and not as "successfully treated".

F.1.8. Equipment and data management

F.1.8.1. Material and register

The equipment necessary for the care of SAMc children will be listed in the technical sheet in appendix 7.

F.1.8.2. Equipment

- Balance;
- Fathom;
- Specific tape to measure the PB;
- Weight/height table in SD;
- Educational materials;
- Cooking demonstration equipment.

F.1.8.3 Inputs

All necessary inputs have been cited in the nutritional treatment. These are mainly F100, F75, ATPE, Vitamin A, Amoxicillin.

NB. The same medications are needed for the pediatric ward and can therefore share or order them according to the paediatric ward list.

F.1.8.4 Monthly Statistical Report

An example of a monthly statistical report sheet will be provided in the appendix and in the monitoring and evaluation section will be detailed the collection, compilation, completeness, and transmission of statistical data.

F.2. Treatment of medical complications of severe acute malnutrition

F.2.1. Inappropriate Renutrition Syndrome

Inappropriate renutrition syndrome is a set of metabolic and hydro-electrolyte complications that occurs when a severely malnourished child resumes feeding too quickly.

Clinical consequences:

- **Hypophosphoremia** : muscle weakness, respiratory failure, paralysis, heart rhythm disorders.
- **Hypokalemia** : arrhythmias, weakness, paralysis.
- **Hypomagnesemia** : irritability, tremors, convulsions, arrhythmias.
- **Sodium retention** : oedema, heart failure.
- **Hyperglycemia** possible.

Treatment of Inappropriate Renutrition Syndrome

- Correction of electrolyte abnormalities (Phosphate, K+, Mg++);
- Temporarily reduce calorie intake (return to phase 1 if the child was already in phase 2);
- Intensive monitoring.

Prevention

F-75 is enriched with micronutrients, including thiamine. It typically provides about 0.3–0.4 mg of thiamine per liter.

In a severely malnourished child, the need for thiamine at the beginning of renutrition is often higher than what the F-75 provides alone.

We recommend routine thiamine supplementation concomitantly with resumption of feeding in phase 1 between 1–2 mg/kg/day orally or parenterally.

F.2.2. Diarrhoea

Persistent or chronic diarrhea

- Persistent or chronic diarrhea is diarrhea that lasts 14 days or more;
- If you have not already done so, take an HIV test or refer for an HIV test urgently;
- Appropriate treatment of persistent diarrhoea is often nutritional, and will be resolved with the administration of F75;
- If diarrhoea persists, metronidazole treatment at a rate of 10mg/kg/day can be given;
- Check if the stools are muco-bloody: if it is amoebic dysentery, give metronidazole, if shigellosis, give ciprofloxacin at a dose of 10 to 30 mg/kg/day to be divided into 2 doses.

Renutrition diarrhea after admission

- Renutrition diarrhoea is more common in patients with oedematous malnutrition and is often seen at the beginning of treatment with F75;
- DO NOT give ReSoMal for renutrition diarrhea without weight loss;
- The stools are often explosive and whitish, occurring 15 to 30 minutes after taking milk;
- If persistent, feed intake should be split.

F.2.3. Severe malaria (presence of at least one criterion of severity or signs of danger in children under five years of age).

In the absence of a rapid test (such as Paracheck [15]), make the thick drop and systematically treat the children according to the result (follow the national malaria treatment protocol). If rapid test is available:

- If the test is negative: do not do treatment. But if there are clinical signs suggestive of malaria upon admission, see a doctor; repeat the test if symptoms appear during management.
- If the test is positive: treat according to the national protocol.

NB. Injectable artesunate is the 1st line drug for the treatment of severe malaria.

F.2.4. Dehydration

Misdiagnosis and inappropriate treatment of dehydration is the most common cause of death in severely malnourished patients.
Diagnosing dehydration in malnourished children is much more uncertain and difficult than in normal children.

In the case of marasmus, not all signs of dehydration are specific and cannot be used to diagnose dehydration. Indeed, marasmus presents the physical signs of dehydration without being dehydrated:

- The skin in the case of marasmus is wrinkled and not elastic, which makes the skin fold persistent without there being any dehydration;
- The eyes in the event of marasmus are normally sunken in without dehydration. Ask the mother if the sunken eyes are recent (a few hours or a day); If so, it may be a sign of dehydration

It is difficult to distinguish dehydration from septic shock in a severely malnourished person: signs of hypovolemia are visible in both cases and sepsis is often preceded by diarrhoea. Thus, a child who shows signs of dehydration but does not have fluid loss (watery diarrhea/vomiting) should be treated as for septic shock.
If there is no dehydration, the diarrhoea should not be treated with rehydration solutions (ORS) in order to "prevent" the onset of dehydration, as this also leads to overload and heart failure. However, children with SAM are given simply water for less effective management.

[15] The Paracheck test detects Plasmodium Falciparum infection (sensitivity 95.5%, specificity 96%). It is quick (15 minutes) and does not require a cold chain. It gives a qualitative result but remains positive about 15 days after the start of treatment because it detects a residual protein. During this time, only a thick drop (if a reliable and available laboratory) will be able to confirm a diagnosis of malaria.

Table 29: Comparison of Clinical Signs of Dehydration and Septic Shock in the Severely Malnourished Patient

Clinical signs	Moderate dehydration	Severe dehydration	Beginner septic shock	Advanced Septic Shock
Watery diarrhea	Yes	Yes	Yes or No [to]	Yes or No [to]
Thirst	Drinks greedily [b]	Hardly drinks	No [to]	No [to]
Hypothermia	No	No	Yes [to] or No	Yes [to] or No
Sunken eyes	Yes [b,c]	Yes [b,c]	No [to]	No [to]
Weak or absent radial pulse	No [b]	Yes	Yes	Yes
Cold extremities	No [b]	Yes / can be present	Yes	Yes
Urine emission	Yes	No	Yes	No
Mental state	Agitated, irritable [b]	Lethargic, comatose	Apathetic [b]	Lethargic
Hypoglycaemia	Sometimes	Sometimes	Sometimes	Sometimes

[a] These signs may be helpful in diagnosing septic shock.
[b] These signs may be helpful in diagnosing dehydration
[c] If the mother confirms the recent appearance of this sign

The treatment of dehydration in a malnourished child is different from that of a normal child. ReSoMal (special rehydration solution for severely malnourished patients) should be used exclusively in USN. ReSoMal should not be given systematically or without a prescription. Unwarranted use can lead to heart failure. As part of outpatient treatment, if it is necessary to rehydrate a child, ReSoMal should only be given at the health centre. Any intravenous treatment is particularly dangerous and should be reserved for states of dehydration with shock.

The state of shock is established when the child has cold extremities associated with:

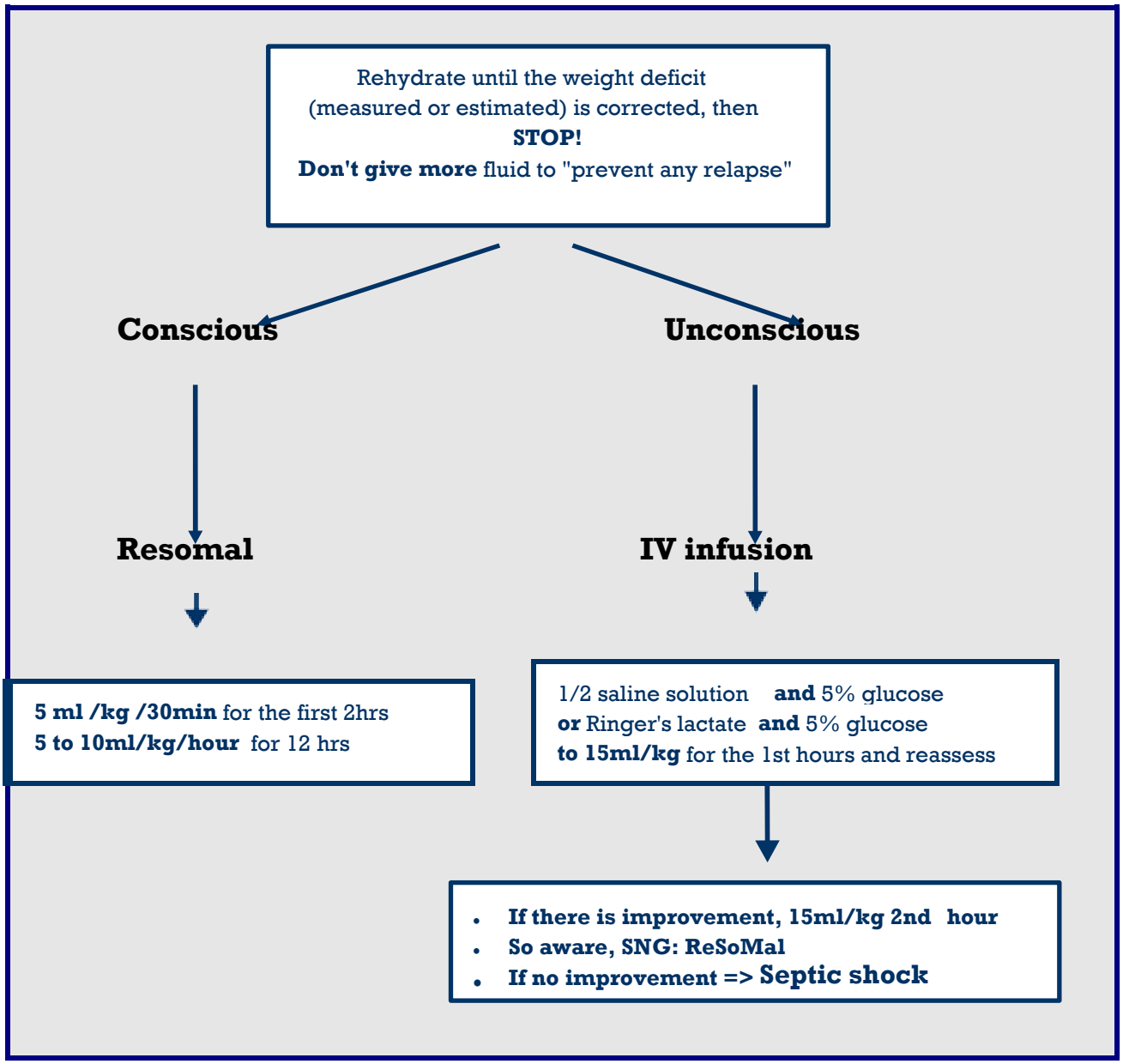
- A skin recoloring time of more than 3 seconds;
- A weak and rapid pulse.

Severe dehydration is established when the child has:

- A history of recent fluid losses in the last few hours or days. (Diarrhea, more than 3 liquid, non-soft or mucous stools per 24 hours);
- Deep-set eyes. The mother should report that the eyes have changed since the diarrhea began. ;
- Oedema;
- A lethargy or unconsciousness.

The rehydration plan is as follows:

Figure V: Treatment of dehydration



NB: take a basic blood sugar test before starting rehydration, give 15 ml/kg of NaCl at 0.45% for the first hour. Reassess and recheck: if hypoglycemia, give a bolus of glucose at 5% at a rate of 4 ml/kg ; If blood glucose is not available, systematically give 5% glucose at a rate of 4 ml/kg.

- **Conscious child (no shock)** - Assess the signs of dehydration and weight loss and give ReSoMal at a rate of 5ml/kg/30 min (during the first two hours). Then, give ReSoMal at a rate of 5 to 10 ml/kg/hour until the child has regained his weight before diarrhea.
- **Child in shock** – Give 1/2 saline solution and 5% glucose at a dose of 15ml/kg IV for one hour. Take a baseline blood glucose test before starting

rehydration, give 15 ml/kg of NaCl at 0.45% on the first hour. Reassess and recheck: if hypoglycemia, give a bolus of glucose at 5% at a rate of 4 ml/kg; or if blood glucose is not available, systematically give 5% glucose at a rate of 4 ml/kg. Following improvement, repeat the 15 ml/kg IV for the next hour. If there is no improvement, you may conclude that the child is in septic shock. See section F.2.5.

Infusions should not be performed unless indicated in a child who is unable to drink or absorb fluid from a nasogastric tube.

If the child regains consciousness or his heart rate returns to a normal rhythm, then stop the infusion and treat the child orally or by SNG at a rate of 10ml/kg/h of ReSoMal. Continue with the protocol (above) for oral rehydration of the child, using weight change as the best indicator of progress.

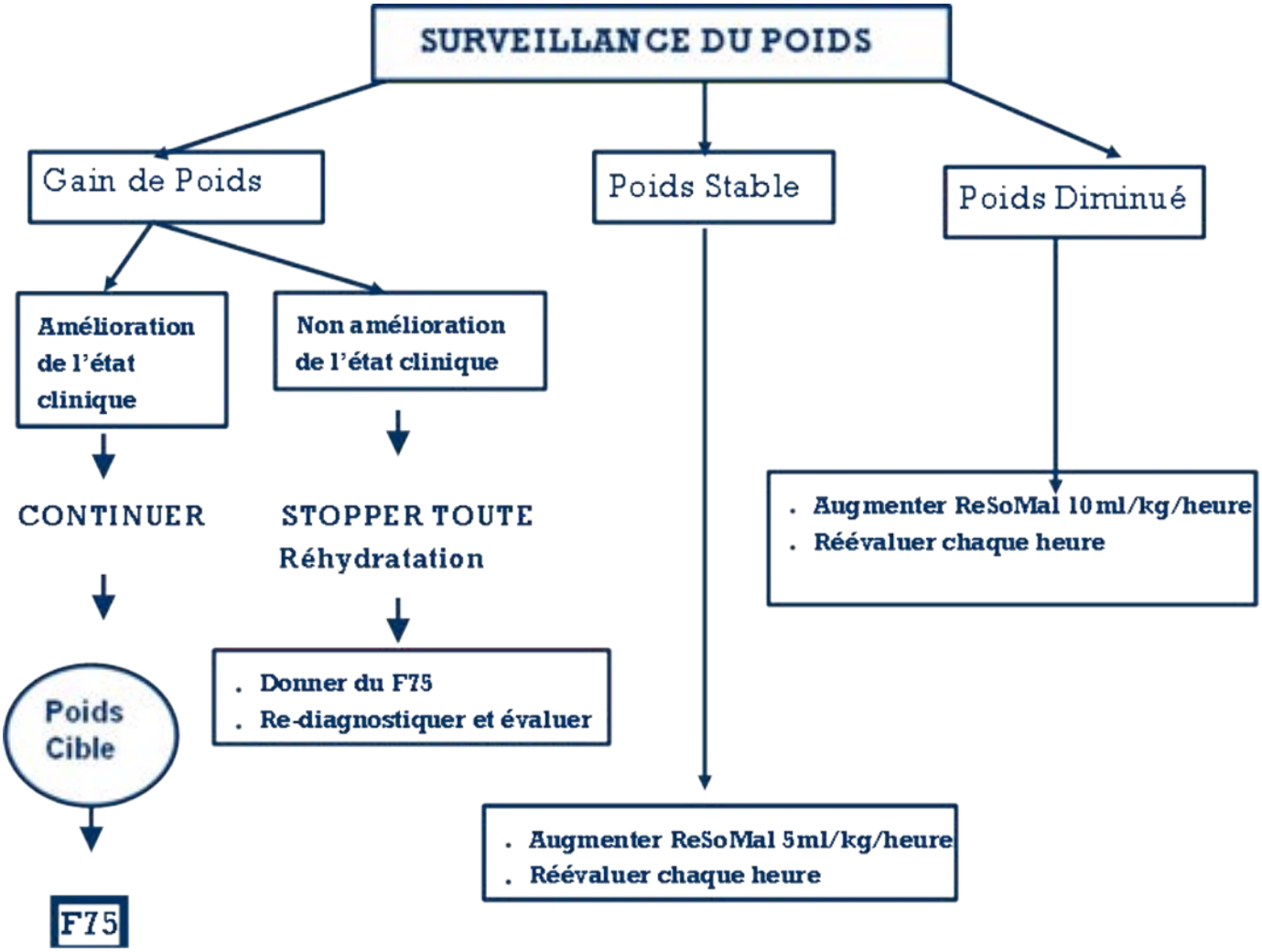
Target Weight for Treatment of Dehydration

It is important to assess the child's weight loss due to dehydration before starting treatment and thus know the target weight to be achieved.

- If the child is already on SAM treatment and has a weight prior to their diarrheal episode:
  - If there is no objective weight loss with diarrhea, dehydration treatment should be given, and rehydrated, if there are other obvious signs of dehydration and a history of excessive fluid loss.
  - If he has weight loss due to diarrhea, the fluid loss is equal to the weight lost. Thus, the target weight is that of the weight preceding the episode of diarrhea. Treatment should not continue after reaching this target rehydration weight.
- If the child is a new admission, it is extremely difficult to estimate weight loss. Because of the danger of easily transitioning from dehydration to hyperhydration, the estimate of underweight must be very conservative. It is preferable and less dangerous to slightly underestimate the weight deficit than to overestimate it.
  - In practice, the weight lost is generally estimated at 2% to 5% of the total weight. Do not try to increase the weight of a conscious child by more than 5%;
  - If there is a weight gain of approximately 5% with real clinical improvement, the child is out of danger. The dehydration treatment can then be stopped;
  - Treatment may be continued with F75.

Note : Administration of Resomal to prevent recurrent dehydration should not be done.

Figures VI: What to do during rehydration



Rehydration monitoring:
All rehydration (oral or intravenous) should be stopped immediately if the following are observed:

- The target weight has been reached;
- Turgidity of the superficial veins;
- The appearance of oedema;
- An increase in liver size of more than 1 centimeter;
- An increase in respiratory rate of 5 or more breaths per minute;
- The appearance of "hoarse" breathing;
- The appearance of pulmonary rattles or crackles;
- The appearance of a galloping sound;
- The appearance of these signs shows that the child is developing circulatory overload and entering heart failure.

F.2.5. Procedure to be followed in case of hydroelectrolyte disorders

Correction of electrolyte imbalances (too little potassium and magnesium, and too much sodium).
Prevention

- Use ReSoMal and F75 as they are low in sodium;
- Do not add salt to foods introduced during the rehabilitation phase.

Evolution of signs
- Edema develops or worsens.

Treatment
- Follow the Recommendations in matter feeding, thus that recommendations for the prevention or treatment of dehydration;
- Supplemental intake of potassium (4 mmol/kg body weight) and magnesium (0.6 mmol/kg) are important;
- Potassium and magnesium are already added in F75 and F100 foods and ready-to-use therapeutic foods (RUTF).

In case of clinical manifestations following hydroelectrolyte disorders, take a blood ionogram and correct.

F.2.6. Septic shock

Signs:
- Rapid and stringy pulse;
- Cold extremities;
- Hypothermia (rarely hyperthermia);
- Pallor;
- Extended hair recoloring time (>3sec.);
- Loss of consciousness or lethargy;
- Low blood pressure;
- Respiratory distress.

NB: Initiate the management of septic shock if at least two of the signs present are found.

Treatment of septic shock:
- Give 1st line broad-spectrum antibiotics: ampicillin, metronidazole, and gentamicin if good diuresis;
- If there is no improvement in 48 to 72 hours, adjust antibiotics based on blood culture results. If no blood culture, give ceftriaxone/ciprofloxacin, metronidazole, and gentamicin if good diuresis;
- If the child is hypothermic, keep him warm (use the Kangaroo method);
- If the child is in hyperthermia, discover it and apply cold compresses;
- First check blood sugar: if hypoglycemia, give dextrose 10% at a rate of 2 ml/kg;
- Avoid moving the child too much;
- Give oxygen.

If the patient is unconscious due to cerebral hypoperfusion, it is necessary to:

1. Blood transfusion at a rate of 10 ml/kg/3 hours (stop F75 for the next 3 hours; nothing should be given orally during the blood transfusion)

Or

2. Infuse it with Ringer's lactate solution or saline solution diluted by half (0.45%) with 5% glucose at a rate of 15ml/kg/h for 2 hours (do not give if there is a possibility of cardiogenic shock).

- Reassess every 10 minutes for signs of deterioration, especially signs of hyperhydration and heart failure:
  - Increased heart rate, appearance of hoarse breathing, increased liver size, engorgement of the veins.
  - As soon as the patient's condition improves, stop all IV intake and continue with F75.

F.2.7. Heart failure

Signs:

It is also important to note that these signs may also be due to other pathologies in order to examine the "clinical picture as a whole"

- Alteration of the general condition with weight gain;
- Painful hepatomegaly;
- Polypnea (FR >50/min for infants 2 to 11 months of age; and RF >40/min for children 1 to 5 years of age) or an acute increase in respiratory rate of at least 10 breaths/min16;
- Expiratory moaning;
- Crepitus or bronchial rattles;
- Turgor of the superficial veins (jugular ++);
- Tachycardia with galloping sound;
- Increased or recurrence of oedema during treatment;
- Decreased hemoglobin levels.

In the last stage, there are:

1) Notorious respiratory distress progressing to tachycardia, cold extremities, edema and cyanosis;

2) A sudden and unexpected death.

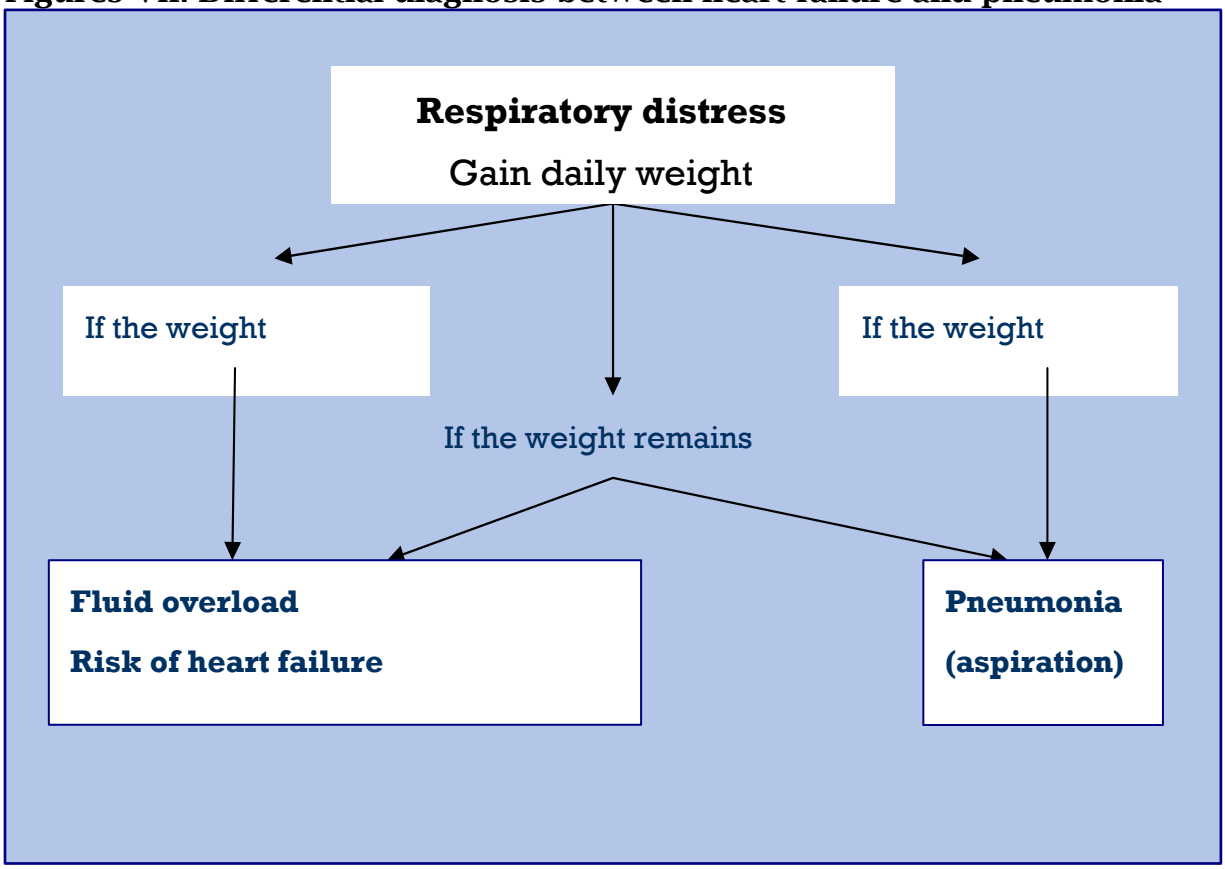
It is a heart shock and it occurs in severely malnourished people after treatment has begun. It must be differentiated from shock due to dehydration or sepsis because the treatment is very different. There is also generally weight gain. Because heart failure begins after treatment, the weight is almost always recorded on the follow-up sheet before heart failure begins.

Heart failure and pneumonia are clinically similar and very difficult to differentiate.

- If there is an increase in respiratory rate AND weight gain, then heart failure should be the first diagnosis mentioned;
- If there is an increase in respiratory rate with weight loss, then pneumonia should be considered instead;
- If there is no change in weight (correct hydration status), then the differential diagnosis should be made using the other signs of heart failure. Pneumonia should not be retained if there has been weight gain just before the onset of signs of respiratory distress.

16 This is particularly common during rehydration treatment.

Figures VII: Differential diagnosis between heart failure and pneumonia



Children with edema can have heart failure without weight gain, if the volume of circulating blood is due to the melting of edema that is mobilized from the vascular space.
During the initial treatment of SAM, any sodium contained in the solutions administered will have to be excreted later. Over-medicalization in the initial phase of treatment can lead to death a few days later by heart failure when intracellular sodium (in the case of marasmus as in the case of kwashiorkor) and the fluid released by the melting of the edema are mobilized.
When the fluid released by the melting of the edema is mobilized (kwashiorkor) and sodium is extracted from the cell (in the case of marasmus as in the case of kwashiorkor), the plasma volume increases and there is a drop in the concentration of hemoglobin (Hb).
Dilution anemia occurs in almost all treated children. A significant drop in Hb levels, which is a sign of an increase in circulating volume, is also a sign of early or confirmed heart failure. These children should not be transfused, but always do a case-by-case assessment of the children.

Treatment:

- Fluid restriction to one-third (1/3) at 5ml/kg until heart failure improves, although it takes 24 to 48 hours;
- Give a diuretic. The most appropriate choice is furosemide (1mg/kg);
- Digoxin can be given as a single dose IV (5 micrograms/kg);
- Give oxygen according to the child's needs;
- Put the child in a semi-seated position.

If severe anaemia is associated with heart failure, treatment of heart failure is given priority over anaemia. **Do not transfuse a child with heart failure unless the child has active bleeding.**

Treatment monitoring:

- Weigh the patient;
- Take your breathing rhythm and auscultate the respiratory system;
- Palpate the liver and measure its size;
- Take the heartbeat and auscultate the heart sounds;
- Observe if there is engorgement of the jugular vein or superficial veins;
- Control hourly diuresis.

F.2.8. Fever

Children with SAM do not respond to antipyretics in the same way as others.
For a moderate or high fever, ≥ 38.5°C rectal temperature or ≥ 38°C axillary temperature:

- Give paracetamol: 10mg/kg/dose q 8h;
- Continue systematic treatment;
- Uncover the child (remove blankets, hat and most clothes) and keep him in a well-ventilated place;
- Give the child something to drink;
- Check for malaria, tuberculosis or any other infection.

For a fever of more than 39°C for rectal temperature or more than 38.5°C for axillary temperature, when the patient is at risk of developing major hyperthermia:

- Hydrotherapy continues until the temperature improves;
- Monitor the decrease in body temperature every 30 minutes;
- Give the child plenty of water;
- If the temperature does not decrease, wrap the child in a wet towel while continuing to monitor the temperature closely.
- If no improvement, give paracetamol 10mg/kg/dose every 8 hours orally or IV;
- If the temperature drops below 38°C for rectal temperature or 37.5°C for axillary temperature, stop all wet wrapping and paracetamol, as there is a risk of inducing hypothermia.

NB: However, you must be careful with prolonged wet wrapping, as it cools the skin, which stimulates the central production of heat.

F.2.9. Very severe anemia

The haemoglobin level generally decreases 2 to 4 days after admission, due to intra- and extracellular hydroelectrolyte exchanges which are accelerated at the beginning of treatment. The overload of the extracellular fluid results in hemodilution and therefore a decrease in the hemoglobin level, which is why the hemoglobin level must be determined immediately in the hours following admission or when the child begins to gain weight (after 14 days).

Support:

- Recheck the hemoglobin level after 4 days;
- If the haemoglobin concentration is less than 4g/dl or the haematocrit is less than 12% in the first 24 hours after admission, the child suffers from very severe anaemia;

- Do not transfuse a beneficiary between the 2nd day after the start of treatment with F75 and the 14th day of treatment: risk of significant cardiac overload;
- Donate 10 ml/kg of whole blood or red blood cells in 3 hours before the 2nd day or after the 14th day;
- Stop eating at least 2 hours before and 3 hours after blood transfusion, while controlling blood glucose;
- Do not give iron during Phase 1.

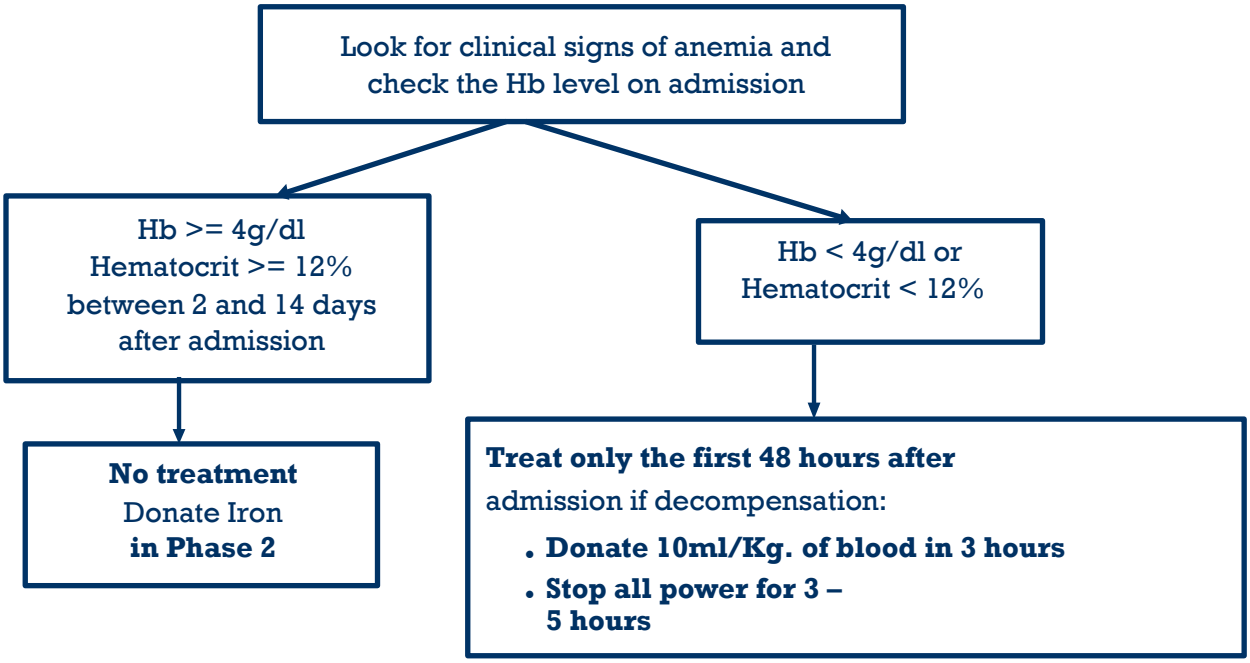
Although anaemia is common in malnourished children, transfusions should be used as little as possible and only according to established criteria. Transfusions represent a major risk of cardiac decompensation due to overload.

Worsening of anaemia and heart failure or respiratory failure are signs of fluid overload and increased plasma volume – heart failure is not "caused" by anaemia; These patients should not receive a transfusion of whole blood or red blood cells directly.

The signs and treatment are summarized in the diagram below:

Figures VIII: Diagnosis and treatment of anaemia

ANEMIA



F.2.10. Hypoglycaemia

All severely malnourished children are at risk of hypoglycemia, especially during the first two days of treatment. Hypoglycemia can result from a severe systemic infection or occur when a malnourished child has gone 4 to 6 hours without food, as is often the case during transport to the hospital. To prevent hypoglycemia, the child should be fed at least every 2 or 3 hours, night and day.
If the milk distribution is well respected and the child takes his ration, there is very little risk of developing hypoglycemia.

A child who eats meals during the day will not develop hypoglycemia at night and will not need to be woken up at night to eat meals. If the child has not eaten all meals during the day, the mother should give at least one meal at night.

Signs:

- Hypothermia (body temperature< 35.5˚C);
- Hypotonia (apathy);
- Retracted eyelids giving the appearance of having wide-open eyes;
- Lethargy and even loss of consciousness;
- Convulsions.

Notes

Sometimes there are no signs as the child develops hypoglycemia. This is why hypoglycemia must be prevented by the systematic administration of 50 ml of 10% sugar water on admission.

Treatment:

- In a conscious patient, if hypoglycemia is suspected, give 50 ml of 10% sugar water (1 teaspoon of sugar to 50 ml of water) or the preparation of F75 by mouth.
- If the patient is losing consciousness, he or she should be given 50 ml of sugar water through a nasogastric tube immediately. When he regains consciousness, he must be given his milk meals frequently.
- If the patient is unconscious, administer 5 ml/kg body weight of sterile 10% glucose intravenously, followed by 50 ml of glucose or 10% sugar by the nasogastric route (gastric tube). When the child regains consciousness, immediately give the F75 preparation.

The response to treatment is fast and spectacular. If a lethargic or unconscious patient does not respond to treatment, the diagnosis should be revised with further investigation and treatment reviewed.

F.2.11. Hypothermia

Infants under 12 months, marasmus, kwashiorkors with skin lesions Extended and the children With some Infections Serious are particularlyexhibited at hypothermia. For the prevent, he Will Sufficiently cover the children particularly the night clean at Help a washcloth severely malnourished children while they are in phase 1. Hypothermia is defined by rectal temperature < 35.5˚C or axillary temperature
< 35˚C.

Treatment:

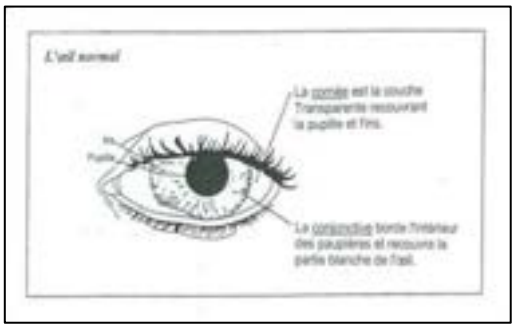
- Put the child in a "kangaroo" position, in contact with his mother's skin and cover him;
- Wrap in a survival blanket to maintain temperature;
- Never use hot water (bath or hot water bottle);
- Also treat for hypoglycemia;
- Think of a state of septic shock;
- Check the temperature every 30 minutes;
- Give antibiotics with reference to the antibiotic section.

The ambient temperature must be sufficiently high, especially at night (between 28˚C - 32˚C); a thermometer that indicates the maximum and minimum temperatures each

day must be hung on the wall during Phase 1 in order to be able to monitor the ambient temperature.

F.2.12. Ocular complications

Figure IX: Normal eye



Signs:
A child with severe malnutrition may show signs of eye infection and/or vitamin A deficiency.

- **Bitot's spots** are white, lumpy-looking superficial spots on the conjunctiva. They are associated with vitamin A deficiency;
- **Pus and inflammation** (redness) are signs of eye infection;
- **Corneal opacification** gives an opaque appearance to the cornea. It is a sign of vitamin A deficiency;
- **Corneal ulceration** is a rupture of the surface of the cornea. This is a sign of severe vitamin A deficiency. If left untreated, the lens may detach, causing blindness. Corneal ulceration is an emergency and requires immediate treatment with vitamin A and atropine (to relax the eye).

Treatment
For the examination of the eyes and the instillation of eye drops, the maximum care and gentleness should be shown. To avoid spreading the infection, a different dropper and bottle should be used for each child. Care should also be taken to wash your hands before and after the treatment of each child.
The affected eyes will also be covered with a bandage for 3 to 5 days, until the inflammation and irritation disappear. An eye pad moistened with 0.9% saline solution held in place by a gauze bandage should be used. Wet pads and bandages help reduce pain, prevent the child from rubbing their eyes, and promote healing. Tampons and bandages should be changed each time eye drops are administered.

The treatment of Bitot's Spots

- Bitot spots without other ocular signs, no eye drops but rather give Retinol in capsule form orally according to the xerophthalmia treatment regimen (D1, D2, D8 to 15) and according to age.

Treatment of Pus/inflammation

- Tetracycline eye drops 1%: 1 drop, 4 times a day **or**
- Chloramphenicol: 1 drop, 4 times a day

For at least 7 days, and until all ocular signs disappear. By adding Retinol capsule orally according to the xerophthalmia treatment regimen (D1, D2, D8 to 15) and according to age

Treatment of corneal ulcer and/or corneal opacification

- Tetracycline eye drops 1%: 1 drop, 4 times a day **and**
- Atropine eye drops 1%: 1 drop, 3 times a day

For at least 7 days, and until all ocular signs disappear. Retinol in oral capsule form should be added according to the xerophthalmia treatment regimen (day 1, day 2, day 8 to 15) and according to age

F.2.13. Other associated pathologies

Other associated pathologies

The treatment of other associated pathologies that are often encountered in malnourished children is summarized below:

Table 30: Treatment of associated pathologies in malnourished children

DIAGNOSIS	TREATMENT
CONVULSIONS	• Check for hypothermia or hypoglycemia and treat as appropriate; • Clear the airways, put them in a lateral safety position; • Oxygen as needed; • **Intrarectal diazepam** : 0.5 mg/kg (diluted in 1 ml of saline solution), to be repeated after ten minutes in case of ineffectiveness; • If rectal administration is not possible (diarrhoea), give 0.3 mg/kg as a slow IV; • If diazepam alone is not effective or in case of repeated convulsions, use phenobarbital at a dose of 5 mg/kg diluted in 10 ml of 5% glucose q 12h. **NB: no more than three doses of diazepam per 24 hours** ; • Blood glucose control: If blood glucose < 54 mg/dl (0.54 g/l), see "hypoglycemia".
SKIN LESIONS OF THE KWASHIORKOR	• Dry lesions: Zinc oxide ointment (2 applications per day); • Wet lesions: Disinfection with Chlorhexidine-Cetrimide (or diluted potassium permanganate), rinsing and then brushing with gentian violet; • Infected lesions: Rinse with sterile water. Apply silver sulfadiazine in a 2 to 3 mm layer, 2 times a day. Give Cloxacillin at a dose of 40mg/kg/day orally.
Mange (Treating the Whole Family)	• Calamine sulphur 8% or permethrin 5% for children 6-36 months of age until improved; • Benzyl Benzoate 25% diluted (1 part Benzyl Benzoate + 1 part water) for 3 consecutive days (preferably one application in the evening). Do not use for children under 6 months; • If superinfection, treat the skin lesions (gentian violet, antibiotics) until the lesions dry up and do the treatment of scabies as a 2nd line.
RINGWORM	• Whitefield's ointment (salicylic acid 3% + benzoic acid 6%): 2 applications per day, for three weeks; • Griseofulvin 10 mg/kg/day in 2 doses + gentian violet; • The duration of treatment will depend on the course of treatment.

CONJUNCTIVITIS	• Washing of eyes and hands; • Tetracycline ophthalmic ointment 1%; 2 applications per day for 7 days; • Also consider xerophthalmia in case of corneal opacity and trachoma (Azithromycin 20 mg/kg in a single dose)

F.3. Psychosocial care?

F.3.1. Psychomotor activities

This psychomotor activity essentially aims to promote the development of motor agility and the growth of the child but also social cohesion. The malnourished child needs to interact with other children during his rehabilitation. After the first days of treatment, he must have time to play and interact with the other children (on a play mat for example), and with his parent or a facilitator. Games are an important part of a child's development, it's a way to learn, explore and it's also a way to express yourself.

When the child progresses to acute malnutrition, he or she reduces his or her activity. In the first stage, the child with marasmus is tired but interested and the child with kwashiorkor, fearful and withdrawn. When they are severely malnourished, they no longer play, cry, smile, complain, and react – they become lethargic and weak. Because the child does not cry when he is hungry, thirsty, or stressed, the mother thinks that her child no longer needs attention. Nurses also neglect the child in the hospital for the same reason. Adults respond to the children's request, if the child does not ask, he or she is ignored. This is the main reason why these children should be treated together and separated from other children with other conditions.

Because the child does not play, he does not have the opportunity to learn. In the long run, this can delay his mental and behavioral development. Emotional and physical stimulation through play should begin during rehabilitation and continue after discharge; In this way, it can reduce the risk of mental and emotional damage.

It is essential that health workers understand the emotional needs of these children and create a joyful atmosphere that is conducive to psychological awakening. Companions should never be punished and staff should never yell or get angry at them. Children who are not smiling, need the attention of parents. Staff should always take care to explain this to parents and monitor their efforts. It is important that parents hug them and give them the necessary affection.

It is essential that mothers, fathers or other caregivers are with their children in the hospital in the USN and that they are encouraged to feed, hold, surround and play with their children as much as possible.

F.3.2. Psychosocial environment

It is important to provide space in the nutrition center where children can run or play. It is necessary to offer a pleasant environment: rooms with strong colors and beautiful wall decorations that can attract the attention of the child. Colored movable toys can be attached above the beds. Have

a stimulation therapy room (TS-Malnourished Children) on a site near the nutrition department and/or close to the community.
Stimulation should be performed in a well-ventilated, clean, bright and pleasant place.

F.3.3. Steps in stimulation therapy (TS) intervention for malnourished children

F.3.3.1. On admission

A warm welcome from the nursing staff is essential to avoid abandonment. The treatment and how long it may take should be explained to the mother or caregiver.
Inform the mother/caregiver about the possibility of following the treatment at home.
Conduct a comprehensive assessment of the child and their functional developmental stage.

Admission criteria for the TS-Malnourished Children (PTA and Phase 2 in the USN)

- Normal appetite;
- Improved mental state: smiles, reacts to stimuli, is interested in their environment;
- Normal temperature (36.5-37.5 ˚C);
- No vomiting or diarrhoea;
- No edema.

F.3.3.2. Organization of Stimulation Therapy sessions for malnourished children

The step is to establish the action plan for the child:

- Stimulation Therapy sessions are planned with regular reassessments if more than 5 sessions are planned;
- Stimulation Therapy for Malnourished Children is based on individual sessions;
- Each session of TS-Malnourished Children lasts from 30 to 45 minutes;
- It is recommended to offer each child 1 to 3 sessions/week;
- As far as possible, these sessions are prescribed by a doctor after consultation with the child.

Psychomotor activities (by the social worker or the person designated for this purpose):

- **During meals**
  - Mealtimes should be used as a privileged time for socialization for staff, accompanying persons and children;
  - The mother should be encouraged to feed her child, to hold him in the position that maximizes his comfort;
  - In a session, ten (10) to twenty (20) mothers must feed their children at the same time;
  - As soon as the milk is distributed, the mothers sit in a circle or semi-circle with the nurse in the middle who encourages the mothers to feed their children. This is one of the most important activities of the phase supervisor. This session is used to observe mother-child interactions, the report of which is used to choose the themes of talks, education and during home follow-up. This allows

the nurse to identify the specific needs of each child (gross motor skills, fine motor skills, cognition, language);
    - Emotional and physical stimulation through play should start from the transition phase and continue after release; In this way, it can reduce the risk of mental and emotional damage.

- **Psychological support through games**
    - The child should not suffer from sensory deprivation. The child's face should not be covered; he must be able to see and hear what is happening around him. He must never be locked up;
    - The games offered must be adapted to the age and the area of development affected:
    - For children who are rather immobile, passive movements of their limbs or bathing at body temperature often help to stimulate them;
    - For children who are able to move around without problems, play should include activities such as rolling or tumbling over a mattress, kicking or throwing a ball, climbing stairs, and going up and down an embankment;
    - Songs in chorus, stories etc. are also useful (make sure they are culturally acceptable). "Play therapy" helps sick or psychologically fragile children to heal;
    - The duration and intensity of psychomotor activities should increase as the child's condition improves. A member of the health care team should be in charge of all these activities for malnourished children;
    - The exchange of experience with mothers or other accompanying persons must be facilitated and encouraged by the centre's staff. The staff and the mother should care for the child in a spirit of mutual cooperation, with the mother being the key person who should care for the child during and after an acute episode.

- **Use and preparation of toys**
    - Toys should be in the beds as well as in the playroom;
    - Toys must be inexpensive and safe, made from cardboard boxes, plastic bottles, tin cans, old clothes, wooden cubes and other similar materials. This is the best, because parents can make them themselves and continue to make them after the child has graduated from the PTA and USN;
    - The toy models shown in Appendix 24 can be made and used for inpatients and those followed on an outpatient basis.

F.4. Management of severe acute malnutrition with medical complications in infants less than 6 months of age or more than 6 months of age with a weight of less than 3 kg

F.4.1. Breastfed infants

Malnourished infants under 6 months of age or over 6 months of age with a weight of less than 3 kg who receive breast milk should be treated in hospital. They are too weak and cannot suckle effectively to stimulate adequate breast milk production. The goal of this treatment is to return these children to exclusive breastfeeding by stimulating breast milk production.

F.4.1.1. Admission requirements

Table 31: Admission Criteria for Breastfed Infants

AGE	ADMISSION REQUIREMENTS
Infants 0 to 6 months of age	Weight/Height< -3 Z score, **Or** Presence of bilateral edema taking the cup, **Or** Recent weight loss; **Or** Prolonged absence of weight gain; **Or** Serious breastfeeding difficulties despite advice given to the mother
Infant 6 months and older with less than 3kg being breastfed	The infant is very weak to suck effectively. **Or** The infant does not gain (or lose) weight at home. **Or** P/T < -3 Z-score **Or** Presence of bilateral edema taking the cup **Or** Any other medical or social issues

Note : Babies with low birth weight are usually not severely emaciated or edematous, and are therefore unlikely to meet the criteria for severe malnutrition.

These babies should be exclusively breastfed until they are 6 months old. When low birth weight infants are unable to suck, they should be fed with a cup and spoon, guided by signs of hunger. But when the infant sleeps for more than three hours, he must be woken up to feed him.

F.4.1.2. Nutritional treatment

These infants must be monitored in a space reserved for them, separated from other older and malnourished children. This can be a corner reserved for breastfeeding mothers.
The dietary diet is F75 until the edema melts away in children with edema.

F.4.1.2.1. Promotion of breastfeeding

The main goal is to restore breastfeeding by stimulating breastfeeding. During the initial phase of treatment, breastfeeding should be supplemented with therapeutic milk, while stimulating breast milk production.

If the infant is able to breastfeed:

- Support the mother (or nanny) to breastfeed at least every three hours for at least 20 minutes. The infant should be breastfed as often as possible. Encourage the mother to breastfeed the infant at any time, as soon as the infant wishes, between intake of supplement milk;

- Half an hour to an hour after breastfeeding, give therapeutic milk through a nursing tube. The therapeutic milk used must be F75 or F100 diluted (end-use product only) divided into 8 to 12 meals per day (see quantities by weight, reference table in Appendix 14 (Appendices 14a, b and c)). If F75 and F100 are not available, give a breastmilk substitute in the same amounts (1st stage milk);

- Monitor the child's weight: the infant should be weighed every day with a 10 g or 20 g precision scale;
- If the infant loses weight or has a steady weight on three consecutive days, but continues to be hungry and eats all meals of diluted F75 or F100, add an additional 5 mL to each meal.

In general, supplementation should not be increased during treatment. If the child regularly gains weight with the same amount of supplement milk, it means that the amount of breast milk taken by the infant increases;
If, after a few days, the child does not complete all the rations of diluted F75 or F100, but continues to gain weight, this means that the intake of breast milk is increasing and the infant is taking sufficient quantities to meet his needs;
Note breastfeeding feedings, both night and day, and, if possible, how long they last. In the same way, note the intake of supplement milk (quantities and hours).

Procedure for feeding the child:

- During breastfeeding, ensure proper positioning and grip of the child to ensure effective sucking. Avoid distractions and let the baby suckle at his own pace;
- Build the mother's confidence to help milk flow;
- Encourage the mother or nanny to breastfeed frequently and for longer periods of time in order to increase milk production;
- Use the supplementation technique with a feeding tube. If this is not possible, give the supplemental milk by cup, dropper, syringe, or nasogastric tube by infusion (using gravity but not pumping);
- Feed through the nasogastric tube only when the infant does not take enough milk by mouth. The nasogastric tube should not be used for more than three days and should be used during the stabilization phase only;
- Give therapeutic milk with a feeding tube.

Suction Supplementation Technique (TSS)

The purpose of this technique is to stimulate breastfeeding and supplement the infant until there is sufficient breast milk supply to allow it to gain weight.
Breast milk production is stimulated by the technique of supplementation by suction (TSS); Therefore, it is important that the infant is put to the breast as often as possible:

- Put the child to the breast every 3 hours, for 20 minutes and more frequently if the infant cries or seems to want to suckle more;
- One hour later, top up with diluted F100 using TSS;
- Supplementation is given by an NGS adapted according to age, (the end is cut at 1cm and the cap is removed at the other end of the NGS);

- The diluted F100 is put in a cup. The mother holds the cup about 10 cm below the nipple so that the child is forced to suck himself;
- The end of the tube is immersed in the cup;
- The other end is placed on the mother's breast, which she holds with one hand; She uses the other hand to hold the cup. At the beginning, it can be fixed with a piece of plaster;
- When the child sucks both the breast and the tube at the same time, since the latter is in his mouth, he sucks the milk at the same time through the tube immersed in the cup and through the nipple. It is as if the infant were taking his milk through a straw (or pipete);
- Encourage the mother to breastfeed her child;
- At first, the cup should be placed about 5 to 10 cm below the nipple so that the milk does not reach the infant's mouth too quickly. If he is weak, he should not have to suckle too hard to get milk. When it grows and has more strength, the cup can be lowered to about 30 cm under the breast;
- NEVER place the cup above the nipple, otherwise the milk can go into the infant's mouth by siphoning with significant risks of inhalation;
- Tell the mother to relax. The mother must feel confident for the technique to work satisfactorily.

It may take a day or two for the infant to get a good grip on the tube and get used to the taste of the mixture of the two milks, but it is important to persevere.
If the diet is changed, the infant will take a few days to readjust to the new taste. It is best to continue with the same supplementation throughout the treatment.

After the meal:
Clean the tube with clean water using a syringe. Then quickly turn the tube to drain the water inside the tube by centrifugal force, and make sure that no water remains in the tube. If possible, expose it to direct sunlight: UV rays pass through the plastic and sterilize it effectively. The tube that has already been cleaned and any opacity at that time, disappears.
NB: Change the catheter every 3 days.

F.4.1.2.2. Nutritional supplementation (F75, diluted F100, formula) in addition to breastfeeding for infants 1 to 6 months of age

Infants with SAM but without oedema should receive expressed breast milk. When this is not possible, diluted F75 or F100 or commercial (generic) formulations may be administered;
SAM infants with bilateral edema taking the bucket should receive F75 as an adjunct to breast milk.
Preparation of Diluted F100
To make small diluted amounts of F100 proceed as follows: Use 100 ml of already prepared F100 and add 35 ml of water, which makes 135 ml of diluted F100. Do not reconstitute smaller quantities;
If you need more than 135 ml, use 200 ml of F100 and add 70 ml of water, to make 270 ml of diluted F100.

Table 32: Volume of Diluted F100 to Infants During SST

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WEIGHT CLASS (KG)	ML PER MEAL/ (FOR 8 MEALS/DAY) F75 or F100-diluted milk
≥1.2 kg	25 ml per meal
1.3 to 1.5	30
1.6 to 1.7	35
1.8 to 2.1	40
2.2 to 2.4	45
2.5 to 2.7	50
2.8 to 2.9	55
3.0 to 3.4	60
3.5 to 3.9	65
4.0 to 4.4	70

NB: Undiluted F100 should never be used in infants under 6 months of age and those over 6 months of age with less than 3kg.

F.4.1.2.3. Nutritional support for the mother/caregiver The mother of an infant must be fed in such a way that she can take good care of her child. She needs quality food provided by 3 meals and snacks every day. The fluid intake is also very important (one litre more than your usual consumption per day).

Listening to mothers by the social worker or any other person designated for this purpose

In emergency situations, mothers are often traumatized and depressed, and they may not have a good relationship with their infant or respond to their infants' requests. At this stage, technical information on infant feeding is useless. It is helpful to get mothers to talk about their experiences and feelings, as this will help them to resolve some of their problems. Then they will be able to respond again to the requests of their infants.

- During this process, listen to the mother, find out what her problems are, and get her to talk about them, including problems that affect her ability to breastfeed and care for her infant;
- Encourage mothers to listen to each other in support groups;
- The best support usually comes from other women, those who are from the same culture and social position, who have had a malnourished infant who responded well to treatment. The rules of the malnutrition ward should not be too strict.

Not separating mother and infant

Do not separate the mother and the infant to allow the mother to take care of her infant and respond to her requests, and multiply skin-to-skin contact (Kangaroo method) to warm the infant.

For this, beds or mattresses are more suitable than cots. The length of stay should be as short as possible.

F.4.1.3. Treatment of associated pathologies

These children, because of their extreme fragility, must be seen by medical staff every day.

Put them on antibiotics: Amoxicillin 40 mg/kg 2 times a day (80 mg/kg/day) in combination with Gentamicin once a day (4 mg/kg/day) for 4 to 5 days. (Never use Chloramphenicol in these infants).

F.4.1.4. Transition phase

When the infant starts to gain weight (at least 20 g/day) for 2 to 3 days:

- Gradually decrease the amount of diluted F75 or F100 by one-third so that the baby gets more breast milk and maintain this amount for 2 to 3 days
- If the infant continues to gain weight satisfactorily (20 g per day), further reduce the amount of supplemental milk, in the same proportions, until it is no longer given.
- If weight gain is not satisfactory when reducing the volume of supplement milk, increase the volume to the previous level for 2 days, and try again.

F.4.1.5. Criteria for Moving from Transition Phase to Phase 2

During this phase, the child no longer receives supplemental milk and must gain weight by being exclusively breastfed.
Observe breastfeeding to ensure that the infant is feeding well, as often and for as long as possible. A feeding should last at least 20 minutes.
Continue to encourage the mother.
From the beginning of the recovery phase, the mother should be prepared to feed the infant after discharge: encourage him to breastfeed exclusively until the age of 6 months before starting to diversify the diet.

Note:
After explaining or demonstrating to the mother the criteria for a good positioning of the baby at the breast, check the criteria for a good latch and effective sucking.
The four signs of a good latch :

1. The baby's mouth is wide open;
2. You may see more darker skin (areola) above the baby's mouth than below (the areola is more visible above than below);
3. The baby's lower lip is turned outwards;
4. The baby's chin touches the mother's breast.

The 5 signs of effective sucking are:

1. The baby sucks slowly and deeply, sometimes pauses;
2. You are able to see or hear the baby swallowing after one or two sucking movements;
3. Sucking is comfortable and painless for the mother;
4. The baby finishes the feeding, releases the breast and appears satisfied and relaxed;
5. The breast is more flexible after feeding.

NB: *Effective sucking helps the mother to produce milk and satisfy her baby.*
After the baby has released one breast, offer the other breast. This will ensure that the baby stimulates milk production in both breasts, and also gets the most nutritious and satisfying milk.

Note: If the mother or nanny is HIV-positive, she should be referred to a counsellor with expertise in infant feeding and HIV.

F.4.1.6. Exit criteria and transfer to the PTA

Decide on the discharge of the infant according to the discharge criteria and complete the TSS follow-up sheet, the child health record/card and the register.

Table 33: Discharge Criteria for Breastfed Infants

AGE	EXIT CRITERIA
Infants less than 6 months of age or 6 months of age and older with less than 3 kg being breastfed	Gains weight only while breastfed No medical problems

Note: There are no anthropometric criteria for the discharge of exclusively breastfed infants under 6 months of age who gain weight. For infants aged 6 months and over with less than 3kg as soon as they reach 4kg (replace the diluted F100 with the F100 or 1st age milk substitute) their discharge criteria are the same as those of the age group from 6 to 59 months. The follow-up of these children is very important.

F.4.1.7. Evaluation and advice in IYCF

The IYCF advice has been clearly defined in the prevention section of this protocol (*see Part C. Prevention*).

F.4.1.8. Hospitalization follow-up

The progress of these infants should be closely monitored by daily weight gain.

- Weigh the infant every day with a scale graduated to the nearest 10 or 20g;
- If the infant loses weight for 3 consecutive days and appears to be hungry and takes their diluted F100, add 5 mL to each meal;
- If the infant regularly gains weight with the same amount of milk, it means that breast milk production is increasing. Supplementation should not be increased;
- If after several days, the infant does not finish his daily supplement of diluted F100, but continues to gain weight, it means that the mother is producing enough breast milk and the infant is breastfeeding well. Encourage the mother;
- When an infant takes 20 g for 2 consecutive days: halve the amount of diluted F100;
- If weight gain is maintained at 10g per day with the amounts of milk reduced by half, then stop TSS completely;
- If the weight gain is not maintained, the volume should be increased by 75% of the maintenance requirements for 2 to 3 days and then reduced again if the weight gain is maintained;
- If the mother wishes to go home, she can go home as soon as the infant takes the breast milk and increases in weight;
- If the mother does not express the desire to go home right away, then she should be kept at the center for 2 more days, to be sure that the infant continues to gain weight with breast milk alone, then exatate the infant, regardless of his P/A or P/T.

F.4.2. Non-breastfed infants

F.4.2.1. Admission requirements

Table 34: Admission Criteria for Non-Breastfed Infants

AGE	ADMISSION REQUIREMENTS
Newborn/infant under 6 months of age or 6 months and older with less than 3kg not breastfed	P/T < -3 Z score Doesn't gain (or lose) weight at home. **Or** Presence of bilateral edema taking the cup **Or** Any other medical or social issues that require further assessment or intensive support

If there is no chance of being able to breastfeed, severely malnourished infants under 6 months of age should be treated according to the standard protocol with the following modifications.

F.4.2.2. Nutritional treatment

F.4.2.2.1. Breastmilk Substitute for Non-Breastfed Infants

In Haiti, the recommended milk substitute for non-breastfed infants is LANPE.

F.4.2.2.2. Nutritional support for the mother/caregiver Specific health care and breastfeeding support will be given to mothers. Psychosocial support will also be provided to alleviate the problems associated with the lack of breastfeeding.

F.4.2.3. Treatment of associated pathologies

The infant should receive the following micronutrients:

- **Vitamin A** : Give a dose of 50,000 IU (2 drops of the blue capsule) to each infant at the time of discharge from the malnutrition ward.
- **Iron:** the iron supplement should only be given when the infant begins to gain weight at a rate of 3 mg/kg/day divided into 2 doses (tablet to be crushed and diluted in milk);

F.4.2.4. Transition phase

During the Transition Phase, only F100-diluted or 1st stage milk should be used. The volume must be increased by 30%.

Recovery phase (Phase 2)

During this phase, the infant should be fed using a cup and saucer; The mother or caregiver will have to feed the child the same after the discharge.

- After 4 to 5 days, increase the volume of milk rations by a further 30%;
- If the infant is still hungry after taking the whole ration, give him more;
- Increase rations by 5 mL per serving.

It is very important to take advantage of the recovery phase to show the caregiver how to prepare milk (drinking water, correct dilution), how much to give, how often to give and how to clean the utensils.
The caregiver should prepare and feed meals under supervision while the infant is in the malnutrition ward.

F.4.2.5. Criteria for Moving from Transition Phase to Phase 2

Criteria for Moving from Transition Phase to Phase 2

- Appetite Good: the child takes 90% of the milk ration;
- Total melting of the oedema;
- Minimum of 2 days in the transition phase for emaciated patients;
- No medical complications.

F.4.2.6. Exit criteria and transfer to the PTA

Table 35: Discharge Criteria for Non-Breastfed Infants in Phase 2

AGE	EXIT CRITERIA
Infants under 6 months of age or less than 3 kg who have no possibility of being breastfed.	When they reach -2 Z-score of their lying P/T, they can switch to 1st age infant milk.

The follow-up of these children is very important and must be organized regularly by community health workers and community relays.

F.4.2.7. Evaluation and advice in IYCF

The IYCF advice has been clearly defined in the prevention section of this protocol (*see part C. Prevention*).

F.4.2.8. Outpatient follow-up

An infant under 6 months of age who has been hospitalized may be transferred for outpatient care when:

- All clinical pathologies and medical complications, including oedema, are cured; AND
- The infant has a good appetite, is clinically well, and is alert; AND
- Weight gain with a substitute diet is satisfactory, e.g. above the median of the WHO growth rate standards or above 5g/kg/day for at least three consecutive days; AND
- Vaccination and other routine interventions have been verified; AND
- The mother or caregiver of the infant is informed of how to receive the necessary follow-up and support at the community level.

For infants less than 6 months of age with severe acute malnutrition who meet the criteria for admission to the NCU, but whose caregiver refuses hospitalization:

- Advice and support on optimal infant and young child feeding should be provided and linked to a community worker, based on general recommendations for infant and young child feeding;

- Weight gain should be monitored weekly to keep track of changes ;
- If they do not gain weight, or lose weight while their mother or caregiver is receiving breastfeeding support, then they should be hospitalized;
- Assessment of the physical and mental health of the mother or caregiver should be encouraged, and appropriate treatment or support should be provided.

G. Nutrition in Emergencies

Security, humanitarian and climatic conditions in Haiti have deteriorated significantly over the past three years, due to a political stalemate, economic recession, inflation and the spread of violence. Armed clashes, killings, abductions, sexual violence and displacement are daily occurrences that force people to live in fear, internal displacement and exile from the country, and those living there do not have access to basic services, including health, nutrition, quantity and quality food, water/hygiene/sanitation. Insecurity is also increasing in the provinces, affecting food production areas and blocking transport routes, which has a significant impact on productive and commercial activities, at a time when nearly half of the population suffers from severe food insecurity. In this alarming context, a cholera epidemic broke out in October 2022 and is still continuing in 2025 in almost the entire country. This is contributing to the deterioration of the nutritional status of children, pregnant and lactating women, as shown by the preliminary results of the 2023 SMART survey, and the CPI NAM and vulnerability analysis.

In view of this precarious situation, it can be said that Haiti is in a chronic emergency situation that requires both emergency and development interventions at all levels and sectors. That is why in this protocol we place a special emphasis on nutrition in emergencies.

G.1. Promotion and Protection of Breastfeeding

In the Prevention component of this protocol, we have developed the promotion and protection of breastfeeding. However, in an emergency situation, this must be done with more emphasis because the mother needs more psychosocial support to perform this vital gesture for the child who is breastfed. For more details, see section C2. Prevention of the Protocol.

G.2. Mother and Baby Nutrition Counselling Points (MBNCP)

The CPNMB is part of a Haiti-specific strategy for the promotion of breastfeeding and has even been developed in emergency situations. This CPNMB strategy was implemented in tents in Haiti after the
12 January 2010 and has proven to be very effective in promoting and continuing breastfeeding in women with post-traumatic shock. Since then, the CPNMB strategy has spread throughout the country and continues even in normal situations. In emergency situations, the frequency of NBCP activities should be significantly increased.

G.3. Ready-to-Use Infant Formula (LANPE)

Ready-to-use Artificial Milk (LANPE) was used in Haiti after the earthquake of January 12, 2010 as a breastmilk substitute in orphaned children and mothers suffering from postpartum psychosis. Since 2010, Haiti has selected LANPE as a recommended breastmilk substitute product in emergency situations.

G.4. Outpatient management of acute malnutrition in children aged 0 to 59 months

G.4.1. Outpatient management of moderate acute malnutrition in children 6 to 59 months of age

Management of moderate acute malnutrition in children 0 to 59 months of age will be done in accordance with the PCMAG descriptions in section D of this protocol.

G.4.2. Outpatient management of severe acute malnutrition without medical complications in children 0 to 59 months of age

The management of severe acute malnutrition without medical complications in children 0 to 59 months of age will be done in accordance with the PCMAG descriptions in section E of this protocol.

G.4.3. Outpatient management of severe acute malnutrition with medical complications in children aged 0 to 59 months

The management of severe acute malnutrition with medical complications in children 0 to 59 months of age will be done in accordance with the PCMAG descriptions in section **F** of this protocol.

H. SPECIFIC CASES: CARE FOR OTHER VULNERABLE GROUPS

Specific cases can be cited as follows: sickle cell patients, cases of cerebral palsy, persons deprived of liberty, persons with HIV/AIDS, tuberculosis and patients operated on for a long period of hospitalization, injured or traumatized. In this protocol we will focus on 4 specific cases (tuberculosis, HIV/AIDS, thinness in adolescents/adults and wasting and thinness in pregnant and breastfeeding women).

H.1. Tuberculosis and severe acute malnutrition

Malnutrition is the main risk factor for tuberculosis.
Therefore, any patient who is malnourished should systematically benefit from active TB testing.

Diagnosis of tuberculosis in a nutrition programme
Diagnosis of TB is difficult to make in children, especially when resources are limited. Suspect tuberculosis in any child with the notion of contagion or with one of these signs that persists for more than 2 weeks without improvement following appropriate treatments:

- Persistent respiratory symptoms (cough) despite appropriate antibiotic therapy;
- Persistent weight loss despite appropriate nutritional therapy.

As bacteriological evidence is often lacking, it is necessary to pay particular attention to other diagnostic elements depending on the type of tuberculosis:

- **Pulmonary Tuberculosis (TBP)**
  - Chronic cough lasting more than 2 to 3 weeks and not responding to broad-spectrum antibiotics (amoxicillin or cotrimoxazole);
  - Evening fever above 38° for more than 2 weeks apart from other common causes (malaria, pneumonia, etc.);
  - Weight loss or insufficient growth for more than 4 weeks, despite a correct diet;
  - Notion of contage (pulmonary tuberculosis in the environment).

- **Extrapulmonary Tuberculosis (PET)**

There are no specific signs that can confirm extrapulmonary tuberculosis in children, however some signs are characteristic and depend on the site:

- Pleural effusion (pleurisy) or ascites;
- Suggestive meningeal or neurological signs;
- Cervical lymphadenopathy sometimes fistulized;
- Deformity of the spine.

Paraclinical Examination
Some tests can help:

- **Spitting Review** :
  - Unlike adults, where microscopic examination of sputum smears is in practice the "key test" for TBP, in children this test does not exist, except in older children who are capable of expectorating;
  - Xpert MTB/RIF (sputum) or Xpert Ultra (with saddles) depending on the availability of the GeneXpert machine;

- Gastric aspiration or laryngeal swabs are invasive techniques and are only useful if there is equipment available to culture Mycobacterium tuberculosis, which is often not obvious.

- **Chest X-ray:** This is an essential part of the diagnosis of intrathoracic TB in children because it allows evocative (but non-specific) images to be objectified. Where possible, a basic chest x-ray may be useful to help with therapeutic follow-up.

Depending on the most common forms of PET (Extra Pulmonary Tuberculosis) in children, the following investigations may be done:

Table 36: Investigation of Extrapulmonary Tuberculosis in Children

Forms of TB	Examination
Adenitis TB	Lung biopsy
Military TB	X-ray and lumbar puncture
TB meningitis	X-ray and lumbar puncture
Pleural effusion	X-ray and ECB of pleural fluid
Abdominal TB	Ultrasound and ECB of ascites
Osteoarticular TB	Radiography
TB pericarditis	Echography

Treatment
For the modalities of implementation of the therapeutic regimen, refer to the National Protocol for the Management of TB.

Chemoprophylaxis
Malnourished children in contact with a contagious case of tuberculosis and in whom tuberculosis has been ruled out should receive chemoprophylaxis according to the national tuberculosis protocol in force.

H.2. HIV/AIDS and severe acute malnutrition

For all malnourished children, screening for HIV infection should be routine after prior counselling for parents.
The management procedures are as follows:

- Remember that neither HIV nor tuberculosis are fatal acute diseases;
- First of all, introduce nutritional management up to phase 2, because all patients, HIV-positive or not, generally respond well to the SAM management protocol; in addition, a delay in HIV care of 1 to 2 weeks will have little effect on the outcome;
- The management of children under 18 months of age (seropositivity still uncertain) of HIV-positive mothers and that of children with confirmed HIV-positive status with severe acute malnutrition must be the same. ;

- Also remember that antiretroviral drugs are very toxic to the liver and pancreas. These organs are particularly affected in SAM. ARV treatment in severely malnourished patients exposes them to very severe side effects of these drugs. This often leads many patients to abandon the treatment.
- Be aware that there are major interactions between ARV drugs and some of the drugs recommended in this protocol. This is the case with the combination of Artemether + Lumefantrine and Albendazole, which should not be given at the same time as certain ARVs. This is another reason why ARV treatment should be delayed until routine treatment for SAM has been administered;
- Antiretroviral treatment should be conducted in accordance with the national protocol for the use of antiretrovirals;
- Vaccinate against measles at 6 months (in case of epidemic) and from 9 months of age under normal conditions.

Chemoprophylaxis:
Malnourished HIV-infected children in contact with a contagious case of tuberculosis and in whom tuberculosis has been ruled out should receive chemoprophylaxis according to the current national tuberculosis programme protocol.

H.3. Thinness in adolescents/adults

Thinness in adults is defined by the presence of nutritional edema and/or significant thinness or muscle wasting, and recent weight loss in the last 4 weeks. The degree of thinness is assessed using the body mass index (BMI). Malnutrition occurs when food intake is insufficient in relation to the body's needs; either because this intake is quantitatively or qualitatively deficient, or because nutritional needs are increased.
Excessive weight loss and/or the appearance of signs of physiological impairment distinguish moderate thinness (MAM) from severe thinness (SAM). Without adequate nutritional and medical care, thinness is fatal even in adults.

Diagnosis
Screening for malnutrition should be done:

- **For persons deprived of their liberty** : on admission to the penitentiary, during routine consultations at the health centre/infirmary, during periodic active screening in the cells and during periodic nutritional surveys organized to assess the nutritional situation.
- **For people with HIV/AIDS and tuberculosis** : during consultations, in hospital, etc.
- **For patients who have undergone surgery** : during hospitalization.

Clinical examination: search for oedema, anaemia, perform the squat test (observe the standing/squatting position without support), look for gingivorrhagia in case of vitamin C deficiency; search for associated medical complications (malaria, diarrhoea, dehydration, cardiovascular disorders, etc.). If oedema is present, the person must be seen by a doctor in order to identify the cause because certain renal, cardiac, hepatic and vitamin deficiency (Beriberi) pathologies also cause oedema.

Paraclinical examination : Specific assays (proteinuria, CBC)

Admission requirements Teenagers/ Adults

Table 37: Admission Criteria for Adolescents/Adults

	ADMISSION REQUIREMENTS	
	Adults	**5-18 years old**
Moderate acute malnutrition	MUC≥ 210 mm and < 230 mm **OR** BMI≥ 16 and < 18.5 in kg/m2 **AND** No nutritional oedema	BMI for age≥ -3 Z score and < -2 Z score **AND** Absence of nutritional oedema
Acute malnutrition severe without complications	BMI < 16 with recent weight loss **OR** PB < 210 mm with recent weight loss **OR** Presence of nutritional oedema + or ++ **AND** Moderate or good appetite No medical complications	BMI for age≤ -3 Z score **OR** Presence of nutritional oedema + or ++ **AND** Moderate or good appetite No medical complications
Acute malnutrition with associated complications or pathologies	BMI< 16 (in kg/m2) with recent weight loss OR PB < 210 mm with recent weight loss **OR** Presence of bilateral nutritional oedema +++AND Poor appetite **OR** Presence of medical complications	BMI for Age < -3 Z score **OR/AND** Poor appetite **OR** Presence of medical complications **OR** Presence of nutritional oedema +++ **or** Kwashiorkor and/or Marasmus

Body Mass Index Calculation Method: BMI = Weight (kg)/Height2(m)
(See appendices 3 and 4 for BMI curves for 5-19 year olds and appendix 5, BMI for adults)

Medical Treatment for SAM

Table 38: Medical Treatment for SAM

Treatment	Dosage	Timing of administration
Treating bacterial infections often subclinical	Amoxicillin 500 mg 3 times/day for 7 days	On admission
Deworming treatment	Albendazole 400 mg in a single dose	At Admission

Antimalarial treatment	Rapid diagnostic test In case of positive result (treatment based on the national malaria management protocol)	On admission in case of endemic malaria or during the season of high transmission. If the result is negative, screening should be repeated on the 8th day in case of fever.

Medical Treatment for AMS

Table 39: Routine medical treatment for MAM

Option 1: Routine medical treatment combined with Ready-to-Use Supplementary Foods (RSFs)		
Treatment	**Dose**	**Notes**
Antihelminthic therapy	Albendazole 400 mg as a single dose on admission	Antihelminthic drugs are not recommended for pregnant women during the first three months of pregnancy.

Table 40: Routine medical treatment combined with local food

Option 2: Routine medical treatment combined with local food		
Treatment	Dose	Notes
Antihelminthic therapy	Albendazole 400 mg as a single dose on admission	Antihelminthic drugs are not recommended for pregnant women during the first three months of pregnancy.
Prevention of micronutrient deficiencies	1 tablet/day of multi micronutrients for 28 days	This makes it possible to cover most sub-clinical micronutrient deficiencies.

Table 41: Medical Treatment in Addition to Available Local Food

Option 3: Medical treatment in addition to local food available		
Treatment	**Dose**	**Notes**
Antihelminthic therapy	Albendazole 400 mg as a single dose on admission	Antihelminthic drugs are not recommended for pregnant women during the first three months of pregnancy.
Prevention of micronutrient deficiencies	Addition of the extra ration to the sauce for 28 days.	This makes it possible to cover most subclinical micronutrient deficiencies.

Table 42: Unroutine medical treatment based on vitamin A and Iron/Folic acid

Option 4: Unroutine medical treatment based on vitamin A and Iron/Folic acid		
Treatment	**Dose**	**Notes**
Antihelminthic therapy	Albendazole 400 mg as a single dose on admission	Antihelminthic drugs are not recommended for pregnant women during the first three months of pregnancy.
Prevention of Vitamin A deficiency	Lives at 200,000 IU as a single dose on admission	Not given to pregnant women except at delivery or within two months.
Iron and Folic Acid	200 mg iron + 400 µg folic acid on admission; then 1 time a week for 4 weeks	In case of anemia, treat it and the cause (malaria for example)

NB: In the absence of the vitamin and mineral supplements mentioned above, those that are locally available can be used in accordance with the recommended dosage (MNPs powder)

Nutritional treatment

The table below summarizes the daily nutritional requirements for adults by nutritional status.

Table 43: Daily Dietary Requirements for Adults

RANCH	MAM//PLHIV/TB	Normal
4000 Kcal/d	3000 Kcal/d	2400 Kcal/d

Nutritional treatment of SAM and MAM

With medical complications

SAM patients with medical complications will be cared for in their specific centers. Nutritional treatment is based on diluted F75 or F100 therapeutic milk or other preparations (see Appendix 27) until the medical complications have stabilized and appetite has recovered, after which the SAM treatment regimen is applied without medical complications.

Without medical complications

Adults with SAM without medical complications receive nutritional treatment with RUTF. If RUTF is unavailable, balanced menus can be prepared based on local foods.

They are monitored on a weekly basis with a medical and nutritional visit, during which their health and weight gain are assessed. They are kept in the care program until they are cured.

Nutritional monitoring of MAM
Adults with AMS are given a nutritional supplement based on ASPE or balanced menus based on local foods or fortified flour.
These local foods could be given in the form of porridge or a meal consisting of:

- Cereals (corn, rice, sorghum, millet, etc.);
- Legumes (soybeans, peanuts, peas, beans, lentils, etc.);
- Oil;
- Sugar;
- Iodized salt.

If possible, foods rich in vitamins and minerals (moringa, spirulina, etc.) or fresh fruit/vegetables prepared in such a way as to preserve micronutrients.

Beneficiaries are monitored on a monthly basis with a medical and nutritional check-up, during which their health status and weight gain are assessed, and are maintained in the program until the criteria for completion are met.

Prevention of malnutrition in people on ARVs and tuberculosis treatment
The aim of the care of people on ARVs and anti-tuberculosis drugs is to ensure additional nutritional intake in order to meet **increased nutritional needs** (PLHIV/TB) and/or to **improve the therapeutic effectiveness of current treatments** (PLHIV/TB).

N.B. People on ARVs and TB treatment who are severely malnourished receive the same treatment as any severely malnourished adult. Those who are moderately malnourished receive the same nutritional treatment as adults with moderate acute malnutrition. People on TB treatment receive the nutritional supplement for the entire period they are on TB drugs and those on antiretrovirals receive the nutritional supplement for the first two months of their ARV treatment.

Nutritional treatment of patients who have undergone surgery or trauma.
Diets will be prescribed to patients based on the factors and pattern below:

- The nutritional status of the patient;
- The degree of severity of the injury or trauma;
- The ability to maintain sufficient oral nutrition.

Exit criteria

Table 44: Adolescent/Adult Discharge Criteria

EXIT CRITERIA		
	Adults	**5-18 years old**
Moderate acute malnutrition	PB ≥ 230 mm **OR** BMI ≥ 18.5 Kg/m2)	BMI for Age ≥ -2 Z score
Severe acute malnutrition without complications	BMI≥ 16 kg/m2 And PB≥ 210 mm ET Absence of nutritional oedema for 14 days	BMI for Age > -3 Z score **AND** Absence of nutritional oedema for 14 days

Severe acute malnutrition with complications or associated pathologies	BMI≥ 16 kg/m2 **AND** PB ≥ 210 mm ET Absence of nutritional oedema for 14 days **NB:** From BMI ≥ 16 or PB ≥ 210mm, do MAM coverage up to BMI ≥ 18.5 or PB ≥ 230mm	BMI for Age ≥ -2 Z score **AND** Absence of nutritional edema for 14 days

H.4. Wasting and thinness in pregnant and breastfeeding women

This chapter deals with the management of moderate acute malnutrition in health facilities and/or at the community level.
The objective is to correct moderate acute malnutrition among vulnerable target groups:

- Pregnant women;
- Breastfeeding women (with children under 6 months)

Admission requirements

Table 45: Admission criteria for MAM ECL

CATEGORIES	ADMISSION REQUIREMENTS
Pregnant women	With PB < 230 mm
Breastfeeding women	Having a child under 6 months of age and a MUAC < 230 mm

Other types of admission

- **Relapse** : Admission of a patient who had already been managed and exerted after recovery, and who returns to a state of moderate acute malnutrition < 2 months later
- **Internal transfer** : A patient who arrives because they have been transferred from another center while still undergoing treatment for malnutrition
- **Readmission after discontinuation**: Return within 2 months after discontinuation of treatment

NB: Pay particular attention to FEFAs with clinical signs of anaemia.

NOTE *:* In special situations (conflicts, floods, food crisis, natural disasters, etc.), adolescents whose BMI for age is ≥ -3 Z-score and < -2 Z-score, as well as adults whose BMI is between 16 and 18.5, can be taken care of in the program on the instruction of the MSPP.

Nutritional supplementation

The supplementation ration can be:

- ASPE (Ready-to-Use Supplementary Feed), e.g. Plumpy Sup;

- Dry ration supplement (CSB+ or Super Cereal, CSB++ or Super Cereal Plus;
- Fortified infant flour (PEC MAM) or flour made from fortified local foods.

Table 46: Ration for the management of moderate thinness

Produce	Ration	Dietary Allowance per Ration	Target groups
Super Cereal (CSB+)	250 g 25 g oil	1171 Kcal 45 g protein 39 g fat	Pregnant and lactating women

This ration is given to supplement the daily ration and should not be considered as a food ration to meet nutritional needs.
This protocol strongly recommends the use of recipes based on local products enriched with multi-micronutrients, including fruits and vegetables. This ration will be balanced so that the calories come from:

- 50 to 55% carbohydrates;
- 30 to 35% lipids;
- 10 to 15% protein.

Table 47: Dry Diets Based on Local Foods for FEFA

Food	Quantity			Nutritional Composition		
	g/per/day	g/per/ week	kg/per/2 Weeks	Energy (Kcal/per/ day)	Protein (g/per/ Day)	Fat (g/per/day)
Grain	200	1400	2,8	728	14	1
Legumes	160	1120	2,24	536	32	2
Oil	60	420	0,84	530	0	60
Sugar	20	140	0,28	80	0	0
Total	**440**	**3080**	**6,16**	**1874**	**46**	**63**
% energy supplied					**10**	**25**

Systematic medical treatment

Table 48: Routine medical treatment of MAM

	Deworming	Iron + Folic Acid (200mg + 400µg)*
Pregnant women during ANC	**Check that the woman has received Albendazole. Otherwise,** give : **1cp of 400 mg** in the 2nd trimester and 1cp of 400 mg in the^{3rd} trimester of pregnancy.	**Check if the woman has received** 1cp per day, if not refer her to the ANC/ONC for administration throughout the period of CEP
Breastfeeding women	**NOT INDICATED**	

Curative medical treatment
* Iron + Folic Acid will be administered in FEFAs

Medical examination
Similarly, when the pregnant woman has not made her prenatal visits or has health problems, she should be referred for prenatal consultations to receive her Iron/Folic Acid (FAF) and Albendazole supplementation. At the level of the health institution, the verification of vaccination status or other medical complications must be done under the supervision of qualified health personnel.

Monitoring nutritional status

Measurement of the evolution of anthropometric parameters
The nutritional status will be monitored:

- With the help of the PB only at the community level;
- At the institutional level, every 4 weeks so that it coincides with prenatal visits (ANCs) and ONCs.

Nutritional Counselling and Education
Counselling should be given at admission and at each visit based on the feeding practices identified using the FED Scorecard.

Treatment failure
In the event of a stable weight after two (2) consecutive follow-ups or weight loss, it is important to discuss with the mother to understand the reasons and adopt a course of action.

Possible causes

- Other pathologies: malaria, diarrhoea, acute respiratory infections, tuberculosis, HIV/AIDS, etc. ;
- A substitution of one beneficiary by another;
- Insufficient quantity and nutritional quality of the ration (inadequate amount received, sharing of the ration at home, poor preparation).

Actions to be taken
Above all, we must look for the causes of these failures and try to compensate for them as best as possible.

- Check that there is no substitution of FEFA by taking the size, involving the community authorities, and other community relays who have a good knowledge of their community;
- Make a home visit to check the hygiene conditions, the sharing of the ration to be discouraged, the general conditions of the family;
- Refer as needed.

NB: An analysis of treatment failure must always be carried out before taking any action, and this analysis must be noted in the centre's cards or registers.

Exit criteria
FEFAs admitted on the basis of the PB will only be released when they meet both criteria as shown in the table below.

Table 49: Discharge criteria from the SNP

CATEGORIES	EXIT CRITERIA
Pregnant women	PB ≥ 230 mm NB: if delivery, continue care until the child reaches 6 months
Breastfeeding women	BP ≥ 230 mm or when the child reaches 6 months

Other types of output

Pregnant and breastfeeding women:

- **Non-response** : if BP < 230 mm up to 6 months postpartum;
- **Withdrawal** : Patient absent for 2 consecutive sessions (8 weeks);
- **Internal transfer** : Patient transferred to another SNP;
- **Reference** : Patient referred to the hospital due to medical or surgical complications;
- **Death** : Patient who died during her stay in the program or died during a transfer or referral (to be investigated).

Monitoring and evaluation of nutritional recovery activities for moderate cases It is essential to look for abandonments, in order to be able to identify whether it is a death or abandonment and to understand the cause of these abandonments.

Possible causes:

- The distance of the beneficiaries from their place of residence;
- The harvest or growing season;
- Sudden population movements, due to drought or insecurity;
- Mothers who do not understand the purpose of the program;
- Poor organization of the service (poor reception, slow deliveries, insufficient communication);
- Out of stock;
- Mothers do not perceive an improvement in their health and nutritional status;
- An improvement in the food situation in general.

Actions to be taken

They are directly related to the causes mentioned above:

- Collect monthly statistics for monitoring the situation at the commune, department and national levels as well as the analysis of the effectiveness and efficiency of the program;
- Analyze indicators to monitor and evaluate the effectiveness of care activities.

The indicators included in the monthly reports are shown in the table below.

Table 50: Benchmarks for Key Performance Indicators

SNP	Acceptable values	Alarm values
Cure rate	**> 75%**	**< 50%**
Mortality rate	< 3%	> 10%
Abandonment rate	< 15%	> 30%
Length of Stay	< 8 weeks	> 12 weeks
Non-response rate	< 10%	≥ 10%

If the dropout or non-response rate exceeds acceptable thresholds (15% and 10% respectively), it is essential to investigate the cause of this increase and to take the necessary measures to remedy it.

NB: In the event of a shortage of inputs, screening should continue, record the FEFAs screened and ensure their regular follow-up. The management of these cases must be ensured by medical treatment, counselling and cooking demonstrations.

I. MONITORING & EVALUATION

I.1. Introduction

Monitoring and evaluation is an integral part of any nutrition programme. Indicators should be graphed to describe trends across programs. The data collected is important for planning activities such as: opening care centers (PNS, PTA and USN), ordering nutritional inputs, medicines, necessary equipment and forecasting training or technical support needs. Monitoring and evaluation is also part of the surveillance system. It includes monitoring patients, activities and programme performance through: UNSNUS, SMART nutrition surveys, multiple household indicator surveys (EMMUS), IPC NM, coverage surveys such as SLEAC/SQUEAC, EUM (End-User Monitoring) surveys or monitoring of input end-users, in order to assess the scope and quality of implementation of nutrition interventions. Monitoring and evaluation is carried out at all levels of the PCMAG.

I.2. The objectives of monitoring and evaluation

The objectives can be summarized as follows:

- Ensure the quality of care activities;
- Improve the management of programmes/projects/activities for optimal use of resources;
- Assess the impact of PCMAG's activities;
- Provide data on the nutritional situation of the locality;
- Identify the problems that arise in terms of care and provide appropriate solutions;
- Identify needs for personnel, training, equipment, medicines or nutritional products;
- Share information with health workers, the community and authorities;
- Assess the impact of integrated multi-sectoral activities;
- Provide information to strengthen advocacy to improve the nutritional situation of children and women.

I.3. Definitions

Readmission is defined as a child who has never been in the program or who has been out of a program for more than 2 months after dropping out or healing;

Discontinuation is defined as a patient who is absent for two consecutive visits (28 days in the PNS, 14 days in the PTA, and 2 days in the USN) and without being formally exatated;
NB: in the event of a shortage of inputs to the PNS or the PTA, the notification of the abandonment is made two weeks after the supply.

Relapse is defined as a patient admitted for malnutrition/thinness when he or she has been discharged from the program as cured before the last two months;

Readmission is defined as a withdrawal that falls back to the PNS, PTA, or USN to resume treatment after an absence of less than 2 months;

Internal transfer is defined as a patient who arrives because they have been transferred from another center while still under treatment for malnutrition. Internal transfers should not be counted as new admissions:

- PNS to another PNS;
- PTA to another PTA;
- PTA to USN;
- USN to another USN;
- USN to a PTA.

Cured is defined as a patient who meets the criteria for a cured/exed discharge;

Successfully Treated/Stabilized is used for USN patients who have successfully completed Acute and Transition Phase treatment and are transferred to a PTA to continue their treatment. This includes infants under 6 months of age who meet the criteria for exeat in their category;

Length of stay is defined as the time that elapses from the date of admission and the time when the patient has achieved cured status (PNS, PTA) or "successfully treated" status (USN);

Death is defined as a patient who dies during their stay in the malnutrition program;
NB: When a malnourished patient dies during the transfer from one program to another, the death must be recorded as a death in the program that performs the transfer and be assigned to that program's report.

Non-response (to standard therapy) is defined as a patient managed in a PNS (after 2 weeks), PTA (after 2 weeks) or USN (after 1 week) who meets the described criteria for treatment failure after investigation. This excludes SAM and MAM cases referred to the USN for investigation;

Medical referral is defined as a patient who has a serious underlying disease that requires treatment beyond the competencies of USN/PTA/PNS;

Refusal to transfer is defined as a patient who meets the criteria for admission to the USN but refuses to be transferred from the PTA to the USN.
NB: this refusal is noted in the register and on the patient's follow-up sheet. He will leave the program after signing a waiver.

I.4. Calculation of key metrics

I.4.1. Indicators in USN

Table 51: USN Indicators

Key indicators			
	Definitions	**Main interpretations**	**Indicator calculations**
Number of admissions	**New admission** Child who has never been in the program before or child who has been out of the program for more than 2 months + **other admissions** (relapses, readmissions)	Assessment of the nutrition, health and food security situation in the community Program workload and capacity	Total Admissions (taken from USN Registry)
Number of relapses	**Relapse** Child discharged cured or successfully treated from USN and readmitted to the program within 2 months of discharge	Assessment of the food and health security of the community The family environment	Total relapses taken from the USN registry
Number of Releases	Total children exempted from the USN during the relevant period	Assessment of the quality of care	Sum of children discharged cured, successfully treated, deceased, abandoned, not Sponsors and medical referrals
Performance indicators			
Cure rate	Proportion of children cured	Assessment of the quality of care and the adherence/collaboration of The caregiver/mother of the malnourished child	Total recovered x 100 / Total outgoing
Successfully treated rate	Proportion of children who met the criteria for discharge from the USN to be transferred to the PTA or to the growth monitoring consultation (infants less than 6 months of age or older than 6 months of age) month with a weight < 3 KG)	Assessment of the quality of care and the adherence/collaboration of the caregiver/mother of the malnourished child	Total Successfully Processed / Total outgoing x 100
Dropout rate	Proportion of children absent 2 consecutive days, discharged on the 3rd day of absence	Assessment of quality of care and adherence to the program	Number of abandonments / Total outgoing x 100
Death rate	Proportion of children who died during the stay at the USN	Assessment of the quality of care Delayed use of health care	Number of deaths / Total outgoing x 100

Rate Reference	Proportion of children referred to another care facility	Technical platform	Number of summary proceedings ——————— x 100 Total outgoing
Rate Transfers	Proportion of children transferred to a PTA or other USN	Continuum of Care	Number of summary proceedings ——————— x 100 Total outgoing
Average length of stay	This is the average length of stay of children who have been successfully discharged and treated from the USN over a given period of time	Assessment of the quality of care Adherence to the exit criteria	Total length of stay of discharged patients who have been successfully cured and treated ——————— x 100 Number of children discharged cured/treated with success
Non-response rate	Proportion of non-response	Extent of comorbidities	Number of non-responses ——————— x 100 Total outgoing
Proportion of mothers/carers advised on IYCF in USN	Number of mothers /accompanying persons advised on the IYCF at the USN compared to total mothers /Accompanying persons	Assessment of the consideration of malnutrition prevention in the USN	Number of mothers /accompanying persons advised on the IYCF at the USN ——————— x 100 Total mothers/companions
Number of malnourished children who received stimulation Emotional	Total children receiving emotional stimulation services	Assessment of the quality of care Integration of care	Total malnourished children who received emotional stimulation ——————— x 100 Total children discharged
Number of days F100 breaks	Total F100 break days during the relevant period	Assessment of the availability of inputs	Sum of F100 Breakout Days

I.4.2. Indicators in the AWP

Cure Rate = $\frac{\text{Number of patients discharged cured}}{\text{Total number of program exits}} \times 100$

Death rate = $\frac{\text{Number of patients who died in centre and during the internal transfer to the USN}}{\text{Total number of program exits}} \times 100$

Abandonment rate = $\frac{\text{Number of abandonments}}{\text{Total number of program exits}} \times 100$

Treatment failure rate (non-response) = $\frac{\text{Number of patients who did not respond to the treatment}}{\text{Total number of program exits}} \times 100$

Average length of stay = $\frac{\text{Total weeks during which children who came out cured have remained in the PTA}}{\text{Total children discharged from PTA}}$

Number of RUTF Breakout Days = Sum of RUTF Breakout Days

Average weight gain (g/Kg/day) $\frac{\text{Sum of the weight gains of the cured}}{\text{Total number of recoveries}}$

For a patient who has been discharged = $\frac{\text{Output Weight (g) - Minimum Weight (g)}}{\text{Duration in days of minimum weight until day of discharge}}$ Minimum Weight (Kg)

I.4.3. Indicators in the SNP

Cure Rate = $\frac{\text{Number of children discharged cured}}{\text{Number of children discharged}} \times 100$

Abandonment rate = $\frac{\text{Number of children identified as dropping out}}{\text{Number of children discharged}} \times 100$

Non-response rate = $\frac{\text{Number of children reported as non-respondents}}{\text{Number of children discharged}} \times 100$

Reference rate = $\frac{\text{Number of children referred}}{\text{Number of children discharged}} \times 100$

Number of days of SLA Sum of ASPE Break Days

I.5. Formative supervision

Supervision is an important component in the implementation of the PCMAG. It must be an opportunity for continuous training. It is also an important source of information on the program and the development of activities. It makes it possible not only to assess the quality of the services provided by the agents but also to correct the shortcomings observed.

Supervision is quarterly at the central level, monthly at the departmental level and biannual at the national level. It covers all nutrition activities, including:

- Evaluation of the level of agents and identification of training needs;
- Verification of the maintenance of media (registers, stock sheets, individual sheets, inventory sheets, etc.);
- Assessment of the management of inputs (therapeutic feed, flour, equipment, storage and warehousing);
- Verification of statistics;
- Assessment of the care of the beneficiaries;
- Identification of implementation issues;
- Verification of equipment (anthropometry, small milk preparation equipment, etc.);
- Verification from stimulation Integration from psychomotor therapy, IYCF, FP, vaccination, at the different levels of care;
- Multisectoral Integration Verification (WASH-Nutrition, Health, Social Protection – Nutrition – Nutrition Security)

I.6. Nutrition surveillance

I.6.1. Program coverage surveys

Coverage refers to people who receive treatment versus those who need it. A quantitative and qualitative assessment of coverage highlighting the main factors influencing (positive or negative) program coverage is a program management tool. The various coverage surveys are: SQUEAC and SLEAC. These surveys are needed in Haiti to confirm or refute the low coverage of PCMAG programs.

I.6.2. EUM (End-User Monitoring) surveys or end-user monitoring of inputs

It is an exercise to monitor the availability, quality, distribution and use of inputs at the PTA level and in households. This tracking is focused solely on the last mile of the supply chain. This includes visits to households to ensure that RUTF distributed to children is used correctly.

This EUM approach was implemented in a very well-received community PEC experiment in Cité Soleil in the Metropolitan Area of Port-au-Prince. However, to improve this monitoring of EUM, it would be necessary to set up a final profit coupon that will make it possible to control and confirm the number of sachets received and the use of RUTF.

I.6.3. SMART fast

Reliable and representative data are important for planning and targeting nutrition interventions. The recognised method for organising nutrition surveys is the SMART method, which must be adapted according to the standards of the MSPP in order to standardise the sampling technique, data collection and analysis. Stratification by agricultural, ecological and cultural zones can help to better understand the nutritional issue. It is important that nutrition surveys are not only limited to anthropometric data but also collect data on the determinants of malnutrition.

SMART surveys, if carried out with a certain frequency, are not only excellent planning tools but also and above all nutritional monitoring. Haiti has conducted several SMART surveys at the commune and departmental level, but at the national level, 3 SMART surveys in 2010, 2020 and 2023. The last SMART carried out in 2023 used a hybrid methodology that made it possible to carry out surveys at 3 levels (national, departmental, communal).

I.6.4. Sentinel sites

In the nutrition surveillance and early warning system, Haiti has sentinel sites in each of the country's 10 departments. These sentinel sites, if they are functional, are excellent early warning tools and allow rapid interventions to save lives endangered by natural disasters (cyclones, hurricanes, earthquakes, droughts with an El Niño effect), epidemics and food insecurity. However, sentinel sites are not functional in all departments, hence the urgency of revitalizing and making these sites functional in view of the current emergency of the country.

I.7. Routine data monitoring (RANuRout)

The monitoring of PCMAG data must be done by the manager of each structure through weekly, monthly and quarterly activity reports. To this end, an efficient data recording system is put in place.
An add-on module was developed on **Kobo Toolbox** using the experience of the Cité Soleil community CEP in the metropolitan area of Port-au-Prince. This module took into account all IYCF indicators that were not included in UNSIS. To overcome the challenges of data completeness and timeliness, a decentralized monitoring system will be developed that will allow all NFPs to monitor nutrition indicators on a weekly and monthly basis in each of the country's 10 departments.

Routine PCMAG data tracking includes the following steps:

- Collecting data in each supporting framework on Kobo Toolbox media;
- Data analysis by verifying: media filling, data consistency, completeness, timeliness;
- Interpretation of data;
- Data transmission following the appropriate circuit.

I.8. Data collection tools

The registers
It is necessary to have a register of the management of malnutrition in each structure (PNS, PTA, USN) and a register of stock management. The PCMAG program data must always be collected in the admissions register which must contain all the information necessary for the calculations of the various indicators. Inventory management data must be collected in the inventory register maintained by the inventory manager.

The sheets
The follow-up sheet is the first tool needed for patient care. It must be completed for each patient. There are three (3) types of individual tracking sheets (PNS, PTA and USN). The stock card and the inventory sheet allow for good stock management and are kept by the stock manager in the store.

Community level report book
Each ASCP fills in its notebook: the number of children screened and referred to the health centre and the information concerning the VaD carried out. At the end of each month, this information is reported to the centre, which in turn completes the monthly activity report.