Golden MH Grellety Y, Integrated Management of Acute Malnutrition (IMAM) Generic Protocol ENGLISH version 6.6.2

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INTEGRATED MANAGEMENT OF ACUTE MALNUTRITION

Professor Michael H Golden

Dr Yvonne Grellety

Version 6.6.2 January 2012 for severe malnutrition and version 1.1 for moderate malnutrition.

ACKNOWLEDGEMENTS

The foundation for these guidelines grew out of the work done at the Tropical Metabolism Research Unit, Jamaica from 1956 to 1991. The work was funded by the University of the West Indies and the Wellcome Trust. The physiological and nutritional knowledge gained formed the basis for the WHO (1999) guidelines for the management of Severe Acute Malnutrition. The guidelines were first applied by Action Contre La Faim (ACF) in 1994 in Rwanda and subsequently applied in many Emergency situations. The experience gained showed the shortcomings of the WHO (1999) guidelines which were then extensively revised. The revised version formed the basis for many National Protocols which were then evaluated by the authors. The subsequent evolution of the guidelines depended upon these field evaluations of actual programs, analysis of the data, identification of problems and situations not adequately addressed by current versions of the guidelines, research undertaken by students of the University of Aberdeen and deliberation by the ACF Scientific Committee. The ACF Scientific committee (M Golden, A Briend, Y Grellety, C Prudhon, D Bounie) was instrumental in the formulation, development and initial testing of RUTF. This permitted effective treatment at home and large scale implementation of the treatment of SAM in the community. The subsequent testing of the products was largely undertaken by Dr André Briend with collaborators and the implementation in emergency settings spearheaded by Dr Steven Collins of Valid International with Concern Worldwide and Save the Children UK.

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This protocol incorporates the decisions made at a regional meeting in Dakar, Senegal in December 2010, sponsored by UNICEF (West and Central African Regional Office) on the provisions for admission & discharge and monitoring & evaluation to be incorporated into a generic protocol for West Africa. The authors gratefully acknowledge the contributions made by the representatives of the Governments of West Africa, UN agencies, Donor Agencies, The European Community, NGOs and Academics. A report of the meeting can be obtained from the UNICEF Regional office for West and Central Africa.

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Any errors or omissions are the responsibility of the Authors.

ACRONYMS

ACT	Artemisinin-based Combination Therapy (WHO recommended treatment for malaria)
ARV	Anti RetroViral (drug combinations used to treat HIV/AIDS)
ART	Anti Retroviral Treatment programs
BMI	Body Mass Index
BMS	Breast Milk Substitute (Infant formula milk)
CCM	Community Case Management
CHW	Community Health Worker
CLTS	Community-Led Total Sanitation
CMAM	Community Management of Acute Malnutrition (see IMAM for complete program)
CMV	Complex of Minerals and Vitamins (mix added to reconstitute F75/F100/Resomal)
CMW	Community Mid-Wife
CSB	Corn Soya Blend
CTC	Community Therapeutic Care (no longer used – see IMAM)
DHMT	District Health Management Team
DNO	District Nutrition Officer
DMO	District Medical Officer
ENA	Essential Nutrition Action (a program by USAID through BASICS and LINKAGES)
EPI	Extended Program of Immunisation
ER	Emergency Room (normally a hospital facility to receive cases for emergency medical treatment)
F75	Therapeutic milk used in Acute-phase of SAM in-patient treatment
F100	Therapeutic milk used in Transition/Recovery Phases of SAM treatment
F100dil	Diluted F100, used in the treatment of severely malnourished infants less than 6 months
HC	Health Centre
IEC	Information, Education, Communication (programs and strategies)
IFE	Infant Feeding in Emergency (documents on feeding infants less than 6 months, See ENN – Emergency Nutrition Network)
IMAM	Integrated Management of Acute Malnutrition
IMCI	Integrated Management of Childhood Illness (WHO/UNICEF program)
IPF	In-Patient Facility (used for treating the severely malnourished: replaces the terms TFC, SC and other acronyms for residential clinical care).
IU	International Units
LoS	Length of Stay
MUAC	Mid Upper Arm Circumference

MAM	Moderate Acute Malnutrition
MCH	Maternal and Child Health (clinic based program)
NCHS	National Centre for Health Statistics of USA (old anthropometric standards)
NGT	Naso-Gastric Tube
NND	National Nutrition Department
NRU	Nutrition Rehabilitation Unit (largely redundant, has been replaced by OTP)
NFP	Nutrition Focal Point
OPD	Out-Patient Department (of health facility – normally a hospital)
OTP	Outpatient Therapeutic Programme; the acronym also refers to Distribution Sites for out-patient management of SAM.
PEM	Protein-Energy Malnutrition (this term is no longer used – replaced by SAM)
PN	Plumpy Nut© (This is a commercial trade name and should not be used in protocols – use RUTF)
RDA	Recommended Dietary Allowances
ReSoMal	Oral Rehydration SOlution for severely MALnourished patients
RUSF	Ready to Use Supplementary Food
RUTF	Ready-to-Use Therapeutic Food (this acronym is restricted to foods for treatment of SAM which have the same nutritional composition as F100, with added iron, and have been clinically tested in efficacy trials to ensure their therapeutic equivalence to F100)
RWG	Rate of Weight Gain
SAM	Severe Acute Malnutrition
SC	Stabilization Centre (synonym for TFC – has been replace by In-patient facility – IPF)
SFC	Supplementary Feeding Centre
SFP	Supplementary Feeding Programme
TFC	Therapeutic Feeding Centre (synonym for SC, TFC – has been replace by In-patient facility)
VCT	Voluntary Counselling and Testing (program for HIV/AIDS)
WHO	World Health Organisation
W/H – W/L	Weight-for-Height – Weight-for-Length

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ORGANISATION OF AN IMAM PROGRAM

The organisation of an Integrated Management of Acute Malnutrition (IMAM) program is critical to its success. Implementation of an IMAM program requires adequate funding and trained personnel at each level of organisation. It will not be sustained (because of staff turnover and the "brain drain") until all pre-service training institutions include malnutrition and its management into their curricula; involvement of academic institutions should always be part of the strategy.

1 NATIONAL/PROVINCIAL LEVEL

The Ministry of health/National Nutrition Department (NND) should:

- Set the strategy and standards
- Develop and disseminate the National protocols, tools and guidelines
- Arrange training of trainers
- Arrange central ordering, storage and dispersal of therapeutic and supplementary products
- Establish mechanisms for, and facilitate, the District Nutrition Officer (focal point) to integrate the IMAM program with the other health activities co-ordinated at district level
- Establish effective cooperation between curative services and public health services with respect to IMAM and seek to integrate IMAM with IMCI
- Ensure decentralisation of In-patient care (IPF) as far as possible, not only at the provincial hospital
- Give the codes to be used for IMAM facilitates to each district in a standard format and maintain a register of all facilities offering IMAM services (SAM and MAM)
- Collect and collate district reports
- Compile all the data of the districts, submit and incorporate them at district level to the National Health Information System
- Liaise with the Ministry of Education to ensure that IMAM training is incorporated into the curricula of Medical, Nutrition and Nursing Schools
- Develop contingency plans and an organisation for communication, coordination, monitoring and implementation if a crisis or other nutritional emergency arises (usually as part of a National Disaster preparedness plan)
- When an emergency is declared or anticipated, or where the nutritional status of the population is expected to change rapidly, ensure that weekly reports of number of patients with Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) are submitted to the National Emergency Surveillance System

The Nutrition Focal Point (NFP), who supervises and controls the program has to be at **District level**, with the main in-patient care at the district hospital and Out-patient Therapeutic programme (OTP) at health centres, SFC sites, health posts and at non-clinical sites or by mobile team.

2 DISTRICT LEVEL

The district is the key administrative unit for the development and control of the IMAM programme.

2.1 The District Medical Officer

Should appoint an individual to be responsible for the IMAM program within his/her district.

- Where funds are available, this should be a full time post – the District Nutrition Officer (DNO) – having responsibility for all nutrition programs within the district under the direction of the DMO.
- Where funds are not available, responsibility for the IMAM program should be delegated to a "focal point" for nutrition under the direction of the DMO.

S/he has to plan, implement, organise, coordinate and control the IMAM program within the district. In very large districts there should be more than one responsible person (nutrition officer) so that the organisation and control point is close to the main IPF and no more than 4 hours (maximum) by vehicle from the furthest OTP and SFC sites.

S/he is in charge of the overall organisation of the program in the district: recruiting and recommending staff appointments, in job training, supervision, monitoring and evaluation, management of the therapeutic and supplementary products and routine drugs at OTP level and coordination with the In-patient facilities at district level (normally the paediatric or medical ward within the district hospital). In countries where logistic officer or pharmacist are available at sub-national level; they should manage supplies in coordination with the DNO.

2.2 The District Nutrition Officer/Focal Point

Prerequisite

A doctor, senior nurse or senior nutritionist trained in IMAM theory and practice with organisational, communication and networking skills.

Activities

- Her/his main duties are to be part of the District Health Management Team (DHMT) and coordinate the IMAM program with those responsible for other health programs and activities within the district: EPI, IMCI, TB, HIV, MCH, Statistics and Evaluation and Health Information System within the ministry and the Director and staff of the District Hospital;
- Organise an annual meeting at district level with all involved with the IMAM program in the district, particularly including the community leaders and a representative from the Nutrition Department at National level;
- At this meeting the annual report (written by the District Nutrition Officer and comprising the consolidated monthly reports together with an overview of the progress of the program, problems and constraints faced, budget, and survey/screening data, etc.) are presented. The various involved parties are each invited to comment, make suggestions and voice difficulties. Lessons learned are discussed and the plans and changes for the coming year are presented, responsibilities agreed and tasks delegated. Minutes of the meeting shall be taken and submitted to the National Level;
- Organise monthly coordination meetings at district level with all the OTP, SFC and IPF supervisors (reports, supplies of therapeutic products, drugs);
- Assess the needs of the program and make provision for their procurement;
- Ensure the availability of transport and fuel to enable supervision and meetings to occur regularly;

- Ensure the flow of therapeutic and supplementary products from the centre to the district, storage at district level and then transport from the district to the OTP (HC) and SFC site, and supply to the IPF;
- When a new OTP or SFC is opened, ensure that all material (tools, RUTF, RUSF and drugs, etc.) are available;
- Ensure mechanisms 1) to transfer patients safely between OTPs and IPF and 2) to establish mechanisms for information on the individuals transferred to be passed to the receiving facility (telephone);
- Ensure regular (monthly) supervision of the quality of service provided by all the facilities (IPF and OTP, SFC sites) within the district;
- Ensure good coordination between IPF (hospital) & OTP and between OTP and SFC site;
- Examine and correct any problems found during supervision (using check-lists) for IPF, OTPs, SFC, storage facilities, RUTF & RUSF stocks and supplies (charts, registers etc.);
- Identify particularly vulnerable villages for additional support;
- Re-adjust OTP & SFC sites, reassign staff and open and close OTPs & SFC sites as needed (according to the reports and screening data);
- Conduct in-job training as necessary and train all newly appointed staff;
- Formulate contingency plans for action in case of increasing hardship;
- Register and give the code to each facility within the district as authorised by the Ministry of Health (Nutrition Department) and submit the registration details to the central level;
- Establish a list of the day of consultation for each OTP & SFC site in the district with the name and contact phone numbers of the persons in charge and disseminate this list to all IMAM sites;
- Ensure the completion of monthly reports by each IMAM facility;
- Compile the OTP and IPF Monthly reports (with the District Information & Statistics Officer) and submit them in time to the DMO and the DHMT;
- Compile, analyse and map the screening tally sheets (in collaboration with the District Rural Development Focal point person) in order to determine the degree and change in nutritional state at village level and give feed back to the supervisors of the OTP & SFC sites;
- Submit the monthly individual and compiled reports to the Provincial/regional and National Nutrition Department in a timely manner;
- Implement the strategy for Community mobilisation;
- Facilitate outreach-workers activities.

2.3 Stock and drugs delivery

Storage facilities are a necessity at district level to allow a 3 month buffer-stock for the therapeutic & supplementary products, routine medicines for the treatment of SAM and MAM and an adequate stock of the other materials and tools needed.

The therapeutic and the supplementary products should be separated from the drugs and the material should be in a separate storage facility.

2.4 Activities delivered at district level

The IMAM program will deliver a range of services and activities at each level. The protocol outlines these activities, addressing first the community, then the health structure in general with the

importance of the active and passive screening and then the OTP within the health centre, and the IPF for complicated cases (usually within the hospital).

SFC sites should be as much as possible out of the health centres for the distribution of products.

COMMUNITY ASPECTS OF IMAM

1 ORGANISATION

The community aspects of the programme have to be planned and organised at national level before being delivered at district, health centre and community level.

1.1 National level

The Nutrition department should plan with the other community health sectors how to develop the community program for the SAM and MAM activities. These need to be coordinated with immunisation, community-IMCI, Community Case Management (CCM), maternal and child health services, Community-Led Total Sanitation (CLTS), breast feeding support as well as other programs such as food security, agriculture, micro-credit and income-generating programs. These latter features of community mobilisation are beyond the scope of this protocol.

The National Nutrition Department (NND) should

- Produce visual aids and fliers (after testing) posted in key places and arrange for debate, discussion and advertising on the National media (radio and TV);
- Produce tools for community health workers for active screening within the community (screening sheets, MUAC tapes etc.);
- Plan the organisation of the community mobilisation with the regional health manager to facilitate coordination at district level within the DHMT. The rural development focal point and the DNO can be in charge of community mobilisation within the DHMT;
- Standardise the amounts and methods of recognition of incentives and remuneration of community workers and volunteers, and ensure that there is no disparity or "competition" between different implementing agencies or programs;
- Standardise the training of trainers (IMAM, active screening, Essential Nutrition Action, Breast feeding community Initiative, mother-to-mother network group, etc.);
- Coordinate at regional and district level the integration of the active screening and research of defaulters at community level within the training of trainers' module.

1.2 District level

Active screening should be under the direction of the District Medical Officer, organised by the District Nutrition Officer/Focal Point and involving the District Officer for Community Development and the Information and Statistic Officer to ensure coordination and so that the various out-reach programs do not compete with each other or overburden the village workers.

The training of trainers on active screening, nutrition education of the outreach workers and/or volunteers should be delivered at district level to all the nurses in health centres in charge of the community mobilisation.

The frequency of the active screening should be coordinated with the DMO and the DNO/nutrition focal point.

The screening data should be collated at district level under the guidance of the DHMT to determine 1) the degree and change in nutritional state at village level and in the district as a whole, 2) the reliability of the data collected.

Active screening for SAM and MAM should also be organised in conjunction with community level vaccination, vitamin A distribution campaigns, child health days/weeks and maternal & child health days/weeks.

1.3 Health centre and Community level

At health centre level

The nurse in charge of the Health Centre/OTP is usually responsible for:

- Choosing the outreach workers with the DHMT;
- Coordination of the outreach workers and activities once a month;
- Training the outreach workers to conduct active screening using MUAC tapes and examination for bilateral œdema, follow up of defaulters from the program and integrating these activities with the other community based activities (EPI, community IMCI, midwifery, CCM, CLTS, etc.). The training curriculum should be designed nationally;
- Meet with the outreach workers monthly to collect the community information and address any difficulties that arise;
- The terms and conditions of employment for all staff supported by the different programs should be identical and decided at national level. The number of outreach workers that can be employed, and hence the number of villages and frequency of visits, is determined by the funding of the program. There should be secured funding for a minimum of two years for each employee.
    - The advantage of paying for outreach health workers is that screening is more organised, the work more regular and they are more likely to remain with the program and see their work as a priority.
    - If cash payment is not feasible, or the program is dependent upon volunteers, funds are required for regular training (with travel and subsistence allowance) and reimbursement for time and fuel spent upon the program in order to maintain motivation.

Outreach activities

- For the villages that are more than 5 km (or 2 hours walk) from the OTP site, compliance with the treatment is much less than for villages close to the OTP - “the catchment area”. These more remote villages must be screened and have a village focal point (volunteer) taught to screen children.
- Depending upon the accessibility and numbers of SAM children in remote villages there should be scheduled visits (weekly) by a nurse aid from the OTP (for example by motorbike), provision of a mobile team or opening of a new OTP site.
- SFC sites can be organised much closer within the villages depending mostly on the logistic constraints.

At community level

Outreach Health workers

Outreach health workers are employed full time to go into the communities. Where there are village volunteers they liaise with the village focal points, oversee their activities and support them; where

there is no village focal point/ volunteers they perform the screening, follow-up and other outreach activities themselves.

Pre requisite

1- Honest and trusted by the community
2- Both males and females should be selected (with a bias towards females)
3- With a true desire to benefit the community altruistically
4- Being able to read and write is a distinct advantage, but not absolutely essential

S/he has to

- Sensitize the community about the programme before and during its implementation and have the approval of the community;
- Visit the village or group of villages close together periodically within the catchment area of an OTP. Visit villages where there appears to be a problem (excessive defaulting, low rate of weight gain, etc.) or when requested during a monthly meeting or when the village focal person comes, in rotation, to help with the OTP and recruit volunteers;
- Inform the community leaders, traditional and modern health practitioners, other members of civil society and local organisations about the nature and purpose of the program and the nature of their involvement;
- Using both formal and informal communication to inform the community about malnutrition and good nutrition practices taking into account literacy levels, who takes care of children, who determines the use of resources within the household (husband, mother-in-law, etc.), and the beliefs within the society about the causes of malnutrition as well as their usual health seeking behaviour;
- Recruit volunteers, particularly where the burden of work is high and the community poor. However, suitable volunteers may not be available;
- Work with the community volunteers and collect the tally sheets from screening, observe any screening and do any follow-up and home visits required;
- Check with the village elders to maintain their involvement in the program and to provide feedback about the program;
- Visit the defaulters to obtain any complaints about the program, reasons for defaulting (program is a low priority for the family, child has died or moved away, etc.) and determine the outcome of patients;
- Conduct home visits on children that are failing to respond to treatment;
- Maintain a strong link between the health centre/ OTP and the village leaders, village volunteers and other community workers;
- Coordinate and collaborate with the different agencies and programs, in particular, the type and value of the incentives offered (travel, meal allowance, telephone and credit, clothing, food, money, etc.) and the subsistence and travel allowances for training/attending meetings.

Volunteer

A volunteer is a person living within the community itself who is willing to spend time providing services to their neighbours without formal employment or pay. Compensation can be given in kind or/and with regular training. Many countries have an institutionalised stipend for volunteers to retain them and make them more accountable for results.

Selection of volunteers

S/he can be selected by the community itself, the outreach worker or directly by the nurse in charge of the area.

The major difficulties with a volunteer-based program are: 1) choosing volunteers who are representative of their communities, 2) providing adequate support, 3) maintaining their motivation and 4) having volunteers in the poorest communities where they are most needed and perform during times of increased hardship when they are most needed[1].

Volunteers are usually self-selected. However, it is critical that the community itself selects and approves of the volunteers. The most common problem is for communities to select the community leaders' relatives and males.

Once the program is working, mothers who have successfully treated their own malnourished child and who otherwise fulfil the criteria for selection should be invited to volunteer. These mothers who have been through the program, and are of the same socio-economic class as the new cases, are particularly credible, are able to relate to and guide new caretakers and will obtain information (for example on reasons for defaulting) that others may not solicit. It is important for outreach health workers to be employed to regularly visit and support the volunteer network.

Pre-existing volunteers that have been trained in other aspects of health promotion usually have standing in the community and villagers are accustomed to seek their assistance. However, they should never be overloaded; the amount of time they can devote to volunteering is always limited. It is usually necessary to recruit additional volunteers so that the workload can be shared and they can work together as a team. Existing village volunteers are best placed to identify new volunteers. Community midwives can also be used for recruiting, training and following volunteers.

There is no limit to the numbers of volunteers that can be within a village, but they have to be organised and cooperative.

2 COMMUNITY AWARENESS AND INVOLVEMENT

- Before implementation, it is necessary for the community to know about the program and approve;
- They should understand the objectives, the methods that will be used to identify and treat the children, the nature of their involvement, the cost and other inputs to the program by the community, for how long the program has secure funding and how the program complements the other health programs in the area;
- They should be sufficiently involved to take ownership of the program once it is established and shown to be effective;
- The information about the program must include its aims, methods, organisation and the persons involved including their responsibilities and accountability;
- They must be clear about how the program will affect them and their community in practice: what will it do, who will be eligible to benefit and why they will be selected, who will not benefit or be excluded, where it will operate, who will implement it, how people access it

[1]Volunteer programs work best in the better-off villages, in times of stability and when there is less urgent family activity (planting, harvesting etc.). With increasing hardship volunteers resign and SAM levels increase. There needs to be local contingency arrangements planned and budgeted for those villages most at risk of failure of a volunteer system to provide additional support if and when a crisis occurs (to be activated by the DMO on the advice of the DNO).

and what the programme will do for the selected individuals. Any misunderstanding at this stage can lead to frustration and disillusionment;

- Full acceptance of the program is not expected until it has already been implemented and the community sees it with their own eyes and assesses its value, therefore there should be a step-by-step approach with continuing dialogue, feedback and exchange between the program staff and the community leaders. Such a program should never be "imposed" upon a community.

Community involvement

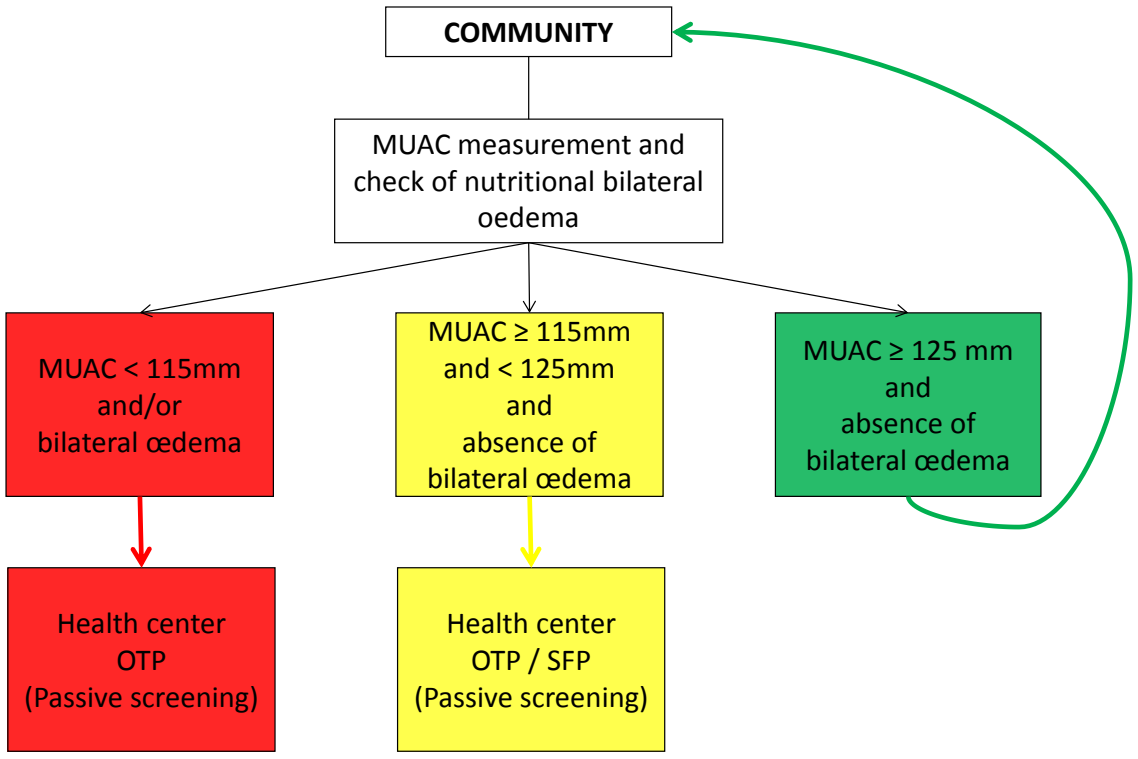
Messages

The simple messages and memorable slogans have to be revised by the local community itself (religious leaders, village elders, traditional healers and other authority figures such as teachers, CHWs, community midwifes, traditional birth attendants and health centre staff) who are then responsible for spreading the information within their communities. However, it is often more effective to use informal methods of passing information about the program. The information should then be passed by the community figures themselves and not by strangers to the community.

Information is most effectively passed at places where people gather normally, particularly the market and where women collect water or wash clothes and men gather to drink and socialise. The use of women's groups, schools (child-to-child or child-to-parent), football and sporting and other networks should be explored. A particularly important group to involve is the religious leaders of the community and passing information at places of worship can be particularly powerful. The target groups must include the decision makers in households, husbands and mothers-in-law in particular.

3 Active case finding, referral for treatment, follow-up and counselling

Flow chart 1: Nutritional Strategy for Screening for Acute Malnutrition within the community



The primary activities that take place in the community are:

- Screening of children for severe malnutrition (and moderate malnutrition where a program for moderately malnourished children exists) – this is active case finding;
- Referring cases of SAM to the nearest OTP site and MAM to the nearest SFC site
- Follow up of cases at home that:
  - Have not attended the OTP (defaulters) or SFC site
  - Have been discharged or defaulted from in-patient care and have not enrolled at an OTP – SFC
  - Have failed to respond to treatment
- Promoting healthy practices through communication for behaviour change and social norms and advice/counselling.

3.1 Active case finding

Active case finding in the community and all other opportunities where the community members encounter health services is a critical part of all programs to treat SAM and MAM.

Advantages

Patients are identified and treated whilst relatively healthy, before they develop complications and when treatment can be achieved entirely in the community. This prevents admission to in-patient facilities (IPF). This has important implications (costs of transport, loss of earning ability, food for the caretaker, family disruption, failure to complete essential work, reduction in the level of care for the other children, preparation of family meals and concerns about separation in times of insecurity, separation of husband and wife) for access to treatment and the capacity of the program to provide for all those that require treatment.

Activities

- Screen all the children in the community using a MUAC tape and check for bilateral œdema going from house to house, and at any other opportunity (particularly “national Days” when vaccinations are given, Vitamin A, HIV, IMCI, child health days, CCM, community development programs, etc.):
  - Examine each child for bilateral œdema
  - Measure MUAC
  - Recheck all MUAC measurements of <115mm
- Refer those with a MUAC < 115mm to the nearest OTP centre for direct admission to the program;
- Refer those with a MUAC from 115mm to <125mm to the nearest SFC sites;
- Record every child on a tally sheet in the red, yellow or green column (SAM, MAM and normal) – i.e. not only those who require treatment;
- Bring to the supervisor (Out Reach Worker or Nurse from the HC) all the tally sheets collected whenever they meet;
- Participate in periodic coordination/experience sharing meetings with other volunteers and the supervisor.

The outreach worker/nurse should travel to the village monthly. During the visit s/he will discuss any problems with the village volunteer face-to-face, see the village elders to get feed-back on their

attitude towards the program and the volunteers, see any patients that the volunteer is worried about or who cannot come to the OTP/IPF, provide any incentive that has been agreed, invite the volunteer to a periodic coordination/experience sharing meetings (provide funds for transport to the meeting) and collect the screening tally sheets.

Constraints

Travel: Without a focal point in the village, in widely dispersed communities, team members would have to travel long distances to visit villages and individual houses. This is not possible for volunteers and requires a paid outreach worker with transport provided (e.g. a motorbike and fuel).

Isolation: It is critical that village volunteers feel supported and can get help whenever they face a problem. They should each, be supplied with a mobile phone (pre-loaded with all numbers pertaining to the local program) and/or credit as part of the program where there is a network's coverage.

Motivation: Volunteers living within the local community have many of the constraints upon their time as the parents of patients within the same community. It is unreasonable to ask them to spend more than one or two hours per week on the program. They must not have any out-of-pocket expenses and have to be visited regularly. They should be given tee-shirts and a hat which identify them as being part of the programme, a mobile phone and a bag to carry and store their materials in (this should all be part of a *volunteer's kit*). Also it is reasonable to give them some modest incentive such as money for a meal or help with transport or the equivalent of two hours work (for example, one quarter of the local daily rate of agricultural labour) per week. There have to be regular meetings for all the volunteers and out-reach workers so they are given travel money to the place from which the program is controlled and meetings held. The volunteers must undertake to remain in the program for a definite length of time.

Once the results of the program become widely known and there is positive feedback because the community sees ill children rapidly recover, the volunteer village focal point will get status and esteem within the community as the conduit to the program. At this time, parents will start to bring their children to the OTP/IPF spontaneously. Nevertheless, it is important to maintain contact with the village volunteer and for her activities to continue (screening, follow-up, education).

Coordination with other partners involved. If there are other programs in the area then the volunteers may be working alongside volunteers supported by another program or agency. This happens particularly in emergency situations where many NGOs descend upon the population, often with the same programs. They all try to employ (usually temporarily) local staff and recruit volunteers. Even in development situations there are often many different programs being implemented. It is important that there is full coordination between the programs. Volunteers must not be overloaded, there should not be different NGOs giving conflicting messages or advice; there must never be differences in the incentives given by the different agencies.

Tools

The village focal point/volunteer/outreach worker needs to have a kit. This should comprise:

- MUAC tapes (including spare tapes)
- Screening tally sheets
- Referral slips
- Pencils, paper, pencil sharpener, eraser
- Bag
- Mobile phone and credit with a list of key telephone numbers

- Written simple guidelines (in the local language) adapted to the level of education of the village focal point. It should be given even if the focal point/volunteer is unable to read – this will avoid humiliation and s/he will nearly always have someone in the village who can read for them if they are illiterate
- Counselling cards

Data collation

From the tally sheets and during the visit to the village by the outreach worker, the following information should be collected:

- Village name (GPS coordinates should have been determined and entered in database)
- Names of persons doing the screening
- Date of screening
- Total number of children screened
- Number with œdema
- Number in the red band: <115mm = SAM
- Number in the Yellow band: between 115 to 125mm = MAM
- Number in the green band: above or equal to 125mm = normal
- Number referred and the site to which they were referred
- Number who refused to go to program
- The village tally sheet can then be given to the nurse of the health centre and send or given once a month to the nutrition focal point to be analysed and entered into a database. This information gives a prevalence of SAM and MAM in the screened community at the time of screening
- These results should be mapped to identify pockets of malnutrition. With regular screening not only are malnourished children identified but screening forms the basis of a nutritional surveillance system to define seasonality and determine whether the situation in the district is deteriorating or improving. This will allow the DMO and DNO to prioritise services.

3.2 Follow-up

Children's progress is monitored on a weekly basis at the distribution site (OTP).

Needs

Follow-up at home is necessary for:

- Children who are not responding to treatment
- Children whose careers have refused admission to the in-patient facility
- Children who do not return for appointments (to determine if they have moved away, defaulted or died)

The children needing follow-up at home are identified by the staff of the OTP/IPF.

Activities

- Visit the patients listed by the supervisor of the volunteers (nurse or outreach worker)
- Advise the caretakers and the family

It is critical that a defaulter is never reprimanded or treated disrespectfully. The reasons for absenteeism are many, but the commonest relates to the staff attitude to the caretaker. If a caretaker is treated badly, not only will the child be denied treatment for this episode, but if the child recovers s/he is less likely to come for treatment of future illness and the caretaker will pass a negative message to her friends and neighbours. The reputation of the program within the community depends to a large extent upon spread of individual experiences informally. Every staff member must treat the parents of the children as those primarily responsible for the health of the child: they are in effect part of the health team as far as that patient is concerned and should be treated as such.

The advice to give about RUTF is given on Page 35-36. It is important that the home visitor determines how RUTF is being given during the home visit. If it is being shared or otherwise used for other purposes she should explain the proper use of RUTF especially if the visit is because the child is not responding to treatment. The advice to give RUSF is given in page 35.

3.3 Communication for health and nutrition, Mother-to-mother support with emphasis on breastfeeding

In the community, communication activities (interpersonal and group communication, community dialogue) on nutrition should be a major part of the activities of the mother-to-mother support groups and other groups within the community itself.

The parents and caretakers, whose children become malnourished, generally come from the poorest sections of society. They frequently have not attended school and many cannot read or write. They are often unaware of the nutritional needs of children, the importance of play and psychosocial stimulation in child development, the effects of poor hygiene and pollution, the measures to take when children become ill and the signs and symptoms of serious disorders. Basic facts about breastfeeding, sexually transmitted disease and HIV, reproductive health and the ill effects of some traditional practices are not known or ignored.

The lesson plans should be generated or modified locally to suit the prevailing problems of a region; however there are basic health and nutrition messages that should be common to all programs.

Guidelines on Key Nutrition Information
Many packages and guidelines have been developed to assist in communication for development (Information, interpersonal communication, influencing social norms). The following are recommended:

The “Essential Nutrition Actions Package” (ENA) covers the following topics:

1. Optimal breastfeeding
2. Optimal complementary feeding
3. Feeding sick and/or malnourished children
4. Maternal nutrition
5. Control of anaemia
6. Control of iodine deficiency and
7. Vitamin A supplementation

Other packages cover subjects such as counselling on growth and feeding (WHO), growth monitoring and promotion, immunization, hygiene and sanitation, malaria control and de-worming.

For each of the above essential nutrition actions, there are either guidelines, policies or protocols that are used for nutrition counselling at different points of contact with individuals or groups.

It is important to harmonise guidelines and communication tools in order to ensure that key messages are consistent regardless of the medium or channel used.

PASSIVE SCREENING IN ALL HEALTH STRUCTURES

Passive screening should be done by doctors, nurses and assistant-nurses in all the health structures and in out-patient departments, emergency and paediatric wards[2]. Any child (6 to 59months old) with a MUAC of less than 125mm, but more than or equal to 115mm should be referred for treatment of moderate malnutrition.

1 ACTIVITIES

- Assess all children using MUAC and œdema. Although it is not appropriate to measure height and weight routinely in busy hospital emergency departments they should all be examined for clinical signs of malnutrition, œdema and have their MUAC taken;
- Apart from integration of MUAC measurement and œdema assessment into IMCI consultations (hospital, health centre and community based) screening should always be done along with other programs.
- Patients attending the TB and ART programmes should be systematically screened for severe malnutrition and referred to the OTP if they fulfil the admission criteria. If there are many such patients an OTP should be opened in conjunction with the TB or ART programs.
- Refer to someone who has been trained specifically in the treatment of the severely malnourished. It is critical that treatment given to normally nourished children is not automatically ordered for the severely malnourished, this is why the nutritional assessment should be made before any other condition is diagnosed and treatment ordered.
- In health facilities take the weight and height/length of all those with a MUAC below 125mm. Older children (more than 5 years of age) and adolescents can be severely malnourished without fulfilling the MUAC criteria for SAM; they should have their weight and height taken if they are suspected of being malnourished and treated according to this protocol. The training, equipment and tables to take weight-for-height should be put in place in all permanent health structures and services.
- Record on a tally sheet (the normal as well as the malnourished) or in the IMCI registration book.

2 TOOLS

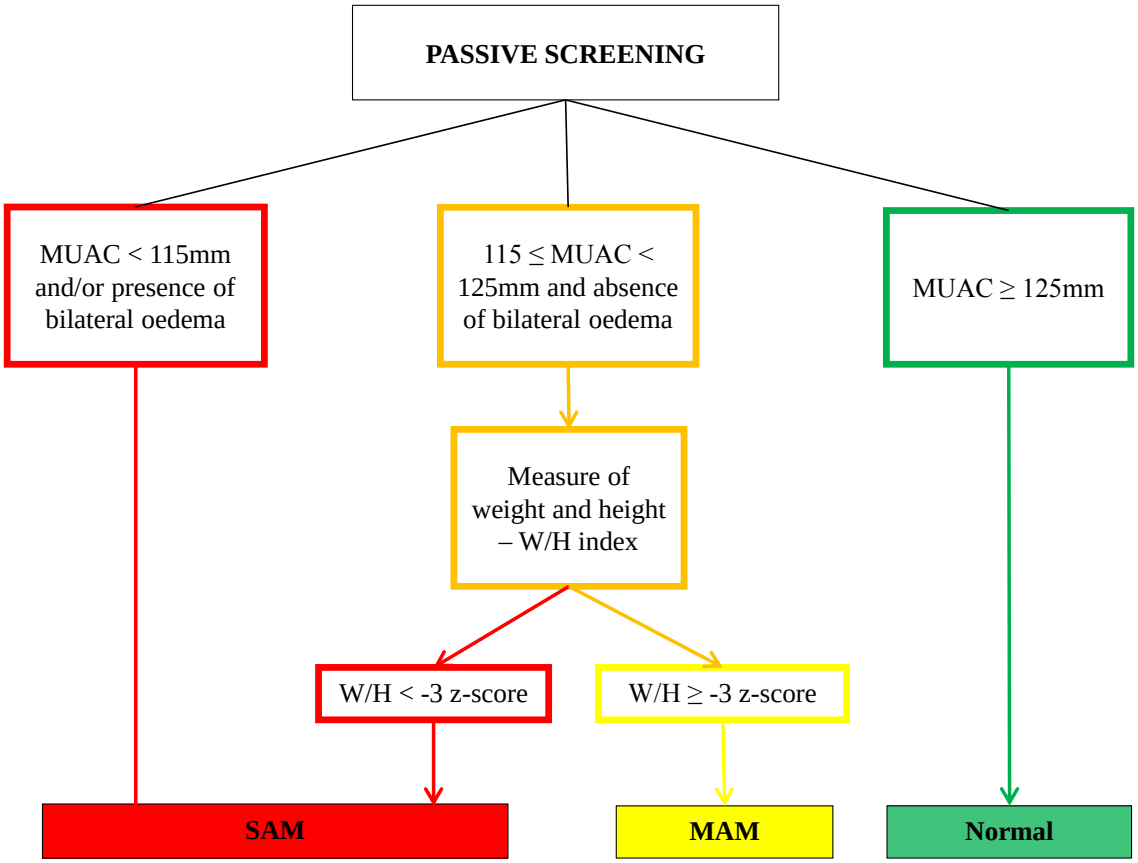
- MUAC tapes (including spare tapes)
- Length board/height board
- Scale within at least 100g precision
- Screening tally sheets or IMCI register
- Referral slips
- Pencils, paper, pencil sharpener, eraser
- Weight/Height tables for children[3] and adolescents and BMI table for adults

[2] See annex 1
[3] See annex 3, 4, 5

MAM & SAM TRIAGE

The children who have been screened in the community and health facilities will have been referred to an OPT or Health Centre – here the first stage triage is made, deciding if the patient has SAM or MAM or is not acutely malnourished.

Flow chart 2: Nutritional Strategy for Screening and Triage for Acute Malnutrition (normally at the health centre level).



1 PRINCIPALS

Children with moderate acute malnutrition do not usually have the profound changes in metabolism, physiology and immunological status that the severely malnourished children suffer from. Furthermore, although MAM children are at increased risk of death compared to normal children, the increase is relatively small compared to the greatly increased risk of SAM children. For both these reasons, the treatment protocols for moderate (MAM) and severe acute malnutrition (SAM) are quite different.

About 2.5% of the children in a healthy population will fulfil the criteria for MAM, even though these children are completely normal. Only about 1 in 1000 children with the criteria for SAM is "normal"[4]. Likewise, there are many more children in the population with MAM than with SAM. For each SAM

[4] These are for Z-score criteria (weight-for-height, MUAC-for-height) – the figures for absolute MUAC cut-off points depending on the age/height of the patients and are therefore variable.

child usually there are about 10 MAM children[5]. This has implications for the relative size of the programs and consequently on the organization, staffing, logistics, storage of products and costs of the program.

As these children do not have the level of physiological changes of the SAM child, the diagnosis of illness is relatively straightforward and they do not need special protocols for the management of "complications"[6], and the IMCI criteria and protocols should be used – when they are admitted to hospital, they do not need to be separated and mixed with the SAM children, but should be treated with the non-malnourished children.

A summary of these differences and similarities is given in the following table.

Table 1: Differences between SAM and MAM treatments

Procedures	MAM treatment	SAM treatment
Screening	Same	
Patient numbers	About 10 times SAM numbers	About one tenth of MAM numbers
Organisation	Need more space for waiting, measurement – distribution – storage	Needs less space for OTP, may require to manage sick patients who cannot be transported
Place	SFC – should not be in a health facility, or use health staff	OTP - Should normally be in a health facility and part of the normal health services.
Staff	Does not need any clinical staff (nurse, etc.). But SFC should be near the HC.	Need a trained and experienced nurse or aid nurse for OTP
Visit	Every 15 days is perfectly ok	Every week in OTP – 24h in IPF
Admission criteria	MUAC 115 to less 125mm **or** WH >= -3 to less than -2Z	MUAC<115mm **or** WH<-3Z **or** Bilateral oedema
Registration number	Registration number	SAM number & if necessary registration number
Tools used	Same Table WH – scale – length board	
Appetite test	No	Yes
Treatment of the Complications	Refer to the IMCI treatment at health centre level	Refer to SAM Protocol, Complication section at IPF level – do **not** treat according to IMCI protocols
Products	Different products: Fortified Blended food (eg CSB), RUSF	Different products RUTF – F75 – F100
Other use	Follow up of the CURED SAM patients May include Pregnant and lactating women.	
Discharge Criteria	Same	

[5] This ratio changes depending on the severity of the nutritional status of the population. As the population deteriorates there are relatively more SAM to MAM children from 1:16 when the mean W/H is 0 Z-score to 1:7 when the mean W/H is -1 Z-score.

[6] For example, in MAM the sinking of eyes and skin pinch tests for dehydration are relatively reliable and their renal function is sufficiently preserved for them to be treated with standard WHO guidelines for diarrhoea and dehydration; their inflammatory response is relatively intact, so that fever is usually due to infection and with pneumonia they develop a fast respiratory rate; they can safely metabolise standard doses of most drugs. This is different from the SAM child where different diagnostic criteria and treatments have to be applied.

2 ACTIVITIES

The nurse, assistant nurse or nutritionist does the followed tasks:

1. On arrival, give sugar-water immediately to obviously ill children and those that will clearly need in-patient or other medical treatment: approximately 10% sugar solution – 10g of sugar per 100ml of water;
2. Take the anthropometric measurements (MUAC at OTP/mobile clinics and both MUAC and W/H at health centres/IPF) and check œdema for all patients, including those referred from the community;
3. In Health centres/IPFs check the weight-for-height table;
4. Examine for œdema and its severity (see annex 1) and take the temperature;
5. According to the **criteria of admission** (see page xxx), decide if the child should be admitted or not. If a patient that has been referred from the community with a diagnosis of SAM but does not meet the criteria of admission to the OTP, **do not reject** him but:
    - Admit him/her to the Supplementary Feeding Program (if it is operational)
    - If there is no SFP, give a "protection ration" or some other benefit[7]

    It is important that they receive some tangible benefit from attending the SFP/OTP/triage site and not sent home without anything. Such refusal will undermine the authority and moral of those screening in the community and bring the program into disrepute within the community.
6. If the patient has been referred from the community to the SFC with a diagnosis of MAM, but does not meet the criteria for admission to the SFC:
    - If the patient is actually a SAM child admit/refer the patient to the OTP for assessment and admission
    - If the patient is not acutely malnourished, do not reject him. The mother/patient should be given some tangible benefit – education and, if available, a preventive intervention such as a course of micro-nutrient powder (MNP), or other low-volume, nutrient-dense supplement to augment the type I nutritional status of the patient.
7. Send the SAM patient to the OTP and the MAM children to the SFC site.

If a large number of inappropriate referrals attend, then the screening teams must be retrained and the OTP/SFC/Triage staff's ability checked. This should be discussed during the regular co-ordination meetings between the OTP staff and the screening teams[8].

3 TOOLS

MUAC tapes, Scale, length board, weight-for-height table, Registration book, patient charts.

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[7] If a child has been diagnosed as severely malnourished by MUAC in the community, but not in the OTP, it is reasonable to assume that the child is "borderline" SAM; under these circumstances it is reasonable to give one week supply of RUTF to the patient as the "benefit" – this give the best support to the community worker as the caretaker does not perceive that the treatment is substantially different from that given to those children that are admitted to the program. it should be explained that the case is "borderline" and that is why longer treatment is not required. Other benefits include micronutrient powders etc.

[8] There is only a 10mm difference between the diagnosis of SAM (<115mm) and normal (>125mm). Tests during training show that about one third of measurers have a difference of 10mm or more when the same 10 children are measured twice. MUAC is not an easy measurement to take accurately and training should be emphasised; note that the error may be with the staff in the OTP as well as the community screening team.

MAM TREATMENT

This section provides practical guidelines for the identification and management of patients with Acute Moderate Malnutrition. Moderately malnourished individuals may be treated as outpatients through an SFP (Supplementary Feeding Program). The children are at heightened risk of death in the medium and long term, but, unlike the severely malnourished, do not need immediate emergency treatment.

There are alternatives to direct distribution of food products which may be as or more successful than direct food distribution. These alternatives include: income generation support, family micro-credit, cash transfer, home-gardening support and Hearth program (positive deviance). Note that several other programs do not (and are not designed to) address any form of malnutrition in a community[9], although they do involve food distribution.

1 OBJECTIVES[10]

- Identify Moderately malnourished children in the community
- Treat moderate acute malnutrition and prevent deterioration to severe acute malnutrition
- Support individuals who have recovered from severe malnutrition and discharged for follow-up to prevent relapse

2 ORGANISATION

2.1 Opening and closing an SFC/SFP

In an emergency context, where either there are rapidly rising numbers of MAM children or the food security situation is predicted to deteriorate, an SFP should be established **when the numbers of children with MAM exceed the normal health and social services' ability to respond to their needs** and there is a risk that they will deteriorate to develop severe acute malnutrition. This test should be applied in relation to the absolute numbers of MAM children in excess of the usual services to cope and not to the percentage of GAM or MAM assessed from a survey[11] The scale and scope of the SFP will depend upon the numbers of anticipated children, the capacity of the health and social services and the presence or absence of other programs to address the problem of malnutrition in the community. Each of these factors will vary from one situation to another.

In an emergency, by definition, the normal services cannot manage the large increase in malnutrition that is caused by the emergency. In some emergencies, particularly when there is

[9] For example, « food-for-work » programs distribute food mainly to the healthy well-nourished who can work, the malnourished cannot. Food-for-work is a way of securing workers when "food" is an available medium of currency. Likewise, school feeding only targets those that go to school (which are generally the already better off).

[10] The nutritional support of pregnant /lactating women should be under the supervision of the maternal/ obstetric services where high risk pregnancies (primipera, teenagers, previous abortion/ stillbirth/ complicated pregnancy etc) can be specifically targeted as well as those with a low MUAC value.

[11] For example, if there is 15% MAM in a camp with a population of 10,000 of which 20% are children from 6-59 months of age, then there will be 300 MAM children, if there are no health services in the camp, provision should be made to treat 300 children. If in a metropolitan area of 10 million people there is 6% MAM, again with 20% children, then there are 120,000 MAM children within that population. It is very unlikely that the health services are able to manage this vast number of children – yet the use of a percentage cut-off would exclude them from receiving any assistance. This is neither equitable nor ethical. The use of an arbitrary percentage of the population with acute malnutrition (with or without "aggravating factors") to decide if there needs to be an intervention or not must be abandoned as contrary to all systems of natural justice, ethics and public health priority.

population displacement, there is a complete absence of any "normal" services, there is no capacity to respond to the needs of the population and the population has no coping mechanism; in such circumstances urgent establishment of general relief and an SFP is urgent and should not await a nutritional survey to decide whether to open a program or not.

In some populations there is marked seasonality in the prevalence of acute malnutrition. In such situations it is proper to plan to open an SFP whenever the normal services are overwhelmed and to close it again, in a planned way, whenever the numbers decrease to a level that the normal services can cope.
In some chronic emergencies, and in stable situations, that is in a development context or when moving from emergency to development, other programs are in place to address the nutritional needs of the most vulnerable in the society. These include cash subsidies of various kinds, microcredit and other income generating family support mechanisms, positive deviance/ hearth programs etc. These programs are not mutually exclusive. If such programs are established and there is still sufficient MAM to overwhelm the health and social services an SFP program should be established within a development context. The SFP should only be closed when the numbers of MAM children fall to levels that can be managed by other programs and the normal health/social services.

2.2 Structure

The SFC should be **not** run (if possible) from health centers/structures. The workload of the staff of the health structures is already burdensome with many programs to administer, including treatment of the severely malnourished. If the health staff also have large numbers of children attending for supplementary feeding (note there are normally about 10 MAM children for each SAM child), their facilities and staff become swamped so that all the essential health programs suffer. The SFC can be run from any convenient structure (house, school, community facility) provided that there is a secure, ventilated and pest free storage facility and ideally the health centre is close by, so there is easy coordination of the programs, the patients are quickly and easily transferred and the staff know each other.

It may be useful to site the SFC close to a market, in which case the SFC can operate on market days as the beneficiaries/caretakers are likely to be visiting the market to buy and sell, and can combine one travel from home for both purposes – in this case the length of time the spent at the SCF should be kept to a minimum and the flow of recipients steady and rapid.

2.3 Staffing

There is no need to have clinically trained staff (nurse or nurse aid). MAM treatment can be run by social workers for two reasons: 1) the sick MAM child should be treated as a sick normal child following the IMCI protocol and guideline and 2) the MAM child only needs to receive a regular fortnightly supplement of food, and counselling, to recover.

2.3.1 Social worker or nutrition as supervisor

Pre requisite

- Part of the social worker in the country trained in the MAM activities of the IMAM protocol

Activities

- S/he manages the food and non-food items (stock control)
- S/he prepare the monthly reports
- S/he manages the human resources
- S/he supervises the MAM treatment

- S/he organises the health & nutrition education/counselling and the cooking demonstration with the nutritionist

2.3.2 CHW or Volunteers

Pre-requisite

- See previous section

Activities

- S/he does the anthropometric measurements[12]: weight – height/length – MUAC measurements – checks for oedema

  Note: they should be two persons and the tools should be the same to monitor the progress of the child.

- S/he finds the defaulters and encourages them to come back
- S/he helps for the preparation of the individual ration (preparation of the premix and packaging)

2.3.3 Nutrition aid/social worker

Pre requisite

- Trained on community IMCI
- Trained on the measurements technique and admission and discharge criteria for the IMAM program and the MAM treatment and, in particular the procedures to follow for all failure to respond to treatment patients

Activities

- S/he admits the child according to the criteria of admission
- S/he explains to the mother the management of MAM
- S/he checks for any medical problem, the vaccinations and refers immediately to the nearest health centre if any medical problem is identified
- S/he registers the child in the registration book and applies the criteria of admission, discharge and failure to respond to treatment
- S/he identifies the defaulters and the failure to respond to treatment and informs the CHW/volunteers
- S/he organises and supervises the preparation of the ration
- S/he distributes the prepared ration to the child or caretakers
- S/he gives health/ nutrition education sessions

2.4 Materials

Measurements

- Scales – length board – MUAC (see annex 1)
- Weight for height & 5% weight loss table (see annex 3)

[12] It is important throughout this manual that the SAME physical instrument is used for weighing the patient on admission and for following the patient's progress. The instruments should be regularly maintained and checked for accuracy (each scale should have a book attached where the dates of checking with a standard weight and the deviation corrected are recorded).

Registration

- Laminated posters for the admission and discharge criteria – failure to respond
- Registration book for MAM treatment – Follow up of the SAM cure children – Key messages about the products (RUSF/porridge) in local languages
- Ration Card for the mother/caretakers

Preparation and distribution of the Ration

- Supplemental ration supplies (with secure storage facilities).
- Buckets/Basins
- Salter scale (50kg)
- Calculator
- Measuring cup/Scoop
- Soap for washing utensils at the feeding centre
- Products

Routine medicine

- Vitamin A capsules
- Albendazole tablets
- Iron/Folic Acid tablets
- Safe drinking water
- Cup and glass

Health and nutrition education

- Cooking material
- Posters on nutrition and health education and material for health education session.

3 ADMISSION

All the children that fulfil **any** of the admission criteria in the following table should be admitted in the MAM treatment.

AGE GROUP	ADMISSION CRITERIA
MORE THAN 6 MONTHS CHILDREN	➢ W/H - W/L ≥-3 and <-2 Z score (WHO_{2006} standards unisex table[13]) **or** ➢ MUAC≥115 mm and <125mm[14]
ALL SAM CURED CHILDREN	➢ NO ANTHROPOMETRIC CRITERIA ➢ FOLLOW UP FOR 3 MONTHS

3.1 Type of admission

- New admission according to the criteria of admission
- Relapse: a cured MAM child readmitted for a second episode of MAM
  - If a Cured SAM child (W/H >=1.5, MUAC >125) is losing weight during his/her follow-up and reaches the criteria for MAM (W/H <-2, MUAC < 125) then s/he is a new MAM admission to the MAM program. If s/he reaches the criteria for SAM (W/H<-3, MUAC<115) s/he is a new admission-relapse to the OTP program and should be transferred to the OTP.

[13] See annex 3: Weight/Height table

[14] There is controversy over the criteria for MUAC in children less than 67cm. Some centres use a stick of 67cm and if the height is less than this then the MUAC criterion used is 110mm. This has not been resolved at this time.

- If a MAM child is losing weight during its treatment of MAM and reaches the criteria for SAM (W/H <-3, MUAC<115) s/he is should be transferred out to the nearest OTP immediately where s/he will be treated as a new SAM admission.

- Follow up of the cured SAM child
- Readmission of defaulters after less than 2 months absence
- Internal Transfer from another SFC

3.2 Procedure of admission

- Take the anthropometric measurements – MUAC, weight (always using the same scale) and height – examine for oedema
- Check the criteria of admission
- Explain to the mother/caretaker how treatment will be organized and reasons for admission to SFP
- Determine if the patient has any sign of a medical problem; If the child has any IMCI complications, refer him/her to the nearest health centre immediately for clinical examination and treatment, "fast track" those obviously ill to the health centre; do not keep them waiting
- Systematically check for measles vaccination status, in particular for children over 6 months. If child has not been vaccinated in the last 6 months, refer for vaccination to the nearest health centre
- Carefully explain the expectations and way the caretaker should use the supplement and attend the centre (regular attendance, sharing in the family, MAM child to be fed separately from siblings, supplement not to be taken with ordinary meals, etc.)
- Enter all the children eligible for admission to the program in the registration book, give a registration number
    - If the child has already a SAM number, write it in the 2nd column of the registration book
- Enter all the information for admission in the programme in the card and give the card to the caretakers

NOTE: A good registration system allows both close monitoring and successful management of individuals, provides information for the compilation of appropriate indicators and statistics to monitor the functioning of the feeding program.

4 DIET

4.1 Type of Supplementary Feeding

Dry or Wet Feeding

In general there are 2 types of supplementary feeding centre:

1. **The Wet Supplementary Feeding Centre (SFC).** The food supplement is prepared daily in the SFC and is eaten by the beneficiary in the centre one two or three times a day. ***This option is only used in exceptional circumstances (see appendix)***.
2. **The Dry Supplementary Feeding Centre.** The ingredients of the ration are mixed in the SFC prior to distribution; the mixture is taken home to be prepared & consumed in the home of the beneficiary. The distribution of the dry supplementary ration is made every week or two

weeks depending on the security and other conditions. One week distribution is preferred as it is hygienically better to have less food stored in the household and experience shows that the ration is shared and consumed within a short time after distribution; two weekly distribution is preferred when the beneficiaries have a long way to travel to reach the SFC.

It is necessary to give larger amounts of food in this ration to compensate for intra-household sharing. In some cases on the day of the distribution the beneficiaries and caretakers are given a wet ration. Although this option allows time for the health and nutrition education component to the program and takes into account the fact that some beneficiaries have come a long distance and may have to wait some time to receive their dry ration. The negative aspect is that it takes time that the beneficiaries could usefully spend on their own activities (e.g. economic, agricultural, household, buying/selling, going to the market, preparing food, collecting water, etc).

4.2 Supplementary Ration – Strategies

There are various types of supplementary food that are being dispensed for MAM children, the optimum strategy or ration composition has not yet been determined. Nevertheless the rations should always adhere to these principles.

The food should contain ALL essential nutrients in adequate amounts to allow for the extra nutritional requirements to enable them to have accelerated weight and height gain and full physiological recovery.

The nutrients should be biologically available to children with the altered intestinal function that is associated with MAM. In particular:

- all the inorganic compounds used need to be water soluble;
- Soy and other pulses should be dehulled prior to grinding - cereal flours with a low level of extraction (to reduce fibre content).
- amount of anti-nutrient compounds and naturally occurring toxins, cyanogens, alkaloids or other potentially poisonous or deleterious natural ingredients must be minimised: Cultivars and varieties of the raw ingredients should be chosen that minimise the content of phytic acid, anti-trypsin, anti-chymotrypsin, anti-amylase, phyto-haemogluttins and saponins.
- Ingredients known to contain thermo-labile anti-nutrients should be heat treated prior to fortification.

A take-home or **dry ration** is usually more than the amount required in order to compensate for family sharing when a fortified blended food is used. Therefore, ration sizes are calculated to be in excess of the physiological requirement, providing from **1,000 to 1,400 kcal per beneficiary per day (usually around 1,200kcal/beneficiary).**

Dry supplements should be distributed as a mixture rather than as separate ingredients to avoid use for other purposes.

Mixed foods can be stored at home up to 2 weeks at a time.

The ration supplied should enrich the basic diet of the beneficiary with **all** essential nutrients[15] to provide the amounts of essential nutrients recommended for the moderately malnourished child[16].The suggested nutrient composition for the supplementary food is given in annex 33.

[15] Say that an essential nutrient "MV" is at a marginal level in the basic diet – just sufficient to prevent deficiency disease. Now let us give a supplement that does not contain MV and the supplement provides 30% of the dietary intake (energy) of the child. The intake of MV by the beneficiary will now change from 100% of requirement to 100% x 0.7 from the basic diet and 0% x 0.3 from the supplement, to the new intake after

These "complete" enriched supplements – of which RUSF (Ready-to-Use-Supplementary-Food) is the current example, can be costly. For this reason, because the population often appreciates foods with which it is familiar more than "special" foods and because some commentators consider these foods to undermine beneficial cultural practices an escalating strategy is often used.

- Escalating strategy

For the escalating strategy, at least two different supplementary foods must be available in the SFC in adequate amounts and available for distribution.

The children are started on a Fortified Blended Food such as CSB+, CSB++, WSB, etc., and their progress carefully monitored.

Any child that fails to gain weight satisfactorily must be identified early and the food supplement changed to a product with a higher nutrient density, whose nutrients are more readily available and which contains lower levels of anti-nutrients. To avoid the inhibitory effects of the anti-nutrients in the normal family food on the absorption of nutrients from the fortified supplement, these supplementary foods (Lipid based, ready-to-use-supplementary-food, RUSF) should always be taken between meals and not mixed with the family food or used to prepare "sauce" to be taken with the staple food.

This strategy is particularly useful for older children with MAM (over 24 months), who often demand "normal food", are at a much lower risk of death or of incurring further permanent damage than younger children.

Table 2: Example of ration required per child per fortnight – strategy 1 initial diet

Food Item	Daily Quantity* (g)	Fortnightly Quantity (14days) (kg)
CSB++ (Corn Soya blend)	250	3.500
Vegetable Oil	30	0.420
Sugar	20	0.280
Total	300	4.200

*provides 1300 kcal/beneficiary/day. 14% protein, 31% fat

- Prepare a premix by mixing thoroughly the appropriate quantities of ingredients together in a big basin. The ration should be prepared before the distribution in the most hygienic way, to decrease as much as possible the risk of bacterial contamination.
- Distribute a fortnightly (2 week) ration to the patients of approx 4.2kg. Each ration should be given in a clean family container.
- Conduct a cooking demonstration for new caretakers. Explain how to use the porridge.

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taking the supplementary food will be 100x0.7+0x0.3 = 70% of the requirement! In this way an unbalanced supplement, or a supplement which is fortified with only those nutrients that are thought to be actually deficient in the basic diet (often perceived to be iron, iodine, vitamin A only) can be HARMFUL and lead to a deterioration in nutritional status. For example, giving oil alone, or cereal (rice, wheat, maize) or pulses alone to children or pregnant and lactating women can actually be nutritionally detrimental to the recipient. This is probably one reason why about one quarter of patients receiving CSB deteriorate on the diet, and many of the studies reported in the past (eg ***Beaton GH*** et al. Supplementary feeding programs for young children in developing countries. Am J Clin Nutr 1982 35 864-916)

[16] The WHO endorsed document – "Golden MH. *Proposed recommended nutrient densities for moderately malnourished children*. Food Nutr Bull 2009; 30: S267-S342" – should be consulted for further details.

- one volume of premix to three volumes of water
- ration is to last for fourteen days
- ration is for the malnourished patient only.

- Nutrient dense supplement strategy

The second Strategy is to commence all children on a higher nutrient dense, ready to eat product (eg RUSF – this is more effective, but it is also more expensive) and monitor the patient – if the patients fail to respond on this diet then the problem is much less likely to be an unmet nutritional deficiency and may be a social or underlying medical problem.

This strategy is particularly suited to the younger MAM child – from 6 months to 24 months. These children are more likely to deteriorate to develop SAM (this deterioration can be quite rapid), have a greater infective burden (diarrhoea, pneumonia, etc.) are at higher risk of death, have higher nutrient requirements and are much more vulnerable to developing stunting and mental deficiency at this age than older children.

If there is no food insecurity and the basic family food is of reasonable quality, but the younger child is being restricted to traditional weaning foods, then 500kcal/d can be given. Where there is any food insecurity and there is likely to be sharing of the RUSF within the family, then 750 or 1000kcal/d can be given.

- Strategy where these is no food insecurity

The conditions where this strategy should be used are uncommon. It is related to an extension of the preventive strategies used for normal children in high risk situations and for blanket coverage when there is a high prevalence of type 1 nutrient deficiencies (these are not associated with growth failure and are not specifically related to MAM).

Where the prevalence of MAM is quite low, there is no food insecurity at a population level and most families have access to sufficient food, then the likely cause of nutritional deficiency is the poor nutritional quality of the diet. However, a higher proportion of the MAM (and SAM) children in this situation will have underlying social or medical problems and will probably not respond to any nutritional supplement for this reason.

However where moderate malnutrition due to essential nutrient deficiency and not household energy deficiency, it is reasonable to give a relatively small daily amount of a highly nutrient-dense food supplement (again to be taken between meals) – such nutrient supplements include highly enriched lipid pastes (eg plumpyDoz) which are meant to be taken in small amounts daily. These products are also used for blanket distribution to prevent MAM and SAM in emergency conditions where there is, or it is anticipated there will be, a very high prevalence of MAM and SAM.

Micronutrient powder distribution to the general population to treat anaemia and other conditions associated with type 1 nutrient deficiency is not a strategy for the management of MAM – and are very unlikely to increase weight or height gain as they principally contain only type 1 nutrients.

There is no incompatibility between a MAM-SFP program and blanket programs for nutritional supplementation of populations of children (micronutrient powder distribution, vitamin A capsule distribution, food fortification programs etc.). They can both take place in the same population at the same time.

5 ROUTINE MEDICINE

5.1 Vitamin A Supplementation

- On admission check on the heath card/passport and/or ask the mother if the child has received Vitamin A in the last six months.
- Administer Vitamin A as follows if it has not already been taken in the past 2 months and it is not anticipated that it will be given in other programs within the next 2 months.

Table 3: Vitamin A Supplementation

Age	Vitamin A IU (µg) Orally at Admission
6 to 11 months	100,000 IU (30,000ug)
12 to 59 months	200,000 IU (60,000ug)

5.2 Albendazole

- On admission check on the heath card/passport and/or ask the mother if the child has received Albendazole in the last six months.
- If not administer Albendazole to all children over 11 months.

Table 4: Albendazole Treatment

Age	Albendazole (mg)
<11 months	None
12 to 23 months	200mg
>23 months	400mg

5.3 Iron/Folic Acid Supplementation

Administer Iron/Folic Acid fortnightly, as follows:

Table 5: Iron/Folic Acid Supplementation

Children	Tablets (fortnightly)
<10 kg	1 tablet
>10 kg	2 tablets

6 SURVEILLANCE

On admission ensure that the there is a record in the register of 1) the target weight for discharge, 2) the weight which would trigger transfer to OTP for SAM and 3) for SAM-follow up patients only, the criteria to re-designate the child as having MAM.

- Take the MUAC measurement at each visit and compare with the discharge criteria.
- Take Weight measurements of children at each distribution and on discharge and compare with the target weight recorded at the time of admission and to the min weight for transfer to SAM treatment.

- Only take Height/Length measurements if there has been an unexpected large change in weight (to look for child substitution particularly when a child dies and the family want to continue to access food supplements)
- Diagnose whether the child meets any of the criteria of Failure to respond to treatment (see paragraph 7)
- Check whether the child meets the Minimum Weight and has now met the SAM criteria (W/H <-3Z) for MAM children and if they do, immediately transfer them to the OTP;
- For the SAM-follow-up children check whether the child meets the Minimum Weight to enter the criteria for MAM (W/H<-2 and >-3Z): the child should then be reclassified as a new MAM admission in the same SFC. This is counted as a new MAM case.
- Ask the mother/caregiver if the child is ill, and if yes refer to the HC for medical check-up and treatment; if any acute illness, send him/her rapidly to the HC for IMCI investigation
- Record results in the appropriate SFP Registration Book and on the individual Ration Cards of the caretaker.
- Give routine treatment at the appropriate visits
- Explain the change in the nutritional status to the caregiver.
- Give and record ration at each visit on the ration card of the caregivers

Table 6: Summary of the surveillance in SFC

MEASURE	FREQUENCY
MUAC is taken	Every 2 weeks
Weight is taken using the same scale	Every 2 weeks
Height/Length is measured	At admission and if child substitution is suspected
W/H Z can be calculated	As required – Day of Admission and Discharge

7 DIAGNOSE OF FAILURE TO RESPOND TO TREATMENT

It is essential to strictly apply the failure-to-respond criteria: children must not languish in the SFP for weeks or months without being identified and the cause of failure investigated and managed. It is for this reason that on admission, not only the discharge weight should be calculated but also the weight at which a criterion for SAM is reached and action needs to be taken urgently.

7.1 Criteria for failure to respond to treatment

These are **maximum** time limits for labelling the patient as failure to respond to treatment – in most circumstances action should be taken before these limits are reached.

1. Either no or trivial weight gain after 5 weeks in the program or at the 3rd visit
2. Any weight loss by the 3rd week in the program or at the 2nd visit
3. Weight loss exceeding 5% of body weight at any time (the same scale must be used)
4. Failure to reach discharge criteria after 3 months in the program
5. Abandonment of the program (defaulting)

7.2 Reasons for failure to respond

1. Problems with the application of the protocol: this should be addressed first
2. Nutritional deficiencies that are not being corrected by the diet supplied in the SFP
3. Home/ Social circumstances of the patient
4. An underlying physical condition/ illness
5. Other causes

7.3 Step by step procedure to address failure to respond

Protocol problems

Where a substantial proportion of children fail to respond to treatment (or abandon the program) the proper application of the protocol and the training of the staff at field level should be systematically reviewed, if possible by external evaluation. Any deficiencies should be corrected. Failure to treat the caretakers with due respect (rudeness, etc.) is, in most situations, the commonest cause of defaulting. If it is suspected that "short rations" are being given or that there is diversion of food, unannounced post-distribution monitoring should be implemented by re-weighing the food of recipients exiting the SFC or visiting a random selection of beneficiaries at home and examining/weighting the food they have recently received.

Uncorrected nutritional deficiencies

The old diets used for supplementary feeding of moderately malnourished children (CSB, UNIMIX, FAMIX etc.) are neither designed to promote rapid catch-up weight gain nor to return children to physiological normality, even if taken exclusively; the nutrient density does not compensate for the very low levels of some essential nutrients in the remainder of the diet. They often have low concentrations of several essential nutrients (e.g. potassium, magnesium, available phosphorus or zinc, etc.), the availability of these nutrients is very low from some of the diets and there are high concentrations of anti-nutrients. As demonstrated by the calculation in the footnote on page xxx, such unbalanced supplements can even exacerbate the malnutrition. Further, some contain very high concentrations of iron, which destroys other essential nutrients, such as vitamin C, during food preparation.

Particularly, when cereal based fortified blended foods are used (first strategy), the next step is to test whether the children have an uncorrected nutritional deficiency. This is achieved by changing the ration given to a nutrient dense diet with few antinutrients: this is usually by giving RUSF or, in extreme circumstances, RUTF designed for the severely malnourished to promote rapid weight gain. It is important to emphasise that the recovery of the child is slower than expected and that the diet should be given exclusively to the child and not shared, and that it should be take at least one hour before, or two hours after a family meals and not mixed with the family food taken by the child.

Social problems

Where RUSF is being used and the correct instructions as to its use have been given (and the caretaker confirms that they have been followed), the most likely cause of failure are social problems within the household. These include:

- the father or mother-in-law, who rarely attend the SFC with the child, countermanding the mother and insisting that the child should have "traditional weaning foods"
- excessive sharing of the ration with other siblings, family members, neighbours or sale of the ration

- sibling rivalry, particularly in cultures where family members share a plate – the MAM child is usually slow to eat, smaller and less able to obtain his/her share of the food, and the siblings "steal" the RUSF from the MAM child without the mother's knowledge
- parental psychopathology, particularly where the family has been traumatised by violence or fear of violence and displacement; also in this category is parental mental illness (schizophrenia, Munchhausen syndrome by proxy, mental deficiency, etc.).
- Child abuse
- a family member (usually adult) is consuming all the family's resources through alcohol, khat or other drug purchase, gambling. Where a family member is chronically ill (eg with HIV) and economically inactive as the cause of poverty, the family resources may be consumed by medical costs for that adult.
- occasionally rejection of a child, often because of a family dispute or suspicion about parenthood
- sufficient poverty that the family as a whole is malnourished without access to food and the "program" only "targets" young children (this is particularly common where absolute MUAC is the only criterion used as the admission criterion as older malnourished children and starving adults will not be eligible for admission to the SFP)
- use of the child's state to access food and services for the whole family: it is unacceptable to have a family that has to choose which child they will sacrifice for the family to survive. Do not chastise the family for having to make this terrible decision – a full ration of food MUST be given to the whole family.
- Discrimination by the community against the family (ethnic minority) or loss of the social network which allows borrowing and lending between neighbours.
- These are the more common causes, but there are many other causes of social disruption that lead to malnutrition in a young child that lead to that child failing to respond to treatment.

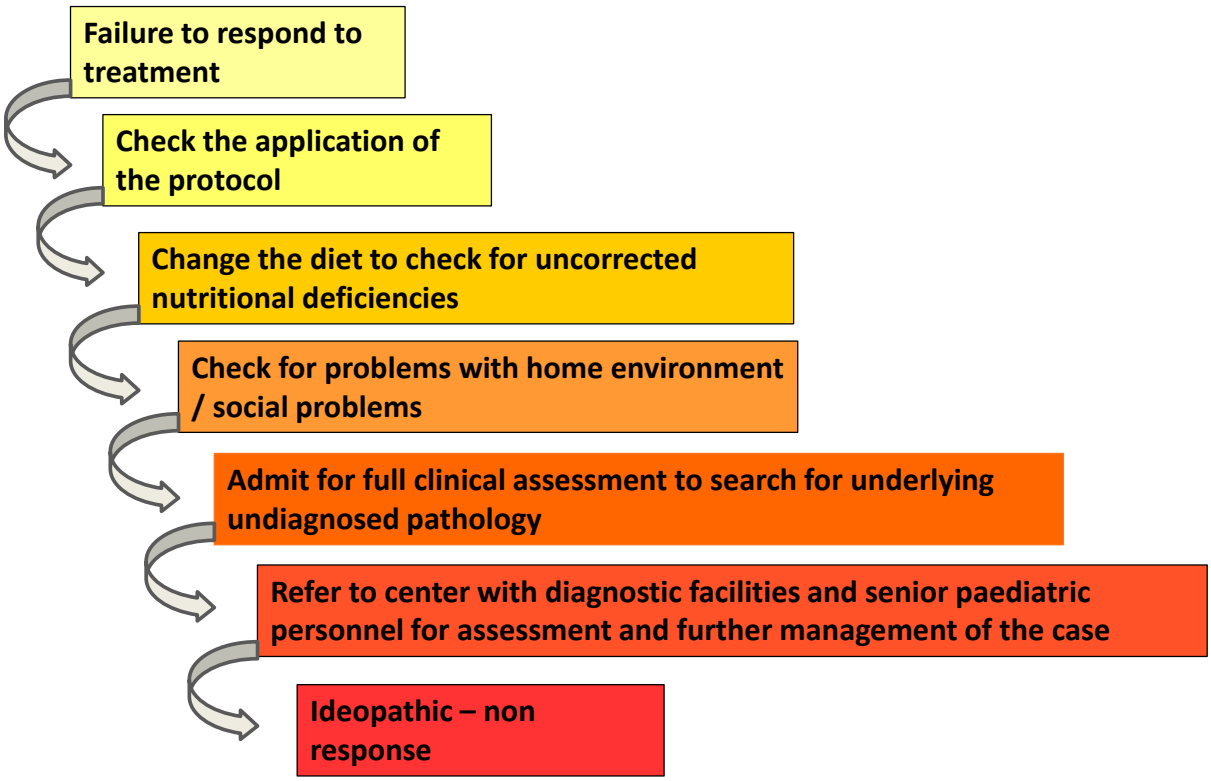
To test whether any of these are the cause first an appetite test can be conducted. If the child is eating well or is hungry and yet fails to gain weight at home then a major social problem is confirmed. This is then investigated with an in-depth interview with the head / main decision maker in the household (father, mother-in-law) and a home visit is performed. If the child does not take the test meal and appears not to have an appetite, this may be because of shyness, unfamiliarity with or dislike of the RUSF/RUTF, then one strategy is to admit the child to day-care and feed the child under direct supervision for a day or so.

Underlying medical conditions

If the child has no appetite then there may is probably an underlying medical problem. A careful history and examination should be performed and a search made for the common underlying conditions; in particular, TB, HIV, cerebral palsy, leishmaniasis, schistosomiasis, other infections, cirrhosis, inborn errors of metabolism, Down's syndrome, post-meningitis neurological damage, etc.

Other conditions

If an underlying condition is not found then the child should be referral to a paediatric facility with special expertise and diagnostic facilities.



7.4 Treatment of the failure of treatment

One at a time in the sequence shown – and not in another sequence or omitting any step; after making the diagnose to this patient of failure to respond to treatment, the next step is to treat the patient.

For this, you need in addition to your main supplementary diet, like for example CSB – Oil – Sugar or another blended fortified diet, a different supplementary diet.

For example:

1. CSB/WSB/other blend fortified food with oil ***and***
2. RUSF which is a higher quality ready to eat supplementary product fortified with all the nutrients.

1st step: Give lipid based "RUSF", 1000kcal per day for 15 days (2 bags per day)

This diet will correct all known nutritional deficiencies and in addition give the additional lacking nutrients; there is no question of switching the diet from CSB to another inadequate diet (such as BP5); if the child still fails to respond, you will not have effectively excluded an undiagnosed/untreated nutritional deficiency as the cause of the failure. It MUST be the best diet available for recovery of a malnourished child.

This does not exclude a social reason as RUSF does not need to be prepared - if the mother cannot prepare the blended food for social reasons she may be able to give RUSF because it is ready to eat.

2nd step: After 15 days, next visit,

1. If he/she now responds to treatment, this means that it was a nutritional (or social) problem

=> Continue the treatment with 2 sachets of RUSF plus the SFC ration for a further month.

2. If he/she does not respond to treatment, this means that the dominant problem is NOT A NUTRITIONAL problem and that we now have to investigate if it is a social problem.

3rd step: Investigate the home social circumstances; the home visit will pick up some social problems

It is very important to realise that many/most social problems will NOT be found during a home visit (such as discrimination against the child, neglect, parental manipulation, career illness, siblings' rivalry, etc.). This is because parents' and children's behaviour changes during a visit by an outsider.

1. During the home visit, if a problem is identified that can be alleviated or solved,

=> Then deal with the problem, leave the child at home for follow up and further visits can be made the next weeks.

2. During the home visit, if they identified a problem that cannot be alleviated or solved at home,

=> Take any steps necessary to alleviate the problem – such as 1) admission of the child to a facility, 2) Putting more resources into the home, 3) Arranging for a different caretaker (relative), 4) Getting treatment for the caretaker (e.g. psychiatric/ HIV etc.).

3. During the home visit, if no problem is identified to account for the failure to respond to treatment, then it is still likely that there is a social problem that has not been identified during the home visit

=> Then admit the child for a trial of feeding for 3 days with feeds under supervision[17]. This can be in an IPF, in a day-care centre or with "wet feeding" where the child is taken to a health center daily to receive food under supervision.

Many of these facilities do not have full medical diagnostic capability – but they certainly can supervise feeding and care and ensure that the child gets the food that is prescribed.

4th step: If still the child is not responding to treatment, then he needs to be sent to a facility (hospital)

Where there are clinicians/paediatricians that are skilled in diagnostics and have the facilities to investigate the child.

If this facility does not find the cause then the child should be referred to a national centre/ University for full investigation of unusual causes.

The cause of the malnutrition has not been found. Such children should perhaps be entered into a register, have specimens stored and be seen whenever there is a senior paediatrician with skill in severe malnutrition and in other diseases.

[17] This is standard paediatric practice in Europe for children who are "failing to grow" at home normally – they are admitted first for a trial of normal care/feeding in a supervised environment.

8 DISCHARGE PROCEDURE

Discharge the children according to the discharge criteria

AGE GROUP	DISCHARGE CRITERIA
MORE THAN 6 MONTHS CHILDREN	➢ W/H – W/L ≥-1.5 Z score (WHO_{2006} standards unisex table[18]) **And** ➢ MUAC≥125mm
ALL SAM CURED CHILDREN	➢ FOLLOW UP FOR 3 MONTHS **And** ➢ W/H – W/L ≥-1.5 Z score (WHO_{2006} standards unisex table[19]) **And** ➢ MUAC≥125mm

8.1 Type of discharge

- Cured
  - Cured for MAM children reaching the criteria of discharge
  - Cured after 3 months follow up for SAM cured children
- Defaulter After 2 consecutive absences[20]
- Dead while the child is registered in the program or within 24 hours of transfer to another health facility (follow up required when transfer)
- Transfer to OTP or to Hospital
- Internal transfer to another SFP

8.2 Procedure of discharge

As soon as the child reaches the criteria for discharge (target weight and target MUAC), s/he can be discharged from the program.

- Record the discharge date - weight – MUAC and the Type of discharge in the registration book and in the card and that all the necessary information are entered in the card
- Check that the immunisations are updated and inform the child that the treatment is over.

[18] See annex 3: Weight/Height table

[19] See annex 3: Weight/Height table

➢ [20] for MAM children, home visits to determine in the defaulting is real or the child has died is rarely done due to lack of human resources), but a random selection of these children should be visited at home to determine the usual causes of defaulting

9 STORAGE AND MANAGEMENT OF THE GOODS

Complete store room stock card **as** food goes in or out of the storeroom.

Deliveries

- Check the commodities on delivery.
- Verify on the waybill the contents of the delivery and certify the receipt of the delivery.
- Indicate (in writing) any problems or inconsistencies between the actual delivery and the waybill. Retain one copy of the waybill and return one copy to the driver.

Storage of Food & Non-food Commodities

Ensure that the storeroom is:

- sufficiently big (1M for 2M3) to store one month's stock of food commodities
- easily accessible by car in any season
- well ventilated and sheltered from the rain
- regularly cleaned/disinfected
- protected from rodents, and insects
- secure – under lock and key

Commodities

- food commodities should be separated from the non-food items
- food products should be put on wood-pallets 30cm from the wall
- split bags should be separated from the others
- When the storekeeper goes on leave the key and stock must be handed over to a relief store keeper. Even though the storekeeper is personally responsible for the stock, it is unacceptable to leave the store locked when beneficiaries arrive for treatment.

10 MONITORING AND EVALUATION

10.1 Needs

- Calculator
- SFP Monthly Report (see annex 31)
- Registration Books (see annex 29)
- Stock card

10.2 Activities

- Fill in the SFP Monthly Report. A report should be made for each SFP, each month, by the supervisor in charge of the program.
- Calculate the indicators for an SFP on a monthly basis, using the data recorded in the registration book.

This is an important part of all supplementary feeding programs and allows supervisors to assess their efficiency and effectiveness. Timely and correct interpretation of the different indicators is essential to highlight problems and allow appropriate and prompt action. The collection of data can

be done through the regular analysis of indicators (see Table 5). These data are also used to assess the consumption of stock and the future requirements.

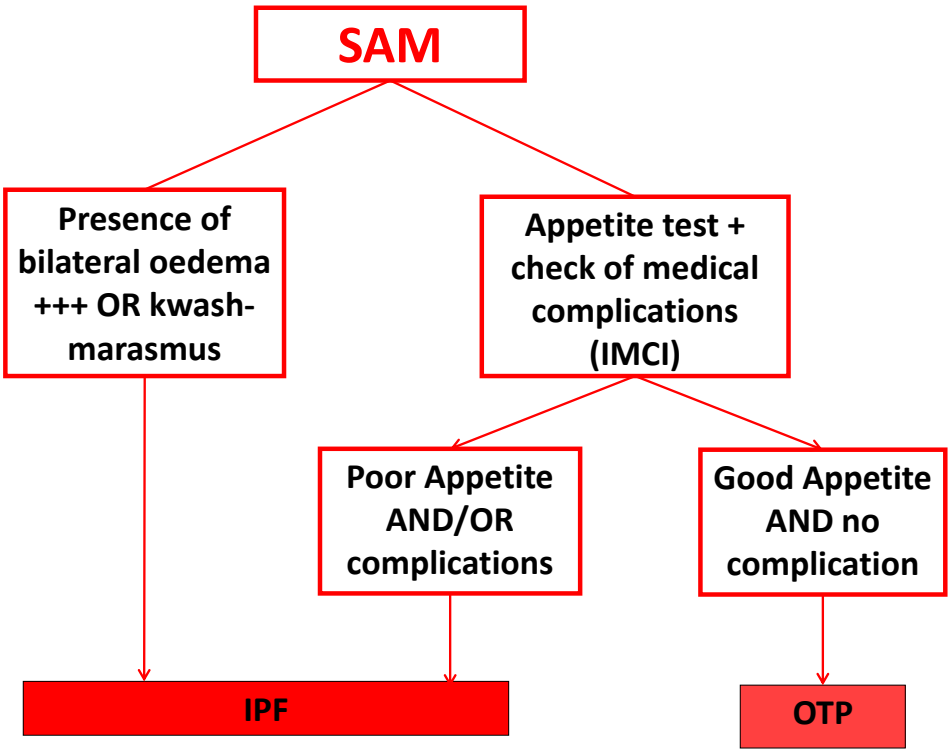
Table 7: SFP Sphere standards

Indicators	**SFP Acceptable**	**SFP Alarming**
Cured rate	> 70%	< 50%
Death rate	< 3%	> 10%
Defaulter rate	< 15%	> 30%
Length of stay	< 8 weeks	> 12 weeks

OTP/IPF TRIAGE OF THE SAM PATIENTS

The triage should be made in the OPD of an IPF and in the OTP. Schema 1 shows the flow of patients for decision-making.

Flow chart 3: Decision making for IPF or OTP



1 ACTIVITIES

The nurse, assistant nurse or nutritionist does the followed tasks

1. Enter all the children eligible for admission to the program in the registration book, fill in the patient's chart and give a SAM number;

2. "Fast track" those obviously severely ill to in-patient treatment; do not keep them waiting. The triage person should regularly look at any waiting area and refer such patients directly to the nurse-in-charge for her to send directly to the IPF or start treatment if the distance is excessive and/or suitable transport is not available.

3. Perform the appetite test whilst the patients are waiting to see the nurse (see paragraph 4, p.27);

The nurse

The nurse then sees the patient with the anthropometry and the result of the appetite test.

1. Examines the patient to determine if s/he has a complication using IMCI criteria (see paragraph 5: complications);
2. Explains to the caretaker the options for treatment and decides *with the caretaker* whether the child should be treated as an out-patient or in-patient;

3. Transfers those that need in-patient treatment for admission to an IPF and those that can be treated as out-patients to the OTP site nearest to their home;

   If the triage is made within the OTP and the patient requires IPF treatment, give a SAM-Number, register the patient, fill out a transfer form and arrange the transfer.

4. For sick children whose mother initially refuses in-patient care re-perform the appetite test:

   - **If appetite test is now passed**, explain home care to mother and give IMCI treatment for the accompanying illness. Passing the appetite test is the main criterion for out-patient management.
   - **If appetite test is again failed**, explain to the mother of the dangers of taking the child home and try to persuade her to accept in-patient care for at least a few days. However, the mother's decision must be respected and she should not be coerced.
   - **If the child fails because s/he seems to be afraid but is otherwise alert without complications**,
     - Still refer the child to IPF for at least a short time (if transport is convenient);
     - Explain carefully the benefits of IPF, the risks of OTP and that the caretaker can change her mind at any time after admission with the agreement of the staff;
     - Accept the final decision of the caretaker and arrange appropriate care at home.

5. Start the treatment appropriate for outpatients (see below).

2 Tools

For the assistant nurse:

- MUAC tapes
- Scale, length board, weight-for-height table
- Registration book, patient charts
- RUTF, sugar, safe drinking water, medical measuring cup or scale (5g precision)
- Water and soap to wash hands
- Thermometer

For the nurse:

- Examination tools (stethoscope, otoscope, ...)
- Transfer forms
- drugs

The details are described in the next section.

3 DEFINITION OF SAM – CRITERIA FOR ADMISSION

All patients that fulfil **any** of the criteria in the following table have severe acute malnutrition (SAM).

AGE	ADMISSION CRITERIA
LESS THAN 6 MONTHS	See separate section for these infants.
6 MONTHS TO 12 YEARS (120CM)	➢ W/H - W/L <-3 Z score (WHO_{2006} standards unisex table[21]) **or** ➢ MUAC<115 mm[22] **or** ➢ Presence of bilateral œdema[23] (+ & ++ admission to OTP; +++ admission to IPF)
12 YEARS (120CM) TO 18 YEARS	➢ W/H <70% NCHS[24] **or** ➢ Presence of bilateral œdema (+ & ++ admission to OTP; +++ admission to IPF)
ADULTS	➢ MUAC < 180 mm with recent weight loss **or** ➢ BMI[25] < 16 with recent weight loss **or** ➢ Presence of bilateral œdema (unless there is another clear cut cause)

NOTE: it is important to emphasise that the patient is admitted if they fulfil ANY of these criteria – even if the other criteria are not within the SAM range.

4 THE APPETITE TEST AND FLOW OF PATIENT

4.1 Why to do the appetite test?

- Reasonably accurate assessment of the appetite is often the only way to differentiate a complicated from an uncomplicated case of SAM. Other signs (IMCI) of severe illness are less reliable in the severely malnourished child.
- By far the best sign of severe metabolic-malnutrition is a reduction in appetite, and the appetite test is the most important criterion to decide if a patient should be sent for in- or out-patient management.
- A poor appetite means that the child has a significant infection or a major metabolic abnormality such as liver dysfunction, electrolyte imbalance, and cell membrane damage or damaged biochemical pathways. These are the patients at immediate risk of death. Furthermore, a child with a poor appetite will not take sufficient amounts of the therapeutic diet at home to prevent deterioration.

[21] See annex 3: Weight/Height table
[22] There is controversy over the criteria for MUAC in children less than 67cm. Some centres use a stick of 67cm and if the height is less than this then the MUAC criterion used is 110mm. This has not been resolved at this time.
[23] See annex 1: Measurement
[24] See annex 4: Weight/Height table for adolescents
[25] See annex 5: BMI table for adults

4.2 How to do the appetite test

The assistant

- All children who will have an appetite test are normally tested together in the same area (at the same time). This should be a separate quiet area. Children that have travelled a long distance should be allowed to rest first and given water to drink.
- Sometimes a child will not eat the RUTF because he is frightened, distressed or fearful of the environment or staff. This is particularly likely if there is a crowd, a lot of noise, other distressed children or intimidating health professionals (white coats, awe-inspiring tone). If a quiet area is not available then the appetite can be tested outside under shade. Watching other children take the RUTF gives confidence.
- Explain to the caretakers the purpose of the appetite test and how it will be carried out and wash the hands of both the caretaker and the child. Allow the caretaker to sit comfortably with the child on her lap and offer the RUTF to the child.
- Give the RUTF from medicine-cups or the packet itself and water to drink in a cup:

  Pre-Prepare graduated 20 to 25 ml medicine cups before the start of the appetite test. The packet of RUTF normally holds almost 100g of the paste. One sachet of RUTF can be used for about 4 tests and it is much easier to judge the amount taken from a graduated medicine cup than from the packet itself.

The mother

- Initially allows her child to play with an RUTF packet or pot and become familiar with the environment. This sometimes helps the child become confident.
- Either gives the RUTF directly or puts a small amount on her finger and gives it to the child. The mother/other children/siblings must not consume any of the RUTF. It often helps if she pretends to take some and like it; seeing the mother eat the RUTF herself is the best way to encourage the child.
- If the child refuses then continue to quietly encourage the child and take time over the test. Do not force the child to take the RUTF.
- The test usually takes a short time, about fifteen minutes, but can take up to one hour with a shy or upset child or one with a marginal appetite.
- The child MUST be offered plenty of water to drink from a cup during the test.

The assistant nurse should evaluate the result of the appetite test:

Pass

A child that takes at least the amount shown in the moderate column of the table below passes the appetite test.

Fail

A child that does not take at least the “moderate” amount of RUTF fails the test - the nurse will examine the child and probably refer him/her to the IPF.

Even if the child is not taking the RUTF because s/he does not like the taste or is frightened, the child did not pass the appetite test.

The following table gives the MINIMUM amount that should be taken.

Table 8: Amount of RUTF to assess the appetite of severely malnourished children

APPETITE TEST "Moderate" is the minimum amount that malnourished patients should take to pass the appetite test						
BODY WEIGHT	PASTE IN SACHETS (PROPORTION OF WHOLE SACHET 92G)			PASTE IN CONTAINERS (ML or GRAMS)		
	poor	moderate	good	poor	moderate	good
Less than 4 kg	<1/8	1/8 –1/4	>1/4	<15	15 – 25	>25
4 – 6.9	**<1/4**	**1/4 – 1/3**	**>1/3**	**<25**	**25 – 30**	**>35**
7 – 9.9	**<1/3**	**1/3 – 1/2**	**>1/2**	**<35**	**35 – 50**	**>50**
10 – 14.9	<1/2	1/2 –3/4	>3/4	<50	50 – 75	>75
15 – 29	<3/4	3/4 – 1	>1	<100	100 – 150	>150
Over 30 kg	<1	>1		<150	>150	
Note: if different size small medicine cups are used then a new table should be constructed, depending on the size of the cup. The table should be in the number of medicine-cups the child should take for his/her category of weight. The majority of children will be from 4 to 6.9kg so the minimum test to differentiate a poor appetite would then be one level medicine-cup of 25ml.						

4.3 When to do the appetite test

- During initial triage
- When there is poor weight gain at any visit to OTP. The appetite test should be carried out when out-patients are not gaining weight steadily. The test can also be carried out routinely on all children at each visit if the supervisor thinks appropriate

Failure of an appetite test at any time is an indication for full evaluation and probable transfer for in-patient assessment and treatment.

During the second and subsequent visits the intake should be in the "good" range of table if the patient is to recover reasonably quickly.

If the appetite is "good" during the appetite test and the rate of weight gain at home is poor then a home visit should be arranged because this indicates a social problem at household level or extensive sharing of the RUTF. If the home visit is not possible, it may be necessary to bring a child into residential care to do a simple "trial of feeding", where the intake of the child is directly observed by the staff, to differentiate:

a. a difficulty with the home environment from
b. a metabolic problem with the patient

Such a trail-of-feeding, in a structured environment (e.g. day-care, IPF), is used to investigate failure to respond to treatment but can be undertaken if the staff suspect a problem at home.

5 MEDICAL COMPLICATIONS (IMCI)

After anthropometry and conducting the appetite test, the nurse has to examine the patients to look for complications that need to have treatment started before transfer to the in-patient facility.

If there is a serious medical complication, then transfer the patient for in-patient treatment if the patient has any of the following conditions:

- Diarrhoea and dehydration based on history & change in appearance (clinical signs are unreliable in the malnourished and should NOT be used to diagnose dehydration)
- Severe vomiting
- Pneumonia : >60 breaths/ minute for under 2 months
  >50 breaths/minute from 2 to 12 months
  >40 breaths/minute from 1 to 5 years
  >30 breaths/minute for over 5 year-olds or
  Any chest in-drawing

  Respiratory rate can be judged with a small home-made pendulum made from string and a small weight. Knots should be tied at 43 and 66 centimetres; the pendulum will then swing 50 and 40 times per min respectively. The appropriate knot is held and the pendulum swung in front of the child – if the child is breathing faster than the pendulum then a diagnosis of respiratory distress should be made.
- Open skin lesions
- Hypothermia < 35.5°C (rectal) or <35° C (axilla)
- Fever > 39.5°C (rectal) or >39° C (axilla)
- Very pale (severe anaemia)
- Weak, apathetic or unconscious
- Convulsions
- Clinical vitamin A deficiency
- Any condition that requires an infusion or NG tube feeding
- Any other general signs or symptoms which the nurse/clinician thinks requires investigation or treatment in an in-patent facility

Table 9: Summary of second triage criteria for admission to in-patient or out-patient care

If ANY of these indicate that the patient needs in-patient treatment the child should be referred to the IPF with the agreement of the caretaker[26]

FACTOR	IN-PATIENT CARE	OUT-PATIENT CARE
CHOICE OF CARETAKER (AT ANY STAGE OF MANAGEMENT)	Caretaker chooses to start, continue or transfer to IPF The caretaker's wishes must be respected	Caretaker chooses to start, continue or transfer to OTP The caretaker's wishes **must** be respected
APPETITE	Failed or equivocal Appetite test	Passes Appetite test
BILATERAL ŒDEMA	Bilateral pitting œdema Grade 3 (+++) Both Marasmus and Kwashiorkor (W/H<-3Z score and bilateral œdema)	In most countries: Kwashiorkor with bilateral pitting œdema Grade 1 to 2 (+ and ++)[27]
SKIN	Open skin lesions	No open skin lesions
MEDICAL COMPLICATIONS	Any severe illness, using the IMCI criteria – respiratory tract infection, severe anaemia, clinical vitamin-A deficiency, dehydration, fever, lethargy, measles rash, etc.	Alert with no medical complications
CANDIDIASIS	Presence of severe candidiasis or other signs of severe immune-incompetence	Absence of candidiasis
CARETAKER	No suitable or willing caretaker.	Reasonable home circumstances and a willing caretaker

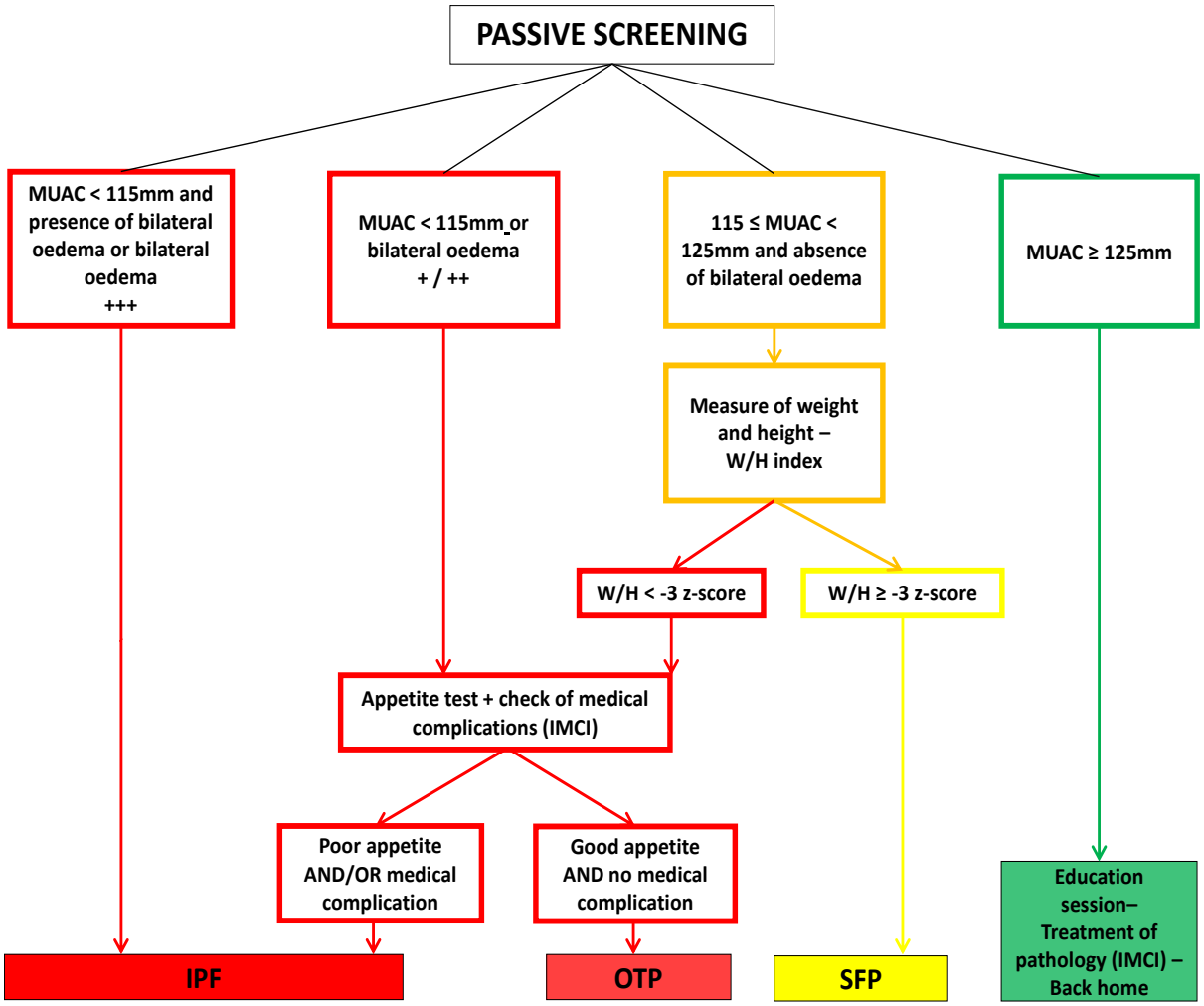
Remarks:

If the appetite test is properly and accurately conducted, it should differentiate those œdematous children who should and those who should not be treated as out- or in-patients.

[26] The mother is the primary caretaker. If she is forced or persuaded against her will to be admitted to the IPF, then she is very likely to default and her child will be denied treatment, her other children will not attend if they become malnourished and she will complain about the program within her community. If the staff take the mother's wishes as paramount (after explaining the reasons and prognosis), then this child may not get the best treatment acutely but will get treated for the whole of his/her illness, is unlikely to default, the mother may decide to be transferred at the next visit and she will praise the service in her community as being « mother friendly » and caring.

[27] In some countries, oedema appears to carry a much higher risk of death than in other countries. This provision should be varied by local experience. In general, there is a lower risk from mild oedema where oedema is common and a higher risk where oedema is rare.

Flow chart 4: Summary of Triage Procedures in a health center



TRANSPORT OF SICK PATIENTS

Very ill malnourished children may be brought to an OTP distribution site or health centre and the protocol requires them to be "transferred" to an IPF.

However, it is commonly found that malnourished children who are relatively well before transport, deteriorate and die soon after arrival after a long or difficult journey. This is "transport trauma".

Public transport is not recommended.

It is recommended that sick patients, where possible, be stabilised at the OTP or nearest health centre before transport. The provisions in this protocol for the management of severe malnutrition for In-Patients and its complications should be followed as far as feasible in the health centre[28].

IPF

Should be contacted by telephone and take responsibility and "cover" the nurse in the field, reassure the nurse that it is the correct course of action not to transport the child and give advice and support for the management of the patient. The telephone call, advice given and the name of the doctor and IPF contacted should be recorded on the patient's chart.

OTP

The nurse must explain to the caretaker that the patient is critically ill and may die, but that the danger of transporting the patient to the hospital is greater than trying to stabilise him/her at the health centre. Again the mother's choice should be followed.

District Nutrition Officer (focal point)

- Mobilise the community about the problem of transport of sick patients from one centre to the other;
- Explore solutions: 1) use a national or international NGO, 2) establish a community fund, 3) have an ambulance, 4) establish a phone consultation to treat patients without transport, 5) establish a local IPF to manage/stabilise complicated malnutrition close to an epicentre of malnutrition;
- Organise the transport of the critically ill transfer-patients:
  - Payment for transport (lend money, subsidise or pay for transport),
  - Essential medical transport (with verification) from the village to the IPF,
  - Train staff about care during the transport
    - the vehicle must drive slowly
    - not be crowded
    - stop for 5 min every 20-30 min during the drive to lessen the effects of motion sickness on the sick patient
    - water must be available
    - children should be nursed by the mother.
    - Do **not** give drugs to sedate or prevent motion sickness (vomiting) to malnourished patients (this is particularly important).
- Anticipate vehicle break-down, seasonally impassable roads (flooding, etc. during the rainy season);

[28] Transport trauma is one of the main reasons why IPFs should be established as close to the patient's village as possible. In addition many of the advantages of having OTPs close to the patient's home apply equally to IPFs.

- Preposition stocks if seasonally impassable roads are anticipated (stocks of RUTF, training of village volunteers if team cannot travel);
- Consider having an "emergency kit" for IPF-style stabilisation of children prior to transport, if transport difficult/impossible or if mother refuses to travel;

- Regularly evaluate the outcome of patients that have been transported under difficult circumstances. Detailed analysis of death during and for 48h after transport should be undertaken by the District Nutrition Officer and actions taken (such as opening a satellite IPF). The time of leaving and the time of arrival at the destination facility should be noted on the transfer form and analysed periodically to determine if this is a major problem within the district;
- Establish regular meetings between the IPF doctors and the OTP staff in order to facilitate communication between the different teams and give confidence to the IPF about the judgement of the OTP/community staff;
- Monthly reports should be checked and updated for deaths occurring during transport. Transfer times reported on the transfer form should be examined and if they are excessive, ways of resolving the problem should then be explored.

OUT-PATIENT MANAGEMENT (OTP)

1 ORGANISATION

1.1 Structure

1.1.1 Health Centre and its organisation

Location

- Out-patient care, in the community, should be organised from health centres, health posts or even non-clinical facilities that are as close to the patients' homes as possible;
- The IPF normally runs an OTP from its own facilities. Patients that have been admitted to the IPF should not be transferred to the associated OTP if there is another OTP closer to the patient's home;
- The distance and time the patients have to travel is a major determinant of coverage, defaulting rate and reputation of the whole program;
- There should be many satellite OTP sites close to or within the community – they should be within walking distance (5km is the normal catchment area - at most 10 km) of places where malnutrition is commonly found (from screening results).

Structure

- The OTP site requires a physical structure (the health centre) with 1) a sheltered waiting area, 2) a place to receive the patients and do anthropometry and the appetite test, 3) a place for the nurse to see and examine the patients and 4) a secure store for the therapeutic products and a pharmacy;
- There must be water available. The OTP is normally in a health structure and run one or two days per week; however, it can also be established in a school, community centre or private house. Where there is no suitable structure, OTP can be run from tables set up under shade in the open, but each function must have its own space;
- Communication facilities: It is important that each structure is able to get in touch with the IPF, the other OTP teams in the district, the focal points at village level and the District Nutrition Officer/Focal Point (up-to-date lists of names, addresses and phone numbers need to be maintained at district level and distributed to each OTP supervisor and the Outreach workers and village focal points).

Organisation of the consultation

During the OTP days, the Outreach Workers or village volunteers/focal points (at least two) come from their communities, **in rotation**, to help the Nutrition Supervisor of the centre to take measurements, perform the appetite tests, register the patients and update their training.

For new referrals (see triage procedure), after the anthropometry and appetite test, the nurse does the medical check-up, discusses with the caretaker the mode of treatment, explains the procedures and prescribes the RUTF and routine medicines.

Frequency of the consultation

There has to be an updated list of each OTP site that gives the day(s) of the week, the hours when the OTP site is open and functioning and the name & phone number of the person responsible for that OTP.

1) If there are several staff members, then the OTP can be run each day. However, it is important for the OTP supervisor to have time to visit each village periodically, liaise with the Outreach workers and volunteers and to run meetings where all the village focal point personnel attend.

2) Normally the OTP is run on one or two days per week when children that have been screened in the community are seen at the OTP site, have their MUAC and œdema checked, their appetite test performed, after which they are registered and either started on out-patient treatment or transferred for in-patient treatment (after stabilisation if there is a danger of transport trauma).

3) For remote villages, two-weekly outreach activities can be arranged. This maintains contact between the community and the health team and greatly increases compliance with the treatment. This service is limited by transport and logistics constraints that need to be resolved at national and district level; it is often only possible for NGOs.

The worst cases of malnutrition are usually found in the most remote villages, mainly because the community has difficulty to access health services which leads to delayed diagnosis. These villages should be a priority to be mapped and screened and there should be regular contact with the community volunteers. Provision of petrol (and help with acquiring motorbikes) to ensure regular contact is important.

1.1.2 Mobile teams

Where and When

- Where mobile health clinics are operating, especially in an emergency situation and where the population is widely dispersed, with a relatively low population density, or a nomadic population, the management of severe acute malnutrition should be by mobile team. A vehicle is equipped for an OTP site as well as with vaccines and IMCI medicines and other essential services.
- It normally comprises staff trained in Integrated Management of Childhood Illnesses (IMCI)/Maternal and child Health (MCH) and immunisation (EPI) and carries out these activities as well as IMAM management and follow up of HIV and TB programs.

Frequency of the consultation

- The Team visits pre-arranged sites on a weekly basis (the day and time have to be widely known within the community and should not change). If for any reason the visit is not possible the village focal point **must** be telephoned.
- Screening is done using the MUAC tape and checking for œdema only (height is not taken). Patients fulfilling the admission criteria are assessed and given a weekly RUTF ration (if they pass appetite test and medical check). As height is not taken, their weight is taken until they reach their target weight (see annex 12) or MUAC. A proper referral system and transport is important for the patients that need in-patient care (see section on transport).

1.2 Activities

A nurse or assistant nurse is responsible for supervision of the program at the OTP site and the communities within its catchment area.

Prerequisite

- Nurse or assistant nurse;
- If not possible, an assistant nurse or nutritionist (provided that person is properly trained in the clinical aspects of malnutrition, can diagnose the medical complications competently and refer patients appropriately; national legislation must allow them to dispense routine drugs).

Assistant nurses or nutritionists should only be in charge of OPTs where clinical expertise is readily available (e.g. urban areas). OTPs in more remote sites must be run by a trained nurse qualified to make clinical decisions (some of these patients will need stabilisation before transport).

The nurse or assistant nurse has to

- Admit the patient according to the criteria of admission with no medical complications and who pass the appetite test, fill the charts and register (see section below and triage) and give a SAM number;
- Give the routine drugs;
- Give the RUTF and inform the caretaker as to its proper use;
- Follow the patients every week:
  - Examine the weight changes,
  - fill in the routine follow up sections of the OTP chart,
  - decides if any further action is needed,
- Diagnose the patients who have failure-to-respond and take the appropriate decisions: home visit, repeat appetite test, supervised feeding trial, and transfer for in-patient treatment;
- Be supervised by the District Nutrition Officer and assist to the monthly coordination meeting at the district level. At this time, the monthly report of the OTP is given to the District, the therapeutic products needed for the following month are collected if needed, and other problems should be discussed to ensure quality of care is maintained and to undertake in-service training and supervision;
- Organise a meeting with all her/his outreach workers each month to lean about and deal with any problems, collect screening data and to give refresher training;
- Handle the procurements, storage and distribution of commodities.

1.3 Tools[29]

For the assistant nurse

- MUAC tapes
- Scale, length board, Weight-for-Height table, 5%weight loss table, weight gain table to reach discharge criteria, weight gain over 14 days table
- Registration book, OTP charts, box for the OTP charts & for archive, stock cards
- Look-up table for RUTF an key messages
- RUTF, sugar, safe drinking water, medical measuring cups or scale (5g precision) for the appetite test
- Water and soap to wash hands
- Thermometer, calculator, pencils, pens, rubber, etc.

[29] Refer to UNICEF manual to calculate the input in terms of therapeutic products; refer also to USAID CMAM costing tool to calculate the inputs and financial resources required to establish, maintain, or expand CMAM services. <http://www.fantaproject.org/publications/CMAM_costing_tool.shtml>

For the nurse

- Examination tools (stethoscope, otoscope, etc.)
- Drugs: Amoxicillin; Anti-malarials; Vitamin A; Anti-helminths; Measles vaccination.
- Transfer forms, stock cards, monthly reports
- Communication tools (phone, etc.), Poster on transport recommendations, list of the OTPs & IPF

2 ADMISSION

The procedures of admission are explained in the triage section.

There are two kinds of admission to the OTP:

New admissions

- New admission from active and passive screening or self referral. Most admissions to OTP will be of this sort.
- Relapse (after more than 2 months of absence[30] or after previously being discharged as cured). This is considered to be a new episode of malnutrition.

Admissions of patients already under treatment for SAM

- Internal Transfer from another OTP (treatment already started with a SAM N°)
- Internal Transfer from an IPF (transfer form with a SAM N° and the treatment given)
- Return from an IPF back to the OTP (transfer form with a SAM N°, chart & already registered)
- Readmission after defaulting with less than 2 months of absence

There needs to be a functioning communication and referral system between the OTP site and IPF so that patients can be quickly and easily transferred from the IPF to the OTP as they enter the recovery phase (phase 2) and those OTP patients that fail to respond appropriately or who develop a complication can be transferred (temporarily) to IPF. *Such transfers are not "discharges" from the program.*

A patient should **always** be treated at home where there is:

1. a capable caretaker,
2. The caretaker agrees to out-patient treatment,
3. There are reasonable home circumstances,
4. There is a supply of RUTF,
5. An OTP program is in operation in the area close to the patient's home,
6. The Triage criteria for home treatment are met.

A patient being treated as an out-patient that deteriorates or develops a complication should be transferred to IPF for a few days before continuing their treatment again in OTP (see section on transport).

[30] It is assumed that during this period the patients will spontaneously recover. This is not necessarily the case, but a child that has lived for 2 months without treatment and survived can, by definition, now be treated as having a new episode of SAM. This definition may change as more information is gathered about the natural history of untreated malnourished children.

The two arms (In and Out-patient) of the program should always be integrated, with regular meetings, so that there is smooth transfer of patients from one to the other mode of treatment.

The same registration number is retained throughout the movements (the SAM-NUMBER). A patient transferring from one to another mode of treatment is still under the care of the program for this episode of severe malnutrition; for example, this is not a "discharge" from the in-patient facility but an "internal" transfer to another part of the same program.

3 DIET

- Sensitize the mother of the importance of breast-feeding and that the child should always get breast-milk before they are given RUTF and also on demand.
- Explain to the caretaker how to give the RUTF at home

- For breast-fed children, **always** give breast milk before the RUTF.
- RUTF is a food and a medicine for malnourished patients only. **It should not be shared with the other family members even if the patient does not consume all the diet offered**. Opened packets of RUTF can be kept safely and eaten at a later time[31] – the other family members should not eat any that is left over at a particular meal.
- Wash the patient's hands and face with soap before feeding.
- These patients often only have moderate appetites during the first few weeks and eat slowly. They must be fed separately from any other children in the household. The patient can keep the RUTF with him/her to eat it steadily throughout the day – it is not necessary to have set meal times if the food is with the patient all the time. However, with children, the caretaker should attend to the child every 3-4 hours at least and encourage the child, or give small regular meals of RUTF at these times. Tell the mother how much her child should eat each day (this is given in the look-up table).
- Explain that for the first week or two the patient will probably not finish all the RUTF given. The mother should not be upset by this as excess has been given, but as the child recovers his/her appetite will improve so that all the diet will be taken later on in recovery. Uneaten RUTF should not be taken by other members of the family but returned to the OTP – as the child improves s/he will start to consume nearly all the food.
- Explain that RUTF is the only food the patient needs to recover during her/his time in the programme. It contains all the ingredients that the patient needs to recover and is really like a special medicine. It is not necessary to give other foods.
- Tell the caretaker that there are special medical nutrients and milk powder inside the RUTF, and that it is not just peanut butter. Tell her that all the nutrients are needed by the child to recover and that if the child does not take sufficient RUTF then they will not get enough of these medical nutrients. Normal food does not contain the right amounts and balance of these nutrients.
- Explain that the illness has damaged the child's intestine so that the normal family food is not sufficient for the child and may even cause some diarrhoea. Tell the mother that some common foods will delay the recovery of her child. If the child asks for other foods small

[31] The actual length of time depends upon storage conditions. If the package is kept in a closed container and protected from insects and rodents it can usually be kept for several weeks (at least until the next OTP visit); there is certainly no necessity to consume a whole sachet at one meal.

amounts can be given but she should always give the RUTF **before** other foods and at a different time from regular family meals.

- Never mix the RUTF with other foods. Most cereals and beans contain anti-nutrients and inhibitors of absorption that make the special nutrients in the RUTF that the child needs to recover unavailable for the child. If other foods are given they should be given at a separate time from the RUTF.
- Explain that the child must NEVER be force fed and should always offer plenty of clean water to drink while eating RUTF.
- Explain that the carer should have an attentive, caring attitude while feeding the baby; talk, sing and play with the child to stimulate appetite and development.

Note: For OTP programs, if there is a problem with food security or in an emergency situation a "protection" ration (usually fortified blended foods such as CSB or UNIMIX or a family ration with cereals, pulse and oil) should be given to the family both to assist this family of a malnourished child and to prevent sharing of the RUTF with other family members. The caretaker must be told that this ration is **not** for the patient but for the rest of the family only.

For patients that are being transferred to an OTP from an IPF, a transfer form needs to be filled in with the SAM-NUMBER; sufficient RUTF should be given to last until the next day of operation of the OTP site closest to the child's home. The IPF should inform the OTP site by phone when a transfer is being made.

For children that are first admitted directly into OTP, the amount of RUTF should be enough for the next visit to the OTP distribution site.

Amounts to give

The RUTF can be kept safely for several days after the package is opened provided it is protected from insects and rodents. It is also used in day-care management when RUTF is given for feeding overnight, at weekends or during staff shortages.

Table 10: Look up table of Out-patients of the amounts of RUTF to give per day and week

Class of weight (kg)	RUTF Paste		RUTF Sachets (92g)		BP100®	
	Grams per day	Grams per week	Sachet per day	Sachet per week	Bars per day	Bars per week
3.0 – 3.4	105	750	1 ¼	8	2	14
3.5 – 4.9	130	900	1 ½	10	2 ½	17 ½
5.0 – 6.9	**200**	**1400**	**2**	**15**	**4**	**28**
7.0 – 9.9	**260**	**1800**	**3**	**20**	**5**	**35**
10.0 – 14.9	400	2800	4	30	7	49
15.0 – 19.9	450	3200	5	35	9	63
20.0 – 29.9	500	3500	6	40	10	70
30.0 – 39.9	650	4500	7	50	12	84
40.0 – 60.0	700	5000	8	55	14	98

Note 1: The amount given during the first two weeks can be reduced by about 15%-20%.
Although this can complicate the OTP protocol it lessens the likelihood of a few children developing complications during the early phase of treatment (see sections on refeeding diarrhoea and "**refeeding syndrome**" as a potential hazard if a patient who has been taking far less than the requirement suddenly takes large amounts of the diet, or the mother forces the RUTF that has been dispensed into her child at the start of treatment. Sudden large increases in intake at the start of treatment are dangerous and may account for some of the deaths in the OTP program).

Note 2: This is equivalent to about 170 kcal/kg/d. On this amount the child has sufficient RUTF to gain weight at up to 14 g/kg/d. This is never achieved in outpatient programs where the rate of weight gain varies from about 2 to 10 g/kg/d, indicating a total energy intake by the child of between 110 and 150kcal/kg/d and extensive sharing within the family. Giving more RUTF encourages sharing within the family as the other members become habituated to consuming the "left-overs", it also increases the cost of the program considerably**. If stocks of RUTF are short** then the amount given could safely be reduced by about 15%-20%. It is better to give all children adequate amounts of RUTF, than excess to some and none to others. The amount dispensed should never fall below that required to maintain modest amounts of weight – a table is given in annex 9.

4 Routine Medicines

4.1 No Other nutrients should be given

The RUTF already contains all the nutrients required to treat the malnourished child (provided that the caretaker gives sufficient RUTF to the child – the need to give sufficient to the child and not to share the RUTF needs to be emphasised to the caretaker at admission to the program[32]).

- Additional potassium, magnesium or zinc should not be given to the patients. Such a "double dose", one coming from the diet and the other prescribed, is potentially toxic. In particular, additional potassium should never be given with these diets.
- For children with diarrhoea on RUTF or other therapeutic food containing zinc it is not advisable to give additional zinc as this can increase the mortality rate[33].

4.2 Systematic Antibiotics

- Give systematic antibiotics to severely malnourished patients, even if they do not have clinical signs of systemic infection. Despite the absence of clinical signs, they nearly all have **small bowel bacterial overgrowth** and have at least minor infections.

Note: The position of antibiotic administration to children who pass their appetite tests and go straight to OTP has not been determined in properly conducted trials. They probably do not have a major systemic infection; however, small bowel bacterial overgrowth occurs in ***all*** these patients (including those with moderate malnutrition, those with reasonable appetites and older children, adolescents and adults) and these bacteria should be suppressed for optimal response to treatment; asymptomatic children in OTP can also have colonisation with pathogenic organisms. However, in

[32] Large dose vitamin A and folic acid supplements are omitted on admission and additional zinc is not given because the RUTF contains generous amounts of these nutrients. This simplifies the procedure at the OTP site. It is therefore very important that the patient is actually given adequate amounts of RUTF at home and that the instructions on use are carefully explained to the caretaker and understood by the outreach workers and community volunteers.

[33] The increase in mortality is probably due to induced copper deficiency with high doses of zinc. This is not a danger with RUTF as the RUTF contains copper. The zinc tablets given for diarrhoea, however, do not contain additional copper.

many countries there is widespread resistance to amoxicillin. Where this is the case one study showed that amoxicillin could be detrimental (Malawi).

Because many children with nutritional œdema (kwashiorkor) have free iron in their blood, bacteria that are not normally invasive, such as *Staphylococcus epidermidis,* most enteric bacteria and "exotic bacteria" can cause systemic infection or septicaemia. If œdematous children are treated as outpatients they must receive routine antibiotics.

OTP treatment should only be with oral amoxicillin in areas where there is not widespread resistance to amoxicillin[34], where resistance is common a short course of metronidazole should be given at a lower dose than is normally prescribed (see annex 28). Alternatively Amoxicillin/Clavulanic acid combination could be used (the level of resistance is lower than with amoxicillin alone at the moment) – this recommendation should be reviewed periodically in light of the prevailing resistance patterns in the population being treated.

Table 11: Dosage of Amoxicillin

WEIGHT RANGE KG	**AMOXICILLIN (50 – 100 MG/KG/D) DOSAGE – TWICE PER DAY**	
	IN MG	**CAP/TAB (250MG)**
<5kg	125 mg * 2	½ cap.*2
5 – 10	250 mg * 2	1 cap * 2
10 – 20	500 mg * 2	2 cap * 2
20 - 35	750 mg * 2	3 cap * 2
> 35	1000 mg * 2	4 cap * 2

Note: Syrup can be given but check the strength per 5ml first (there are 2 strengths, 125mg and 250mg). Ampicillin is given in the same dose as amoxicillin.

- Do not give chloramphenicol to babies of less than 2 months of age and with caution in infants less than 4kg or 6 months of age[35]. Because of the danger of OTP staff giving chloramphenicol to these categories of patient, **it should not be used as routine treatment in OTP programs.**
- Do not give systematic antibiotics to children transferred to the OTP from IPF or have been transferred from another OTP after having already received a course of antibiotics.
- Do not give second line antibiotics: children who require second-line antibiotic treatment or have significant infections should be treated in IPF. Therefore there are no recommendations for "second-line" antibiotics for use in out-patient treatment programs.
- Give the first dose under supervision and tell the mother that the treatment should continue for a total of 7 days. For OTP, antibiotic syrup is preferred; if it is not available the tablets should be used and cut in half by the staff before being given to the caretakers (for children <5kg).

[34] Co-trimoxazole is not active against small bowel bacterial overgrowth and the levels of resistance reported from most countries are very high. It is inadequate for the severely malnourished child. If it is being given for prophylaxis against pneumocystis pneumonia in HIV positive patients, the other antibiotics should be given in addition to prophylactic (not curative) doses of co-trimoxazole.

[35] In these children chloramphenicol causes "grey-baby" syndrome which is a dose-dependent toxicity. It is thought to occur in this age group because of immaturity of the liver's enzyme systems. There is insufficient data on the young malnourished child to determine if their liver abnormalities also make dose-dependent chloramphenicol toxicity a danger.

4.3 Malaria

- Refer to national guidelines for asymptomatic malaria or malaria prophylaxis (except that quinine tablets should not be used in the severely malnourished).
- Refer symptomatic malarial cases for in-patient management.
- Where complicated patients refuse admission to in-patients, treat with the regimen recommended for in-patients (see section on complications).
- Give insecticide impregnated bed nets in malaria endemic regions.

4.4 De-worming

- Give de-worming for both those transferred from IPF to OTP and those admitted directly to OTP at the 4th outpatient visit at the same time as the measles vaccination. Worm medicine is only given to children that can walk.

Table 12: De-worming treatment

AGE	<1 YEAR	1 TO 2 YEARS	>= 2YEARS
Albendazole 400mg	Not given	½ tablet	1 tablet
Mebendazole 500mg	Not given	½ tablet	1 tablet

4.5 Measles

- Give measles vaccine to children over the age of 4,5[36] months if allowed by the National protocol or from 9 months if this is the current National strategy who do not have a vaccination card during their 4th visit; give a second dose to those that have been given measles vaccine as in-patients when severely malnourished.
- Do not give measles vaccine on admission to patients directly admitted to OTP, they are unlikely to be incubating measles[37] and will not be exposed to nosocomial infection.

Note: Measles vaccine on admission to OTP is thus omitted except in the presence of a measles epidemic, because the antibody response is diminished or absent in the severely malnourished. The measles vaccine is given at a time when there should be sufficient recovery for the vaccine to produce protective antibodies.

4.6 Vitamin A

- Give vitamin A once on 4th visit to all children.

  At this time there should be sufficient recovery to store the massive dose of vitamin A in the liver. There is sufficient vitamin A in the RUTF to treat sub-clinical vitamin A deficiency[38]. Do not give high doses of vitamin A routinely on admission to OTP.

[36] This has not yet been adopted by WHO and recommended to National Governments: nevertheless there is compelling evidence (see papers by P Aaby et al) that measles vaccine from 4.5months reduces the risk of death from all infectious disease including respiratory tract infections, septicaemia and diarrhoea as well as measles. The protection is improved if there are still circulating maternal antibodies, and is particularly important for girls.

[37] If they are incubating measles they are likely to fail the appetite test.

[38] Do not give vitamin A routinely to the severely malnourished on admission to the program. Studies in Senegal and DRC show that there is an increased mortality in those with œdema and increased respiratory tract infections in both œdematous and wasted children

- Do not keep any child with clinical signs of vitamin A deficiency as an outpatient; the condition of their eyes can deteriorate very rapidly and they should always be transferred for in-patient management.
- If an epidemic outbreak of measles is in progress, give to all children vitamin A.

Table 13: Vitamin A systematic treatment

AGE	VITAMIN A IU ORALLY
6 to 11 months	One blue capsule (100,000IU = 30,000µg)
12 months and more	Two blue capsules or 1 red capsule (200,000IU = 60,000µg)

4.7 Summary of the systematic treatment

Table 14: Summary table of systematic treatment

DRUGS	ROUTINE MEDICINES
Amoxicillin	1 dose at admission + treatment for 7 days at home for **new admissions only**
Albendazole/Mebendazole	1 dose on the 4th week (4th visit) – all patients
Measles vaccine (from 9 months old)	1 vaccine on the 4th week (4th visit) – all patients
Vitamin A	1 dose on the 4th week (4th visit) – all patients

Medicines for specific groups of SAM children in OTP

One dose of Folic acid (5mg) can be given to children with clinical anaemia. There is sufficient folic acid in the RUTF to treat mild folate deficiency[39]. High dose folic acid should not be given where Fansidar (SP) is used to treat malaria.

5 SURVEILLANCE

At each weekly visit,

- Measure MUAC, weight and check for œdema;
- Check whether the patient meets the criteria for Failure-to-respond to treatment;
- Take body temperature;
- Do the appetite test either routinely for all children or whenever there has been a poor weight gain;
- Ask about IMCI symptoms and examine the child;
- Give systematic treatment at the appropriate visits (if a visit is missed give at the next visit);
- DO NOT give excessive drugs to SAM patients, particularly drugs that could decrease appetite
    - Zinc should not be given to patients taking RUTF
    - Anti-emetics should not be used in OTP (they all depress the nervous system)

[39] This assumes that the patients are receiving the RUTF at home and that the extent of sharing within the family is very small. If there is doubt whether the child will receive sufficient RUTF then a dose of folic acid can be given.

- Do not give cough suppressants
- Paracetamol should only be given for documented fever and not simply with a history of fever (fever >39°C)
- Aminophylline should not be used in OTP. The severely malnourished child does not get asthma because of the inhibition of the immune system.
- Normal/high dosage metronidazole should not be given and ivermectin must be avoided in any œdematous child.

⇘ Complete the chart.

Table 15: Summary of surveillance in OPT

OUT-PATIENT	FREQUENCY
MUAC is taken	Every week
Weight and œdema	Every week
Appetite test is done	Routinely or whenever there is poor weight gain
Body temperature is measured	Every week
The IMCI clinical signs (stool, vomiting, etc.)	Every week
Height/Length is measured	At admission and if child substitution is suspected
W/H z score can be calculated	As required -Day of admission and discharge

There is sometimes "child substitution" in order for the family to continue to access services when the index child has recovered, moved away or died. Height should be measured if there is an unexpected change in weight (large increase or decrease) to check if the same child has attended the OTP site. If there has been child substitution then the "new" individual should be fully assessed.

6 CRITERIA TO MOVE FROM OTP TO IPF: "INTERNAL TRANSFER TO IN-PATIENT CARE"

6.1 Criteria of transfer from OTP to IPF

Outpatients who develop signs of a serious medical complication (pneumonia, dehydration, etc. - see table 2 in section on triage) are transferred to the IPF for management of their condition until they are fit to return to OTP.

Transfer any patient being treated in the OTP to the IPF if they develop any of the followings:

- Failure of the appetite test (see failure-to-respond procedure)
- Increase/development of œdema
- Development of refeeding diarrhoea sufficient to lead to weight loss
- Fulfilling any of the criteria of "failure to respond to treatment"
  - Weight loss for 2 consecutive weightings
  - Weight loss of more than 5% of body weight at any visit (see annex 10)
  - Static weight for 3 consecutive weightings

- Major illness or death of the main caretaker so that the substitute caretaker is incapable or unwilling to look after the malnourished patient or requests transfer to in-patient care.

6.2 Procedure for transfer

When transferred to the IPF, standard in-patient treatment should be applied; however, the routine drugs are individually prescribed depending upon whether the child has been directly transferred or has already been given treatment, the cause of the transfer and the nature of the complication.

- Write on the chart of the patient the reason for transfer
- Complete the transfer form which should contain the summary of the treatment given and the SAM-Number (See section on Monitoring and evaluation)
- Complete the transfer form with a carbon copy. Give the top copy to the patient to take to the IPF and keep a copy in the OTP with the chart
- Phone the IPF nutrition supervisor, if possible, to inform the IPF about the transfer and record it on the patient's chart: the IPF supervisor should arrange for the patient to be directly admitted to the ward and **not** processed through casualty or the emergency department. Such direct admission to the ward should be understood in the IPF's casualty department whenever a patient arrives with a transfer form from an OTP.

Note: When the patient returns to the OTP similar contact should be made to avoid losing the patient during the transfer.

7 Failure To Respond To Treatment in OTP

It is usually only when children fulfil the criteria for "failure to respond" that they need to have a full history & examination or laboratory investigations conducted. Most patients are managed entirely by less highly trained staff (adequately supervised) on a routine basis. Skilled staff (senior nurses and doctors) time and resources should be mainly directed to 1) those few children who fail to respond to the standard treatment or are seriously sick and complicated and 2) training, evaluation and supervision.

7.1 Diagnosis of failure-to-respond

Failure to respond to standard treatment can be due to social, nutritional, psychiatric or medical problems. An attempt to diagnose the difficulty should first be made by OTP staff. In particular, the IPF has less capacity to investigate social problems than OTP staff. Transfer to the IPF should not be the first response when a patient fails to respond. If inadequate social circumstances are suspected as the main cause of failure in OTP, do an appetite test, then a home visit or supervised trail of feeding at the health centre (attending daily for 3 days) before transfer to the IPF.

Table 16: Failure to respond for Out-Patients

Criteria for failure to respond	Time after admission
Failure to gain any weight (non-œdematous children)	21 days
Weight loss since admission to program (non-œdematous children)	14 days
Failure to start to lose œdema	14 days
Œdema still present	21 days
Failure of Appetite test	At any visit

Weight loss of 5% of body weight (non-œdematous children)[40]	At any visit
Weight loss for two successive visits	At any visit
Failure to start to gain weight satisfactorily after loss of œdema (kwashiorkor) or from day 14 (marasmus) onwards.	At any visit

The usual causes of failure to respond are:

PROBLEMS WITH THE OTP:

- Inappropriate selection of patients to go directly to OTP
- Poorly conducted appetite test or appetite "judged" by inexperienced personnel and not measured
- Inadequate instructions given to caretakers (especially with respect to sharing within the family)
- Wrong amounts of RUTF dispensed to children
- Excessive time between OTP distributions (e.g. two weekly gives significantly worse results than weekly visits)

PROBLEMS OF INDIVIDUAL CHILDREN – SOCIAL:

- Mother refused to go to IPF when the child required IPF investigation and treatment
- Insufficient RUTF given by caretaker
- RUTF taken by siblings or caretaker
- Sibling rivalry (food as well as RUTF taken by older children)
- All eating from the same plate (the malnourished child should always have his/her own portion of food)
- Excessive intake of other foods of poor quality from family pot or traditional weaning foods/paps
- Unwilling caretaker
- Caretaker or head of family has depression, another psychiatric condition or is sick (e.g. HIV)
- Caretaker overwhelmed with other work and responsibilities or their priorities are set an oppressive head of household (husband, mother-in-law, etc.)
- Death of caretaker or major change in family circumstances
- Purposeful discrimination against the patient
- Use of the child's illness to access relief or other services for the whole family with attempts to ensure the child remains within the program

PROBLEMS OF INDIVIDUAL CHILDREN – PSYCHOLOGICAL:

- Psychological trauma (witnessing violence or death, particularly in refugee situations and families living with HIV/AIDS)
- Psycho-social deprivation, neglect
- Rumination

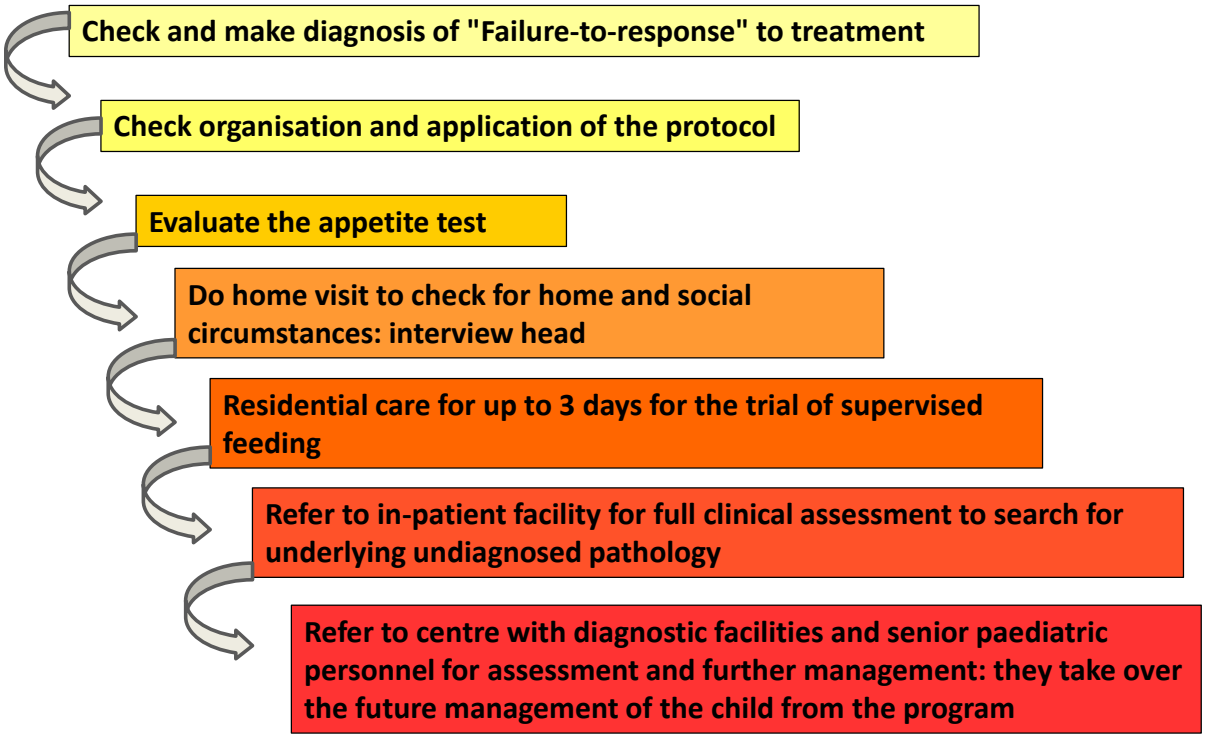
PROBLEMS OF INDIVIDUAL CHILDREN – MEDICAL:

- Initial refusal to go to IPF despite having a medical complication or an inadequate appetite
- Undiagnosed vitamin or mineral deficiency (particularly if RUTF shared excessively)
- Malabsorption, small bowel bacterial overgrowth
- Traditional medicines/ herbs being given that are toxic or affect appetite
- Inappropriately prescribed drugs

[40] See annex 10: Weight loss 5% table

- Bacterial resistance to routine antibiotics
- Infection, especially: Diarrhoea, dysentery, pneumonia, tuberculosis, urinary infection, otitis media, malaria, HIV/AIDS, schistosomiasis, leishmaniasis and hepatitis/ cirrhosis
- Other serious underlying disease, for example, congenital abnormalities (e.g. Down's syndrome, congenital heart disease), neurological damage (e.g. cerebral palsy), inborn errors of metabolism, surgical problems (pyloric stenosis, Hirsprung's disease, etc.)

7.2 Management of failure to respond to treatment



If there are no children reported to fail-to-respond,

There are always some children who fail-to-respond because of one or more of the many reasons given above. If the centre reports that there are no failures-to-respond an evaluation visit must be made to the OTP and the charts individually reviewed by the District Nutrition Officer with the supervisor to ensure that such cases are being properly identified. **These cases are the most likely to default or die.** They must not be kept for long periods in OTP (until they default, die or the staff "give up") without being identified and managed appropriately.

If there are a large number of children failing to respond,

The District Nutrition Officer reviews the OTP with the staff to ensure proper organisation of the OTP, staff attitudes, treatment given and the protocol followed correctly.

If there are some children failing to respond,

Evaluate the appetite test and carefully re-examine the child.

If the child has a good appetite when tested, but is failing to gain weight at home, then it is likely that this is a social problem. The hungry child is not getting the RUTF at home that he will eat willingly at the OTP site. The mother often sees this demonstrated and realises for the first time that there is a problem.

- Ask the outreach worker and/or the volunteer to make a home visit and see if she can identify any problem at home. It is very important that this be done in private, out of earshot of other families, and that the mother is not made to feel guilty – she often does not realise that there is a problem within the household because of her workload or with the other children taking the RUTF. The instructions need to be repeated carefully and slowly.
- Interview the head of the household (who is normally the husband, grandparent, mother-in-law etc. – this person does not normally attend the OTP) who has not directly received the advice and instructions given to the immediate caretaker who attends the OTP.
- Investigate if there are problems with intra-family distribution, plate sharing and sibling rivalry of which the mother may be quite unaware, rejection of a child, parental psychopathology or use of the child's state to access food and services for the whole family. These problems are usually not determined from either an interview with the mother at the distribution point or even during a home visit.

For social problems, management may take the form of counselling, family support, support by the neighbourhood, the village elders or volunteers or a local NGO. Pairing the mother with another "successful mother" (positive deviance programs). As a last resort, finding an alternative caretaker for the child where there are intractable social problems.

If the problem is still not determined,

- Refer the child to the IPF or residential/day care at the health centre for up to 3 days and fed under careful supervision[41].

If the child gains weight well with supervised feeding and yet fails to gain weight at home, then there is a major social problem that was not determined during the home visit.

A further interview with the whole family including the head of the household should be undertaken and the results of the "trial of feeding" discussed with the household head as well as the primary caretaker.

Psychological trauma (of the caretaker as well as the patient) is particularly hard to deal with and normally requires a change to a totally supportive safe environment, often with others that have undergone similar experiences. Frequently treatment of the mother is as important for a child's welfare as treatment of the child itself, particularly in conflict situations. Dramatic improvement is sometimes seen when mothers are given treatment such as anti-depressants. Traditional practitioners are usually skilled at dealing with psychological problems and the staff should not avoid referral to traditional practitioners in such circumstances.

If child still fails to respond with a trial of supervised feeding

- Refer to an IPF for full medical and psychological evaluation and a search for underlying pathology. Where nothing is found the patient should be further referred to a tertiary centre where there are more sophisticated diagnostic facilities and senior paediatric/medical staff.

Where an underlying medical problem is identified for failure-to-respond to treatment, the further management of the child should be in the hands of the service/facility making the diagnosis; the further management of the patient is usually under the control of the specialist and is recorded in the report as a "medical referral".

[41] When tested with the appetite test at the OTP site the child may not take the food eagerly for various reasons (often such children are overawed, intimidated or frightened). The child can take several days to relax and become sufficiently familiar with the staff to take the food readily.

It is important that children do not languish in OTP for several months, not responding, and then simply be discharged as "non-responders". Such a category of outcome should not exist in an OTP program.

Note: Each step in the investigation of failure-to-respond in OTP will involve fewer and fewer children as the problems are identified and addressed. There should be very few who require referral to senior paediatricians. Clinically, senior doctors should concentrate on these failure-to-respond children where their training and skills are best used, rather than on routine management of the malnourished who respond well to the standard protocols and can be managed by nurses and their assistants. Medical students should not be excessively exposed to such "unusual" cases during their training.

8 DISCHARGE PROCEDURE

8.1 Criteria for discharge

Discharge the patients when they reach the discharge criteria shown in the following table.

AGE	DISCHARGE CRITERIA
6 MONTHS TO 12 YEARS ***Standard OTP***	➢ **W/H or W/L** >=-1.5z score on more than one occasion if adequate arrangements for follow up have been made[42] (Two days for inpatients, two weeks for outpatients). **Or** ➢ MUAC>125mm for children[43] **And** ➢ No œdema for 14 days
Mobile team: this criterion is NOT used in health centres or other fixed OTP sites.	➢ Target weight gain reached [44] **And** ➢ No œdema for 14 days
12 to 18 years	➢ W/H>=85% NCHS **And** ➢ No œdema for 14 days
Adults	➢ MUAC>=185mm **Or** ➢ BMI≥17.5 **And** ➢ No œdema for 14 days

⇘ The "target" weight should be calculated at admission and this weight used as the discharge weight-for-height criterion. When height is re-measured repeatedly and a new "target"

[42] It is acceptable to discharge the patient if s/he reaches this criterion on one occasion if the weight gain has been steady and the weight is rechecked before discharge.

[43] It is complicated if children have to achieve multiple anthropometric criteria before discharge (X "and" Y, rather than X "or" Y). The choice of >125 mm MUAC is based upon the criteria for "normality" – the children should be returned to this range during treatment and not discharged having just reached the most severe range of MAM. This leaves the difficulty with the short (<67cm) children who do not readily reach that discharge criterion – for these children analysis of MUAC-for-Age (WHO standards) indicates that a MUAC of >115 mm is above the criteria for MAM.

[44] See annex 12: Weight gain to reach cured criteria

weight calculated, the child may not attain the discharge criteria because s/he is gaining height quite rapidly. Rapid height gain is a sign of nutritional well-being and keeping such children in the program is unnecessary and can overburden the staff and consume resources that are better spent elsewhere.

- Do not tell the mother that her child has reached the discharge weight and will be discharged after the next visit. Some children lose weight before discharge when a family wants the child to remain in the program to obtain RUTF or other benefits for the family.

All the patients should be discharged to supplementary feeding program (SFP) for follow up where this is available. Where this is not available the criteria for discharge should be conservative[45].

8.2 Recording the outcome of treatment

Register the patients discharged in the registration book and chart according to the following possibilities:

- **Cured**: the patient has reached the criteria for discharge
- **Dead**: if the patient died during treatment in the OTP or in transit to the IPF
- **Defaulter confirmed**: if the patient has not returned for 2 consecutive visits and a home visit, neighbour, village volunteer or other reliable source confirms that the patient is not dead
- **Defaulter Unconfirmed:** if the patient has not returned for 2 consecutive visits and there is no information (yet) about the outcome of the patients
- **Internal transfer**: Transfer-out to IPF (they are expected to return)
- **Internal transfer:** Transfer-out to another OTP distribution site (will not return but are still in the program)

  When a new OTP distribution site is opened closer to the patient's home, transfer the patients to that OTP (internal transfer) but the patient retains their SAM-NUMBER and is recorded in the new OTP as an internal transfer (in) and not as a new admission
- **Non-responders.** Non response at discharge should very rarely occur in OTP, although this may arise when a family/caretaker refuses to go to the IPF for diagnosis and treatment, where there are intractable social problems or where there is an underlying condition for which there is no treatment available in the IPF (e.g. many cases of cerebral palsy). Where available further management of these patients should be transferred to other agencies with expertise in the care of such cases (medical referral)
- **Wrong admission**: these admissions are not counted in the statistical returns

9 FOLLOW – UP AFTER DISCHARGE

- Ensure the follow up of patients that have been discharged from the programme by the outreach workers and village focal point/ volunteers.
- If there is a SFP, forward the patients to the SFP where nutritional support will be given for another 4 months.

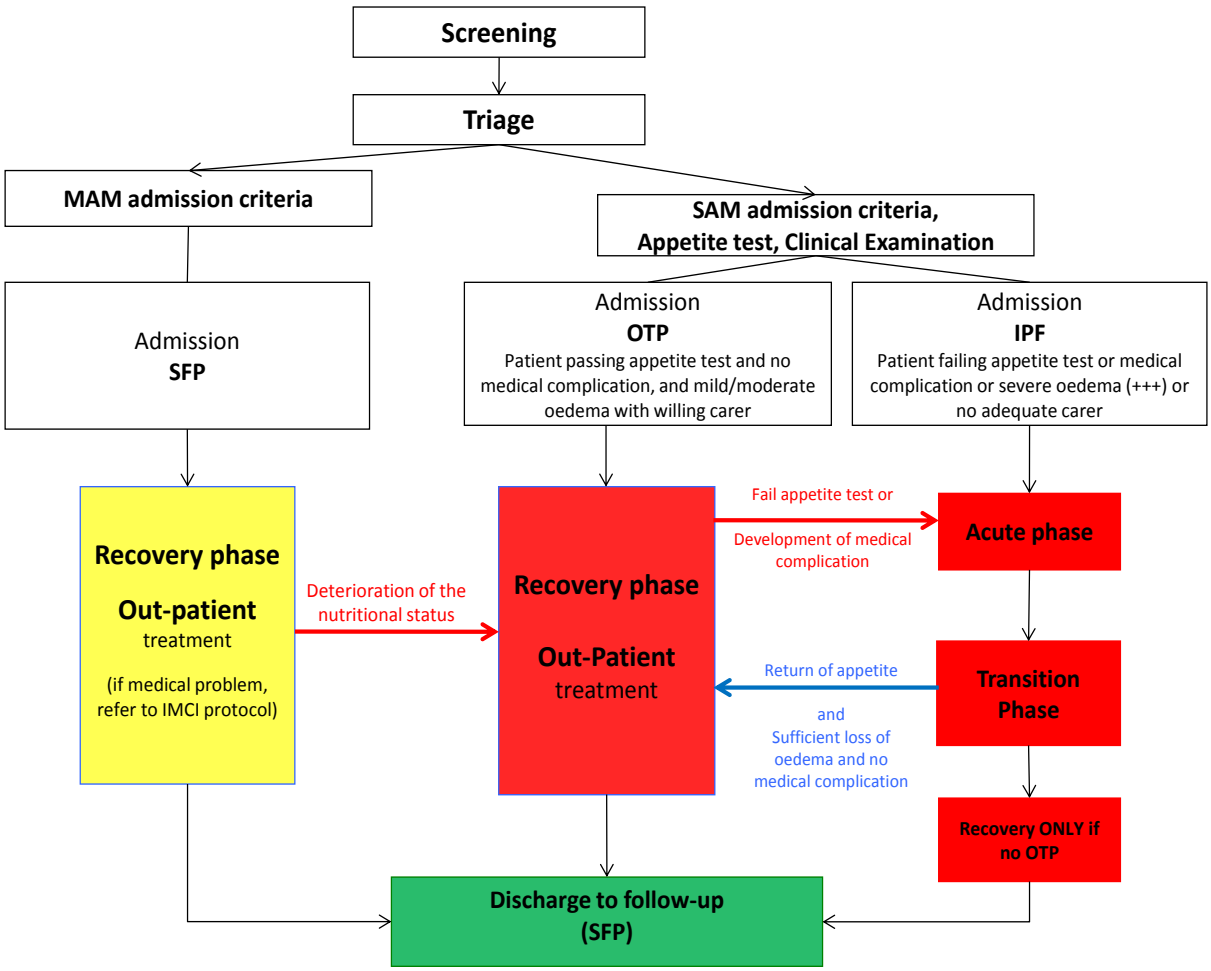
  For the first two months they attend every 15 days and then once per month for a further two months if progress is satisfactory. The ration should be the same as the standard SFP

[45] Some OTPs discharge at -2Z weight-for-height when there is a well functioning and effective SFP at the same site as the OTP (the mothers should not have to travel further). If such excellent facilities do not exist then the tables given in this protocol should always be used.

ration. There should be a separate category in the SFP registration book for these patients for their follow up. The registration book should always record the SAM N° of the patients that have been severely malnourished.

- If there are no outreach workers or village volunteers, and no SFP near to the beneficiaries' home, organise the follow-up at the nearest MCH or health centre.

Flow chart 5: Nutritional Strategy for Screening, Triage and Treatment for Acute Malnutrition



EMOTIONAL AND PHYSICAL STIMULATION

1 IMPORTANCE OF STIMULATION

As children become malnourished they gradually reduce their activity. When fully malnourished they do not play, cry, smile, complain or show normal emotions – they become lethargic and feeble. Because they do not cry when they are hungry, thirsty or distressed a busy mother thinks that her child does not need more attention than she is giving to the child; the child is unintentionally neglected. Nurses also neglect children in hospital for the same reason. Adults respond to the demands of children, if the child does not demand then it is ignored. This is one of the main reasons why these children should be treated together and separately from children with other conditions.

Because they do not play, they do not learn. With time this leads to delayed mental and behavioural development. If this is not treated it is the most serious long-term result of malnutrition. Emotional and physical stimulation through play programmes that start during rehabilitation and continue after discharge can substantially reduce the risk of permanent mental and emotional damage.

Many children have witnessed events that are very traumatic emotionally. Children of parents with HIV/AIDS for example may have seen their mother and farther become ill and die in most distressing ways. Orphans are particularly vulnerable. With serious famine they may have been discriminated against within the family by siblings and relatives. Occasionally a head-of-household may deliberately discriminate against a "junior wife" and her children or be "uncertain" about her fidelity. In emergency situations they may have witnessed extreme violence to loved ones. Such psychological trauma frequently leads to post-traumatic stress disorder and, particularly in older children, can be a major impediment to recovery. The same problems occur in the caretakers; in these circumstances they frequently need psychological or psychiatric support or medication.

2 CARE IN THE IPF AND OTP

- Create a friendly supportive atmosphere. Remember that the caretaker is the primary health provider for the child and you are simply there to provide services to her and her child; to assist and guide her in giving the best care available.
- Do not chastise the caretakers, order them about, demean them or adopt an officious attitude; never shout or become angry. Do not wear imposing uniforms (white coats).
- Pick up the unsmiling children, talk or sing to them and cuddled them. It is the child that does not make eye contact or seek attention that needs it most.
- In the OTP and the IPF, organise an educational session that teaches the mothers the importance of play and exploration as part of the emotional, physical and mental stimulation that the children need. This is an integral part of treatment.
- Organise sessions where the mothers learn to make toys suitable for their children from cheap or discarded material.
- In the IPF, keep the mother with the child and encouraged her to feed, hold, comfort and play with him as much as possible.

Toys should be available in the child's bed and room, as well as the play area. Inexpensive and safe toys made from cardboard boxes, plastic bottles, tin cans, old clothes, blocks of wood and similar

materials. They are much better than purchased toys because mothers learn to make them themselves and continue to make toys for their children after discharge.

2.1 Emotional stimulation and play

To avoid sensory deprivation,

- Do not cover the child's face. The child must be able to see and hear what is happening around him or her.
- Do not wrap or tie the child. The malnourished child needs interaction with other children during rehabilitation.
- After the first few days of treatment as the children recover, put them all on large play mats for one or two hours each day with the mothers or a play guide. There is no evidence that this increases nosocomial infections. Have the mothers tell stories, sing and play with their children.
- Teach the mothers how to make simple toys and emphasise the importance of regular play sessions at home.

Note: Most nosocomial infection comes from the staff moving from patient to patient without washing their hands, from the caretakers, from contamination of the diets and storage of feeds before they are given to the child and from inadequate facilities for washing, and the disposal of excreta. Putting children together to play does not represent an important additional danger and is often vital to their recovery.

Note: Most faecal contamination in a facility comes from the young malnourished children themselves. There is a reflex which empties the bowels about 20 minutes after eating. At this time children should be automatically put onto potties. This can also be a communal activity.

2.2 Physical activity

Physical activity itself promotes the development of essential motor skills and may also enhance growth during rehabilitation.

- For immobile children, encourage mother to do passive limb movements and splashing in a warm bath.
- For mobile children, encourage mother to do some activities as rolling or tumbling on a mattress, kicking and tossing a ball, climbing stairs, and walking uphill and down.

The duration and intensity of physical activities should increase as the child's condition improves. There should be a member of staff nominated who has overall responsibility for all these aspects of care of the malnourished.

The toys shown in the diagram below should be made and used in both the in-patient units and the homes of the malnourished children.

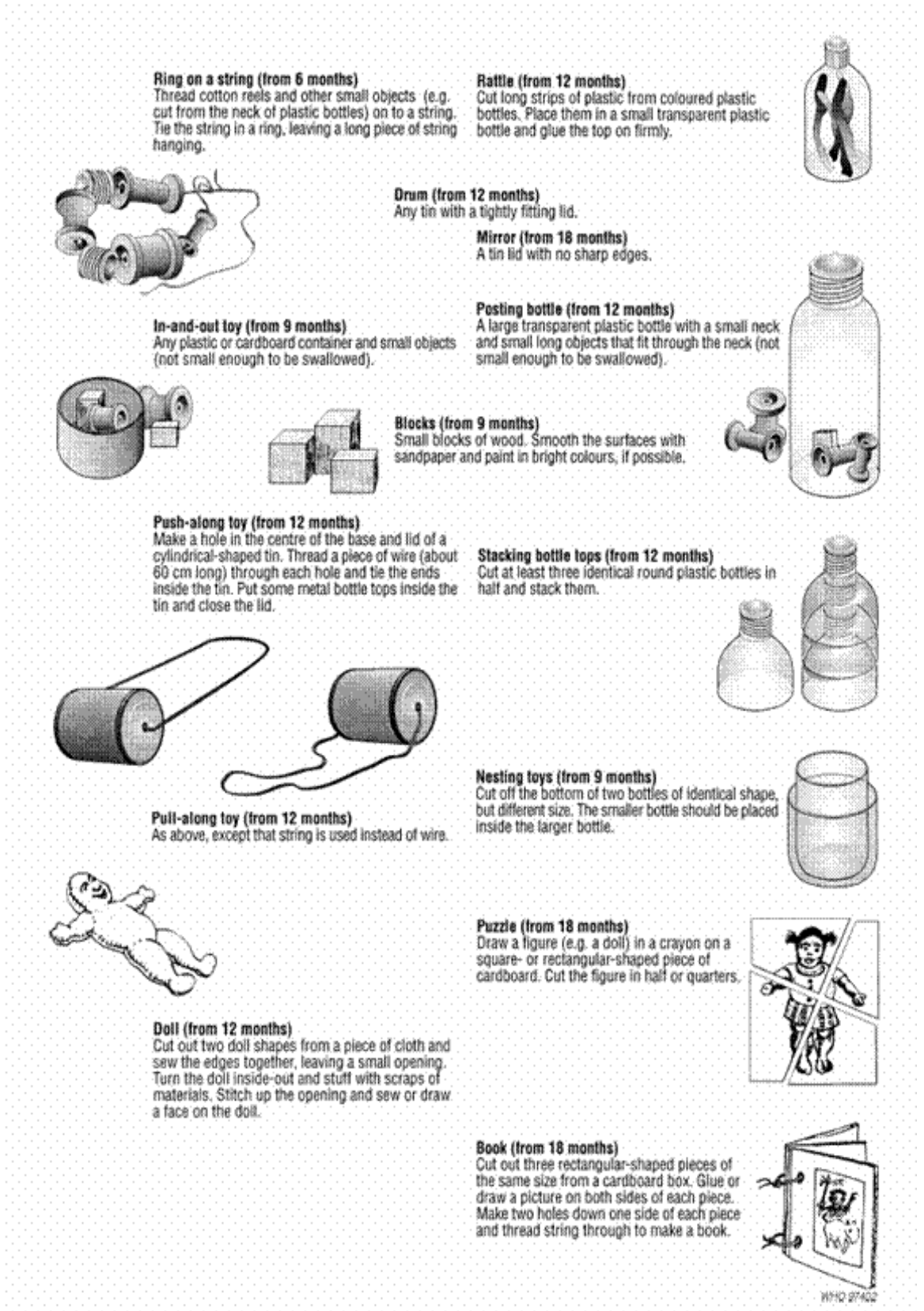


Figure 1: This diagram was supplied by Professor S. Grantham-McGregor

IN-PATIENT CARE IN IN-PATIENT-FACILITY (IPF)

1 THE PRINCIPLES OF THE MANAGEMENT OF IN-PATIENTS

- **Acute-phase or Phase 1.** Patients with an inadequate appetite and/or an acute major medical complication are initially admitted to an IPF for acute-phase treatment. The formula used during this phase (F75) promotes repair of physiological and metabolic functions and electrolyte balance. Rapid weight gain at this stage can be dangerous, that is why F75 is formulated so that patients do not gain weight.
- **Transition Phase**. A transition phase is then introduced because a sudden change to large amounts of diet, before physiological function is fully restored, can be dangerous and lead to electrolyte disequilibrium and "refeeding syndrome". During this phase the patients start to gain weight. The diet is changed to RUTF or F100 and the amount given increases the energy intake by about 30%. The increase in energy intake should give a weight gain of around 6g/kg/d; this is less than the quantity given, and rate of weight gain expected, in the recovery phase.
- **Transfer/return to OTP for the recovery phase or phase 2**. Whenever patients have a good appetite and no acute major medical complication, they are given RUTF and transferred to OTP. These formulae are designed for patients to rapidly gain weight (more than 8 g/ kg/ day). The look-up tables are scaled so that the same tables can be used to treat patients of all weights and ages.

2 STRUCTURE USED FOR IN-PATIENT CARE

2.1 The structures

The in-patients are those that have an insufficient appetite, which indicates severe metabolic malnutrition or an overt clinical complication. They require residential care. This is normally in a District hospital. In-patient care for SAM patients with complications is normally needed by around 5% to 20% of the SAM patients identified by community screening – but a higher proportion of those first coming to hospital with another illness.

In an emergency, when there are large numbers of patients requiring in-patient care, a special structure can be erected (similar to a local style house, tent, school classroom, etc.) to accommodate the additional case-load; this should be close to or within the grounds of the local hospital wherever possible.

It is highly desirable to decentralise acute-phase management (IPF) to be close to the patient's home; this decreases the problems of transport trauma, visiting and defaulting and subsequent transfer to OTP. However, such satellite IPFs should only be implemented when there is close supervision from the District Nutrition Officer/ District Medical Officer of Health, complete and satisfactory in-job training in another functioning IPF, no problem of staff turnover resulting in untrained staff in charge and close follow up.

There are different possibilities:

- IPF on a **24/24 hour** basis.

Actual treatment at night is only required for 1) very ill children 2) those that get "refeeding diarrhoea" and 3) those that have not taken food during the day. Only these patients receive a diet of 8 meals per 24 hours with full medical surveillance and treatment of complications (there needs to be adequate staff at night). The other ones can receive 6 meals per 24 hours and although resident are not given treatment overnight.

- IPF in a **24/24 hour** facility, but the patients are only actively treated during the day with no treatment being offered at night when there is a shortage of trained staff[46] – they are given 5 or 6 feeds during the day.
- IPF on a **Day Care** system (receiving 5 or 6 meals during the day).

Those from far away sleep in the facility in a separate room or a separate local structure, on beds or (preferably) mattresses on the floor.

Such treatment is called "residential day care". There is no provision of staff, surveillance or treatment during the night. Because of the absence of staff at night such residential-day-care can be used in health centres (and hospitals). 24h care is not required for many in-patients; this can be implemented in health centres (particularly those that also offer obstetric services) provided that the staff is properly trained.

Patients who live, or are hosted by family or friends, in the immediate neighbourhood of the facility can come each morning and remain in the facility during the day and then return home at night (non-residential day-care).

For all in-patients, as soon as they regain their appetites they should continue treatment as out-patients, whenever the caretaker agrees and an out-patient program is in place. In exceptional circumstances patients can remain in the IPF for the recovery phase. This applies to children that are abandoned by their families, where the home circumstances are impossible, where there is no caretaker or the caretaker is incapable of managing the patient and there is no alternative caretaker. These patients do not need to occupy acute hospital beds; they can be accommodated in a local structure attached to the IPF. They remain until a "place of safety" (other relative found, foster care, orphanage etc.) is arranged. As soon as a placement is arranged the fostering family or orphanage applies OTP treatment. Children less than 6 months have a separate protocol.

2.2 Organisation of the IPF

The Nutrition ward in the IPF only needs:

- A space to take the anthropometric measurements, examine the patients, prepare the therapeutic milk (F75), the drugs to deliver to the patients, toilet and washing facilities and provision for the caretakers to cook (and where possible food given to the caretakers), storage facility for drugs and F75/F100/RUTF.
- The patients should always be treated together in a separate room or dedicated section of the ward and NOT mixed with other patients.
- There should be impregnated mosquito nets for each bed. Adult beds or even mattresses on the floor are preferred to cots: mothers should sleep with their children to avoid hypothermia, emotional stress and interruption of breast feeding, and so that the mothers themselves get do not get exhausted, are able to make rational decisions and are less likely to default.

[46] Even major hospitals often have many staff during the day but only one overburdened and unsupervised student nurse at night. It is better to arrange treatment during the daytime only than to give good treatment for half the day and inadequate treatment during the other half of the day; this results in the patients being undertreated and sometimes falsification of the records at night.

3 ACTIVITIES

Prerequisite

All the Human resources should be trained before managing SAM patients: doctors, nurses, assistant nurses etc. The personnel of the IPF, the OPD and the emergency ward should regularly be re-trained and supervised.

Staff turnover should be minimised and only one staff member should be rotated at any one point of time; the assistants should not be redeployed.

The management of SAM patients is not taught in medical or nursing school at present. The diagnosis and treatment of complications and management of these patients are totally different from that of other patients. Thus, any new staff must be specifically trained in the management of SAM and work for a period under supervision before they are allowed to take charge, work alone or at night with these patients. Heavy rotation of staff induces higher mortality, due to the lack of understanding.

3.1 The doctor

The doctor's main duty is to support the nurse and to concentrate upon any patients that fail-to-respond to treatment or present diagnostic difficulty and the management of the complications.

In nearly all IPFs the limiting factor is staff time, particularly at night. Any simplification of the protocol that saves staff time will improve the quality of care. Doctors must be aware that each and every order that they give for special treatment to individual patients (e.g. frequent feeds, night feeds, frequent monitoring, excessive record keeping, IV infusions, IV drugs, etc.) commits staff time and makes it more likely that the overall quality of care given in the service will deteriorate.

The doctor/nurse in charge of the SAM in-patients should attend the monthly co-ordination meetings convened by the District Nutrition Officer/Focal Point of the District Health Team. There has to be trust and easy communication between those running the IPF and the OTPs.

3.2 The nurse

For a new admission

- Applies the procedure of triage and admits the SAM patients with complications to the IPF and transfers those with a good appetite and without medical complications directly to the OTP.

For an internal transfer

From OTP

- Register the patient using his/her SAM N° given by the OTP (if the SAM patient is referred by other health facilities or the ER, the SAM-number is given by the facility). The details are entered into the registration book and Multi-chart (see annex 7); the transfer form should be attached to the Multi-chart (see section on admission, evaluation and monitoring).
- Ask the doctor in charge to examine the patient when s/he is available but do not wait before starting treatment according to the protocol.
- Give a phone call to the OTP transferring the patient to inform them of arrival and discuss any details that are not recorded on the transfer from.
- Start treatment of the acute-phase **and** treat the complications according to the protocol.

To OTP

- As soon as possible, move to Transition phase and prepare for transfer to the OTP.

In general,

- Teach and supervise the assistants to ensure that they are performing their functions correctly and accurately.
- The nurse also needs to give or supervise any intravenous or unusual treatment and monitor all critical care patients.

3.3 Assistant Nurses

The assistants do most of the actual "nursing". They have to:

- Weigh and measure patients according to the protocol
- Mix and dispense feed, and give the oral drugs
- Assess the clinical signs and record the results all the routine information on the Multichart (the caretakers must never be given the task of reconstituting the F75).

3.4 District Nutrition Focal Point (DNPF)/ District Nutrition Officer (DNO)

- The supervision of the IPF must include a visit to the emergency department and an assessment of the procedures used in the emergency department to identify, treat and transfer SAM patients to the staff of the IPF area specifically designated to treat SAM patients.
- With the doctor in charge of the nutrition ward in the IPF, the DNO should regularly assess the management of the SAM patients with complications.

4 TOOLS AND MATERIALS

4.1 Records

- **The registration book** (annex 6). A separate register is kept for malnourished patients. It contains all the information necessary to complete the monthly and other reports.
- **The Multi-chart** (annex 13) is the primary tool used for in-patient treatment of malnourished patients. Other charts should not be used. All the staff use the same multi-chart to record all the information needed to manage the malnourished patient – separate charts are not used by different categories of staff. All records should be taken in the language of the assistant and not in the language of the senior staff or an international language to avoid any misunderstanding of instructions.
- The Critical-Care chart (annex 14), is used for patients with complications who require more intensive monitoring during the acute treatment of the complication (shock, dehydration, hypothermia, etc.)

4.2 Diet

Pre-packaged F75, F100 and RUTF, cups, mixer, drinking water, sugar, ReSoMal, measuring jugs.

If the pre-packaged F75 and F100 are not available alternative recipes for making these diets are given in annex 26. The pre-packaged commercial F75 is preferred because it has a lower osmolarity and passes through an NG tube[47].

4.3 Drugs

Routine medicine (amoxicillin, gentamicin, anti-helminthic, anti-malarials, measles vaccine) and specific drugs for the complications (vitamin A, folic acid, anti-fungal, second and third line antibiotics, frusemide, glucose, magnesium sulphate injection, etc. – see section on complications).

4.4 Other materials

- MUAC tapes, length board, scale with 100g precision, a scale with 10g -20g precision for children and infants less than 8kg.
- A second set of MUAC tapes, length board, scales and look-up charts for the OPD/Emergency ward.
- Naso-gastric tube for children (Ch5-8)
- Laminated look-up charts for weight-for-height, BMI, feed volumes to dispense
- Wall charts for triage, standard treatment, management of common complications to be placed in the IPF and the Emergency Wards[48]
- Examination tools (stethoscope, otoscope etc), thermometers, calculator
- Multi-charts, Critical care charts, transfer forms, registration book, monthly reports
- Clean water and soap
- Toys for the children
- A list of the OTP sites, the name and phone numbers of the persons in charge and the days and hours that the OTPs operate should be in the IPF. The list should also have an indication of the travelling times and distance (and cost) for transport
- Copies of the protocol
- Flip charts and lesson plans for education sessions
- Adult beds, blankets, mosquito nets, maximum-minimum wall thermometer (to determine the environmental temperatures during the day and night), washing materials, shower, toilets, cleaning material and a place for mothers to cook and eat

5 Admission

The nurse or assistant nurse **registers** the patients **directly** to the IPF's Nutrition Ward. The patients should **NOT** be treated in an emergency ward for the first 24-48 hours. This is **ONLY to be allowed**, if the staff of the emergency ward has had specific training in the management of the complications seen in SAM patients and know that the clinical signs and treatment differ from that used for normally nourished children.

The rapid staff turnover, high workload and relatively junior staff in emergency wards are such that this is the main place where misdiagnosis, mistreatment and iatrogenic death take place. No treatment should normally be given in the emergency department.

[47] The "home made" F75 contains cereal powder which makes the formula difficult to give by NG-tube, if the cereal is replaced by sugar then the formula becomes hyperosmolar and provokes diarrhoea. The commercial F75 has dextromaltose instead of sugar, has a lower osmolarity and is much less likely to cause refeeding osmotic diarrhoea.

[48] It is insufficient to simply have a copy of the protocol in the IPF. With staff turnover, such documents "disappear", and it is rarely read completely, but acts as a "reference" document – wall charts give immediate aids to memory.

There are several ways, in which patients with SAM can present for in-patient care:

New admissions

Patients who come spontaneously to the hospital/IPF because of another illness (such as diarrhoea, pneumonia, malaria, etc.) and are found to be severely malnourished on screening or clinical examination (See the triage procedure).

Referral

- Patients referred by a non-OTP health centre or private practitioner because they fulfil the criteria of SAM.
- Malnourished Infants less than 6 months old (see section Infant less than 6 months with a caretaker).
- These children are NEW admissions; they will be registered with a SAM-number (that they will keep throughout SAM treatment).

Internal transfer from OTP

- These Patients have already been diagnosed, or are under treatment, in the OTP, but have failed their appetite test, have a complication or failed-to-respond to treatment and fulfil the criteria to be transferred to IPF. They already have a SAM-number and a transfer-form giving all the information on the treatment already given in OTP.
- These are NOT new admissions to the program but "Internal Transfers" within the IMAM program.
- A copy of the transfer form (and a phone call) should have been sent with the patient – the transfer form is attached to the multichart and the patient registered.
- Re-measure the weight, height, MUAC and check for œdema. Take a brief history concentrating on the complaints, symptoms and signs. Examine the child clinically and assess any complications.
- All patients should have something to drink (F75, water or sugar-water) and/or eat (RUTF for the appetite test) shortly after they come to the IPF.
- Do NOT wash or bathe malnourished patients on admission.
- Refer to the nurse or doctor in charge of the IPF.

Table 17: Summary of Criteria for admission to in-patient care

FACTOR	IN-PATIENT CARE
CHOICE OF CARETAKER (AT ANY STAGE OF MANAGEMENT – THE CARETAKER IS OFTEN THE BEST JUDGE OF SEVERITY)	Caretaker chooses to start, continue or transfer to in-patient treatment. The caretaker's wishes must be respected
APPETITE	Failed or equivocal Appetite test
ŒDEMA	Bilateral pitting œdema (Grade 3 +++ – see triage section) Both Marasmus and kwashiorkor (W/H<-3z score and œdema)
SKIN	Open skin lesions
MEDICAL COMPLICATIONS (SEE SECTION ON TRIAGE)	Any severe illness, using the IMCI criteria – respiratory tract infection, severe anaemia, dehydration, fever, lethargy, etc.

CANDIDIASIS	Presence of candidiasis or other signs of severe immune-incompetence
CARETAKER	No suitable or willing caretaker

In some countries grade + and ++ should also be admitted to an in-patient facility. The risk of death and severity of malnutrition varies greatly from region to region by grade of œdema.

6 ACUTE PHASE (PHASE 1)

Patients that require in-patient care generally have a poor appetite and usually have a complication such as diarrhoea, dehydration, sepsis, pneumonia, severe anaemia, etc. Thus, the patients will often require treatment for both the complication and the malnutrition.

The management of acute or life threatening complications take precedence over routine care and may change the way in which the routine care is given; the routine care and complications sections should be read in conjunction with each other.

6.1 Diet (F75)

The diet used in the acute-phase of treatment is F75. F75 is NOT a dilute form of F100; it has a completely different nutrient composition and balance. It is designed for patients with severe complicated malnutrition who have impaired liver and kidney function with infection. Patients should NOT gain weight on F75. The diet allows their biochemical, physiological and immunological function to start to recover before they have the additional stress of making new tissues.

6.1.1 Activities

- Half an hour before the scheduled time for giving the feed, ask the mothers to breast-feed their children;
- Calculate the total quantity of F75 to prepare according to the number of patients, their weight and the number of feeds (refer to table 11);
- Prepare the quantity of water and F75 for the feeds (see paragraph “preparation”);
- Ask the mother to wash their own and their children’s hands;
- Give five or six feeds per day for most children (make out a time schedule and post it on the wall).

Note: Experience in the centre will show whether the children tolerate the slightly larger volumes when 5 daily feeds are given. If refeeding diarrhoea is uncommon then 5 daily feeds should be used; if refeeding diarrhoea poses a problem then the IPF should use 6 feeds per day. Only ONE routine schedule should be used in an in-patient facility.

- Give eight (or more) feeds per day over 24h (night as well as daytime) for the few children who cannot tolerate the increased volumes when 5 or 6 feeds, quite closely spaced during the day, are given; this includes:
  - those that are very severely ill,
  - develop re-feeding diarrhoea on the routine schedule,
  - have had very little during the day (e.g. new arrivals),
  - have vomited some or all of their feeds during the day,
  - have had an episode of hypoglycaemia,
  - have had hypothermia,
  - where there are sufficient staff to prepare and distribute the feeds at night (unusual).

6.1.2 Preparation

Add either one large packet of F75 (410g) to 2 liters of water or one small packet of F75 (102.5g) to 500 ml of water. Where small numbers of children are being treated as in-patients, do not order the large packets of F75[49]. These are for use in emergency settings with large numbers of SAM patients. If F75 is not available use one of the recipes given in the annex 26.

6.1.3 Amounts to give

Give the amounts in the table below to each patient.

Table 18: Amounts of F75 to give during Acute-phase (or Phase 1)

CLASS OF WEIGHT (KG)	8 FEEDS PER DAY ML FOR EACH FEED	**6 FEEDS PER DAY ML FOR EACH FEED**	5 FEEDS PER DAY ML FOR EACH FEED
2.0 to 2.1 kg	40 ml per feed	**50 ml per feed**	65 ml per feed
2.2 – 2.4	45	**60**	70
2.5 – 2.7	50	**65**	75
2.8 – 2.9	55	**70**	80
3.0 – 3.4	60	**75**	85
3.5 – 3.9	65	**80**	95
4.0 – 4.4	70	**85**	110
4.5 – 4.9	80	**95**	120
5.0 – 5.4	90	**110**	130
5.5 – 5.9	100	**120**	150
6.0 – 6.9	110	**140**	175
7.0 – 7.9	125	**160**	200
8.0 – 8.9	140	**180**	225
9.0 – 9.9	155	**190**	250
10 – 10.9	170	**200**	275
11 – 11.9	190	**230**	275
12 – 12.9	205	**250**	300
13 – 13.9	230	**275**	350
14 – 14.9	250	**290**	375
15 – 19.9	260	**300**	400
20 – 24.9	290	**320**	450
25 – 29.9	300	**350**	450
30 – 39.9	320	**370**	500
40 – 60	350	**400**	500

NOTE: Patients on F75 are NOT expected to gain weight.

[49] The amount of powder in the red-scoop "Nutriset" varies with the degree to which the powder is compressed into the scoop – if there is moderate compression then one scoop should be added to 21ml of water: if the powder is uncompressed then one scoop should be added to 18ml of water. The red scoop "Nutriset" comes with the box of F75 packets. Do not use any other scoop, or spoon or other measures as this can lead to either an over-concentrated diet (vomiting, osmotic diarrhoea, hypernatraemic dehydration, etc.), or over-dilute diet (failure to recover, deterioration).

6.1.4 Naso-gastric feeding[50]

Naso-gastric tube (NGT) feeding is used when a patient is not taking sufficient diet by mouth. This is defined as an intake of less than 75% of the prescribed diet (for children about 75 Kcal/ kg/ day).

The reasons for use of an NG tube are:

- Taking less than 75% of prescribed diet per 24 hours
- Pneumonia with a rapid respiration rate
- Painful lesions of the mouth
- Cleft palate or other physical deformity
- Disturbances of consciousness

Every day, try patiently to give the F75 by mouth before using the NGT. The use of the NGT should not normally exceed 3 days and should only be used in the Acute-phase.

6.1.5 Feeding technique

- The muscle weakness, slow swallowing and poor peristalsis of these children makes aspiration pneumonia very common.
- Tell the mother to put the child on the mother's lap against her chest, with one arm behind her back. The mother's arm encircles the child and holds a saucer under the child's chin. The child should be sitting straight (vertical).
- Give the F75 in a cup, any dribbles that fall into the saucer are returned to the cup.
- Tell the mother not to force fed the child and never to pinch his/her nose, squeeze the cheeks to force the mouth open or lie back and have the milk poured into the mouth.
- If a child "splutters" or coughs during feeding, tell the mother that it is probably due to incorrect feeding-technique. Re-train the mother. It is better for the child not to finish the feed and have an NGT inserted than to develop aspiration pneumonia.

- Meal times should be sociable.
- Make the mothers should sit together in a semi-circle around an assistant.
- Encourage the mothers, talk to them, correct any faulty feeding technique and observe how the child takes the milk.

Remark: In many hospital wards the mothers feed the children on their beds individually. Often the F75 is "secreted" under the bed and "kept" by the mother for later feeding if the child does not finish the feed. This can lead to bacterial growth in the F75 and underestimation of the amount taken by the child. It is better to have a "feeding" area where all the children and mothers are brought together. The children can encourage each other.

The meals of the caretakers should **never** be taken beside the patient. It is almost impossible to stop the child demanding some of the mother's meal. **Sharing the mother's meal with the child can be dangerous** as the mother's meal usually has salt or condiment added in sufficient amounts to provoke fluid retention and heart failure in the malnourished child. Furthermore, the mother's diet

[50] See annex 15: how to insert a Naso Gastric Tube (NGT)

does not contain the correct balance of nutrients to treat metabolic malnutrition and will disturb the child's appetite for the F75. The only food apart from F75 that the child should receive is breast milk.

6.2 Routine medicines

6.2.1 Systematic Antibiotics

Antibiotics should be given to every severely malnourished in-patient, even if they do not have clinical signs of systemic infection. Despite the absence of clinical signs, they are all infected; these infections are treated blindly. This is NOT prophylaxis.[51]

The antibiotic regimen (see annex 28 for dosage information)

- First line treatment for patients without apparent signs of infection:
  - give oral Amoxicillin/ampicillin[52], if it is known that there is not a high level of amoxicillin resistance in the region

    OR where there is amoxicillin resistance
  - give a daily IM injection of cefotaxime[53], [54] for two days (50mg/kg)
  - or give amoxicillin-clavulanic acid combination
  - and/or suppress small-bowel overgrowth with metronidazole (10mg/kg/d)

- Second line treatment[55] [56] for patients with any apparent signs of systemic infection:
  - **add** gentamicin IM (do not stop first line antibiotics) during the acute phase

    OR
  - **change** to cefotaxime (50mg/kg) IM injection plus ciprofloxacin orally (30 mg/kg/d in three doses per day) – continue as long as the patient has any signs of infection.
  - If suspicion of Staphylococcus infection **add** cloxacillin [57] (100 – 200 mg/kg/d Dosage 3 times daily)

- Third line: individual medical decision

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[51] See note on antibiotics and small bowel overgrowth in the out-patients section

[52] Amoxicillin is active against small bowel bacterial overgrowth in most patients. Where this is used as the first line antibiotic, metronidazole need not to be given – if metronidazole is used it is important to give a dose of 10mg/kg/d and not the normal dose given to well-nourished children (which is 3 times as high).

[53] Ceftriaxone is an acceptable alternative. However, ceftriaxone must not be given through the same IV set as Ringer-lactate or any calcium containing compound. The diluent for Ceftriaxone for IM injection contains lidocaine. Once reconstituted with this diluent, the solution can only be used in IM, never use the IV route due to risk of a reaction to the lidocaine. If water for injection is used as diluent, ceftriaxone should be given slowly IV; without lidocaine IM injection is extremely painful.

[54] There is quite rapid colonisation of the intestine with organisms resistant to cefotaxime/ceftriaxone. In order to reduce nosocomial spread of resistant organisms it is often recommended that oral ciprofloxacin should normally be given along with cefotaxime.

[55] There is increasing resistance to Amoxicillin, for ill children with suspected gram negative septicaemia so that for the child with severe sepsis cefotaxime and ciprofloxacin are more reliable (for example. sensitivity in Kenya is: Amoxicillin 28%, cefotaxime 95% and ciprofloxacin 99%) However, these latter drugs are substantially more expensive and should be reserved for children with obvious sepsis.

[56] Chloramphenicol is occasionally used where there is no suitable alternative. Chloramphenicol dose must be reduced to half that used for normally nourished children 25mg/kg/d (twice daily) –see appendix 28 for doses. Chloramphenicol should never be used in babies less than 3 months of age and with extreme caution in infants less than 6 months of age or less than 4kg.

[57] Cloxacillin can be substituted by another anti-staphylococcal antibiotic such as oxacillin, flucloxacillin, or dicloxacillin

- Anti-fungal treatment
  - Nystatin 100,000 UI orally 4 times daily is added for patients with oral candidiasis and routinely for all patients in areas with a high prevalence of candidiasis (>20%) or HIV.
  - Patients with signs of severe sepsis or systemic candidiasis should be treated with fluconazole (3mg/kg once daily) although it has been associated with mild hepatic damage.

Note: Co-trimoxazole is not active against small bowel bacterial overgrowth. It is inadequate for the severely malnourished patient. If it is being given for prophylaxis against pneumocystis pneumonia in HIV positive patients, the other antibiotics should be given in addition to prophylactic (not curative) doses of co-trimoxazole.

Table 19: Dosage of Gentamicin, Amoxicillin

Weight range	Gentamicin[58] Dosage **once** per day	Amoxicillin (50 – 100 mg/kg/d) Dosage – **twice** per day	
Kg	mg	mg	Cap/tab
<5kg	5 mg/kg give once daily IM	125 mg * 2	½ cap.*2
5 – 10		250 mg * 2	1 cap * 2
10 – 20		500 mg * 2	2 cap * 2
20 - 35		750 mg * 2	3 cap * 2
> 35		1000 mg * 2	4 cap * 2

The 20mg ampoule (10mg/ml) of gentamicin should be used. It is very difficult to measure small volumes with the adult (stronger) gentamicin solutions
When metronidazole is used for suppression of small bowel overgrowth in the severely malnourished complicated patient and all patients with kwashiorkor the dose must not exceed 10mg/kg/d.

Duration of antibiotic treatment

For in-patients, either give antibiotics continuously until transferred to OTP or every day during the Acute-phase + four more days.

Administration of antibiotics

- Wherever possible antibiotics should be given orally or by NG tube (see annex 16).
- In cases with complications due very severe infection such as septic shock, parenteral antibiotics should be used.
- Infusions containing antibiotics should not be used because of the danger of inducing heart failure. Indwelling cannula should rarely be used – and only in very ill children, not routinely. Every effort should be taken to keep the cannula sterile.

[58] Gentamicin elimination is prolonged in malnutrition so that once daily administration of 5mg/kg gives adequate blood levels. In view of the renal toxicity of gentamicin it is suggested that this dose is not exceeded.

6.2.2 Malaria

Although the National protocol should be followed for asymptomatic malaria in OTP, cases with symptomatic malaria are admitted to IPF.

- For uncomplicated malaria, give Coartem (artemether-lumefantrine) as first line treatment using a 6 dose regimen (at 0 and 8 hours then twice daily on each of the following 2 days).
- For complicated malaria (e.g. cerebral malaria)
  - For children without diarrhoea, give high dose artemether or artesunate suppositories; If the suppository is expelled within two hours, repeat the dose.
  - For those with diarrhoea, disturbance of consciousness or where suppositories are not available, give IM artesunate or IV artemether.
  - Once responding change to oral Coartem to complete the full course[59]

NOTE: Some of the drugs used in treating malaria are potentially more toxic in the malnourished than in well-nourished patients and should be avoided if possible. Combinations containing amodiaquine should be avoided in the SAM children until their safety is confirmed in this group of children.

- Do NOT give oral or intravenous infusions of quinine to SAM patients for at least the first two weeks of treatment. In severely malnourished patients quinine often induces prolonged and dangerous hypotension, hypoglycaemia, arrhythmia and cardiac arrest. There is only a small difference between the therapeutic dose and the toxic dose.

Mosquito-nets should be on all the beds in the IPF.

6.2.3 Measles

Give all children from 4.5[60] months, without a vaccination card, measles vaccine on admission (and a second dose at week 4 as an outpatient in OTP – young children should also get a further dose at 9 months according to the national protocol). Do not give DPT vaccine to these children, even if they have not been vaccinated with DPT before.

6.3 Medicines given under specific circumstances only

- Vitamin A

There is sufficient vitamin A in F75, F100 and RUTF to correct mild vitamin A deficiency; high doses of vitamin A are not required in the child without clinical signs of deficiency and may be dangerous

Give high doses of vitamin A only under the following circumstances:

- Where the child has any clinical signs of vitamin A deficiency (including any eye infection).
- In children over 9 months, where there is an active measles epidemic and the child has not been vaccinated against measles.

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[59] Artemether or artesunate monotherapy should only be used to initiate treatment – it is important to continue with a full course of combination treatment to complete treatment and prevent resistance as soon as the patient can take drugs orally.

[60] This has not yet been adopted by WHO and recommended to National Governments: nevertheless there is compelling evidence (see papers by P Aaby et al) that measles vaccine from 4.5months reduces the risk of death from all infectious disease including respiratory tract infections, septicaemia and diarrhoea as well as measles. The protection is improved if there are still circulating maternal antibodies, and is particularly important for girls. DPT in this situation appears to increase **all cause** mortality and should wherever possible be followed by a live vaccine (measles, BCG etc) as a non-specific stimulus of the immune system.

- Folic acid

There is sufficient folic acid in F75, F100 and RUTF to treat mild folate deficiency.
If clinical anaemia, give a single dose of folic acid (5mg) on the day of admission.

- Antihelminthics

Delay the treatment of antihelminthics until the patient is admitted to OTP.

- Other nutrients

The F75 (and F100, F100 diluted, RUTF) already contains all the nutrients required to treat the SAM patient.

Table 20: Summary table of systematic treatment of patients

SYSTEMATIC TREATMENT	DIRECT ADMISSION ONLY TO IN-PATIENT (ACUTE-PHASE- IPF)
Antibiotics	Every day in Acute-phase + 4 more days in Transition or until transfer to OTP
Malaria	Coartem (artemether-lumefantrine)
Measles vaccine (from 9 months)	1 vaccine at admission if no card (second will be given in OTP)

6.4 Surveillance recorded on the IPF multichart

- Weight (annex 1) is measured, entered and plotted on the multi-chart each day;
- The degree of œdema (0 to +++) is assessed each day;
- Body temperature is measured twice per day;
- The standard clinical signs (stool, vomiting, dehydration, cough, respiration and liver size) are assessed and noted in multi-chart each day;
- MUAC is taken each week;
- A record is taken (on the intake part of the multi-chart) if the patient is absent, vomits or refuses a feed, and whether the patient is fed by Naso-Gastric Tube (NGT) or is given an IV infusion or transfusion. There are appropriate places for these to be recorded each day.

ALL these observations are normally taken by a trained assistant and not by the nurse herself. The nurse's job is to teach and supervise the assistants and to check the multi-charts to ensure that the clinical data are accurate. If she finds inaccuracies she should patiently retrain the assistants to be her "eyes and ears" within the facility; the assistants must not be chastised or humiliated because of previous shortcomings of the training and supervision given by herself or her predecessor. Failure to take a record is usually due to shortage of staff time; it is better to have no record at all than for junior staff to insert data that has not actually been taken because they fear criticism. Assistants must be clear that they will not be criticised for failing to take a measurement on time when there are inadequate staff.

6.5 Criteria to Progress From Acute-Phase To Transition Phase

There is no "fixed" time that a child should remain in the acute phase – individual children differ. It is expected that the most severely ill children will remain in the acute phase for longer than average and the less severely complicated cases and those that respond readily to treatment a shorter time.

- Transfer a patient from Acute-phase to Transition Phase when all the following are present:
  - Return of appetite

    and
  - Beginning of loss of œdema (Normally judged by an appropriate and proportionate weight loss as the œdema starts to subside)

    and
  - The patient appears to be clinically recovering

Patients with gross œdema (+++) should wait in Acute-phase at least until their œdema has reduced to moderate (++) œdema. These patients are particularly vulnerable.

7 Treatment of Complications

When a patient develops a complication, **always** transfer him/her to Acute-phase for treatment (in-patients are transferred back to acute-phase if they are in transition phase; out-patients are referred to the IPF if suitable transport is available and the in-patient facility is within a reasonable distance of the OTP site, otherwise where feasible, attempts to start phase 1 and treat the complications should be started before transport in consultation by phone with the IPF).

7.1 Dehydration

7.1.1 In the marasmic patient

Misdiagnosis and inappropriate treatment for dehydration is the commonest cause of death in the malnourished patient. Rehydration fluids are never given "routinely" to malnourished patients.

With severe malnutrition the "therapeutic window" is narrow, so that even dehydrated children can quickly go from having a depleted circulation to over-hydration with fluid overload and cardiac failure. IV infusions are rarely used. In malnutrition (both marasmus and, to a greater extent, kwashiorkor) there is a particular renal problem that makes the children sensitive to salt (sodium) overload.

- Do NOT use the standard protocol for the well-nourished dehydrated child
- Do NOT make a bucket of ORS or ReSoMal freely available for the caretakers to give to their SAM children whenever they have a loose stool. This leads directly to heart failure, as well as failure to lose œdema, re-feeding œdema, and failure to report and record significant problems.
- Do NOT treat if there is no dehydration, diarrhoea is not treated with rehydration fluids to "prevent" the onset of dehydration in SAM children[61]. This again leads to over-hydration and heart failure.

Once excess sodium has been given, it is very difficult to get the sodium back out of the child.

Diagnosis

The diagnosis of dehydration in marasmus is not easy. Even very experienced paediatricians frequently make mistakes. For this reason, one should always be prepared to revise the diagnosis.

- Do NOT use the classical signs of dehydration, they are unreliable.

[61] If there is diarrhoea 30ml (not more) of ReSomal can be given for each watery stool

Thus, marasmic skin normally lies in folds and is inelastic so that the "skin pinch" test is usually positive whether or not the child is dehydrated.

- Do NOT use the skin pinch test to diagnose dehydration in severely malnourished children.

Marasmic eyes are normally sunken without there being any dehydration.

- Do NOT diagnose dehydration in malnourished patients because they have sunken eyes.

Incorrect and over-diagnosis of dehydration is very common and treatment given inappropriately. The consequences of over-hydration are very much more serious than slight dehydration. On the other hand truly dehydrated children must be appropriately rehydrated if they are to survive.

- Do NOT make a definitive diagnosis of dehydration
- If you think the child is dehydrated, then make a *provisional* diagnosis and observe the response to treatment before confirming the diagnosis.

The main diagnosis comes from the HISTORY rather than from the examination.

There needs to be:

- A definite history of significant recent fluid loss - usually diarrhoea which is clearly like water (not just soft or mucus) and frequent with a sudden onset within the past few hours or days.
- There should also be a HISTORY of a recent CHANGE in the child's appearance.
- If the eyes are sunken then the mother must say that the eyes have changed to become sunken since the diarrhoea started.
- Absence of visible "full" superficial veins (look at the head, neck and limbs).
- The child must not have any œdema.

7.1.2 Diagnosis of shock from dehydration

- When there is definite dehydration from both the history and examination and
- a weak or absent radial or femoral pulse **and**
- cool or cold hands and feet and
- poor capillary refill in the nail beds (more than 3 seconds)

Then, the patient is in shock.

When in addition to the above signs there is also:

- decrease in level of consciousness so that the patient is semi-conscious or cannot be roused

Then this is severe shock.

There are other causes of the signs of shock in the severely malnourished child.

In particular, 1) toxic shock, 2) septic shock, 3) liver failure and 4) cardiogenic shock.

Treatment of cardiogenic shock or liver failure as if the patient has shock due to dehydration is very dangerous and the treatment itself may then lead to death; on the other hand, failure to treat dehydration because the clinician thinks that the shock is due to some other cause also leads to death.

7.1.3 Treatment

Whenever possible, a dehydrated patient with severe malnutrition should be re-hydrated orally. Intra-venous infusions are dangerous and not recommended unless there is a) severe shock and b) diminution of consciousness from c) confirmed dehydration.

The management is based upon accurate measurements of weight – this is the best measurement of fluid balance. The weight should be taken on an infant scale or, for older children (more than 8 kg) a hanging scale to which a basin is attached with ropes. The basin hangs close to the ground and is easily cleaned (see picture in annex 1). The patients should be weighed naked. Hanging pants, used for surveys should not be used to weigh sick children or those likely to soil the pants and pass infection to the next child.

BEFORE starting any rehydration treatment:

- WEIGH the child
- MARK the edge of the liver and the costal margin on the skin with an indelible marker pen
- RECORD the respiration rate

In addition the following can be recorded if the staff has the necessary skill

- RECORD the pulse rate
- RECORD the capillary refill time (of the nail bed) in seconds.
- RECORD the heart sounds (presence or absence of gallop rhythm)

The malnourished child is managed entirely by

- Weight changes and
- Clinical signs of improvement and
- Clinical signs of over-hydration

FLUID BALANCE is measured at intervals by WEIGHING the patient.

- Give the re-hydration fluid “ReSoMal” until the weight deficit (measured or estimated) is corrected
- Stop as soon as the child is “re-hydrated” to the target rehydrated-weight
- Additional fluid is not given to the malnourished child with a normal circulatory volume to “prevent” recurrence of dehydration
- Normally much less ReSoMal is sufficient to restore adequate hydration in malnourished than normally nourished children (e.g. a total of 50ml per kg body weight = 5% body weight)
- Start with 10ml/kg/h for the first two hours orally or by naso-gastric tube (2% body weight), and then adjust according to the weight changes observed. Weigh the child each hour and assess his/her liver size, respiration rate, capillary refill time and pulse

After rehydration usually no further treatment is given; however, for malnourished children from 6 to 24 months, 30ml of ReSoMal **can** be given for each watery stool that is lost. The standard instructions to give 50-100ml for each stool should **not** be applied – it is dangerous. The objective is only to replace what is being lost and not to change the overall fluid balance of the patient.

Under no circumstances should further rehydration fluid be given with the sole purpose of “preventing” further dehydration or of “making sure” that sufficient has been given.

- Make a major reassessment at two hours

If there is continued weight loss *then*:

- Increase the rate of administration of ReSoMal by 10ml/kg/hour
- Formally reassess in one hour

If there is no weight gain then:

- Increase the rate of administration of ReSoMal by 5ml/kg/hour
- Formally reassess in one hour

If there is weight gain and:

- Deterioration of the child's condition with the re-hydration therapy,
  - the diagnosis of dehydration was definitely **wrong.**
  - Stop and start the child on F75 diet.
- No improvement in the mood and look of the child or reversal of the clinical signs,
  - then the diagnosis of dehydration was probably wrong
  - either change to F75 or alternate F75 and ReSoMal
- Clinical improvement, but there are still signs of dehydration,
  - continue cautiously with the treatment until the appropriate weight gain has been achieved
  - Either alternate F75 and ReSoMal or continue with ReSoMal alone
- Resolution of the signs of dehydration,
  - stop all re-hydration treatment and start the child on F75 diet

Target weight for rehydration with watery diarrhoea

1. If the child has been in under treatment for SAM and there is a pre-diarrhoeal weight that has been recorded before the diarrhoea starts:
   - If there has been no weight loss with the diarrhoea then the child is NOT dehydrated and no rehydration treatment should be given.
   - If there has been weight loss, the actual fluid loss is equal to the weight loss and the target rehydration-weight is the pre-diarrhoeal weight. Treatment should not be given to increase the weight beyond the pre-diarrhoeal weight.
   - After admission diarrhoea is often "refeeding diarrhoea" (see separate section).
2. If the patient is newly admitted, it is extremely difficult to judge the amount of fluid that has been lost in the child with marasmus as all the clinical signs are unreliable. Because of the narrow therapeutic window and the danger of going from under-hydration to over-hydration, the estimated weight deficit should be conservative. It is better and much less dangerous to slightly under-estimate the amount of weight deficit than to over-estimate the weight deficit in malnourished children.
   - In practice, the weight loss is generally 1% to 3% of body weight in most children and in a few up to 5%.
   - Do not attempt to increase body weight by more than 5% in conscious children.
   - If there is weight gain of up to 5% of body weight with rehydration, the truly dehydrated child will show dramatic clinical improvement and should be out of

immediate danger from death due to dehydration; treatment can then be continued with F75 (see annex 10: table of 5% weight gain/5% weight loss).

During re-hydration breastfeeding should not be interrupted. Begin to give F75 as soon as possible, orally or by naso-gastric tube. ReSoMal and F75 can be given in alternate hours if there is still some dehydration and continuing diarrhoea. Introduction of F75 is usually achieved within 2-3 hours of starting re-hydration.

7.1.4 Treatment of shock from dehydration in the marasmic patient

Only IF there is definite dehydration (a history of fluid loss, a change in the appearance of the eyes) and the patient has several of the following:

- Semi-conscious or unconscious and
- Rapid weak pulse and
- Cold hands & feet and
- Poor capillary refill in the nail beds

Then treat the patient with intravenous fluids.

The amounts given should be half that used in normally nourished children. Use one of the following solutions that are used in normally nourished children

- Half strength Ringer-Lactate with 5% dextrose
- Half strength Saline with 5% dextrose

- Give 15 ml/kg IV over the first hour and reassess the child
- If there is continued weight loss or the weight is stable, repeat the 15ml/kg IV over the next hour. Continue until there is weight gain with the infusion. (15mg/kg is 1.5% of body weight, so the expected weight gain after 2 hours is from 0% up to 3% of body weight)
- If there is no improvement and the child has gained weight, then assume that the child has toxic, septic or cardiogenic shock or liver failure. Stop rehydration treatment. Search for other causes of loss of consciousness.
- As soon as the child regains consciousness and the pulse rate drops towards a normal level, then stop the drip and treat the child orally or by NG-Tube with 10ml/kg/hour of ReSoMal.
- Continue with the protocol (above) for re-hydration of the child orally; continue to use weight change as the main indicator of progress.

NOTE: There should never be a drip present in a malnourished child who is able to drink or is absorbing fluid adequately from an NGT.

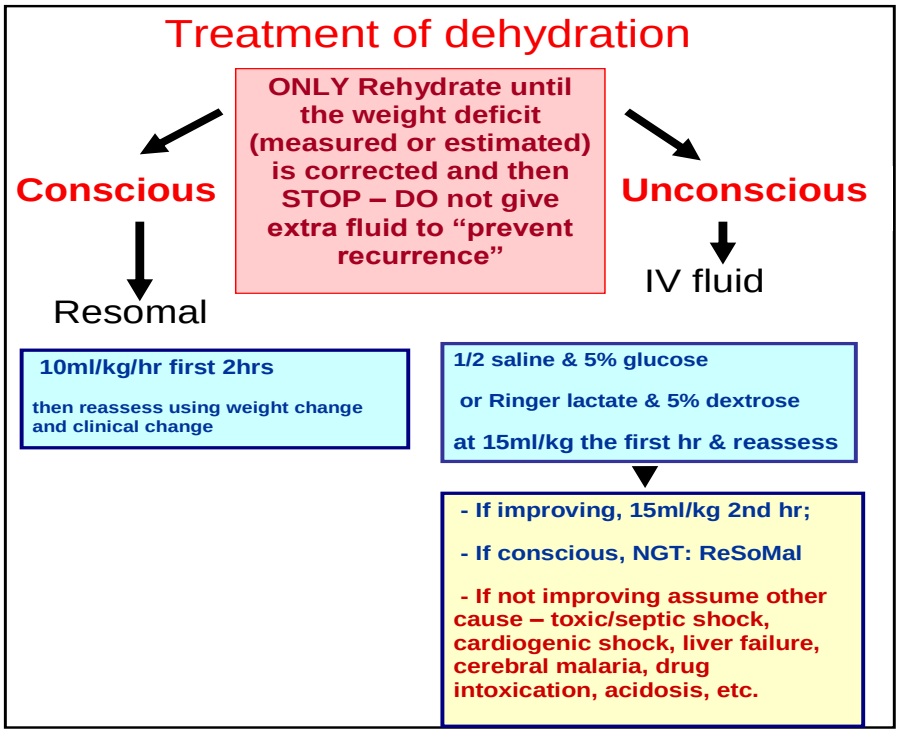
7.1.5 Monitoring of rehydration

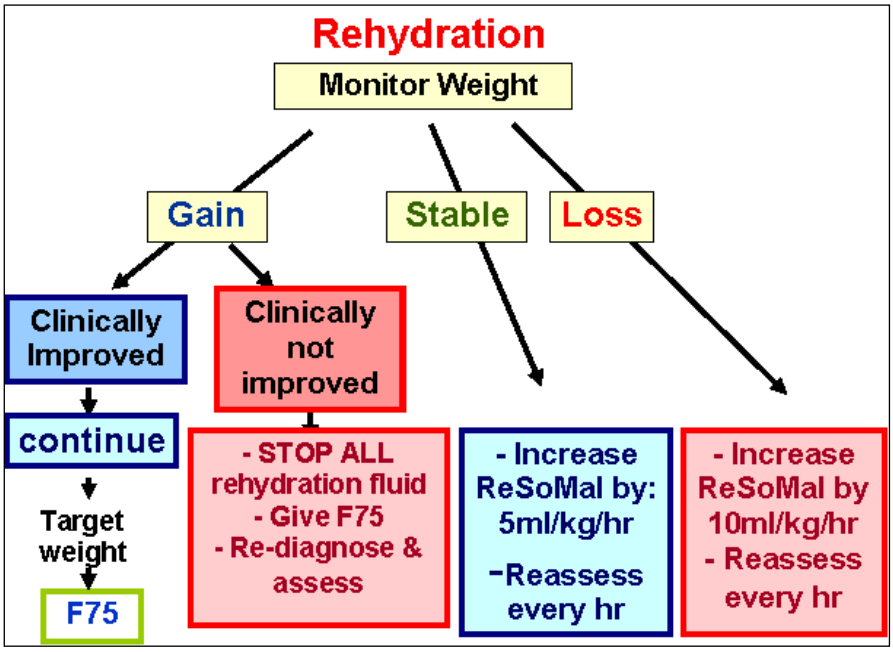
STOP all rehydration (oral or intravenous) therapy immediately if **any** of the following are observed:

- The target weight for rehydration has been achieved (go to F75)
- The visible veins become full (go to F75)
- The development of œdema (over-hydration – go to F75)
- The development of prominent neck veins*
- The neck veins engorge when the abdomen (liver) is pressed*.
- An increase in the liver size by more than one centimetre.*

- The development of tenderness over the liver.*
- An increase in the respiration rate by 5 breaths per minute or more*
- The development of a "grunting" respiration (this is a noise on expiration NOT inspiration).*
- The development of râles or crepitations in the lungs*
- The development of a triple rhythm*

*If these signs develop then the child has fluid overload, an over-expanded circulation and is going into heart failure.





7.1.6 In the œdematous (kwashiorkor) patient

ALL children with œdema have an increased total body water and sodium - they are over-hydrated. Œdematous patients CANNOT be "dehydrated" although they are frequently HYPOVOLÆMIC with the fluid in the "wrong place". The hypovolæmia (relatively low circulating blood volume) is due to a dilatation of the blood vessels and a low cardiac output.

If a child with kwashiorkor has definite watery diarrhoea and the child is deteriorating clinically,

then the fluid lost **can** be replaced on the basis of 30ml of ReSoMal per watery stool. This is not mandatory and the clinical state of the child after the oral ReSoMal should be carefully assessed.

The treatment of hypovolæmia in kwashiorkor is the same as the treatment for septic shock.

7.2 Persistent or chronic diarrhoea

Children with persistent or chronic diarrhoea (without an acute watery exacerbation) do not need acute rehydration therapy. They have adapted over the weeks to their altered hydration state and should not be rehydrated over a few hours. The appropriate treatment of persistent diarrhoea is nutritional[62]; it is most often due to nutrient deficiency and will resolve with F75 and suppression of small bowel bacterial overgrowth. Small bowel overgrowth is suppressed with most routine antibiotics used for severely malnourished children; if the diarrhoea persists a course of metronidazole (10mg/kg/d) can be given (see annex 28).

7.3 Re-feeding diarrhoea after admission

The intestine of the malnourished child is atrophic and the capacity to absorb large amounts of carbohydrate is limited; there is also frequently pancreatic atrophy so that carbohydrate, fat and protein digestion is compromised.
When the child starts on F75 there is often an increase in the stool output and it becomes less formed. There is not usually a loss of weight so that the child is not dehydrated and treatment should continue.

- Do NOT give ReSoMal for simple "re-feeding diarrhoea" without weight loss.

Usually, the diarrhoea can be ignored, as the Amoxicillin suppresses the small bowel overgrowth and the intestine repairs with the improved nutrition in F75 so that mild osmotic diarrhoea subsides after a few days.

Re-feeding diarrhoea appears to be more common in children with œdematous malnutrition. There are some (inappropriate) recipes for F75 that contain only dried skim milk, oil, Complex of Minerals Vitamins mix (CMV) and sugar. The high sugar content makes the diet made from these recipes hyperosmolar and the excess sugar can then cause osmotic diarrhoea; the staff then treat this osmotic diarrhoea with ReSoMal, whereas the correct treatment is to change the diet.

Commercial F75 has much of the sugar replaced by dextromaltose so that it is much less likely to cause osmotic diarrhoea.

If F75 is to be prepared in the facility,

- then use the recipes containing starch (particularly rice starch), if possible add some germinated grain flour to add amylase which reduces the viscosity.

[62] Check for mucus and blood in the stool, amoebiasis and shigella dysentery.

If this does not suffice or there is weight loss,

- then divide the diet into many feeds, each smaller so that they do not overwhelm the limited capacity for digestion and absorption.

For a few children this is insufficient as the intestine or pancreas is sufficiently damaged that even small amounts of F75 can provoke osmotic diarrhoea initially.

- Add pancreatic enzymes directly to the feed just before it is given. These are available commercially and are normally used to manage cystic fibrosis of the pancreas (mucovisidosis).
- Change the diet to one where the F75 is fermented or based upon yoghurt instead of unfermented milk.

7.4 Hypernatræmic Dehydration

Hypernatræmic dehydration is common in areas with a very dry atmosphere (deserts) particularly if there is also a high temperature.

It is most likely to occur in children that have been carried for long distances to the IPF/OTP in the sun, without the mother stopping to rest or give the child something to drink. It is important that those arriving at clinics, OTP etc. are given water/sugar-water to drink on arrival and not kept waiting to be seen without shade. It also occurs when the feeds are over-concentrated.

Although hypernatræmia is difficult to treat safely, it is easy to prevent safely. Malnourished children, particularly those in dry and hot environments should be given continuous access to sufficient plain water.

NOTE: in desert areas where the humidity is very low and the day-time temperature is very high ALL the children *must be offered water to drink at frequent intervals. If F100 is used in transition phase and recovery phase, then it should be further diluted and the intake table adjusted for the additional volume required to be given at each feed.*

7.4.1 Diagnosis

The first sign to appear is a change in the texture and feel of the skin.

- The skin develops plasticity similar to the feel of dough (flour and water mixed for bread making).
- The eyes can sink somewhat.
- The abdomen frequently then becomes flat and may progress to become progressively sunken and wrinkled (so called “scaphoid abdomen” or “prune belly”).
- The child may develop fever.
- The child becomes progressively drowsy and then unconscious.
- Convulsions follow and if treatment for hypernatræmia is not instituted this leads to death. The convulsions are not responsive to the normal anti-convulsants (phenoparbitone, diazepam etc.).
- Failure to control convulsions with anti-convulsants may be the first indication of the underlying diagnosis.

The diagnosis can be confirmed by finding an elevated serum sodium. Normally hypernatræmia is diagnosed when the serum sodium is more than 150mmol/l.

7.4.2 Treatment

For insipient hypernatræmic dehydration – that is a conscious, alert child whose is **only** showing changes in the texture and feel of the skin,

- Breastfeed the child or give breast milk. This can be supplemented with up to about 10ml/kg/h of 10% sugar-water in sips (little by little) over several hours until the thirst of the child is satisfied. At this early stage treatment is relatively safe.
- Give water but the child should not drink large amounts rapidly – take several hours to correct the mild hypernatræmic dehydration.

For developed hypernatræmic dehydration, treatment **must** be slow.

If it is possible, measure serum sodium

- then the aim is to reduce the serum sodium concentration by about 12 mmol/24h. **To correct the hypernatræmia more quickly than this risks death from cerebral œdema**.

If it is not possible to measure the serum sodium

- then aim to take at least 48h to correct hypernatræmic dehydration. The treatment should start slowly and as the serum sodium approaches normality, the rate of repletion can be increased.

The text-book treatment of hypernatræmia is to give normal saline, slowly, either orally or intravenously. Sodium intake in the severely malnourished child should be restricted so that this treatment is NOT used in SAM.

Progress is assessed by serial weighting of the child.

- **First**, put the child in a relatively humid, thermoneutral (28˚ to 32˚ C) environment (mist or spray water into the air in desert areas) – this is the most important step and must not be omitted.
- Weigh the child on an accurate balance and record the weight.

The objective of treatment is to put the child into positive water balance of about 60ml/kg/d over the course of treatment (assessed by weight gain) which is equivalent to 2.5ml/kg/h of plain water. This amount should not be exceeded until the child is awake and alert.

If the child is conscious or semi-conscious and there is no diarrhoea,

- Then, put down an NGT and start 2.5ml/kg/h of 10% sugar water or breast milk. Do not give F75 at this stage. Never give F100 or infant formula. Expressed breast milk is the best "rehydrating" fluid available.
- Reweigh the child every 2 hours.
    - If the weight is static or there is continuing weight loss, recheck the immediate environment to try to prevent on-going water losses. Then, increase the amount of sugar-water intake to compensate for the on-going weight loss (calculated as g/h and increase the intake by this amount).
    - If the weight is increasing continue treatment until the child is awake and alert.

If there is accompanying diarrhoea,

- then give one fifth normal saline in 5% dextrose orally or by NG-tube.

If the child is unconscious,

- then the same volumes of fluid (5% dextrose if there is no diarrhoea and one fifth normal saline in 5% dextrose if there is diarrhoea) can be given by intravenous infusion. There

should be a peristaltic pump or accurate paediatric burette in order to ensure that that the rate of administration of fluid is not exceeded during treatment.

When the child is awake and alert and the skin quality returns to normal (or the serum sodium is normal if there are facilities to measure sodium),

- then recommence feeding with F75.

7.5 Septic (OR Toxic) Shock

Septic shock presents with some of the signs of true dehydration but also of cardiogenic shock and frequently of liver dysfunction; the differential diagnosis is often very difficult.

Children that appear "very ill", may have septic shock, ordinary dehydration, hypernatræmic dehydration, cardiogenic shock, liver failure, or toxic shock from poisoning with traditional medicines or overdose of therapeutic drugs, aspirin poisoning, malaria, acute viral infection or other severe conditions. All "very ill" children should not be automatically diagnosed as having septic shock; the true reason for the condition should be sought.

7.5.1 Shock developing after admission

Children with septic shock normally present with very severe illness, if the condition develops **after** admission then it is more likely to be cardiogenic shock, or an adverse reaction to the treatment that is being given.

If the child deteriorates **after** admission to the in-patient facility, then:

- Review the treatment given to the child to determine if the treatment is the cause of the clinical deterioration.
- Review the fluid (sodium) intake, particularly any treatment given in the emergency ward during admission (if this is excessive treat for cardiogenic shock/heart failure). [63]
- Examine the daily weight changes as this may indicate cardiogenic shock; do not diagnose septic shock in a very ill child if there has gained weight during the preceding 24h: treat for heart failure.
- Stop any drugs being given that are not included in the protocol
- Check the dose of drugs given to ensure that they have been adjusted for the malnourished state.

7.5.2 Diagnosis of septic shock

To make a diagnosis of developed septic shock requires the signs of hypovolæmic shock to be present

- A fast weak pulse with
- Cold peripheries
- Slow capillary refill in the nail beds (more than 3 seconds)
- Disturbed consciousness
- **Absence of signs of heart failure**

[63] In some areas the drinking water contains appreciable concentrations of sodium. Ensure that the patient has not been taking the mother's food.

7.5.3 Treatment of septic shock

To all patients with septic shock,

1. Give broad-spectrum antibiotics (for doses see annex 28)

Cefotaxime by SLOW IV injection once per day (100mg/kg/d on the first day, followed by 50mg/kg/d on subsequent days)

AND ADD

Ciprofloxacin orally 30mg/kg/d in 3 doses (or Gentamicin 5 mg/kg/day once daily injection IM

AND

Metronidazole 10 mg/kg/d orally or rectally

If there are extensive open skin lesions or signs suggestive of pulmonary abscesses, add Cloxacillin IV: Children: 100-200 mg/kg/d divided into 3 injections, one every 8 hours

If there is no improvement in 24h, then

- Add Fluconazole: orally 3mg/kg/d once daily

In areas of high HIV prevalence, where there is oral candidiasis or where the prevalence of candidiasis is >20%, add fluconazole at the start of treatment for all very ill children.

- Kept warm to prevent or treat hypothermia.
- Give sugar-water by mouth or NGT as soon as the diagnosis is made to prevent hypoglycæmia.
- Physically disturb the patient as little as possible (no washing, excess examination, investigations in other departments, etc.).
- Do not transport to another facility unless there are proper facilities to safely transport the patient.

For Incipient septic shock:
Give the standard F75 diet by NGT, if gastric residues are aspirated from the NG-tube, start with half the recommended quantity of F75 until there are no gastric aspirates.

For Developed septic shock: If the patient is semi-conscious or unconscious because of poor brain perfusion,

- then a **slow** IV infusion of one of the following can be given (do not give if there is a possibility of cardiogenic shock):
  - Whole blood of 10ml/kg over at least 3 hours – nothing should be given orally during the blood transfusion or for 3 hours after the transfusion.
  - Or 10ml/kg/h for 2 hours of one of the following:
  - Or Ringer's lactate solution with 5% glucose or Half-normal (0.45%) saline with 5% glucose
- Monitor every 10 minutes for signs of deterioration, especially over-hydration and heart failure.
  - Increasing respiratory rate,
  - Development of grunting respiration,
  - Increasing liver size,
  - Vein engorgement.

As soon as the patient improves (stronger radial pulse, regain of consciousness)

- **Stop** all IV intake – continue with F75 diet by NG-tube.

7.6 Absent Bowel Sounds, Gastric Dilatation And Intestinal Splash With Abdominal Distension

There is a functional ileus with bacterial overgrowth similar to that with intestinal obstruction. In this situation there has normally been gram-negative bacterial translocation across the intestine with septicaemia. The stomach is not emptying, there is no peristalsis and fluid is gathering in the intestinal lumen. These are very grave signs. It is often accompanied by severe liver dysfunction and resembles the "grey baby syndrome" associated with Chloramphenicol intoxication. When the condition develops after admission all drugs that have already been given during development of this situation and are potentially hepatotoxic must be stopped. Apart from drug toxicity, it is possible that some patients develop this syndrome from "super-infection" by emergence of organisms resistant to the antibiotic regime being used or to "bush medicines" given by traditional practitioners. Nothing will be absorbed orally as the stomach is not emptying.

- Warn the mother that the prognosis is not good.

The following measures should be taken:

- Give antibiotics intravenously as outlined for developed septic shock
- STOP all other drugs that may be causing toxicity (including anti-retrovirals)
- Give an IM injection of magnesium sulphate (2ml of 50% solution) and repeat twice daily until stool is passed and gastric aspirations drop.
- Pass a NGT and aspirate the contents of the stomach, then "irrigate" the stomach with isotonic clear fluid (5% dextrose or 10% sucrose –the solution does not need to be sterile). Do this by introducing 50ml of solution into the stomach and then gently aspirating all the fluid back again. This should be repeated until the fluid that returns from the stomach is clear.
- Put 5 ml/kg of sugar-water (10% sucrose solution) into the stomach and leave it there for one hour. Then aspirate the stomach and measure the volume that is retrieved. If the volume is less than the amount that was introduced then return the aspirate to the stomach[64] and make up the volume to 5ml/kg with more sugar-water.
- There is frequently gastric and oesophageal candidiasis, put oral nystatin suspension, or fluconazole down the NGT
- Keep the child warm
- Give intravenous glucose, these children are usually unconsciousness, semiconscious or delirious (see section on hypoglycæmia)
- Do not put up a drip at this stage but monitor the child carefully for 6 hours, without giving any other treatment
- Use the critical care form
- Monitor continuously to see if there is any Improvement

[64] Discarding the aspirate can lead to alkalosis and electrolyte disequilibrium. However, if there is any gastric bleeding (coffee grounds) the aspirate should always be discarded.

- First, by a change in intestinal function – decrease in the distension of the abdomen, visible peristalsis seen through the abdominal wall, return of bowel sounds, decreasing size of gastric aspirates
- Second, by improvement in the general condition of the child

If there is intestinal improvement,

- then start to give small amounts of F75 by NG tube (half the quantities given in the F75 – table). Aspirate the stomach before each feed.
- If the volume of residual feed remaining is large, then decrease the amount of F75.
- If the amount of aspirate is small then the amount can be gradually increased.

If there is no improvement after 6 hours then:

- Consider putting up an IV drip. It is very important that the fluid given contains adequate amounts of potassium. Sterile Potassium Chloride (20mmol/l) should be added to all solutions that do not contain potassium. If it is available use one-fifth normal saline in 5% dextrose, otherwise use Ringer-Lactate in 5% dextrose or half-strength saline in 5% dextrose. **The drip should be run VERY SLOWLY – the amount of fluid that is given should be NO MORE THAN 2 to 4 ml/kg/h** (a paediatric burette or peristaltic pump should be used).
- When the gastric aspirates decrease so that one half of the fluid given to the stomach is absorbed, discontinue the IV treatment and continue with oral treatment only.

7.7 Heart Failure

7.7.1 Signs and symptoms

Heart failure should be diagnosed when there is:

- Physical deterioration with a gain in weight
  - this is the most common way of making the diagnosis and does not require any equipment or particular clinical skill
- An increase in respiration rate with weight gain
  - an acute increase in respiration rate of more than 5 breaths per minute (particularly during rehydration treatment)
  - > 50 breaths/minute in infants and
  - >40 in children 1-5 years,
- A sudden increase in liver size (this is why the liver is marked before starting any infusion)
- Tenderness developing over the liver
- Respiration that has or develops a “grunting” sound during each expiration
- Crepitations or râles in the lungs
- Prominent superficial and neck veins
- Engorgement of the neck veins when the abdomen (liver) is pressed
- Enlargement of the heart (very difficult to assess in practice)
- Appearance of triple rhythm (difficult to assess in practice)
- An acute fall in haemoglobin concentration or hæmatocrit (needs laboratory, but measures quite accurately the degree of expansion of the intravascular volume)

As the heart failure progresses there is either 1) marked respiratory distress progressing to a rapid pulse, cold hands and feet, œdema and cyanosis or 2) sudden, unexpected death. This is cardiogenic shock, it usually occurs in the severely malnourished patient after treatment has started.

The cause is an excessive intake of sodium, either from the diet, from rehydration fluids or from drugs; even with sodium restriction there may still be heart failure due to the residual sodium in the diet and the amount of sodium that comes out of the cells as the cells recover. Excess sodium given in an emergency department or during the initial treatment of dehydration at admission can give rise to heart failure several days later as the sodium inside the cells enters the vascular space.

There is usually also weight gain. As heart failure usually starts after (and is due to) treatment, there is nearly always a record of the weight of the patient that was taken before the onset of heart failure.

7.7.2 Differential diagnosis

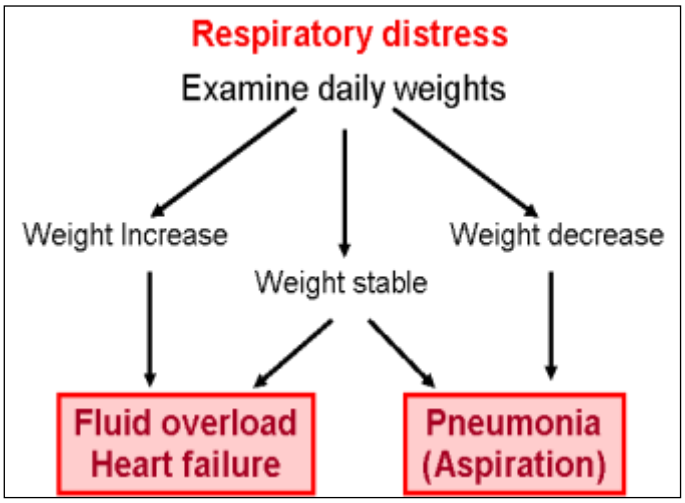
Heart failure and pneumonia are clinically similar and very difficult to tell apart.

- If there is an increased respiratory rate AND any gain in weight, then heart failure should be the first diagnosis.
- If there is an increased respiratory rate with a loss of weight, then pneumonia can be diagnosed.
- If there is no change in weight (fluid balance) then the differentiation has to be made using the other signs of heart failure.
- Pneumonia should NOT be diagnosed if there has been a gain of weight just before the onset of respiratory distress.

Children with œdema can go into heart failure without a gain in weight, if the expanded circulation is due to œdema fluid being mobilised from the tissues to the vascular space.

7.7.3 Treatment

As œdema fluid is mobilised (kwashiorkor) and the sodium is coming out of the cells (both kwashiorkor and marasmus), the plasma volume expands but the volume of red cells remains constant so that there is a FALL IN HÆMOGLOBIN concentration. This DILUTIONAL anaemia happens to some extent in nearly all children as they recover. A substantial fall in haemoglobin, as a sign of an expanding circulation, is also a sign of impending or actual volume overload with heart failure. These children should never be transfused. The heart failure is **not caused by the** anæmia – the increasing anaemia is a sign of the expanding blood volume causing the heart failure. This is a common error. Children with respiratory distress and anaemia should **not** be transfused.



When heart failure is diagnosed,

- Stop all intakes of oral or IV fluids. **No fluid or food** should be given until the heart failure has improved even if this takes 24-48 hours. Small amounts of sugar-water can be given orally to prevent hypoglycaemia.
- Review drug regimen and reduce dose or stop those which are given as the sodium salt (see annex 28 for details of drugs that contain sodium).
- Give frusemide (1mg/kg) (generally it is not very effective and diuretic treatment should not be relied upon in the malnourished patient to manage heart failure)
- Optional: Digoxin can be given in single dose (5 micrograms/kg – note that this is lower than the normal dose of digoxin. A loading dose is not given. Use the paediatric preparation, not small quantities of the adult preparation).

7.8 Hypothermia

Severely malnourished patients are highly susceptible to hypothermia (rectal temperature below 35.5°C or under-arm temperature below 35°C).

7.8.1 Prevention

- Keep the room warm, especially at night (the thermo-neutral temperature for malnourished is from 28°C and 32°C).
- Keep windows and doors closed at night.
- Monitor the temperature with a maximum-minimum thermometer on the wall.
- Use adult beds so the children sleep with their mothers. There should be adequate blankets.

7.8.2 Treatment

- Use the “kangaroo technique”. The child is placed on the chest of the mother skin-to-skin and the mother’s clothes wrapped around the child.
- Put a hat on the child.
- Give **hot** drinks to the mother so her skin gets warmer (plain water, tea or any other hot drink).
- Monitor body temperature during re-warming (every 30 minutes).
- Treat for hypoglycæmia and give second-line antibiotic treatment.

7.9 Fever

Severely malnourished children do not respond to anti-pyretics. Because they fail to work, caretakers and staff often repeat the dosage inappropriately, frequently leading to toxicity. Antipyretics are much more likely to be toxic in the malnourished than a normal child.

- Do not give aspirin or paracetamol to SAM children in IPF.

<u>For moderate fevers, up to 38.5°C rectal,</u>

- Do not treat moderate fevers, up to 38.5°C rectal or 38.0°C underarm
- Maintain routine treatment
- Remove blankets, hat and most clothes and kept in the shade in a well-ventilated area
- Give water to drink
- Check for malarial parasites and examine for infection

Fevers of over 39°C rectal or 38.5°C underarm, where there is the possibility of hyperpyrexia developing,
In addition to the above, also:

- Place a damp/wet room-temperature cloth over the child's scalp, re-dampen the cloth whenever it is dry
- Monitor the rate of fall of body temperature
- Give the child abundant water to drink
- If the temperature does not decline, the damp/wet cloth can be extended to cover a larger area of the body
- When the temperature falls below 38°C rectal, stop active cooling. There is a danger of inducing hypothermia with aggressive cooling

7.10 Severe Anæmia

7.10.1 Diagnosis

Measure the hæmoglobin on admission in any patient that is clinically anæmic[65].

7.10.2 Treatment

If the hæmoglobin is above 4g/100ml or the packed cell volume is above 12% OR if the patient has started treatment with F75 for more than 48 hours (preferably 24 hours) and less than 14 days,

- Then do NOT give any treatment, apart from a dose of folic acid on admission.

If the hæmoglobin concentration is less than 4g/100ml or the packed –cell volume is less than 12% in the first 24 hours after admission the patient has very severe anæmia that should be treated.

- Give 10ml per kg body weight of packed red cells or whole blood slowly over 3 hours.
- Fast the patient during, and for at least 3 hours after, a blood transfusion.
- Do not transfuse a patient between 48h after the start of treatment with F75 and 14 days later.
- Do not give iron during the acute-phase of treatment
- If the facilities and expertise exist (neonatal units) it is preferable to give an exchange transfusion to severely malnourished patients with severe anæmia.

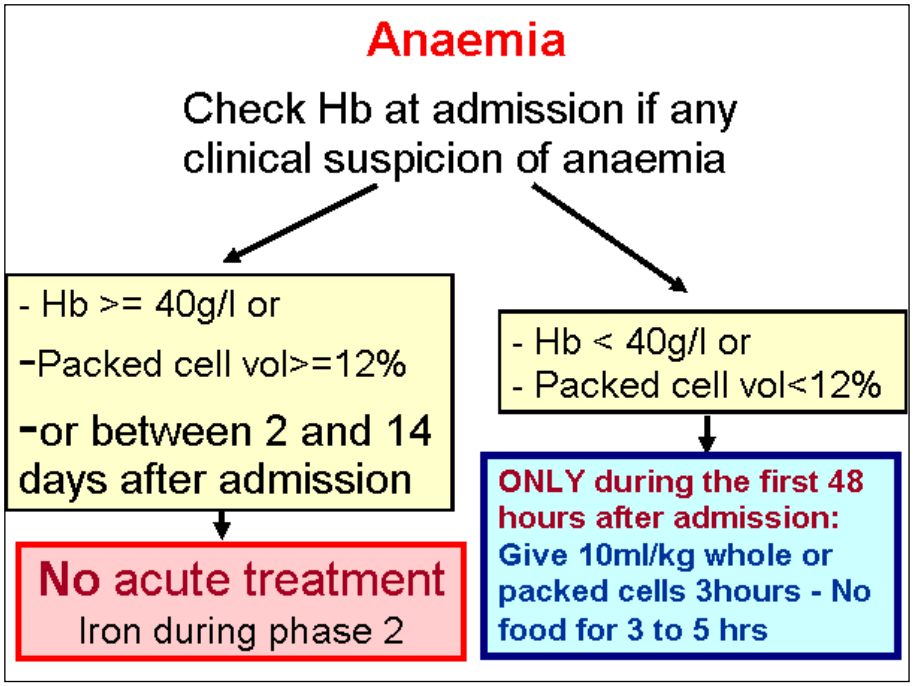
If a transfusion is necessary during the "danger" period of 48h to 14d after starting dietary treatment or if there is heart failure with very severe anæmia then the patient cannot be given a straight transfusion and needs an exchange transfusion. If the expertise does not exist locally, then transfer the patient to a centre where there are the facilities and skill to do an exchange transfusion (neonatal unit).

Heart failure due to anaemia is clinically different from "normal" heart failure – when the failure is due to anæmia alone there is "high output" failure with an over-active circulation, easily felt pulse and heart beat and warm peripheries.

Anæmia or a falling hæmoglobin, and respiratory distress is a sign of fluid overload and an expanding plasma volume – the heart failure is not being "caused" by the anæmia, rather the apparent anæmia

[65]Hæmoglobin should not be measured subsequently in most circumstances. This is to avoid an untrained person seeing a low hæmoglobin level and transfusing the patient during the "danger" period of electrolyte disequilibrium (day 2 to 14).

is “dilutional” and is caused by the fluid overload. Do not give a straight transfusion of blood or even packed cells to these patients[66].



7.11 Hypoglycaemia

7.11.1 Prevention of hypoglycaemia

Severely malnourished patients can develop hypoglycaemia but this is uncommon.

- Give sugar-water to all children that have travelled for long distances as soon as they arrive at the centre. As it is normally unknown when a new admission last had food all new arrivals should be given sugar-water routinely while they are waiting to be measured and assessed.
- Give extra sugar to all children who get hypothermia or have septic shock, whether or not they have low blood glucose.
- The children who develop hypoglycaemia are those that have not taken food (carbohydrate) for at least 12 hours. Any child that has not taken food during the day needs at least one feed during the night. A child who has taken all the diet during the day will not develop hypoglycæmia overnight and does not need to be woken for night-time feeding because of the danger of hypoglycæmia.

7.11.2 Clinical signs

There are often no signs at all of hypoglycaemia. Most hypoglycæmic malnourished children do not sweat, have raised hair on their arms or go pale. They simply become less responsive and slip into coma and often present with hypothermia.

One sign of the overactive sympathetic nervous system, which starts before actual hypoglycæmia develops, and is seen in the malnourished child, is eye-lid retraction. If a patient sleeps with his/her

[66] Some guidelines advocate transfusion of children with a hæmoglobin higher than 4 if there is respiratory distress. This advice should **not** be followed: it is very dangerous in the severely malnourished patient as the respiratory distress is usually due to heart failure in this situation.

eyes slightly open, then s/he should be woken up and given sugar-water or F75 to drink; the mothers and staff should be taught to look for this sign during the night.

7.11.3 Treatment

- For Patients who are conscious and able to drink, give about 50 ml (approximately 5 to 10ml/kg) of sugar-water (about 10% ordinary sugar in water), or F75 by mouth. The actual amount given is not critical.
- For Patients losing consciousness, give 50 ml of sugar-water by NGT immediately. When consciousness is regained give F75 feeds frequently.
- For semi-conscious and unconscious patients, give sugar-water by NGT immediately. They should then be given glucose as a single intravenous injection (approximately 5ml/kg of a sterile 10% glucose solution).
- Treat all malnourished patients with hypoglycæmia with second-line antibiotics.

The response to treatment is dramatic and rapid. If a very lethargic or unconscious patient does not respond in this way,

- then it is urgent that another cause for the clinical condition is considered, found and treated (e.g. cerebral malaria, meningitis, hypoxia, hypernatræmia, shock, etc.)

7.12 Skin lesions

7.12.1 Kwashiorkor dermatosis[67]

In kwashiorkor there are often open skin lesions where the epidermis has stripped away to leave raw weeping wounds that resemble burns. The lesions can be treated in the same way as burns. Serum may be lost through the lesions. There is also an increased loss of heat by evaporation and hypothermia is common and must be prevented. The lesions usually become overgrown with bacteria and Candida under usual IPF conditions. Normally these patients have not an inflammatory reaction, pus formation or fever due to their deficient inflammatory and immune function; an inflammatory reaction can occur during treatment as the nutritional status of the patient improves.

Treatment

- Put the patient onto second or third line systemic antibiotics, including fluconazole.
- Monitor body temperature; do not wash the child unless the environmental temperature is high.
- If possible expose the lesions directly to the atmosphere during the heat of the day so that they dry (form a crust), do not cover with occlusive dressings.
- If available dress with Silver sulfadiazine impregnated tulle or cream (1%) once per day, if unavailable dress with Zinc Oxide ointment (10%).
- At night and in cold conditions dress with sterile paraffin gauze or (preferably).

[67] Some protocols recommend bathing/soaking in potassium permanganate solution. Potassium permanganate is a very strong oxidising agent that acts as an astringent (a substance that coagulates serum/blood/tissue proteins and stops bleeding, they are mildly antiseptic because they also destroy bacterial and viral proteins) and after an application the raw skin dries quickly; the pink solution turns brown and stains the skin. It is poisonous if ingested and caustic if insufficiently diluted. It is not recommended because a) the danger of insufficient dilution b) these children have deficient anti-oxidant defences. If used the solution should be very faint pink and not stronger. Other astringents include aluminium salts and silver nitrate. Burrow's solution (aluminium acetate) is a non-toxic astringent used to treat otitis externa (discharging ear). It has not been tested in kwashiorkor dermatosis, but would be a much safer alternative astringent to potassium permanganate."

- Gently massage oil (e.g. mustard or soya oil) into the areas of unaffected skin to prevent further breakdown of the skin.
- If the patient has candidiasis apply miconazole cream to the skin lesions until they are dry.

7.12.2 Perineal excoriation

This is normally a chemical dermatitis caused by bacterial decomposition of urine to ammonia. It is very common where plastic pants or bags are used by the mother to cover the perineal area to prevent soiling of her clothes, sheets etc. With exposure to the atmosphere the child's bottom will dry and bacteria and yeasts will not flourish – they thrive in warm damp conditions such as under plastic or occlusive dressings; any ammonia generated will escape to the atmosphere and the mother can observe when the child is dirty and needs to be cleaned.

Prevention

- Ban the use of plastic pants/ polythene etc. to cover the child's bottom.
- Get the mothers to make or give them waterproof aprons to wear to protect their clothing when they are feeding/ nursing/ changing/ playing with the child.
- Leave young children naked as much as possible during the day.
- Regularly massage all the children's skin with oil (use whatever local custom dictates, mustard oil appears to be particularly effective).
- About 20 minutes after finishing a feed, put all the children onto the potty; the mother can support the child on her feet, facing her legs[68].

Treatment

- The most important measure is to wash and then expose the child's bottom to the atmosphere.
- If severe it can be treated in the same way as kwashiorkor dermatosis
- Otherwise, continue with second-line antibiotics, give nystatin orally.
- Apply miconazole69 nitrate cream/ointment until the lesions are dry.

7.12.3 Scabies/lice

Scabies is particularly common in warm wet areas where people sleep together. The mites are mostly found between the fingers and toes, the wrist, axilla and groins, In SAM and immuno-compromised patients they can spread to most of the body surface and become encrusted (so called "Norwegian scabies").

Treatment

- Apply permethrin70 cream (5%) or lotion (1%) over the whole body and wash with soap after at least 12 hours. Ensure that the web spaces of the fingers and toes, wrists, axillae, groins, perineum and buttocks are covered.

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[68] There is physiologically a gastro-colic reflex; the hormones released during feeding encourage the bowels and bladder to evacuate. This should be used to regularly put the children onto the potty/ toilet after they have finished eating. Not only does this prevent perineal lesions, but also is important for the hygiene of the IPF (the children's faecal "accidents" are probably the source of much cross-infection).

[69] Miconazole can be used on mucus membranes and orally as a gel to treat oral candidiasis as well as perineal and genital candidiasis.

- Do not apply to mucus membranes or ulcerated skin.
- If the patient washes within 8 hours then repeat the application and leave on for 12 hours.
- Treat anyone who sleeps with or has "close sweaty contact" with the patient at the same time.
- For head or body lice apply permethrin lotion to the infested hair – in children this is usually confinded to the head, in adults the pubic area and axillae can also be infected.
- Change and boil all clothes and bedclothes.

7.12.4 Fungal infections or the skin

Ringworm, intertrigo (fungal infections of groins, axillae and other "sweaty places"), athlete's foot and other local skin infections are common in many areas.

- Local fungal infections of the skin or nails are all treated with miconazole nitrate cream/ointment (2%)
- Apply cream directly to the lesions twice daily
- For continue for at least 10 days after the lesion has resolved

7.12.5 Impetigo (Bacterial skin infections)

Impetigo starts as small spots that quickly burst to appear as irregular yellow/honey colored crusts that form from dried serum. It is common on the face around the mouth, nose and cheeks and the arms and legs. A second form gives large painless fluid filled blisters (bullous impetigo) normally on the abdomen or limbs. It is caused by Staphylococcus aureus (and occasionally by Streptococcus pyogenes, group A). Areas of the skin that have been injured by insect bites and scrapes or where there is already skin damage (e.g. angular stomatitis, scabies) are particularly susceptible. Scratching mosquito bites is a common portal of entry. Initially the lesions are superficial. The lesions are highly contagious for about 48 hrs after starting effective antibiotic treatment. Well-nourished patients can be treated topically with antibiotic ointments (fusidic acid or mupirocin ointments are equally effective); this is inadequate for the severely malnourished (and other causes of immuno-incompetence) and treatment requires systemic antibiotics.

Prevention

Prevention is related to hygiene. Wash frequently with soap and warm water and dry carefully. Do not share washcloths, towels, etc. Cut fingernails short with good quality scissors (most families do not have scissors and their children's nails are long and dirty or, in older children bitten and sharp, when they scratch mosquito bites they inoculate the dirt/organisms into their own skin).

Treatment

- Wash the area with warm soapy water or a mixture of vinegar and warm water. Dry carefully and cover the lesions if this is possible to prevent spread of the infection.
- If there are any microbiological facilities take a swab for culture and sensitivity. Immediately start the patient on oral cloxacillin (see annex 28).
- If the lesions do not respond within 48 hr or continue to spread change to erythromycin, clindamycin or cefotaxime treatment.

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[70] This is the same product that is used to impregnate bed nets and has less toxicity than most other products. Although Benzyl benzoate is cheaper it is less effective and leads to excoriation of the skin of malnourished patients and should be avoided unless there is no alternative.

7.12.6 Cancrum oris (Noma, gangrenous stomatitis)

This condition is not common and affects the most seriously deficient children. At the beginning it is easily confused with impetigo as it commonly begins as a small ulcer on the facial skin (or buccal mucosa). But it rapidly enlarges, deepens and spreads to the lip and cheeks and progresses to a necrotic, foul-smelling deep penetrating ulcer. It may penetrate into the oral cavity and expose the jaw bone and teeth. It can follow measles or herpes infection. The primary cause is probably a synergistic infection with anaerobes and aerobes (e.g. haemolytic streptococcus, enterobacter, klebsiella, staphylococcus, candida, etc.).

Treatment

- Clean the lesions and attend to oral hygiene.
- Give a full course of second line antibiotics. If available give clindamycin (3–10 mg/kg four times daily; if body weight under 10 kg, minimum dose 37.5 mg x 3 daily, maximum dose 450 mg x 4 daily).
- Add metronidazole 10mg/kg/d.
- Surgery should not be attempted until after full nutritional recovery.

7.13 Other conditions

Children with many other underlying illnesses can first present with severe malnutrition. Initially, they should all be treated according to the standard protocol for severe malnutrition.

Those that fail to respond to this treatment need further investigation for an underlying condition (see failure to respond to treatment). For HIV/Aids, see separate section.

7.14 Drugs

Great care should be exercised in prescribing all drugs to severely malnourished patients. For most drugs the dose recommended for normal children is either toxic or ineffective in the malnourished child. Drugs which affect the central nervous system such as anti-emetics and those where the side effects include adverse effects on the liver, pancreas, kidney, heart, circulation or intestine and those which cause loss of appetite should not be used, or only used under very special circumstances.

It is advised that:

- For other conditions that are not rapidly fatal (e.g. HIV), the malnutrition is treated for at least one week (whilst the nutritional treatment returns the metabolism of the patient towards normal) before standard doses of drugs are given.
- Many drugs should be avoided altogether until there is research to show that they are safe and how the dosage should be adjusted for the malnourished state. Common drugs such as paracetamol do not work in most malnourished children during the acute phase and can cause serious hepatic damage.
- When it is absolutely necessary to give drugs that have not been adequately tested in SAM patients, the dose should be initially reduced.
- Drugs can usually be given in standard doses to patients that are in the later stages of treatment in OTP or have lesser degrees of malnutrition.

7.15 Refeeding syndrome

"Refeeding syndrome" refers to malnourished patients (and those who have been fasting for more than one week[71]) who develop any of the following shortly after they have a rapid, large increase in their food intake: acute weakness, "floppiness", lethargy, delirium, neurological symptoms, acidosis, muscle necrosis, liver and pancreatic failure, cardiac failure or sudden unexpected death. The syndrome is due to rapid consumption of key nutrients for metabolism particularly if the diet is unbalanced. There is frequently a large reduction in plasma phosphorus, potassium and magnesium.

Other separate problems during early refeeding include refeeding-œdema and refeeding-diarrhoea (see separate section).

Prevention

It is necessary at the start of treatment not to have a sudden jump in the adapted malnourished state to a very high intake. On admission, malnourished patients should never be force-fed amounts of diet in excess of those prescribed in the protocol; particular care needs to be taken with those who are being fed by NG Tube. Prevention of refeeding syndrome is the purpose of the transition phase of treatment. In the OTP protocol very large amounts of RUTF are sometimes given at the start of treatment. If any mother forces her child to take all the diet then refeeding syndrome is a real possibility.

Treatment

For patients in the recovery phase

If there is deterioration during the recovery or transition phase of treatment,

- ↘ Then the child should be returned to the acute phase.

For patients that are in the acute phase,

- ↘ Reduce the diet to 50% of the recommended intake until all signs and symptoms disappear and then gradually increase the amount given
- ↘ Check to make sure that there is sufficient potassium and magnesium in the diet. If the diet is not based on cow's milk (or the mother is also giving cereals/pulses etc) additional phosphorus should be given to prevent refeeding syndrome.

7.16 Severe malnutrition and HIV/AIDS, Tuberculosis (TB)

7.16.1 Screening for HIV

Where there is an effective Voluntary Testing and Counselling (VCT) program and, at least, prophylaxis and treatment for opportunistic infections is available, VCT should be offered to all patients with severe malnutrition and their caretakers.

Where anti-retroviral treatment is available, there should always be VCT associated with the identification and management of SAM.

There is a need for there to be a willing and capable caretaker for the SAM patient.

Where the parent has HIV/AIDS, additional support needs to be available as the parent will have recurrent illness. During these illnesses she may not be able to care for her children. Indeed, OTP may not be feasible.

Where one grandmother has to care for many grandchildren without obvious means of support, it may not be possible for the grandmother to give special care to the malnourished child; in others cases the household is headed by a child, normally an older sibling.

[71] The syndrome also occurs in obese patients who have been fasting as part of their treatment; they are not wasted but, like the malnourished patient, have metabolically adapted to a low intake of food.

Community mobilisation and support, as well as local NGOs, can be invaluable in these circumstances. Many of these children have to be treated in a facility initially (not necessarily a hospital), some need to be cared for in special programs or facilities using the OTP protocol.

Orphanages. The staff of orphanages need to be trained to screen and give basic care to the severely malnourished; they can function as an OTP.

The children should also be particularly screened for TB (and SAM) at the time of HIV testing, as co-infection is particularly common. TB, HIV and SAM are linked and frequently appear in the same patients.

In areas where there is a high prevalence of HIV there is a danger of patients being enrolled in both programs where either the nutrition team or the staff of other program is unaware of the potential drug interactions in the malnourished patient; with ARVs then alternative anti-malarial and TB drugs may be indicated.

7.16.2 Treatment

The care and treatment centres that have been established for HIV should also be able to provide treatment for severe malnutrition and TB, on an out-patient basis according to this protocol.

If treatment with anti-TB drugs or ARVs is started **in the severely malnourished patient** whilst they have physiological malnutrition, they are likely to develop very severe side effects from the drugs. Such side effects can lead to death or withdrawal of many of the patients from the ARV treatment programs. All ARV drugs have significant side effects, and their toxicity and pharmacokinetics have not been adequately assessed in the severely malnourished child.

Most children with HIV infection respond to the treatment of severe malnutrition in the same way as those without HIV infection. Those with a very low CD4 count have a higher (but not very high) mortality. Those with a reasonably high CD4 count appear to have the same mortality risk as non-infected children. The treatment of the malnutrition is the same whether the patient is HIV positive or negative (both in and out-patients).

- Start SAM treatment, at a minimum two weeks, before the introduction of ARV drugs to diminish the risk of serious side effects from the ARV drugs. In responding children delay ARV treatment until the recovery phase is well established in OTP; for failure-to-respond children start ARV after two weeks of SAM treatment with F75.
- Give co-trimoxazole prophylaxis against pneumocystis pneumonia for children with HIV. This is inadequate antibiotic cover for the severely malnourished patient
- Give the routine antibiotics as well as **prophylactic** doses of co-trimoxazole.
- Avoid amphotericin B in SAM patients with HIV.

Once the patient's SAM is being treated satisfactorily and s/he have had adequate amounts of the essential nutrients to resist the toxic effects of the drug treatment HIV and TB,

- Then start the treatment for HIV and follow the national guidelines.

Children with SAM and TB

- Do not immediately transfer to a TB centre if they have little experience/ are untrained in treating SAM; the treatment of the SAM takes precedence in view of the respective mortality rates. Treatment for TB can also be delayed for at least two weeks, except in the cases of military TB, TB meningitis and Pott's disease when treatment should start immediately despite the danger of drug toxicity.
- Avoid co-artem and rifampicin if the patients have SAM and are on ARVs.

8 FAILURE TO RESPOND TO TREATMENT (IPF)

8.1 Diagnostic

It is usually only when children fulfil the criteria for "failure-to-respond" that they need to have an extensive history and examination or laboratory investigations conducted. Skilled staff time and resources should be mainly directed to training, supervision and diagnosis and management of the few children who fail-to-respond to the standard treatment.

Failure-to-respond to standard treatment is a "**diagnosis**" in its own right.

For OTP, the most common reasons for failure are social; social and psychological reasons can also cause failure to respond in in-patients although this is less likely.

Table 21: Diagnosis of Failure-to-respond for In-Patients

CRITERIA FOR FAILURE TO RESPOND	TIME AFTER ADMISSION
Failure to improve/regain appetite	Day 4
Failure to start to lose œdema	Day 4
Œdema still present	Day 10
Failure to fulfil the criteria for recovery-phase (OTP)	Day 10
Clinical Deterioration AFTER admission	At any time

Note that the day of admission is counted as day 0, so that day 1 is the day after admission.

8.2 Investigation on the Causes of failure to respond (In-patients)

PROBLEMS WITH THE TREATMENT FACILITY:

- Failure to apply the protocol appropriately
- Poor environment for malnourished children
- Excessively intimidating, strict or cross staff
- Failure to treat the children in a separate dedicated area
- Failure to complete the multichart correctly (or use of traditional hospital records only)
- Insufficient staff (particularly at night)
- poorly trained staff – excessive staff turnover or untrained senior medical staff
- Inaccurate weighing machines (of failure to take and plot the weight change routinely)
- F75 not prepared or given correctly

PROBLEMS OF INDIVIDUAL CHILDREN:

- A severe medical complication (see section on complications)
- Drug toxicity (see section on drugs)
- Insufficient food given (criteria for NGT not applied)
- Food taken by siblings or caretaker
- Sharing of caretaker's food
- Malabsorption
- Psychological trauma
- Rumination (and other types of severe psychosocial deprivation)
- Infection, especially: viral , bacteria resistant to the antibiotics being used, fungal, diarrhoea,

dysentery, pneumonia, TB, urinary infection/ Otitis media, malaria, HIV/AIDS, Schistosomiasis/ Leishmaniasis, Hepatitis/ cirrhosis

- Other serious underlying disease: congenital abnormalities (e.g. Down's syndrome), neurological damage (e.g. cerebral palsy), inborn errors of metabolism

When a child deteriorates after having progressed satisfactorily initially, it is usually due to:

- Electrolyte imbalance with movement of sodium from the cells and an expansion of the circulation to give fluid overload or to the refeeding syndrome.
- Inappropriate dosage of drugs, or use of drugs not recommended in the severely malnourished child.
- Inhalation of diet into the lungs.
- An acute infection that has been contracted in the centre from another patient (called a "nosocomial" infection) or from a visitor/ sibling/ household member.
- Sometimes as the immune and inflammatory system recovers there appears to be "reactivation" of an existing infection during recovery
- A limiting nutrient in the body that has been "consumed" by the rapid growth and is not being supplied in adequate amounts by the diet. This is uncommon with modern diets commercially produced (F100 and RUTF) but may well occur when they are made in the facility or where untried recipes are introduced or sharing of the mother's food (see refeeding syndrome).

8.3 Actions required

- Record on the chart the diagnosis and refer the child to more senior and experienced staff
- Take a detailed history and fill the clinical history and examination form
- Examine the child carefully. Measure the temperature, pulse rate and respiration rate accurately
- Where appropriate, examine urine for pus cells and culture blood, culture sputum or tracheal aspirate for TB; examine the retina in a low light for retinal tuberculosis
- Do a chest x-ray
- Examine stool for blood, look for trophozoites or cysts of giardia; culture stool for bacterial pathogens. Test for HIV, hepatitis and malaria
- Examine and culture Cerebral Spinal Fluid (CSF)
- Sometime parents bring traditional medicines and other treatments into the facility and give them to the child (a sort of "insurance" in their mind to have both modern and traditional treatments)
- Systematically consider the common causes listed in the box
- If this is not immediately successful then an external evaluation by someone with experience of running a program for the treatment of severe malnutrition should be requested
- Review of the supervision of staff with refresher training if necessary
- Re-calibration of scales (and length-boards)

- Refer children with chronic diseases (Congenital heart disease, neural tube defects, cerebral palsy, broncho-pulmonary dysplasia, chronic renal failure, etc.) to the appropriate paediatric ward under the care of the paediatrician – these patients are referred out of the program and all further management decisions and treatment will be under the direction of another service

9 TRANSITION PHASE

Transition Phase prepares the patient for Recovery-phase as an out-patient. Occasionally the recovery-phase is as an in-patient where there is no appropriate home for the child to go to, the caretaker chooses to remain in in-patient care (see also the care of the less than 6 month old infant) or there is no OTP functioning.

The transition phase usually lasts between 1 and 5 days – but may be longer, particularly when there is another pathology (e.g. TB or HIV); a prolonged transition phase is a criterion for failure-to-respond.

9.1 Diet

The ONLY change that is made to the treatment on moving from Acute-phase to Transition-Phase is a change in the diet from F75 to RUTF, or if the RUTF is not accepted to F100.

It is preferable to use RUTF in the Transition Phase. Those children who have been very ill and are going to continue treatment as out-patients with take-home treatment should become habituated to RUTF before they go home.

- Give the total amount of RUTF that should be taken during the day according to the table;
- Advise the mother to breastfed the child 30 min before giving the RUTF;
- Tell the mother to wash hands before giving the sachet of RUTF to the child;
- Tell the mother to offer plenty of water to the child;
- Advise the mother to put the sachet in a box (insect and rodent proof) when the child has finished each session of eating;
- CHECK five times during the day the amount given by the mother. It is important for the assistant to check regularly and counsel the mother and not assume that the mother will give all the RUTF to the child. It is useful to have regular “meal times” for the children where the mothers all gather together in one place to feed their children.

For children that are not taking sufficient RUTF (not gaining any weight),

- Either give F100 for a few days and then re-introduce RUTF;
- Or return the child to the acute-phase for a day or so and give F75;
- Do NOT give any other food to the patient during this period;
- Do NOT let the caretaker eat in the same room as the malnourished children;
- Check that the caretaker or other children do not consume the patients’ RUTF;
- Make drinking water available both in the ward and also to individual children. The mother must offer as much water to drink as they will take during and after they have taken some of the RUTF;
- Write on the multi chart, the amount given and taken.

One advantage of the RUTF is that there is no need for surveillance during the night so that minimum or no night staff are needed.

Some patients initially refuse the RUTF completely. If this is the case they should be given the F100 diet for one or two days and then the RUTF re-introduced. Other children prefer the RUTF. It is good practice to give the diet that the children prefer – the two diets are nutritionally equivalent.

If RUTF is not available, or the child does not readily take the RUTF (younger children and about 10% of the older children prefer a liquid diet) then use F100 (130ml = 130kcal).

When F100 is used the number of feeds, their timing and the volume of the diet given remains exactly the same in Transition Phase as it was in Acute-phase.

- Ask the mother to breastfed their children, half an hour before giving the feed;
- Prepare the diet: It is made up from one small package of F-100 (114g) diluted into 500 ml of water or one large package of F100 (456g) diluted into 2 litres of water;
- Give five or six feeds per day;
- Write on the multi-chart the amount to take and taken.

Even if the child is going to remain in a facility for recovery-phase, RUTF can be given for transition phase and subsequently; this relieves the burden on the staff of making up feeds frequently.

Warning: F100 should **never** be given to be used at home. F100 is always prepared and distributed in an in-patient unit by staff trained in its use. F100 should not be kept in liquid form at room temperature for more than 3 hours before it is consumed, if there is a functioning refrigerator, constant electricity and a very clean kitchen/ utensils, then it can be kept (cold) for up to 8 hours (i.e. overnight).

Amounts of RUTF to give per 24h in Transition phase

The amounts given in the table are for the full 24h period.

Table 22: Look up table for RUTF in Transition Phase per 24h

Class of Weight	Paste In grams	Paste Sachets	Bars Bars	Total Kcal
3.0 – 3.4	90	1.00	1.5	500
3.5 – 3.9	100	1.00	1.5	550
4.0 – 4.9	110	1.25	2.0	600
5.0 – 5.9	130	1.50	2.5	700
6.0 – 6.9	150	1.75	3.0	800
7.0 – 7.9	180	2.00	3.5	1000
8.0 – 8.9	200	2.00	3.5	1100
9.0 – 9.9	220	2.50	4.0	1200
10 – 11.9	250	3.00	4.5	1350
12 – 14.9	300	3.50	6.0	1600
15 – 24.9	370	4.00	7.0	2000
25 – 39	450	5.00	8.0	2500
40 – 60	500	6.00	10.0	2700

NOTE: If both F100 and RUTF are being given, they can be substituted on the basis of 100ml of F100 = 20g of RUTF[72].

[72] If tables are to be constructed then 100 ml of F100 = 18.5g of RUTF: 10g of RUTF = 54ml of F100 should be used and the resulting values rounded to the nearest 5 or 10 ml

Table 23: Look up table on the amounts of f100 to give for 6 – 5 feeds per day

CLASS OF WEIGHT (KG)	6 FEEDS PER DAY	5 FEEDS PER DAY
Less than 3.0	F100 full strength should not be used	
3.0 – 3.4	75 ml per feed	85 ml per feed
3.5 – 3.9	80	95
4.0 – 4.4	85	110
4.5 – 4.9	95	120
5.0 – 5.4	110	130
5.5 – 5.9	120	150
6.0 – 6.9	140	175
7.0 – 7.9	160	200
8.0 – 8.9	180	225
9.0 – 9.9	190	250
10.0 – 10.9	200	275
11.0 – 11.9	230	275
12.0 – 12.9	250	300
13.0 – 13.9	275	350
14.0 – 14.9	290	375
15.0 – 19.9	300	400
20.0 – 24.9	320	450
25.0 – 29.9	350	450
30.0 – 39.9	370	500
40.0 – 60.0	400	500

NOTE: if small quantities of F100 are being reconstituted from the commercial powder, the red scoop should be used and 14ml of water added to each scoop (not compressed) of F100.

The table gives the amount of F100 (full strength) that should be offered to the patients in transition phase who are not taking RUTF. They should normally be taking 5 feeds during the day and none at night.

9.2 Routine Medicine

Routine antibiotic should be continued for 4 more days after acute-phase or until transferred to recovery-phase as an outpatient (patients entering OTP after having been in a facility do not need to be given antibiotics).

9.3 Surveillance

The surveillance of Acute-phase is maintained in Transition Phase.

9.4 Criteria to move back from transition phase to the acute phase

Move the child back to acute-phase:

- If there is a rapid increase in the size of the liver
- If any other signs of fluid overload develop (increased respiratory rate)
- If the patient gains weight more rapidly than 10g/kg/d (this indicated excess fluid retention)
- If tense abdominal distension develops (indicates abnormal peristalsis, small bowel overgrowth and perhaps excess carbohydrate intake)

- If the patient gets significant re-feeding diarrhoea so that there is weight loss (see separate section)
- If a complication arises that necessitates an intravenous infusion (e.g. malaria, dehydration, etc.)
- If there is any deterioration in the child's condition (see section on refeeding syndrome)
- If there is increasing œdema (look for unexpected sodium intake, particularly from mother's diet or drugs – if an extraneous source if sodium is found then it should be eliminated and children with good appetites can remain in transition-phase)
- If a child who does not have œdema develops œdema (look for extraneous intake of sodium)

It is common for the children to get some change in stool frequency when they change diet. This does not need to be treated unless the children lose weight. Several loose stools without weight loss is **not** a criterion to move back to acute-phase.

9.5 Criteria to progress from transition phase to OTP

Transfer the patient to the OTP

- If s/he has a good appetite - This means taking at least 90% of the RUTF (or F100) prescribed for transition phase
- For Œdematous patients (kwashiorkor), if there is a definite and steady reduction in œdema
- If there is a capable caretaker
- If the caretaker agrees to out-patient treatment
- If there are reasonable home circumstances
- If there is a sustained supply of RUTF
- If an OTP program is in operation in the area close to the patient's home

A patient transferring from one to another phase of treatment, one as an in-patient and the other as an outpatient, is still under the care of the IMAM program for this episode of severe malnutrition; this is not a "discharge" from the in-patient facility but an internal transfer to another part of the same program – nevertheless the IPF records this as "successful treatment".

10 DISCHARGE PROCEDURES

- Register the patient in the registration book as successfully treated, dead, defaulter or a medical referral;
- Complete the multi-chart and fill in a transfer form with the SAM N° and give all the required information about the treatment;
- Call the OTP to give them notice about the patient returning home;
- Give the mother a copy of the transfer form, the name and address of the OTP and the day of the consultation and a provision of RUTF until the next appointment in the OTP;
- Write in the child's health card the treatment given and the weight.

INFANTS LESS THAN 6 MONTHS OLD WITH A FEMALE CARETAKER[73] (IPF)

Infants who are malnourished are weak and do not suckle strongly enough to stimulate an adequate production of breast milk.

The mother often thinks that she herself has insufficient milk and is apprehensive about her ability to adequately feed her child. The low output of milk is due to inadequate stimulation by the feeble infant. Attempts to put such infants to the breast repeatedly fail, the infant continues to lose weight and the mother is confirmed (correctly) in her view that attempts at exclusive breast feeding will not work after her infant has become so malnourished. This does not work.

On the other hand treating the infant with artificial diets rapidly leads to weaning and the mother sees that the "formula" is the only way to allow her child to recover. Weaning an infant in most circumstances where malnourished infants are found carries a high risk of mortality. This is not recommended.

The objective of treatment of these patients is to return them to full exclusive breast-feeding. This is achieved by stimulating breast-feeding at the same time as supplementing the child **during** breast feeding until the infant becomes stronger and breast milk production is sufficient to allow the child to grow properly.

Breast milk output is stimulated by the Supplemental Suckling (SS) technique; it is important to put the child to the breast as often as possible.

The SS technique is time consuming and requires skill, but is the only technique that works in practice.

1 STRUCTURE AND ORGANISATION

These infants should always be treated in IPF and not in OTP. RUTF is NOT suitable for young infants and milk based feeds should not be given for home treatment.

There should be a special service/program to assist mothers who have difficulty breast feeding established. The aim of such a service would be concentrate on all breastfeeding problems - for the malnourished, to re-establish exclusive breastfeeding and achieve confidence in the mother's ability to produce sufficient milk for their baby to thrive.

- It's out-patient arm would counsel and provide one-to-one support for all mothers who have difficulty with breast-feeding;
- The in-patient arm would be for mothers whose children are not "thriving" and become malnourished.

It is inappropriate to admit young infants to most general paediatric or nutrition wards. If such a service does not exist then the program should be part of the neonatal service; otherwise there should be a specific section of the IPF devoted to the management of the malnourished young infant.

The ward: In most cultures, the ward/room where these infants are managed should be adequately screened and private. Unannounced arrival of males in the section should be forbidden. The mothers must be confident that they will not be disturbed or surprised by men arriving in the ward whilst

[73] See annex 20 for infants less than 6 months without a female caretaker

they are uncovered. Rounds by male doctors should be announced in advance. There should be a separate visiting room where mothers can meet with their husbands without them being admitted to the service.

The staff should be female and have professional training in breast-feeding support and counselling as well as skills in care of the neonate and the malnourished child.

2 Activities and Tools

2.1 Activities

- Admit the baby: take the anthropometric measurements and examine the baby, check the criteria of admission, register in the registration book and the chart;
- Explain to the mother the aim of the management;
- Manage the infants using the Supplemental Suckling Technique (SST);
- Prepare the milks, teach and demonstrate the techniques, conduct surveillance and follow the baby and the mother;
- Discharge the baby and the mother.

2.2 Tools

- Registration book;
- Infant SS- chart (annex 19);
- Material for SST: NGT size 8, cups, material to clean the tube, measuring jug (do not use a feeding bottle);
- Scale with a precision of 10g;
- Diet: F100Dilute or Generic infant formula, meals for the mother;
- Drugs: for systematic treatment and food/nutrients for the mother;
- Others: posters to encourage breastfeeding, flip charts to show technique, look up table for the feeds.

3 Admission

3.1 Anthropometric measurement and clinical examination

- Take the infant's weight with a scale of 10g precision;
- Check the infant clinically (presence of bilateral œdema, infection, etc.);
- Examine the mother's breasts;

3.2 Criteria of Admission

AGE	ADMISSION CRITERIA
INFANT LESS THAN 6 MONTHS **OR** INFANT < 3 KG WITH A FEMALE CARER CAPABLE OF BREAST FEEDING	➢ The infant is too weak or feeble to suckle effectively (irrespective of his/her Weight-for-Length(WL), Weight-for-Age (WA) or other anthropometry) **or** ➢ The infant is not gaining weight at home (by serial measurement of weight during growth monitoring, i.e. change in weight-for-age) **or** ➢ W/L (Weight-for-Length) less than <-3 Z **or** ➢ Presence of bilateral œdema

Each of these criteria objectively shows a failure of satisfactory breast feeding so that the child is not gaining weight and developing normally.

From birth to 6 months of age, weight-for-age is the most appropriate measure to assess nutritional status. At this age, failure to gain weight can be defined as **acute** malnutrition.

However, there are premature and small-for-gestational-age babies born who are being exclusively breast fed and gain weight at a satisfactory rate. Such infants are thriving and do not need admission to the program. The best way to differentiate those infants who are thriving from those that are becoming malnourished is to take repeated weight measures longitudinally; this is the value of the growth-monitoring program.

Where there is a growth-monitoring program,

- Admit all infants who are not following the WA growth channels
- Admit infants if they are losing weight or have crossed WA centile lines because their weight is static

Where there is no growth monitoring program or there are no "historical" weight measurements and the mother reports that she does not have sufficient breast milk or that the infant "does not like my breast milk":

- Check the weight-for-age and admit those who are less than -3Z scores
- Check the infant clinically
- Examine the mother's breasts
- Observe the mothers breast-feeding performance

If the infant is clinically well and appears to be breast feeding satisfactorily, the mother should be counselled and given a return appointment in one or two weeks to monitor the weight change of the infant (an accurate 10g precision infant scale is needed – not a survey scale with 100g divisions).

Where the infant has a clinical illness, the mother's breast feeding performance is not satisfactory, the infant appears clinically malnourished

- Admit the infant and mother to the program

3.3 Registration

- Register the infant in the registration book and fill in the infant SS-chart
- Explain to the mother the aim of the management, which is to return the infant to exclusive breast feeding

4 MANAGEMENT

4.1 Diet

The SS-milk can be either generic infant formula or made by diluting F100 to make F100dilute.

Note: Full strength F100 should NEVER be used for small infants of children less than 3kg. The renal solute load is too high for this category of child and could provoke hypernatræmic dehydration.

4.1.1 Type of milk

For Œdematous infant: Give F75

For Non œdematous infant: Give Generic Infant formula or F100dilute

If there is a choice, Use a formula designed for premature infants.

NOTE: Unmodified powdered whole cow's milk should NOT be used (e.g. Nido®)

4.1.2 Preparation

- For Infant formula,
  - Dilute according to the supplier's instructions.
- For F100dilute,
  - Put one small packet of F100 into 670ml of water instead of 500ml (or, if you do not have a small packet, one large packet of 457g F100 into 2.7 l of water instead of 2l to make F100 diluted).
  - Use 100ml of F100 already prepared and add 35ml of water, then you will get 135ml of F100diluted. Discard any excess waste.
  - Don't make smaller quantities.

4.1.3 Amounts to give by SS technique

- Give the amount of SS-milk at each feed according to the look up table.
- Do NOT increase the amount given as the infant starts to regain strength, suckle more strongly and gain weight.
- Encourage the mother when the infant is gaining weight and tell her, that "the recovery is due to her own breast milk".
- Ask the mother to breast-feed every 3 hours for at least 20 minutes, more often if the infant cries or seems to want more.
- Shortly after (30 to 60 minutes) giving a normal breast-feed, return the infant to the breast and help the mother to give the generic infant formula/F100dilute using the SS technique.
- Write the information on the infant chart.

Table 24: Look up table of the Amounts of SS-Milk for infants during SS feeding

CLASS OF WEIGHT (KG)	ML PER FEED (FOR 8 FEEDS/DAY)
	Infant formula or F100dilute
>=1.2 kg	25 ml per feed
1.3 to 1.5 kg	30
1.6 – 1.7	35
1.8 – 2.1	40
2.2 – 2.4	45
2.5 – 2.7	50
2.8 – 2.9	55
3.0 – 3.4	60
3.5 – 3.9	65
4.0 – 4.4	70

Children less than 6 months, with œdema, should be started on F75 and not on F100diluted. When the œdema has resolved and they are suckling strongly they should be changed to infant formula or F100dilute

4.2 Supplementary Suckling Technique

4.2.1 At the beginning of the SS technique

- Use a tube the same size as n°8 NGT (a n°5 tube can be used and is better for the infant, but the milk should be strained through cotton wool to remove any small particles that block the tube).
- Put the appropriate amount of SS-milk in a cup and hold it.
- Put the end of the tube in the cup.
- Put the tip of the tube on the breast at the nipple.
- Tell the mother to offer the breast in the normal way so that the infant attaches properly.

Note: At the beginning the mothers find it better to attach the tube to the breast with some tape, later as she gets experience this is not normally necessary.

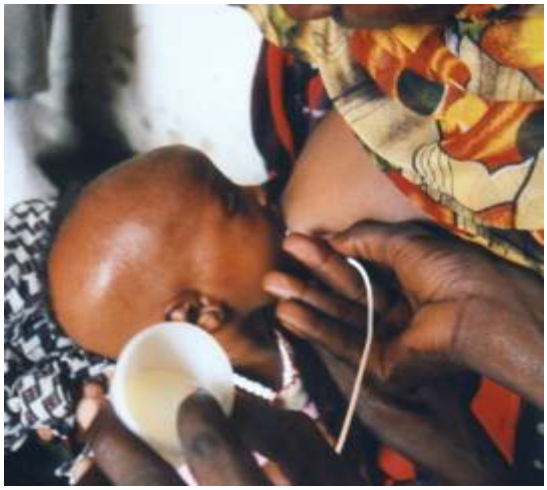
- When the infant suckles on the breast, with the tube in his mouth, the milk from the cup is sucked up through the tube and taken by the infant. It is like taking a drink through a straw.
- Help the mother at first by holding the cup and the tube in place.
- Encourages the mother confidently.
- Place the cup at first about 5 cm to 10 cm below the level of the nipple so the SS-milk can be taken with little effort by a weak infant.
- NEVER place the cup above the level of the nipple, or it will flow quickly into the infant's mouth by siphonage with a major risk of inhalation.
- Tell the mother to relax. Excessive or officious instructions about the correct positioning or attachment positions often inhibit the mothers and make her think the technique is much more difficult than it is. Any way in which the mother is comfortable and finds that the technique works is satisfactory.

It may take one or two days for the infant to get used of the tube and the taste of the mixture of milks, but it is important to persevere.

4.2.2 Later, as the infant becomes stronger

- Lower the cup progressively to about 30cm below the breast.

- Later when the mothers are more confident, ask if they want to manage to hold the cup and tube without assistance. The mother, instead of the assistant, can hold the tube at the breast with one hand and the other holds the infant and the cup. In this way she can perform SS-feeding without assistance.
- Use another mother who is using the technique successfully to help.
- Try to have the mothers together at the same time using the SS technique. Once one mother is using the SS-technique successfully the other mothers are greatly encouraged and find it relatively easy to copy her.
- If the SS-milk formula is changed suddenly then the infant normally takes a few days to become used to the new taste. It is preferable to continue with the same supplementary diet throughout the treatment.



This infant is suckling the breast and also getting the SS-milk (135ml/kg/d) by the supplemental suckling technique.

Raising or lowering the cup determines the ease with which the infant gets the supplement: for very weak infants it can be at the level of the infant's mouth. If it is above this level, the feed can go into the child by siphonage when there is a danger of aspiration.

4.2.3 Cleaning the tube

- After feeding, flush the tube through with clean water using a syringe.
- Then spin (twirl) the tube rapidly to remove the water in the lumen by centrifugal force, and inspect to ensure that no water remains in the tube. If convenient the tube is then left exposed to direct sunlight. The UV rays in sunlight penetrate the plastic and can effectively sterilise the tube if it is already clean and all opaque matter is removed.

4.3 Progress and follow up

- Monitor the progress of the infant by the daily weight with a scale graduated within 10g (or 20g) and write on the infant chart.

If the child loses weight over 3 consecutive days yet seems hungry and is taking all his F100 dilute/infant formula,

- Add 5ml to each feed.

The Supplemental Suckling feed is giving maintenance amounts. If it is being taken and there is weight loss, either the maintenance requirement is higher than calculated or there is significant malabsorption.

If the child grows regularly with the same quantity of milk,

- Tell the mother that the quantity of breast milk is increasing and she is "responsible" for recovery.

If after some days, the child does not finish all the supplemental food, but continues to gain weight,

- Tell the mother that the breast milk is increasing and that the infant is getting enough to fully recover.
- Reduce the amount of SS-milk given at each feed by the amount not taken.

When a baby is gaining weight at 20g per day for 2 consecutive days (whatever her/his weight),

- Decrease the quantity of SS-milk given at each feed to one half of the maintenance intake.

If, on half the SS-intake, the weight gain is maintained at 10g per day (whatever her/his weight),

- Then stop supplement suckling completely. Tell the mother that she is doing this all by herself.

If the weight gain is not maintained when the SS-milk intake is cut in half,

- Then change the amount given to 75% of the maintenance amount for 2 days and then reduce it again if weight gain is maintained.

If the mother wishes to go home as soon as the child is taking the breast milk greedily and gaining weight, they should be discharged.

If the mother is agreeable, keep in the centre for a further 2 days on breast milk alone to confirm that her infant continues to gain weight on breast milk alone.

Then discharge the infant, no matter what his current weight for age or weight for length

4.4 Routine Medicine

These children have to be seen by a nurse every day because they are exceptionally vulnerable.

- **Give Antibiotics**: Amoxicillin (from 2kg): 30mg/kg 2 times a day (60mg/day) in association with Gentamicin once daily. (Never use Chloramphenicol in young infants) during four to five days.

4.5 Surveillance

Monitor the infant and write it on the infant chart:

- Weight is measured daily
- Body temperature is measured twice per day.
- The standard clinical signs are assessed and noted in multi-chart each day
  - Respiration rate
  - Stool
- A record is taken (on the intake part of the multi-chart) if the patient is absent, vomits or refuses a feed,

4.6 Care for the mothers

As the aim is to increase breast milk, the mother's health and nutritional status are critical for the nutritional repletion of the infant.

- Check mother's MUAC and the presence of œdema
- Explain to the mother what the aim of treatment is and what is expected of her
- Do not make the mother feel guilty for the state of her child or blame her for giving other foods

- Introduce her to the other mothers in the centre and introduce her to the staff personally. Make her feel "at home" in a friendly and relaxing atmosphere
- Agree with her that she may not have enough milk at present – but strongly reassure the mother that the technique works and that enough milk will "come into" her breasts as her baby recovers. She will then be able, with her own milk, to make her baby better
- Tell her and encourage her to drink at least 3 litres per day
- Make the necessary arrangement for the mother so she can eat about 2500kcal/day of a high quality diet
- Give to the mother Vitamin A: 1) If the child is below 2 months or the mother is menstruating: 200.000UI (there should be no risk of pregnancy), 2) If the child is above 2 months: 25.000UI once a week
- Give Micronutrient supplementation
- Decrease as much as possible the length of stay in the facility
- If needed, give drugs which help with lactation (e.g. metaclopramide 10mg8 hourly)

Other drugs that increase milk flow (e.g. chlorpromazine, are less effective, cross into breast milk and will potentially affect the mother and child adversely); in some cultures there are local spices that stimulate breast milk output (e.g. fenugreek) but their safety has not been established.

5 DISCHARGE

Decide when to discharge the infant according to the discharge criteria and write in the registration book, the infant SS chart, and on the health card (passport) of the child.

AGE	DISCHARGE CRITERIA
Infant less than 6 months or less than 3 kg being breast-fed	➢ it is clear that s/he is gaining weight on breast milk alone after the Supplemented Suckling technique has been used, ➢ there is no medical problem, ➢ the mother has been adequately supplemented with vitamins and minerals, so that she has accumulated body stores of the type 1 nutrients.

NOTE: there are no anthropometric criteria for discharge of the fully breast-fed infant who is gaining weight.

- Advise the mother to come to the Mother and Child Health (MCH) clinic regularly and the SFP programme to receive high quality food to improve the quantity and quality of breast milk.

NOTE: for infant without care taker, see in annex 20.

MONITORING AND EVALUATION

Monitoring and evaluation is an integral part of all feeding programs. Indicators should be graphed to help in interpreting trends as the programme proceeds. The data are critical for planning services, opening and closing OTPs, ordering supplies and knowing where additional training or help is required. It also forms part of the surveillance system to assess the state of nutrition of the population.

1 DEFINITIONS

1.1 "SAM-Number"

The SAM-Number is defined as a unique number assigned to each patient DIAGNOSED with SAM and entering the IMAM program. It is in addition to any other numbers that may be given by a registered IMAM facility.

- The SAM-Number must be used on all internal transfer forms and documents related to that patient (IPF multi-charts, OTP chart, register book).
- The SAM-Number should normally take the following format:

Health district code (letter or number)/Facility name or Number/Child Number

Note: This can be changed at National level, and should be as simple as possible. Where there is an alternative unique national number for each individual, this can replace the SAM-Number.

For example, if a patient is first diagnosed from District of Sebrah in an OTP at the Najid health centre, that patient may have the SAM number of <S/OTPNaj/0001>; the 156th patient first treated at the district hospital of Goma may have the SAM number of <G/IPFGo/0156>. The principles are that each facility's name should be unique within the country whilst being as short as possible (the staff have to repeatedly write the number).

The National Nutrition Department assigns a code for each region/district in consultation with the other departments of the Ministry of Health.

The District Nutrition Officer with the DMO and the DHMT,

- Liaises with any other agencies or NGOs that collaborate in the government's IMAM program
- Assigns the code and registers each facility as part of the IMAM program, whether it is an OTP site or an IPF, before the site is opened, and informs the National Nutrition Department of the facility's registration details.

The patient keeps this same SAM-number during ALL internal transfers. The individual facilities can also give their own registration number to the patient for internal use and filing – a site specific number – but they must use the SAM-Number on all transfer forms and documents related to that patient.

NOTE: Sometimes a patient has a third number. For example, if there is an IPF attached to a district hospital and the patient has been transferred from OTP as an outpatient, then the patient will have: 1) a SAM-Number assigned by the OTP site, 2) an In-patient sequential registration number for the malnutrition unit, and 3) a hospital registration number; these registration numbers must be kept

distinct and marked in different places on the charts and transfer forms; the critical number is the SAM-Number.

This SAM-Number is assigned where the patient is first DIAGNOSED, whether this is an OTP site or in the IPF. This number is unique and should always be denoted as the SAM-Number. In all the documents relating to the patient, i.e. for in-patient care - on Multi charts, registration book and transfer forms; for Out-patient care, on the OTP chart, registration book and transfer forms. Where there is a National health card, road-to-health chart or other monitoring document then the SAM-Number and the admission must be entered into that document retained by the caretaker.

1.2 "Facility-Registration-Number"

The facility registration number is defined as a registration number assigned by the facility. This should normally take the form of a number followed by the year (e.g. 0234/2011). This number is used for internal filing and sorting records within the facility on the Multi-charts and register book in the IPF and the OTP chart and registration book in the OTP, but is neither used for transfer of patients nor for constructing a database of patients.
For clarity: the sequence of numbers will not be the same; this is because internal transfers may be given a new facility registration number, but should NOT be given a new SAM-Number – they retain the same SAM-number from facility to facility.

1.3 "New admission"

A new admission is defined as a patient with SAM who has not been under treatment elsewhere for this episode of SAM and has not been assigned a SAM-Number.

For clarity: an OTP which diagnoses and transfers the child to an IPF without treatment should assign the SAM-Number upon diagnosis before transfer. It is a new admission for the OTP.

The new admissions to each site should have consecutive SAM-Numbers so that the total number of new admissions can be verified from the numbers.

1.4 "Relapse"

Relapse is defined as 1) where a patient is admitted for SAM that has been previously treated for SAM and has been discharged from the program as cured, or 2) where the child has abandoned the program and returns with SAM after a lapse of more than 2 months.

A relapse should be counted as a "new admission".

SAM-Number and relapse: They should give a postfix to her/his SAM-Number thus:xxxx-2 to denote that this is the second episode of SAM for this patient. If the original SAM-Number cannot be found a new SAM-Number should be given, but it should always have xxx-2 to denote a second admission to the program.

Children that have relapsed are particularly vulnerable and the fact that they are relapses should be noted in the "Major problem" section of their charts.

1.5 "Readmission"

Readmission is defined as a defaulter who returns to either the OTP or IPF to resume treatment after an absence of 2 months or less. The child is not a new admission and is reassigned his/her original SAM-number.

1.6 "Internal-Transfer"

Internal transfer is defined as a patient who arrives because s/he has been transferred from another facility (from OTP to IPF, OTP to another OTP, or IPF to OTP) after receiving the SAM-Number.

Such transfers are recorded in both the entry and exit sections of the register and report. If it is necessary to differentiate these two, then the terms transfer-in and transfer-out can be applied as follows.

- "Transfer-in" is a patient arriving from another facility (OTP or IPF)
- "Transfer-out" is a patient sent to another facility to continue treatment (OTP or IPF)

1.7 "Other Admission"

Other Admission is defined as a patient that is admitted to the facility for whatever reason but does not fulfil any of the criteria of SAM (e.g. a twin, etc.); these patients are not counted in the facility's monthly report statistics. They are not given a SAM-number.

1.8 "Error of Admission"

Error of admission should not be recorded in either admission or discharges in the monthly statistics; their SAM-number should be reassigned to the next patient and crossed out from all their records.

For clarity: these patients are not part of the IMAM program and are not counted in the report. If they have used considerable amount of resources this can be recorded. Also if errors of admission are frequent then the IMAM program should be reviewed.

1.9 "Cure"

Cure is defined as a patient reaching the criteria for discharge.

Note: Discharge to the Supplementary Feeding Program (SFP) is not considered as a transfer, but as a discharge from the program for severe malnutrition.

1.10 "Successfully Treated"

This term is used for 1) patients in the IPF who successfully complete phase 1 (acute-phase) of treatment and are transferred to OTP to continue their treatment, and 2) for infants less than 6 months who are discharged gaining weight on exclusive breast feeding.

For clarity, when the patients exit the IPF to continue treatment in the OTP they are still in the program and have not reached the criteria for discharge, that is they are not yet "cured". However, the IPF has successfully "graduated" the patient and fulfilled their role in treatment properly.

1.11 "Length of stay"

The length of stay is defined as the time from admission to the time of reaching "cured" status (OTP) or successful treatment (IPF) and not the time of physical exit from the program or facility.

For clarity, patients may remain in the program after they have reached the criteria for "cure", particularly in an IPF where transport or escort arrangements have to be made; this time is not counted in the length of stay or rate of weight gain calculations.

Note: it is not recommended that, for individual patients, the length of stay in the IPF be added to the length of stay in the OTP to obtain the total length of stay in the program for that individual. These data can, if desired, be obtained during evaluations, as well as the length of stay and rate of weight gain of children who were first treated in IPFs before transfer to the OTP separately from those who were treated wholly in the OTP.

1.12 "Died" or "Dead"

Died or Dead is defined as a patient who dies during their stay in the SAM program after they have been assigned a SAM-Number.

For clarity: This includes patients who die in transit from one facility to another. Where a patient with SAM dies during transit from an OTP to an IPF, the death should be recorded as death within the program and assigned to the OTP report.

If the child was previously reported as "defaulter unconfirmed" and is subsequently found to have died, this should be notified in a subsequent monthly report in the "change of category section"; a note is made in the registration book and the IPF/OTP chart.

1.13 "Defaulter-Confirmed"

A defaulter-confirmed is defined as a patient who is absent, without making any arrangements with the staff, for 2 consecutive weightings (14 days in OTP and 2 days in an IPF) and without being officially discharged, who is known to be still alive (from home visit, neighbour, volunteer or outreach worker's feedback).

1.14 "Defaulter-Unconfirmed"

A defaulter-Unconfirmed is defined as a patient that fulfils the definition for defaulter, but that it is uncertain whether they are in fact alive or dead.

In the reports, the defaulters are recorded as defaulting when they have failed to return. In OTP this will normally mean that they are recorded in the month following the actual time that they were last seen, and to a lesser extent for IPF. If any calculations are made on defaulters (e.g. rates of weight gain before defaulting etc.), then 14 days should be subtracted from the "date of defaulting" for OTP patients and 2 days for IPF patients.

1.15 "Non-Response" (to standard treatment)

Non-Response to treatment is defined as a patient in either OTP or IPF who fulfils the criteria set out in the guidelines as failure-to-respond to treatment and fails to respond to all treatment and whose caretaker refuses referral or referral to a senior paediatrician to take over the case is impossible.

For clarity: this includes all children who do not respond for any reason (social, psychological and medical) and is not restricted only to those who have suspected underlying medical conditions requiring transfer or referral.

1.16 "Medical-referral"

Medical-referral is defined as a patient who has a serious underlying illness that requires treatment beyond the scope of the IPF for SAM (or is suspected of having such a condition that requires diagnostic tests beyond the capacity of the IPF) and is referred to another service which takes over the complete management of the child. This is counted as the patient leaving the IMAM program for management by another service.

1.17 "Refusal-of-transfer"

Refusal of transfer is defined as a patient who fulfils the criteria for admission to an IPF (according to the triage criteria) but declines the invitation for transfer from the OTP.

For clarity, this is not a reason for discharge from the OTP, where the patient remains for continued treatment. A note is made in the register and the chart to say that the patient declined transfer. This is not recorded in the monthly report. But as it can be an explanation for mortality in the OTP should be periodically examined for the annual report and evaluations; if frequent, this should signal the need for investigation of the reasons (distance to the IPF, reputation of the IPF, etc.) and remedial action to be taken.

1.18 "Exit"

An exit is defined as a patient leaving a facility – it is the sum of patients cured/successfully treated, died, defaulted, medical referral, and internal transfers.

For the OTP this represents the sum of discharges and internal transfers. For the IPF this is the sum of successfully treated patients, discharges and internal transfers.

1.19 "Discharge"

A discharge is defined as a patient who leaves the IMAM program because they are cured, died, defaulted, or medically referred.

1.20 "Missing-Patients"

Missing-patients are defined as those patients that are transferred to another facility and fail to attend the receiving facility to which they have been transferred within a reasonable space of time (several days). This statistic is not recorded in any of the documents – but can be calculated from the collated reports of the OTPs and IPF within a district.

2 REGISTRATION

2.1 Registration book

There should be a registration book in each OTP and IPF.

For clarity, some programs do not use a registration book, but rely on the charts themselves to enable reporting, monitoring and evaluation. This is not considered a safe or satisfactory procedure because of the problem of missing charts and there should always be a registration book.

- The registration book for IPF and OTP should contain the following items:
- Registration number of facility (IPF or OTP)
- SAM number (unique to the child)
- Date of admission
- First and family name
- Address
- Telephone number
- Type of entry (new admission, relapse, returning defaulter, internal transfer)
- Sex
- Age (in months)
- Weight at admission
- Lenght/Height at admission
- Weight-for-height on admission (Z-score)
- MUAC at admission
- Œdema at admission
- Date of exit
- Weight at exit

- MUAC at exit
- Type of exit (cured, successful treatment (IPF only), dead, defaulter (confirmed or unconfirmed -OTP only), referred (IPF only) internal transfer, admission error
- Final diagnosis
- Observations (e.g. refused transfer, other major illnesses, special cases etc.)

The register for IMAM should be maintained separately from other registers (such as IMCI) and must contain all the information necessary to also calculate the length of stay, weight gain and permit all the data to be differentiated by gender, for compilation of the annual (or more frequent) report.

2.2 The charts

There are three sorts of charts: the multi-chart (IPF) and the infant SS-chart (IPF) and the OTP chart. The charts are in the appendix; for details of how to fill the charts see the training modules.

- In patient multi-chart is the primary tool for managing in-patients in IPF

It should be filled for each patient. It is the primary tool for managing malnutrition and is recommended for all facilities looking after these patients. Other documents and local hospital records should not be the primary records for these patients; there is no place for spending time making duplicate records.

The chart is designed so that it allows proper control of all aspects of the care of the patient (from admission to follow-up and throughout his/her stay in the in-patient facility). **All** the staff use the same chart. All the essential information is recorded systematically in the same predetermined part of the chart. The information can thus be found easily and quickly for each patient.

- Infant SS-chart is the primary tool for managing the less than 6 months infants in the IPF
- OTP chart is a single A4 double sided sheet upon which all the OTP information is recorded

3 REPORTS

The monthly report is the standard report. A report from each facility (OTP and IPF) should be completed and submitted to the District Nutrition Officer/focal point each month. These are entered into the district database which is transmitted to the National Level. These are used to assess the quality of services provided at facility level. The monthly reports from each district are also collated together to give an overall picture of the quality of service and magnitude of the problem of SAM at district level. Software is being developed to complete this task. The results of the analysis are reported back to the OTP and IPF supervisors at the next monthly meeting.

In addition to the standard monthly report, there should be: 1) an annual report where additional data is collected from the OTPs and IPFs and 2) a three yearly external evaluation of the IMAM program in each district.

The monthly report should include: the total at the start of the month; the total entry (in categories); Total exits (in categories); total at the end of the month and stock control data.

The Annual report, in addition to the totals for the whole year, should include: the average rate of weight gain; the average length of stay; disaggregation of the data by gender (where there are large numbers of patients, this can be done on a representative sample).

The three yearly evaluation report should include: a) a review of each component of the program (community aspects, screening, SFP, OTP, IPFs, organisation, etc.) with an overview of the monthly and annual reports, b) a review of the tools, modules and methods of training, c) the quality of

supervision, d) the staffing and organisation, e) the logistics, f) the financing of the program, and g) recommendations for adjustment.

3.1 Monthly report

The monthly report should contain the followings:

3.1.1 Categories of patient

The different categories are the type of malnutrition, the age groups, the type of entry and exit,

- Type of malnutrition: Œdematous and Non- Œdematous

NOTE: Where œdematous malnutrition is exceptionally rare there is no need to separate the data by œdema status. Where it is more common the report should be separated by œdema status. Where a child is œdematous s/he should be recorded in the œdema column whether or not s/he fulfils other criteria for admission. The report should accommodate both types.

- Age groups

For IPF: <6 months, 6-23months, 24-59months, >59months;

For the OTP: 6-23months, 24-59months, >59months;

3.1.2 Numbers of patients by type of entry and exit to the facility

The types of entry to the facility should be: new admissions, relapses (both given new SAM-Numbers), readmissions (after defaulting) and internal transfers (transfer-in) where new SAM numbers are not given.

The types of exit from the IPF should be: Successful treatment (i.e. transfer-out to OTP and < 6 month successfully breast feeding and gaining weight), cured (for the few that remain in IPF) , died, defaulter, medical-referral (including non-responders).

The types of exit from OTP should be: Cure, died, defaulter-confirmed, defaulter-unconfirmed, internal transfer (transfer-out) and non-respondent (those who leave after refusing to transfer to IPF, or are transferred out of the program to social or other services).

The report from the OTP contains a box to indicate the IPF to which patients are normally transferred.

For clarity, some OTPs close to administrative boundaries may properly transfer patients to IPFs within another district if that IPF is closer or more convenient for the patients. If this is the case then it should be indicated on the report.

3.1.3 Other information

There is a separate section of the report enabling correction of previously submitted reports. In particular, reclassification of children previously classified as “defaulters-unconfirmed” into those that have been confirmed as defaulters and those that have died.

The report also contains stock details of the major consumables of the centre and those liable to pipeline rupture. In particular RUTF, but other essentials such as routine drugs can be included (e.g. antibiotics, antimalarials, etc.). The data should include stock at the beginning of the month, stock received and stock at the end of the month.

Mean length of stay for cured children:

This indicator should be calculated and reported for the recovered patients[74] for each category.

For an individual this length of stay =*Date the patient reached discharge criteria – date of admission.*

For a group of patients mean length of stay = *Sum of (Number of days for each recovered patient from admission to discharge criteria are met) / number of recovered patients*

Note: this is the average of the date the patient reaches discharge criteria minus the date of admission for each patient. Some patients remain in the program/IPF after they reach the discharge criteria for social reasons (need for communication with family, escort, transport etc.) if the date of actually leaving the centre is used then this should be stated with the result.

Mean rate of weight gain for wasted cured children:

This indicator is particularly useful to show the quality of feeding. In OTP it gives an indication of the amount of the RUTF dispensed that has been taken by the child.

The average weight gain is calculated for all RECOVERED patients for each patient category.

The rate of weight gain for an individual is calculated as the discharge weight minus the minimum weight multiplied by 1000 to convert the weight gain to grams. This is then divided by the minimum weight to give grams of weight gained per kilo body weight. Lastly, this total weight gain is divided by the number of days from the day of minimum weight to the day of discharge, to give g/kg/d.

For an individual this = $\frac{\textit{(Weight at discharge – minimum weight) x 1000}}{\textit{(Date of discharge – date of minimum weight) x minimum weight}}$

The Average rate of weight gain is then:

Average rate of weight gain (g/kg/day) = Sum of individual rates of weight gain/Total No of individuals

Note: There should not normally be a high rate of weight gain in the IPF.

In the OTP it is often not possible to determine the minimum weight and the length of stay will be in units of 7 days. If the admission date & weight are used in the calculation instead of the minimum weight & date then this should be stated and designated as RWG_{adm} to differentiate it from RWG_{min}. The date of FIRST reaching the discharge criterion – weight or MUAC - should be used in the calculation and not the date 7 days later when it is confirmed that the child has reached the required weight/MUAC and discharged.

To facilitate the calculation and speed up data processing a simple programme can be written in Excel. If the following data are entered into the computer then it is simple to calculate the length of stay and rate of weight gain (you can also calculate additional information such as the risk of death according to the Prudhon index, weight loss during loss of oedema). Date of Admission (DoA), Date of Minimum weight (Dmin), Date of discharge (DoD), Admission weight (WtAdm), Minimum weight (WtMin) discharge weight (WtDis), height (HtAdm) and outcome (to analyse only the recovered patients). The data can also be taken directly into programs that calculate anthropometric indices automatically. These data should all be recorded in the admission book to make data entry easy.

[74] The mean length of stay for other categories of patient is also useful: thus the average time that the dead patients were in the programme before death and the average time of defaulting can give an indication of where effort needs to be focused to lower these rates. However, as there is usually considerable variation and the data are highly skewed, this information is more usefully collected for individual children and analysed separately or presented as a graph.

ANNEXES

TRIAGE

1- Measurement techniques
2- Screening tally sheet
3- Weight-for-height -Child
4- Weight-for-height -Adolescent
5- BMI chart for adults
6- Registration book

OTP

7- OTP chart
8- Transfer forms
9- Variable/minimum RUTF in OTP
10- 5% Wt loss/gain chart
11- Wt gain over 14 days
12- Wt gain to reach cured criteria

IPF

13- IPF Multichart
14- Critical care chart
15- How to insert NG-tube
16- Dangers of IV cannula
17- History and examination sheet
18- Recovery Phase as an in-patient

INFANTS

19- Supplementary sucking - SS-chart
20- Management of young infants without a female caretaker

MONITORING AND EVALUATION

21- Monthly report OTP
22- Monthly report IPF
23- Checklist supervision IMAM (DNO)
24- Checklist OTP
25- Checklist IPF

MATERIALS

26- Recipes for F75/F100/ReSoMal
27- RUTF specifications
28- Drug dosage

SFP

29- SFP Registration book
30- SFP/OTP Ration card
31- Monthly report SFP
32- Advantages and Disadvantages of dry and wet feeding
33- Nutrient density used for Supplementary food for MAM

ANNEX 1 – ANTHROPOMETRIC MEASUREMENT TECHNIQUES

Checking for bilateral œdema

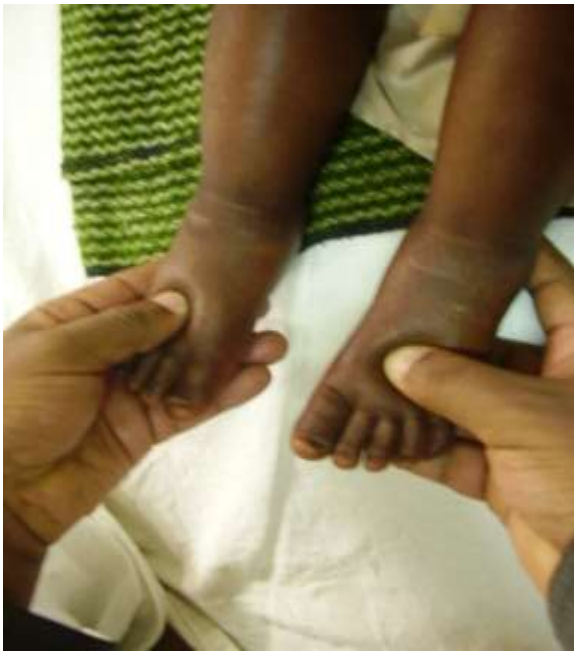
Bilateral œdema is the sign of Kwashiorkor. Kwashiorkor is *always* a severe form of malnutrition. Children with bilateral œdema are directly identified to be acutely malnourished. These children are at high risk of mortality and need to be treated in a therapeutic feeding program urgently.

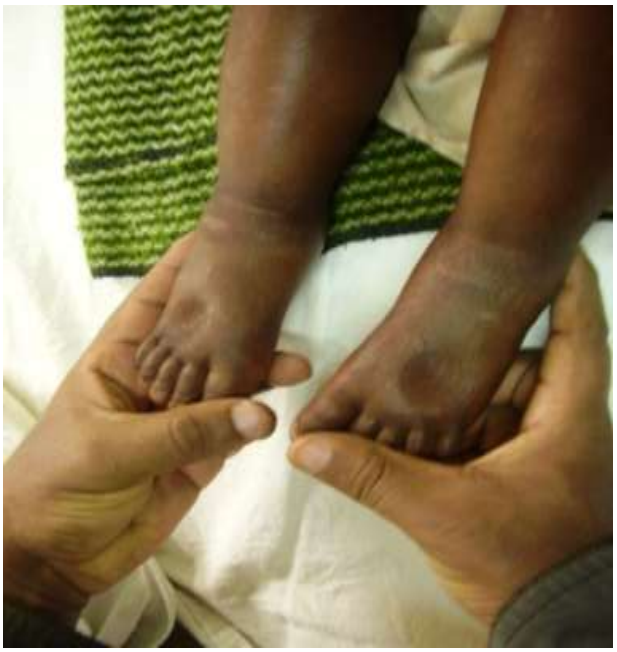
In order to determine the presence of œdema,

- Normal thumb pressure is applied to the both feet for at least three seconds.
- If a shallow print persists on the both feet, then the child has œdema.

Only children with bilateral œdema are recorded as having nutritional œdema[75].

You must formally test for œdema with finger pressure, You cannot tell by just looking





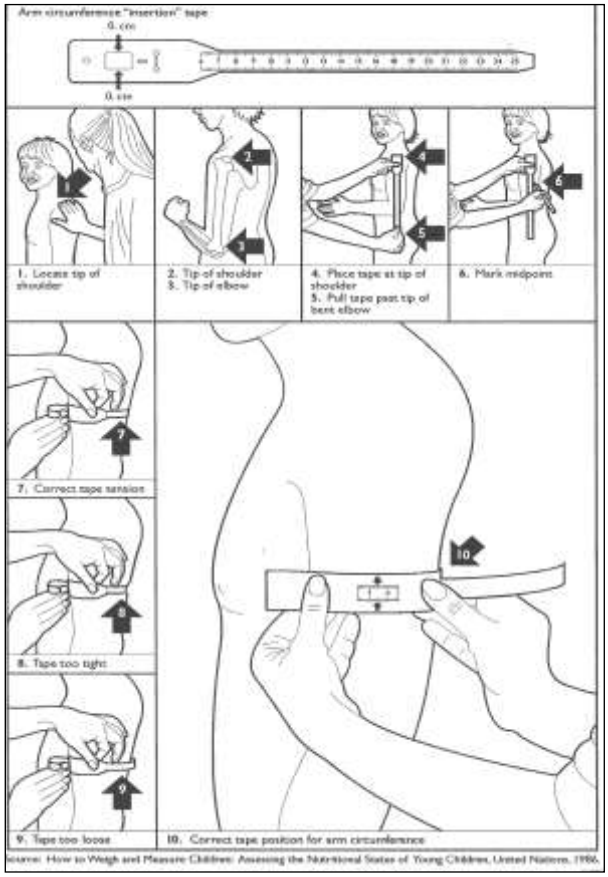
Severity of the œdema	Recording
Mild: both feet	+
Moderate: both feet, plus lower legs, hands or lower arms Intermediate between mild and severe	++
Severe: generalised œdema including both feet, legs, hands, arms and face	+++

[75] There are other causes of bilateral oedema (e.g. nephritic syndrome) but they all require admission as an inpatient.

Taking MUAC

MUAC is used as an alternative measure of "thinness" to weight-for-height. It is particularly used in children from one to five years: however, its use has been extended to include children more than 6 months (under 67cm in height).

- Ask the mother to remove clothing that may cover the child's left arm.
- Calculate the midpoint of the child's left upper arm. This can be done by taking a piece of string (or the tape itself), place one end on the tip of the child's shoulder (arrow 1) and the other on the elbow (arrow 2), now bend the string up in a loop to double it so the point at the elbow is placed together with the point on the shoulder with a loop hanging down – the end of the straightened loop indicates the mid-point.
- As an alternative, place the tape at zero, which is indicated by two arrows, on the tip of the shoulder (arrow 4) and pull the tape straight down past the tip of the elbow (arrow 5). Read the number at the tip of the elbow to the nearest centimetre.
- Divide this number by two to estimate the midpoint. Mark the midpoint with a pen on the arm (arrow 6).
- Straighten the child's arm and wrap the tape around the arm at the midpoint. Make sure the numbers are right side up. Make sure the tape is flat around the skin (arrow 7).
- Inspect the tension of the tape on the child's arm. Make sure the tape has the proper tension (arrow 7) and is not too tight so that the skin is compressed or too loose so that the tape does not contact the skin all the way round the arm (arrows 8 and 9).
- Repeat any step as necessary.
- When the tape is in the correct position on the arm with correct tension, read and call out the measurement to the nearest 0.1cm (arrow 10).
- Immediately record the measurement.



Taking the weight

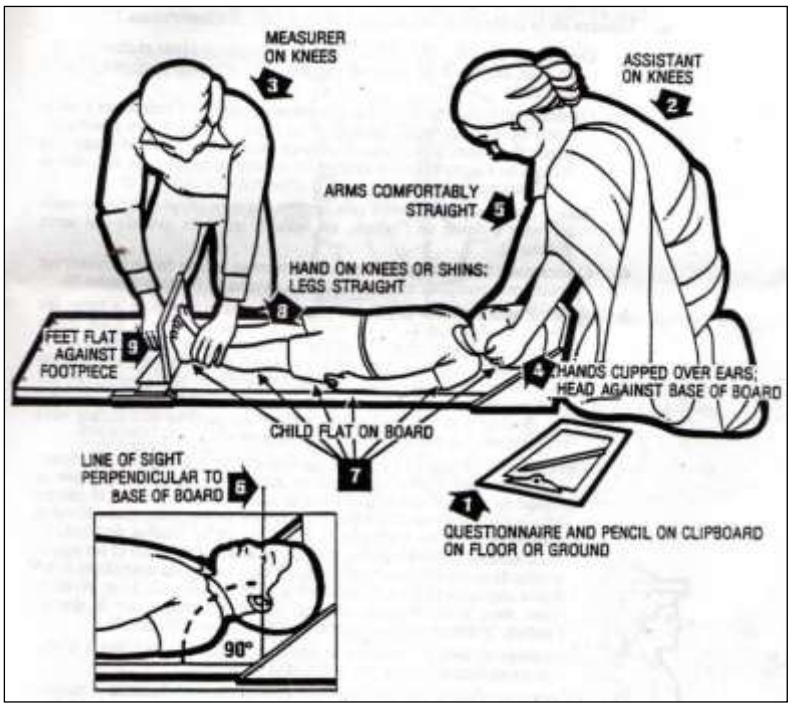
Children may be weighed by using a 25 kg hanging sprint scale graduated to 0.100 kg or an electronic balance (e.g. UNISCALE).

- Do not forget to re-adjust the scale to zero before each weighing.
- A plastic washing-basin should be attached by 4 ropes that go underneath the basin. The basin needs to be close to the ground in case the child falls out, and to make the child feel secure during weighing.
- If the basin is dirtied then it should be cleaned with disinfectant. This is much more comfortable and familiar for the child, can be used for ill children and is easily cleaned. Weighing pants that are used during surveys should not be used; they are uncomfortable, difficult to use, inappropriate for sick children and quickly get soiled to pass an infection to the next patient.
- When the child is steady, read the measurement to the nearest 100 grams, with the frame of the scale at eye level. Each day, the scales must be checked by using a known weight.

Photo on right: Source: Guidelines for the management of the severely malnourished: version January 2007 by Pr. Michael Golden and Yvonne Grellety, ACF. Photos on left courtesy of ACF Liberia

Taking the length/height

For children less than 87 cm, the measuring board is placed on the ground. The child is placed, lying along the middle of the board. The assistant holds the sides of the child's head and positions the head until it firmly touches the fixed headboard with the hair compressed. The measurer places her hands on the child's legs, gently stretches the child and then keeps one hand on the thighs to prevent flexion. While positioning the child's legs, the sliding foot-plate is pushed firmly against the bottom of the child's feet. To read the measure, the foot-plate must be perpendicular to the axis of the board and vertical. The height is read to the nearest 0.1 centimetre.



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The longer lines indicate centimetre marking; the shorter lines indicate millimetre.

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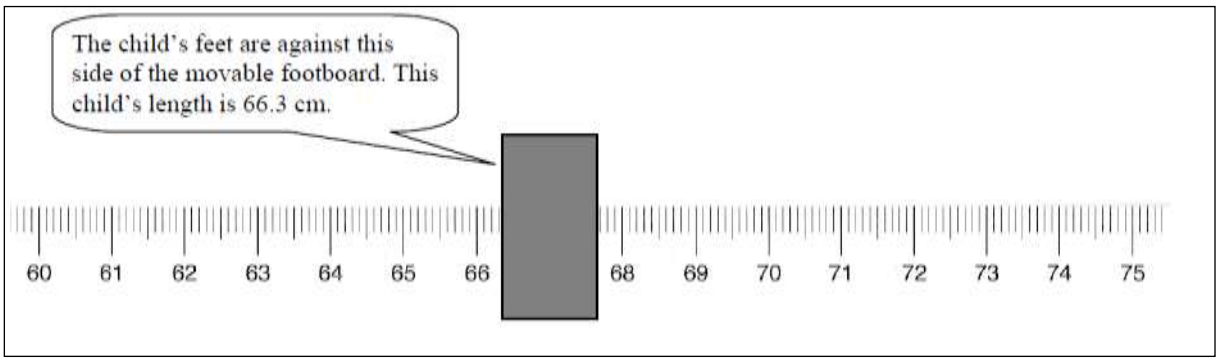
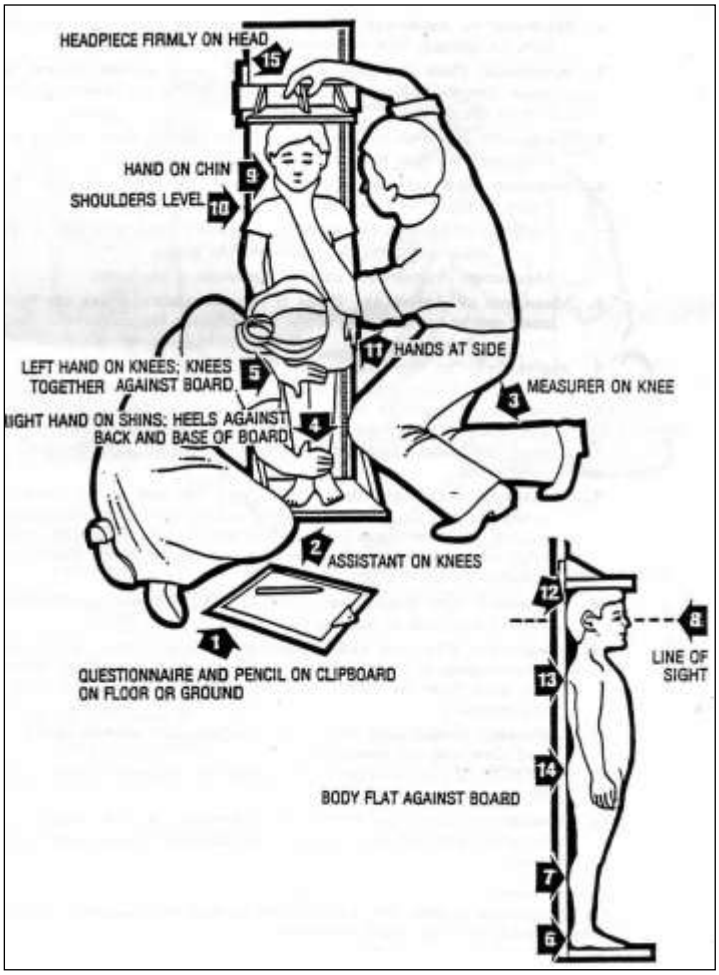
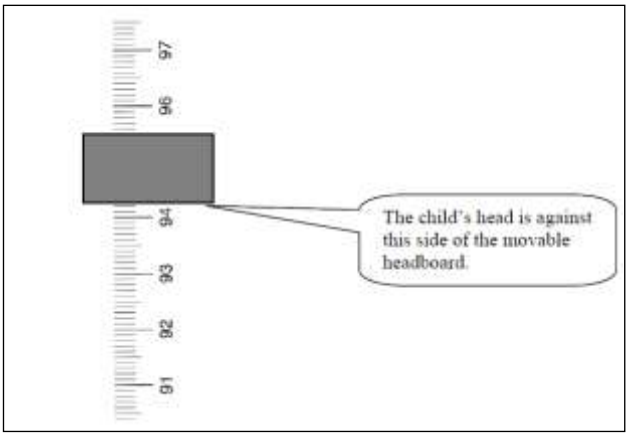


For children more than 87 cm, the measuring board is fixed upright where the ground is level. The child stands, upright in the middle, against the measuring board. The child's head, shoulders, buttocks, knees, heels are held against the board by the assistant, while the measurer positions the head and the cursor. The height is read to the nearest 0.1 centimetre.





Detail of the measurement

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Weight/Height Z-score using unisex table

How to use the weight/height z-score tables?

Example: a child is 63 cm length and weighs 6.5 kg.

- Take the table, look in the 1st column and look for the figure 63cm (=height).
- Take a ruler or a piece of card place it under the figure 63 and the other figures on the same line.
  On this line find the figure corresponding to the weight of the child, in this case 6.8.
- Look to see what column this figure is in. In this case it is in the MEDIAN WEIGHT column.

In this example the child's weight is normal in relation to his LENGHT. He therefore has an appropriate weight for his length.

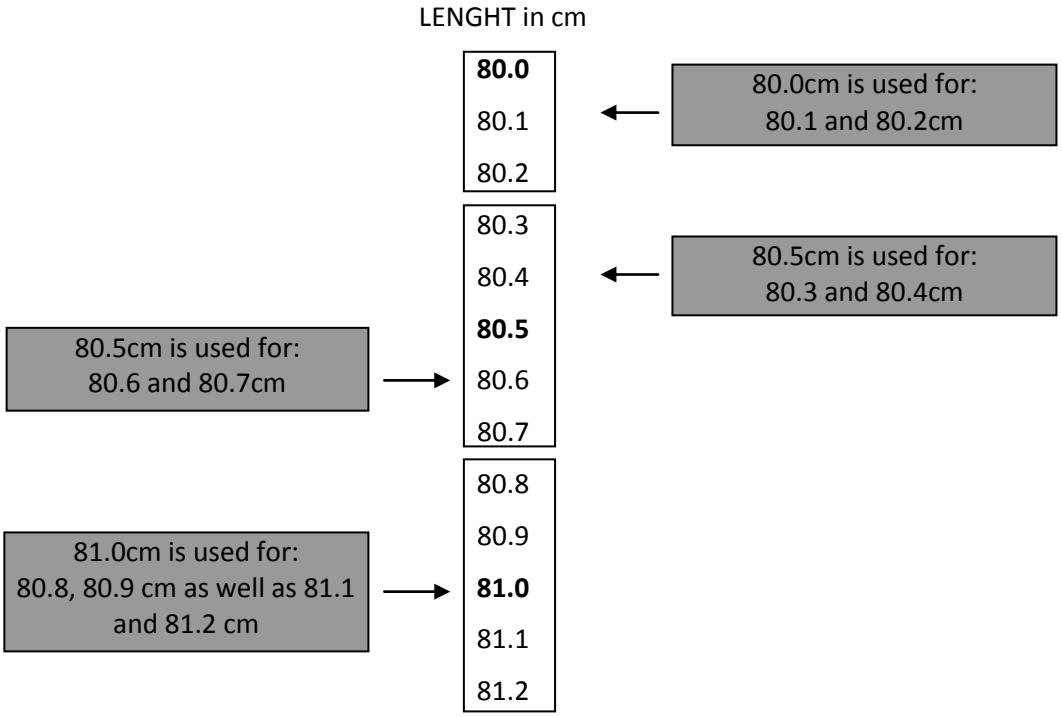
Example: a child is 78 cm tall and weighs 8.3 kg

This child is between the column -2 & -3 Z-score or between MAM and SAM. He is too thin in relation to his length or less than -2 and more than -3; he is <-2 (less) and >-3 (more): he is MODERATELY MALNOURISHED but NOT Severely Malnourished.

NOTE: It may be that the weight or the height is not a whole number.

Example: length: 80.4 cm and weight 7.9 kg. These 2 figures are not in the table.

For the height/length: The height/length measurement has to be rounded to the nearest 0.5cm, as it is in the following example.



For the weight: Looking at the table, for a length of 80.5 cm the weight is 7.9 kg. This is between 7.7 and 8.3 kg. Conclusion, to express the fact that the child is between these 2 weights, write down that this child's Z-score is between -4 and -3 Z-score or <-3 AND >-4 Z-score. The child has SAM.

ANNEX 2 – SCREENING TALLY SHEET

NUTRITION SCREENING TALLY SHEET using MUAC

DISTRICT................HC.................VILLAGE/OTP................. Month......................

From ______/_____/_______ to ______/______/______ **Function** ***Signature***

____

Put a cross to the "o" within the different categories, according to the MUAC

	MUAC <115mm	MUAC≥ 115&<125mm	MUAC≥ 125mm	Oedema
6months & more	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
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	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
	ooooo	ooooo ooooo	ooooo ooooo ooooo	ooooo
Total				

ANNEX 3 – WEIGHT-FOR-HEIGHT TABLE (WHO2006)

Use for both boys and girls													
Length	Weight Kg – Z-score						Length	Weight Kg – Z-score					
	very severe	severe SAM	moderate MAM	discharge IMAM		median		very severe	severe SAM	moderate MAM	discharge IMAM		median
cm	-4.0	-3	-2	-1.5	-1	0	cm	-4.0	-3	-2	-1.5	-1	0
Use Length for less than 87 cm													
45	1.73	1.88	2.04	2.13	2.23	2.44	66	5.5	5.9	6.4	6.7	6.9	7.5
45.5	1.79	1.94	2.11	2.21	2.31	2.52	66.5	5.6	6	6.5	6.8	7	7.6
46	1.85	2.01	2.18	2.28	2.38	2.61	67	5.7	6.1	6.6	6.9	7.1	7.7
46.5	1.91	2.07	2.26	2.36	2.46	2.69	67.5	5.8	6.2	6.7	7	7.2	7.9
47	1.97	2.14	2.33	2.43	2.54	2.78	68	5.8	6.3	6.8	7.1	7.3	8
47.5	2.04	2.21	2.40	2.51	2.62	2.86	68.5	5.9	6.4	6.9	7.2	7.5	8.1
48	2.10	2.28	2.48	2.58	2.70	2.95	69	6.0	6.5	7	7.3	7.6	8.2
48.5	2.17	2.35	2.55	2.66	2.78	3.04	69.5	6.1	6.6	7.1	7.4	7.7	8.3
49	2.23	2.42	2.63	2.75	2.87	3.13	70	6.2	6.6	7.2	7.5	7.8	8.4
49.5	2.31	2.50	2.71	2.83	2.96	3.23	70.5	6.3	6.7	7.3	7.6	7.9	8.5
50	2.38	2.58	2.80	2.92	3.05	3.33	71	6.3	6.8	7.4	7.7	8	8.6
50.5	2.46	2.66	2.89	3.01	3.14	3.43	71.5	6.4	6.9	7.5	7.8	8.1	8.8
51	2.54	2.75	2.98	3.11	3.24	3.54	72	6.5	7	7.6	7.9	8.2	8.9
51.5	2.62	2.83	3.08	3.21	3.34	3.65	72.5	6.6	7.1	7.6	8	8.3	9
52	2.70	2.93	3.17	3.31	3.45	3.76	73	6.6	7.2	7.7	8	8.4	9.1
52.5	2.79	3.02	3.28	3.41	3.56	3.88	73.5	6.7	7.2	7.8	8.1	8.5	9.2
53	2.88	3.12	3.38	3.53	3.68	4.01	74	6.8	7.3	7.9	8.2	8.6	9.3
53.5	2.98	3.22	3.49	3.64	3.80	4.14	74.5	6.9	7.4	8	8.3	8.7	9.4
54	3.08	3.33	3.61	3.76	3.92	4.27	75	6.9	7.5	8.1	8.4	8.8	9.5
54.5	3.18	3.55	3.85	4.01	4.18	4.55	75.5	7.0	7.6	8.2	8.5	8.8	9.6
55	3.29	3.67	3.97	4.14	4.31	4.69	76	7.1	7.6	8.3	8.6	8.9	9.7
55.5	3.39	3.78	4.10	4.26	4.44	4.83	76.5	7.2	7.7	8.3	8.7	9	9.8
56	3.50	3.90	4.22	4.40	4.58	4.98	77	7.2	7.8	8.4	8.8	9.1	9.9
56.5	3.61	4.02	4.35	4.53	4.71	5.13	77.5	7.3	7.9	8.5	8.8	9.2	10
57	3.7	4	4.3	4.5	4.7	5.1	78	7.4	7.9	8.6	8.9	9.3	10.1
57.5	3.8	4.1	4.5	4.7	4.9	5.3	78.5	7.4	8	8.7	9	9.4	10.2
58	3.9	4.3	4.6	4.8	5	5.4	79	7.5	8.1	8.7	9.1	9.5	10.3
58.5	4.0	4.4	4.7	4.9	5.1	5.6	79.5	7.6	8.2	8.8	9.2	9.5	10.4
59	4.2	4.5	4.8	5	5.3	5.7	80	7.6	8.2	8.9	9.2	9.6	10.4
59.5	4.3	4.6	5	5.2	5.4	5.9	80.5	7.7	8.3	9	9.3	9.7	10.5
60	4.4	4.7	5.1	5.3	5.5	6	81	7.8	8.4	9.1	9.4	9.8	10.6
60.5	4.5	4.8	5.2	5.4	5.6	6.1	81.5	7.8	8.5	9.1	9.5	9.9	10.7
61	4.6	4.9	5.3	5.5	5.8	6.3	82	7.9	8.5	9.2	9.6	10	10.8
61.5	4.7	5	5.4	5.7	5.9	6.4	82.5	8.0	8.6	9.3	9.7	10.1	10.9
62	4.8	5.1	5.6	5.8	6	6.5	83	8.1	8.7	9.4	9.8	10.2	11
62.5	4.9	5.2	5.7	5.9	6.1	6.7	83.5	8.2	8.8	9.5	9.9	10.3	11.2
63	5.0	5.3	5.8	6	6.2	6.8	84	8.3	8.9	9.6	10	10.4	11.3
63.5	5.1	5.4	5.9	6.1	6.4	6.9	84.5	8.3	9	9.7	10.1	10.5	11.4
64	5.1	5.5	6	6.2	6.5	7	85	8.4	9.1	9.8	10.2	10.6	11.5
64.5	5.2	5.6	6.1	6.3	6.6	7.1	85.5	8.5	9.2	9.9	10.3	10.7	11.6
65	5.3	5.7	6.2	6.4	6.7	7.3	86	8.6	9.3	10	10.4	10.8	11.7
65.5	5.4	5.8	6.3	6.5	6.8	7.4	86.5	8.7	9.4	10.1	10.5	11	11.9

Use for both boys and girls														
Height	Weight Kg – Z-score							Height	Weight Kg – Z-score					
	very severe	*severe SAM*	*moderate MAM*	*discharge IMAM*		*median*			very severe	severe SAM	moderate MAM	discharge IMAM		median
cm	-4.0	-3	-2	-1.5	-1	0		cm	-4.0	-3	-2	-1.5	-1	0
Use Height for more than or equal to 87 cm														
87	9.0	9.6	10.4	10.8	11.2	12.2		104	12.0	13	14	14.6	15.2	16.5
87.5	9.0	9.7	10.5	10.9	11.3	12.3		104.5	12.1	13.1	14.2	14.7	15.4	16.7
88	9.1	9.8	10.6	11	11.5	12.4		105	12.2	13.2	14.3	14.9	15.5	16.8
88.5	9.2	9.9	10.7	11.1	11.6	12.5		105.5	12.3	13.3	14.4	15	15.6	17
89	9.3	10	10.8	11.2	11.7	12.6		106	12.4	13.4	14.5	15.1	15.8	17.2
89.5	9.4	10.1	10.9	11.3	11.8	12.8		106.5	12.5	13.5	14.7	15.3	15.9	17.3
90	9.5	10.2	11	11.5	11.9	12.9		107	12.6	13.7	14.8	15.4	16.1	17.5
90.5	9.6	10.3	11.1	11.6	12	13		107.5	12.7	13.8	14.9	15.6	16.2	17.7
91	9.7	10.4	11.2	11.7	12.1	13.1		108	12.8	13.9	15.1	15.7	16.4	17.8
91.5	9.8	10.5	11.3	11.8	12.2	13.2		108.5	13.0	14	15.2	15.8	16.5	18
92	9.9	10.6	11.4	11.9	12.3	13.4		109	13.1	14.1	15.3	16	16.7	18.2
92.5	9.9	10.7	11.5	12	12.4	13.5		109.5	13.2	14.3	15.5	16.1	16.8	18.3
93	10.0	10.8	11.6	12.1	12.6	13.6		110	13.3	14.4	15.6	16.3	17	18.5
93.5	10.1	10.9	11.7	12.2	12.7	13.7		110.5	13.4	14.5	15.8	16.4	17.1	18.7
94	10.2	11	11.8	12.3	12.8	13.8		111	13.5	14.6	15.9	16.6	17.3	18.9
94.5	10.3	11.1	11.9	12.4	12.9	13.9		111.5	13.6	14.8	16	16.7	17.5	19.1
95	10.4	11.1	12	12.5	13	14.1		112	13.7	14.9	16.2	16.9	17.6	19.2
95.5	10.4	11.2	12.1	12.6	13.1	14.2		112.5	13.9	15	16.3	17	17.8	19.4
96	10.5	11.3	12.2	12.7	13.2	14.3		113	14.0	15.2	16.5	17.2	18	19.6
96.5	10.6	11.4	12.3	12.8	13.3	14.4		113.5	14.1	15.3	16.6	17.4	18.1	19.8
97	10.7	11.5	12.4	12.9	13.4	14.6		114	14.2	15.4	16.8	17.5	18.3	20
97.5	10.8	11.6	12.5	13	13.6	14.7		114.5	14.3	15.6	16.9	17.7	18.5	20.2
98	10.9	11.7	12.6	13.1	13.7	14.8		115	14.5	15.7	17.1	17.8	18.6	20.4
98.5	11.0	11.8	12.8	13.3	13.8	14.9		115.5	14.6	15.8	17.2	18	18.8	20.6
99	11.1	11.9	12.9	13.4	13.9	15.1		116	14.7	16	17.4	18.2	19	20.8
99.5	11.2	12	13	13.5	14	15.2		116.5	14.8	16.1	17.5	18.3	19.2	21
100	11.2	12.1	13.1	13.6	14.2	15.4		117	15.0	16.2	17.7	18.5	19.3	21.2
100.5	11.3	12.2	13.2	13.7	14.3	15.5		117.5	15.1	16.4	17.9	18.7	19.5	21.4
101	11.4	12.3	13.3	13.9	14.4	15.6		118	15.2	16.5	18	18.8	19.7	21.6
101.5	11.5	12.4	13.4	14	14.5	15.8		118.5	15.3	16.7	18.2	19	19.9	21.8
102	11.6	12.5	13.6	14.1	14.7	15.9		119	15.4	16.8	18.3	19.1	20	22
102.5	11.7	12.6	13.7	14.2	14.8	16.1		119.5	15.6	16.9	18.5	19.3	20.2	22.2
103	11.8	12.8	13.8	14.4	14.9	16.2		120	15.7	17.1	18.6	19.5	20.4	22.4
103.5	11.9	12.9	13.9	14.5	15.1	16.4								

These tables are derived from the WHO_{2006} standards for Boys. Because using separate tables for boys and girls may lead to many more boys being admitted to therapeutic programs than girls, the use of the boys table for both sexes is recommended to avoid discrimination against female children. It is recommended that the discharge criteria should be -1.5Z where there are adequate follow up arrangements and/or a supplementary feeding program to which the children can be referred. © Michael Golden

ANNEX 4 – WEIGHT-FOR-HEIGHT ADOLESCENTS

Height (cm)	100% Median	85% (target)	<80% mod	<70% Severe	sex
120.5	22.1	18.8	17.7	15.5	mf
121	22.3	19	17.8	15.6	mf
121.5	22.5	19.1	18	15.8	mf
122	22.7	19.3	18.2	15.9	mf
122.5	23	19.5	18.4	16.1	mf
123	23.2	19.7	18.6	16.2	mf
123.5	23.5	19.9	18.8	16.4	mf
124	23.7	20.1	19	16.6	mf
124.5	24	20.4	19.2	16.8	mf
125	24.2	20.6	19.4	16.9	mf
125.5	24.5	20.8	19.6	17.1	mf
126	24.7	21	19.8	17.3	mf
126.5	25	21.2	20	17.5	mf
127	25.3	21.5	20.2	17.7	mf
127.5	25.5	21.7	20.4	17.9	mf
128	25.8	21.9	20.7	18.1	mf
128.5	26.1	22.2	20.9	18.3	mf
129	26.4	22.4	21.1	18.5	mf
129.5	26.7	22.7	21.3	18.7	mf
130	27	22.9	21.6	18.9	mf
130.5	27.3	23.2	21.8	19.1	mf
131	27.6	23.4	22.1	19.3	mf
131.5	27.9	23.7	22.3	19.5	mf
132	28.2	24	22.5	19.7	mf
132.5	28.5	24.2	22.8	19.9	mf
133	28.8	24.5	23	20.2	mf
133.5	29.1	24.7	23.3	20.4	mf
134	29.4	25	23.5	20.6	mf
134.5	29.7	25.3	23.8	20.8	mf
135	30.1	25.6	24.1	21.1	mf
135.5	30.4	25.8	24.3	21.3	mf
136	30.7	26.1	24.6	21.5	mf
136.5	31	26.4	24.8	21.7	mf
137	31.4	26.7	25.1	22	mf
137.5	31.7	27	25.4	22.2	mf
138	32.1	27.2	25.6	22.4	mf
138.5	32.4	27.5	25.9	22.7	mf
139	32.7	27.8	26.2	22.9	mf
139.5	33.1	28.1	26.4	23.1	mf
140	33.4	28.4	26.7	23.4	mf
140.5	33.7	28.7	27	23.6	mf
141	34.1	29	27.3	23.9	mf
141.5	34.4	29.2	27.5	24.1	mf
142	34.8	29.5	27.8	24.3	mf
142.5	35.1	29.8	28.1	24.6	mf
143	35.4	30.1	28.3	24.8	mf
143.5	35.8	30.4	28.6	25	mf
144	36.1	30.7	28.9	25.3	mf
144.5	36.5	31	29.2	25.5	mf
145	36.8	31.3	29.4	25.8	mf
145.5	37.1	31.6	29.7	26	mf

Height (cm)	100% Median	85% (target)	< 80% mod	< 70% Severe	sex
146	37.5	31.9	30	26.2	mf
146.5	37.8	32.2	30.3	26.5	mf
147	38.2	32.4	30.5	26.7	mf
147.5	38.5	32.7	30.8	27	mf
148	38.9	33	31.1	27.2	mf
148.5	39.2	33.3	31.4	27.4	mf
149	39.5	33.6	31.6	27.7	mf
149.5	39.9	33.9	31.9	27.9	mf
150	40.3	34.2	32.2	28.2	mf
150.5	40.6	34.5	32.5	28.4	mf
151	41	34.8	32.8	28.7	mf
151.5	41.3	35.1	33.1	28.9	mf
152	41.7	35.4	33.4	29.2	mf
152.5	42.1	35.8	33.7	29.4	mf
153	42.4	36.1	34	29.7	mf
153.5	42.8	36.4	34.3	30	mf
154	43.2	36.7	34.6	30.2	mf
154.5	43.6	37.1	34.9	30.5	mf
155	44	37.4	35.2	30.8	mf
155.5	44.2	37.6	35.4	30.9	m
156	44.6	37.9	35.7	31.2	m
156.5	45	38.2	36	31.5	m
157	45.4	38.6	36.3	31.8	m
157.5	45.8	38.9	36.7	32.1	m
158	46.2	39.3	37	32.4	m
158.5	46.6	39.6	37.3	32.7	m
159	47.1	40	37.7	33	m
159.5	47.5	40.4	38	33.3	m
160	48	40.8	38.4	33.6	m
160.5	48.4	41.1	38.7	33.9	m
161	48.8	41.5	39.1	34.2	m
161.5	49.3	41.9	39.4	34.5	m
162	49.8	42.3	39.8	34.8	m
162.5	50.2	42.7	40.2	35.1	m
163	50.7	43.1	40.5	35.5	m
163.5	51.1	43.5	40.9	35.8	m
164	51.6	43.9	41.3	36.1	m
164.5	52.1	44.3	41.7	36.5	m
165	52.6	44.7	42.1	36.8	m
165.5	53.1	45.1	42.5	37.2	m
166	53.6	45.6	42.9	37.5	m
166.5	54.1	46	43.3	37.9	m
167	54.6	46.4	43.7	38.2	m
167.5	55.1	46.9	44.1	38.6	m
168	55.6	47.3	44.5	38.9	m
168.5	56.2	47.7	44.9	39.3	m
169	56.7	48.2	45.4	39.7	m
169.5	57.3	48.7	45.8	40.1	m
170	57.8	49.2	46.3	40.5	m
170.5	58.4	49.6	46.7	40.9	m
171	59	50.1	47.2	41.3	m

This table has been constructed using the NCHS standards. The height-for-age and weight-for-age standards were amalgamated to determine the median weight for height. The sexes were combined when the uni-sex standard is within 1.5% of the body weight of the standard for either sex.

ANNEX 5 – BMI CHART ADULT

BODY MASS INDEX (ADULTS) (=W/H^2) Wt in kg and height in metres.

Height (cm)	BMI					
	18,5	18	17,5	17	16,5	16
	Weight in Kg					
140	36,3	35,3	34,3	33,3	32,3	31,4
141	36,8	35,8	34,8	33,8	32,8	31,8
142	37,3	36,3	35,3	34,3	33,3	32,3
143	37,8	36,8	35,8	34,8	33,7	32,7
144	38,4	37,3	36,3	35,3	34,2	33,2
145	38,9	37,8	36,8	35,7	34,7	33,6
146	39,4	38,4	37,3	36,2	35,2	34,1
147	40,0	38,9	37,8	36,7	35,7	34,6
148	40,5	39,4	38,3	37,2	36,1	35,0
149	41,1	40,0	38,9	37,7	36,6	35,5
150	41,6	40,5	39,4	38,3	37,1	36,0
151	42,2	41,0	39,9	38,8	37,6	36,5
152	42,7	41,6	40,4	39,3	38,1	37,0
153	43,3	42,1	41,0	39,8	38,6	37,5
154	43,9	42,7	41,5	40,3	39,1	37,9
155	44,4	43,2	42,0	40,8	39,6	38,4
156	45,0	43,8	42,6	41,4	40,2	38,9
157	45,6	44,4	43,1	41,9	40,7	39,4
158	46,2	44,9	43,7	42,4	41,2	39,9
159	46,8	45,5	44,2	43,0	41,7	40,4
160	47,4	46,1	44,8	43,5	42,2	41,0
161	48,0	46,7	45,4	44,1	42,8	41,5
162	48,6	47,2	45,9	44,6	43,3	42,0
163	49,2	47,8	46,5	45,2	43,8	42,5
164	49,8	48,4	47,1	45,7	44,4	43,0

Height (cm)	BMI					
	18,5	18	17,5	17	16,5	16
	Weight in Kg					
165	50,4	49,0	47,6	46,3	44,9	43,6
166	51,0	49,6	48,2	46,8	45,5	44,1
167	51,6	50,2	48,8	47,4	46,0	44,6
168	52,2	50,8	49,4	48,0	46,6	45,2
169	52,8	51,4	50,0	48,6	47,1	45,7
170	53,5	52,0	50,6	49,1	47,7	46,2
171	54,1	52,6	51,2	49,7	48,2	46,8
172	54,7	53,3	51,8	50,3	48,8	47,3
173	55,4	53,9	52,4	50,9	49,4	47,9
174	56,0	54,5	53,0	51,5	50,0	48,4
175	56,7	55,1	53,6	52,1	50,5	49,0
176	57,3	55,8	54,2	52,7	51,1	49,6
177	58,0	56,4	54,8	53,3	51,7	50,1
178	58,6	57,0	55,4	53,9	52,3	50,7
179	59,3	57,7	56,1	54,5	52,9	51,3
180	59,9	58,3	56,7	55,1	53,5	51,8
181	60,6	59,0	57,3	55,7	54,1	52,4
182	61,3	59,6	58,0	56,3	54,7	53,0
183	62,0	60,3	58,6	56,9	55,3	53,6
184	62,6	60,9	59,2	57,6	55,9	54,2
185	63,3	61,6	59,9	58,2	56,5	54,8
186	64,0	62,3	60,5	58,8	57,1	55,4
187	64,7	62,9	61,2	59,4	57,7	56,0
188	65,4	63,6	61,9	60,1	58,3	56,6
189	66,1	64,3	62,5	60,7	58,9	57,2
190	66,8	65,0	63,2	61,4	59,6	57,8

BMI	INTERPRETATION
< 16.0	**severe thinness**
16.0 - 16.9	moderate thinness
17.0 - 18.4	marginal thinness
18.5 - 24.9	**normal**

Source : WHO (1995) Physical status : the use and interpretation of anthropometry, Report of a WHO expert committee, WHO

ANNEX 6 – REGISTRATION BOOK EXAMPLE

	DATE	Reg #	SAM No	Patient's Name	Family Name	Address& Phone No	Entry to facility								
							Type of admission	Int.Transfer Code/Name of the IPF/OTP	Sex M/F	Age mo	Wt kg.g	Ht/L cm	W/Lor H	Oed 0,1,2,3	MUAC mm
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

	Exit from facility					Type of Exit		Date of Minimum Weight	Minimum Weight	Observation
	Date	Wt kg.g	W/LorH	Oed 0,1,2,3	MUAC mm	Type	Int. Transfer out Name/code of IPF/OTP			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

ANNEX 7 – OTP CHART

SAM N0…… Reg N0…….…… Admission date……..…..…….……

OTP code ……..…… OTP name ……..……..District……..……

Reason of Admission MUAC ……..mm W/H……..Z-score OR Œdema Yes □ No □

Patient Name……	**Breast feeding Yes □ No □**	**Major Problem……**
Family Name……	**Twins Yes □ No □**	**……**
Age (mo)…….. Sex …….	**Parents alive Yes □ No □**	**Update Immunisation Yes □ No□**
Address……	**Caretaker:**	**Immunisation card Yes □ No□**
……	**Name……..**	**Measles 1……..**
Phone #	**Health of caretaker……..**	**2……..**

Admission Information

Before beginning treatment **(circle the answer)**
Referral BY: Spontaneous / Active screening / HC /……..(circle
During the treatment
INTERNAL TRANSFER- IN: Yes □ No □
if Yes, IPF / Other OTP / District hospital (circle the answer)
Name of…… Registration N0 ……
Date of IMAM admission…… Date of transfer……

TYPE of ADMISSION
□ New admission
□ Internal Transfer-IN
□ Relapse
□ Readmission after defaulting <2months

Examination

Circle the answer

Condition of Patient: Normal / Sick / Very sick
Handicap: Yes □ No □ If yes, ……..
Respiration: Normal / Fast
Eyes: Normal / Vitamin A deficit / photophobia
Skin lesions: Yes □ No □
Oedema (0, +, ++, +++)……

Education given

Theme	Date	Signature
Causes of malnutrition		
Diarrhoea, fever, ARI		
Infection (skin, eyes, ear)		
Play & stimulation		
Nutrition – child care		
Hygiene		

Home Visit (HV)

DATE	REASON(S)	DATE HV	CONCLUSION

Internal Transfer-TO-IPF during treatment in OTP

DATE	REASON(S)	WHERE	RESULT (RETURN-DATE/NOT RETURN/DEATH)

Discharge

Date of discharge ……/……/……..

Cured □ **Defaulter Confirmed** □ **cause……**
Defaulter Unconfirmed □ **Dead** □ **cause……**
Internal Transfer-TO □ **cause……**
Non Response □ **cause……**
Follow up in SFC

Admission Length / Height.....cm Target Weight .....kg.g Target MUAC.....mm												
Date	Adm	2	3	4	5	6	7	8	9	10	11	12
Date (dd/mo)												
Weight (kg.g)												
Oedema (0,+,++,+++)												
MUAC (mm)												
Diarrhoea (0 to #d)												
Vomiting (0 to #d)												
Fever (0 to # d)												
Cough (0 to #d)												
Pale Conj (0 to ++)												
Respir.rate /min												
Temp. C° (Axi/Rect)												
Malaria test result (0 / - / +)												
App.test (Good/Mod/Poor)												
Appetite test (g/ sachet/ bar)												
Trt carer choice (IPF/OTP)												
RUTF (# sachets given back)												
RUTF (# sachets to caretaker)												
Internal Transfer TO / Absent												
Need HomeVisit (Y / N)												

Routine Medicine					
Drugs	*Date (dd/mm)*	*Dose*	***Drugs***	*Date (dd/mm)*	*Dose*
Amoxycillin			Deworming		
Vitamin A			Measles vaccine		
Antimalaria drugs			Other		

Specific treatment		
Date (dd/mm)	*Observation*	*Treatment*
	◦	

ANNEX 8 – TRANSFER FORM

INTERNAL TRANSFER FORM during SAM TREATMENT

SAM-Number

Circle the information below and fill in codes

Transfer FROM: OTP IPF CODE = | Facility Name | Reg No

Transfer -TO: OTP IFP CODE = | Facility Name

Phone call: Made Y / N | If returning patient reg no in receiving facility

Fill the administrative information

Patient's Name | Date of Transfer

Family Name | Sex: M / F | Age (mo.)

Address ..... | Name of the caretaker

..... |

Phone No

Time & condition of transport

Fill the information of the follow up of the patient

	Date	Weight	Height / Lenght	WH Z	MUAC	Oedema	Result of Appetite Test
Admission							
Minimum Weight							
Day of Transfer							

Complete the information of the diet and medical treatment already given

	Acute Phase	Transition	Rehab
F75			
F100			
F100 dilute			
RUTF			
Date at beginning			

	Drugs		Date
Routine treatment	Amoxycillin		
	Mebendazole		
	Measles vac.		
	other		
	other		

Other Specific treatment given	Date

Reason for Transfer to IPF (In Patient Facility)

Failure of appetite test Y / N Complications Y / N if Y ..... Oedema Y / N Failure-to-Responses in OTP Y/N

SPECIFY:

Reason for Transfer to OTP

Good appetite Y / N No complications Y / N Ready for recovery phase Y / N Return to OTP Y / N Other .....

Any Specific treatment Given or other important items

Laboratory test results

Name and function of the staff | Date and signature

Note: One exemplaire has to be given to the Patient, one sent to the centre, one keep in the centre

ANNEX 9 – VARIABLE RUTF IN OTP TABLE

week of treatment	RUTF Paste - grams per week				RUTF Sachets (96g)			
	CRITICAL stock shortage	Absolute Minimum (week one)	Intermediate (week two)	STANDARD ration	CRITICAL stock shortage	Absolute Minimum (week one)	Intermediate (week two)	STANDARD ration
Class of weight (kg)	100 kcal/kg/d	135 kcal/kg/d	150 kcal/kg/d	170 kcal/kg/d	100 kcal/kg/d	135 kcal/kg/d	150 kcal/kg/d	170 kcal/kg/d
3.0 - 3.4	440	600	660	750	5	6	7	8
3.5 - 4.9	530	720	800	900	6	8	9	10
5.0 – 6.9	830	1100	1250	1400	9	12	13	15
7.0 – 9.9	1060	1430	1600	1800	12	15	17	20

NOTE: This table can be used if there is a limited supply of RUTF due to a pipeline break (not planned), or if the children have marginal appetites at the start of treatment and the OTP wants to discourage sharing because of a large surplus before the child regains a full appetite. The amount given should NEVER fall below 135 kcal/kg/week. If the amount falls below 100 kcal/kg/d the children will loose weight and deteriorate. NOTE the relatively small difference between the Critical and standard amounts to be dispensed! It is the "little" extra which gives the impetus for growth - this is why sharing in the family can lead to low recovery rates and this needs to be explained to the caretaker and her family.

ANNEX 10 – WEIGHT LOSS AND WEIGHT GAIN BY 5% CHART

5% weight loss (for failure-to-respond in OTP)						
Ist week	loss	2nd week		Ist week	loss	2nd week
4,0	0,2	3,8		8,0	0,4	7,6
4,1	0,2	3,9		8,1	0,4	7,7
4,2	0,2	4,0		8,2	0,4	7,8
4,3	0,2	4,1		8,3	0,4	7,9
4,4	0,2	4,2		8,4	0,4	8,0
4,5	0,2	4,3		8,5	0,4	8,1
4,6	0,2	4,4		8,6	0,4	8,2
4,7	0,2	4,5		8,7	0,4	8,3
4,8	0,2	4,6		8,8	0,4	8,4
4,9	0,2	4,7		8,9	0,4	8,5
5,0	0,3	4,8		9,0	0,5	8,6
5,1	0,3	4,8		9,1	0,5	8,6
5,2	0,3	4,9		9,2	0,5	8,7
5,3	0,3	5,0		9,3	0,5	8,8
5,4	0,3	5,1		9,4	0,5	8,9
5,5	0,3	5,2		9,5	0,5	9,0
5,6	0,3	5,3		9,6	0,5	9,1
5,7	0,3	5,4		9,7	0,5	9,2
5,8	0,3	5,5		9,8	0,5	9,3
5,9	0,3	5,6		9,9	0,5	9,4
6,0	0,3	5,7		10,0	0,5	9,5
6,1	0,3	5,8		10,1	0,5	9,6
6,2	0,3	5,9		10,2	0,5	9,7
6,3	0,3	6,0		10,3	0,5	9,8
6,4	0,3	6,1		10,4	0,5	9,9
6,5	0,3	6,2		10,5	0,5	10,0
6,6	0,3	6,3		10,6	0,5	10,1
6,7	0,3	6,4		10,7	0,5	10,2
6,8	0,3	6,5		10,8	0,5	10,3
6,9	0,3	6,6		10,9	0,5	10,4
7,0	0,3	6,6		11,0	0,5	10,5
7,1	0,4	6,7		11,1	0,6	10,5
7,2	0,4	6,8		11,2	0,6	10,6
7,3	0,4	6,9		11,3	0,6	10,7
7,4	0,4	7,0		11,4	0,6	10,8
7,5	0,4	7,1		11,5	0,6	10,9
7,6	0,4	7,2		11,6	0,6	11,0
7,7	0,4	7,3		11,7	0,6	11,1
7,8	0,4	7,4		11,8	0,6	11,2
7,9	0,4	7,5		11,9	0,6	11,3
8,0	0,4	7,6		12,0	0,6	11,4

5% weight gain (for treatment of dehydration)						
initial	gain	final		initial	gain	final
4,0	0,2	4,2		8,0	0,4	8,4
4,1	0,2	4,3		8,1	0,4	8,5
4,2	0,2	4,4		8,2	0,4	8,6
4,3	0,2	4,5		8,3	0,4	8,7
4,4	0,2	4,6		8,4	0,4	8,8
4,5	0,2	4,7		8,5	0,4	8,9
4,6	0,2	4,8		8,6	0,4	9,0
4,7	0,2	4,9		8,7	0,4	9,1
4,8	0,2	5,0		8,8	0,4	9,2
4,9	0,2	5,1		8,9	0,4	9,3
5,0	0,3	5,3		9,0	0,5	9,5
5,1	0,3	5,4		9,1	0,5	9,6
5,2	0,3	5,5		9,2	0,5	9,7
5,3	0,3	5,6		9,3	0,5	9,8
5,4	0,3	5,7		9,4	0,5	9,9
5,5	0,3	5,8		9,5	0,5	10,0
5,6	0,3	5,9		9,6	0,5	10,1
5,7	0,3	6,0		9,7	0,5	10,2
5,8	0,3	6,1		9,8	0,5	10,3
5,9	0,3	6,2		9,9	0,5	10,4
6,0	0,3	6,3		10,0	0,5	10,5
6,1	0,3	6,4		10,1	0,5	10,6
6,2	0,3	6,5		10,2	0,5	10,7
6,3	0,3	6,6		10,3	0,5	10,8
6,4	0,3	6,7		10,4	0,5	10,9
6,5	0,3	6,8		10,5	0,5	11,0
6,6	0,3	6,9		10,6	0,5	11,1
6,7	0,3	7,0		10,7	0,5	11,2
6,8	0,3	7,1		10,8	0,5	11,3
6,9	0,3	7,2		10,9	0,5	11,4
7,0	0,3	7,3		11,0	0,5	11,6
7,1	0,4	7,5		11,1	0,6	11,7
7,2	0,4	7,6		11,2	0,6	11,8
7,3	0,4	7,7		11,3	0,6	11,9
7,4	0,4	7,8		11,4	0,6	12,0
7,5	0,4	7,9		11,5	0,6	12,1
7,6	0,4	8,0		11,6	0,6	12,2
7,7	0,4	8,1		11,7	0,6	12,3
7,8	0,4	8,2		11,8	0,6	12,4
7,9	0,4	8,3		11,9	0,6	12,5
8,0	0,4	8,4		12,0	0,6	12,6

ANNEX 11 – WEIGHT GAIN OVER 14 DAYS TO USE IN OTP

Gain of Weight (gr/kg/day) for a length of stay of 14 days										
		Gain of weight (g/kg/day) over 14 days					Gain of weight (g/kg/day) over 14 days			
		2,5	5	10	15		2,5	5	10	15
Weight 14 days before	4,0	4,1	4,3	4,6	4,8	7,0	7,2	7,5	8,0	8,5
	4,1	4,2	4,4	4,7	5,0	7,1	7,3	7,6	8,1	8,6
	4,2	4,3	4,5	4,8	5,1	7,2	7,5	7,7	8,2	8,7
	4,3	4,5	4,6	4,9	5,2	7,3	7,6	7,8	8,3	8,8
	4,4	4,6	4,7	5,0	5,3	7,4	7,7	7,9	8,4	9,0
	4,5	4,7	4,8	5,1	5,4	7,5	7,8	8,0	8,6	9,1
	4,6	4,8	4,9	5,2	5,6	7,6	7,9	8,1	8,7	9,2
	4,7	4,9	5,0	5,4	5,7	7,7	8,0	8,2	8,8	9,3
	4,8	5,0	5,1	5,5	5,8	7,8	8,1	8,3	8,9	9,4
	4,9	5,1	5,2	5,6	5,9	7,9	8,2	8,5	9,0	9,6
	5,0	5,2	5,4	5,7	6,1	8,0	8,3	8,6	9,1	9,7
	5,1	5,3	5,5	5,8	6,2	8,1	8,4	8,7	9,2	9,8
	5,2	5,4	5,6	5,9	6,3	8,2	8,5	8,8	9,3	9,9
	5,3	5,5	5,7	6,0	6,4	8,3	8,6	8,9	9,5	10,0
	5,4	5,6	5,8	6,2	6,5	8,4	8,7	9,0	9,6	10,2
	5,5	5,7	5,9	6,3	6,7	8,5	8,8	9,1	9,7	10,3
	5,6	5,8	6,0	6,4	6,8	8,6	8,9	9,2	9,8	10,4
	5,7	5,9	6,1	6,5	6,9	8,7	9,0	9,3	9,9	10,5
	5,8	6,0	6,2	6,6	7,0	8,8	9,1	9,4	10,0	10,6
	5,9	6,1	6,3	6,7	7,1	8,9	9,2	9,5	10,1	10,8
	6,0	6,2	6,4	6,8	7,3	9,0	9,3	9,6	10,3	10,9
	6,1	6,3	6,5	7,0	7,4	9,1	9,4	9,7	10,4	11,0
	6,2	6,4	6,6	7,1	7,5	9,2	9,5	9,8	10,5	11,1
	6,3	6,5	6,7	7,2	7,6	9,3	9,6	10,0	10,6	11,3
	6,4	6,6	6,8	7,3	7,7	9,4	9,7	10,1	10,7	11,4
	6,5	6,7	7,0	7,4	7,9	9,5	9,8	10,2	10,8	11,5
	6,6	6,8	7,1	7,5	8,0	9,6	9,9	10,3	10,9	11,6
	6,7	6,9	7,2	7,6	8,1	9,7	10,0	10,4	11,1	11,7
	6,8	7,0	7,3	7,8	8,2	9,8	10,1	10,5	11,2	11,9
	6,9	7,1	7,4	7,9	8,3	9,9	10,2	10,6	11,3	12,0
	7,0	7,2	7,5	8,0	8,5	10,0	10,4	10,7	11,4	12,1

ANNEX 12 – WEIGHT GAIN TO REACH CURED CRITERIA

Weight gain table for infants <4kg			
Admission	Cured	Admission	Cured
1.80	2.14	2.70	3.18
1.82	2.16	2.72	3.20
1.84	2.18	2.74	3.22
1.86	2.21	2.76	3.25
1.88	2.23	2.78	3.27
1.90	2.25	2.80	3.29
1.92	2.27	2.82	3.32
1.94	2.30	2.84	3.34
1.96	2.32	2.86	3.36
1.98	2.34	2.88	3.39
2.00	2.37	2.90	3.41
2.02	2.39	2.92	3.43
2.04	2.41	2.94	3.46
2.06	2.44	2.96	3.48
2.08	2.46	2.98	3.50
2.10	2.48	3.00	3.53
2.12	2.51	3.02	3.55
2.14	2.53	3.04	3.57
2.16	2.55	3.06	3.60
2.18	2.58	3.08	3.62
2.20	2.60	3.10	3.64
2.22	2.62	3.12	3.66
2.24	2.65	3.14	3.69
2.26	2.67	3.16	3.71
2.28	2.69	3.18	3.73
2.30	2.72	3.20	3.76
2.32	2.74	3.22	3.78
2.34	2.76	3.24	3.80
2.36	2.78	3.26	3.83
2.38	2.81	3.28	3.85
2.40	2.83	3.30	3.87
2.42	2.85	3.35	3.93
2.44	2.88	3.40	3.99
2.46	2.90	3.45	4.05
2.48	2.92	3.50	4.10
2.50	2.95	3.55	4.16
2.52	2.97	3.60	4.22
2.54	2.99	3.65	4.28
2.56	3.02	3.70	4.34
2.58	3.04	3.75	4.39
2.60	3.06	3.80	4.45
2.62	3.09	3.85	4.51
2.64	3.11	3.90	4.57
2.66	3.13	3.95	4.63
2.68	3.16	4.00	4.68

weight gain table for children >4kg			
Admission	Cured	Admission	Cured
4.0	4.7	8.5	9.9
4.1	4.8	8.6	10.0
4.2	4.9	8.7	10.1
4.3	5.0	8.8	10.3
4.4	5.1	8.9	10.4
4.5	5.3	9.0	10.5
4.6	5.4	9.1	10.6
4.7	5.5	9.2	10.7
4.8	5.6	9.3	10.8
4.9	5.7	9.4	11.0
5.0	5.8	9.5	11.1
5.1	6.0	9.6	11.2
5.2	6.1	9.7	11.3
5.3	6.2	9.8	11.4
5.4	6.3	9.9	11.5
5.5	6.4	10.0	11.7
5.6	6.5	10.2	11.9
5.7	6.7	10.4	12.1
5.8	6.8	10.6	12.4
5.9	6.9	10.8	12.6
6.0	7.0	11.0	12.8
6.1	7.1	11.2	13.1
6.2	7.2	11.4	13.3
6.3	7.4	11.6	13.5
6.4	7.5	11.8	13.8
6.5	7.6	12.0	14.0
6.6	7.7	12.2	14.2
6.7	7.8	12.4	14.5
6.8	7.9	12.6	14.7
6.9	8.0	12.8	14.9
7.0	8.2	13.0	15.2
7.1	8.3	13.2	15.4
7.2	8.4	13.4	15.6
7.3	8.5	13.6	15.9
7.4	8.6	13.8	16.1
7.5	8.7	14.0	16.3
7.6	8.9	14.2	16.6
7.7	9.0	14.4	16.8
7.8	9.1	14.6	17.0
7.9	9.2	14.8	17.2
8.0	9.3	15.0	17.5
8.1	9.4	15.2	17.7
8.2	9.6	15.4	17.9
8.3	9.7	15.6	18.2
8.4	9.8	15.8	18.4

The weight table for young infants <4kg can be used where there is difficulty in taking the infant's height sufficiently accurately (most small infants) it should only be used for wasted infants thought to be <3Z score weight-for-length. The table for heavier children can be used by mobile teams where admission is by MUAC and no height has been taken.

These tables have been prepared using the WHO_{2006} boy's weight-for-lenght data. They have been constructed to show the increment in weight that is required for a child, who at admission is -3.5Z weight-for-length to reach -1.5Z at discharge.

ANNEX 13 – IPF MULTICHART

SAM N0.....

IPF Multi-Chart

Date of Admission__/__/_ **Date of Discharge**__/__/__

Register N0.....IPF code.....

Major Problem

Hr.....

Successfully **T**reated □

Sheet No.....IPF **N**ame.....

New Admission □

Death □ Cause.....

Patient's name.....IPF 24h/Day Care /**P**ed. Ward

Relapse □

Inter. **T**ransfer to OTP □

Family Name.....**A**ge.....mo / yr

Readm **A**bandon <2months □

If Yes, Code. OTP.....

Address.....**B**irth Date ____/____/____(dd/mm/yy)

Inter. **T**ransfer from OTP □

Medical Referral □

Phone.....**S**ex.....

Breastfeeding Y / N

If Yes, Code. OTP.....

Defaulter □ Cause .....

Referral : **S**pontaneous □ **C**ommunity □ **HC**/**H**osp □

Complementary food.....OTP Name .....

Reason admission **1) F**ail **A**ppetite test: Y / N - if Y PPN .....gr - **2)** If **C**omplication Y / N if Y ..... - **3) Œ**dema Y /N - **4) N**on-**R**esponse in OTP Y / N

Anthropometry

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Date															
Height/Lenght (cm)															
Weight (Kg)															
Wt for Ht (Z / %)															
MUAC (mm)															
Œdema (0 to +++)															

Target weight

.....kg.....g

Target Muac

.....mm

Weight Chart

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Acute Ph./Trans./Rehab															
F75/F100/F100D															
# feeds/day															
Ml/feeds															
Iron added....															
RUTF															
# feeds/day															
Sachet/day															
App. test (Good/Mod/Poor															

A=Absent V=vomiting R=refused NGT=Naso gastric tube IV=IV infusion Volume taken 100% 3/4 1/2 1/4 ...ml=extra	Feeds hrs 1 2 3 4 5 6 7 8 9 10															

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alert / **L**ethargic (A/L)															
Stools (0 to ///)															
Vomiting (0 to ///)															
Dehydrated (0 to +++)															
Cough (0 to +++)															
Shock (0 to +++)															
Capillary refill (secs)															
Resp/min															
Pale conjunct. (0 to +++)															
Temp.AM .Ax/Rec															
Temp PM Ax/Rec															
Liver **s**ize cm															
Other															

Routine treatment	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Antibiotic 1															
		x														
	Antibiotic 2															
	Anti-malaria															
	Anti-fungal															
Specific Treatment	Antibiotic 3															
	Antibiotic 4															
	Resomal ml															
	IV Inf/Blood Tr															
	NGT															
Lab tests	Hb	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Malaria test															
	TB Test															
	Chest x-ray															
	other															

OBSERVATION:

Card Y □ N □	Immunisation Date				
	At Birth	1	2	3	4
BCG					
POLIO					
DPT					
Measles			Extra	Extra	

DISCHARGE		
HEALTH EDUCATION GIVEN	DATES	SIG.
Causes of malnutrition		
Diarrhoea, ARI, Fever		
Sexual transmitted diseases		
Pay and stimulation		
Nutrition for children		
Care of the children		
Hygiene		
Breastfeeding		
Family Planning		
Other		
Updated Immunisation	Y	N
Breastfeeding at discharge	Y	N

ANNEX 14 – CRITICAL CARE CHART

CRITICAL CARE CHART

Patient's Name	Reg. No	Sheet No	Diagnosis:
Age:	SAM-No	Oedema: 0 + ++ +++	Check the vital signs that are to be monitored in the "check" column and write in the times in the time row (only check those that are needed)
IPF / emergency ward/ casulty/ paediatr ward/ other			- attach graph for graphing critical signs if necessary
Date:	Nurse in charge	Dr in Charge	

Check the patient every .....….min/hour Time started.....AM /PM

HOUR	check	Initial Eval.													
Examination															
Level of **Consiousness**															
Weight - Kg.g															
Capillary refill (nail bed) - secs															
Cold extremeties Yes **N**o															
Respiration rate - per min															
Pulse - per min															
Liver (cm below costal margin)															
Stool (liquid/semi/solid) number															
Vomit - number															
Passed **urine Y**es **N**o															
Temperature (axilla / rectal)															
Eye lids retract/sleep eyes open															
Other															
Other															
Treatment given															
ResSoMal..... ml															
IV- fluid..... ml															
Blood/pack cells…..... ml															
F75/sugar water..... ml															
IV glucose 10%..... ml															
Oxygen															
Wet cloths															
Kangaroo - rewarming															
stat Drug															
stat Drug															
stat Drug															

use another sheet if necessary

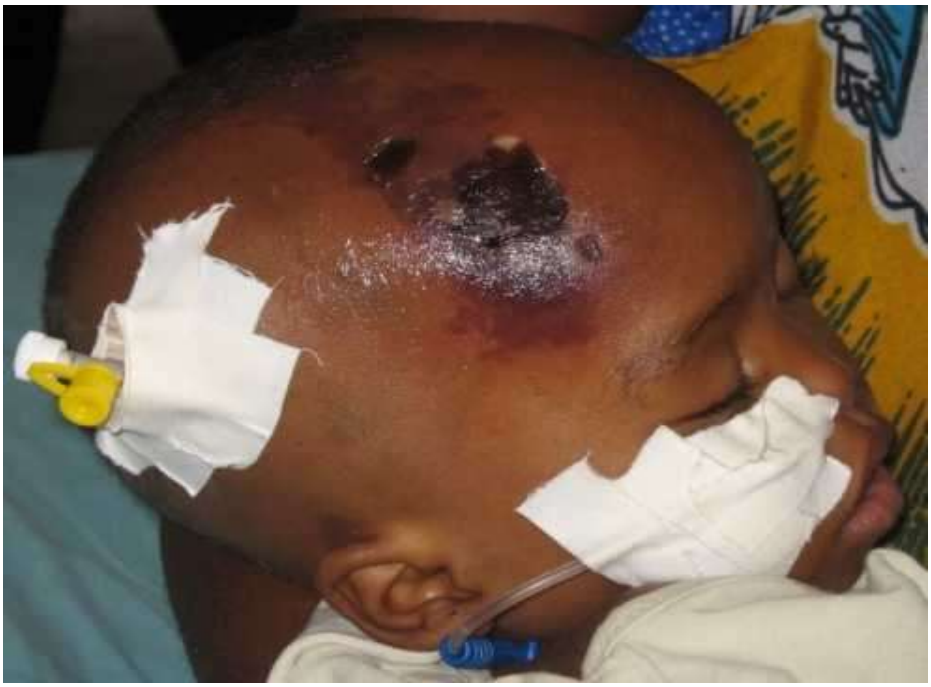
ANNEX 15 – HOW TO INSERT A NGT

- Choose the appropriate size tube (range is 6, 8 or 10 FG). Lie infants on their back, swaddled in a small blanket as a mild restraint.
- Measure the tube from the child's ear to the tip of the nose and then to just below the tip of the sternum (for pre-term and neonates from the bridge of the nose to just beyond the tip of the sternum). Hold or mark this position so that you know how far to insert the tube.
- Lubricate the catheter with a jelly type lubricant, vaseline or at least water and insert through the nose bending the tube slightly upwards to follow the nasal passage.
- Bend the head slightly backwards to extend the neck. Insert the catheter smoothly and quickly at first pushing upwards (not just backwards) so that the catheter bends in one loop downwards along the back of the throat. Do not push against resistance (if you cannot pass the tube through the nose, pass it through the mouth instead). Take care that the tube does not enter the airway. If the child coughs, fights or becomes cyanotic, remove the tube immediately and allow the patient to rest before trying again. It is *vital* to check that the tube is in the stomach before anything is put down the tube. This should be re-checked before each feed is given in case the tube has been dislodged from the stomach. Note that sick, apathetic children and those with decreased consciousness can have the tube passed directly into their lungs without coughing. It is not a guarantee that the tube is in the right place just because it has passed smoothly without complaint from the child.
- The best way to test that the tube is fully in the stomach is to aspirate some of the stomach contents and test for acid with litmus paper. The stomach contents in normal children are acid and turn blue litmus paper red. However, the malnourished frequently have "achlorhydria" (lack of gastric acid). In the absence of litmus paper and in the malnourished child check that there is the characteristic appearance and smell of stomach contents ("sour" or like vomit).
- Also check the position by injecting 0.5 – 1ml of air into the tube whilst listening to over the stomach with a stethoscope. A "gurgling" or bubbling sound can be heard as air enters the stomach.
- It is always best to ask someone else to check if you are not sure the tube is in the right place, to avoid the risk of milk going onto the lungs. Before each feed, aspirate the tube to check that the previous feed has left the stomach; this may be slow and gentle in very sick children as strong suction can damage the stomach lining. It is important not to cause gastric distension by giving a new feed on top of an old one[76]. The flow of the feed should be slow.
- Attach the reservoir (10 or 20 ml syringe) and elevate it 15 – 20 cm above the patient's head. The diet should always be allowed to flow into the stomach by gravity and not pushed in with the plunger. When the feed is complete, irrigate the NGT with a few ml of plain water and stopper the tube (or clamp it). Place the child on his/her side to minimise regurgitation and aspiration. Observe the child after feeding for vomiting, regurgitation or abdominal distension.
- In an IPF the tube should be changed every 3-5 days.

[76] If there is « sour » gastric juice, with flocculant old food suspended in it, then this should be completely aspirated, the volume noted and about 20ml of isotonic sugar solution passed down the tube and immediately reaspirated to « irrigate » the stomach. The stomach is then allowed to rest for about 30 minutes before the diet is re-introduced. If after 3 hours this second feed has not passed out of the stomach then the volume of the diet will need to be reduced and/or the frequency increased.

ANNEX 16 – THE DISADVANTAGES OF INDWELLING CANNULAE

- They give access to the circulation for antibiotic-resistant bacteria in these immuno-compromised patients.
- The dressings quickly become dirty in conventional hospital settings.
- They often become colonised with Candida and can give rise to fungal septicaemia.
- They require fluid or anticoagulants to keep the vein open – but these children have impaired liver function (bleeding tendency) and are very sensitive to fluid overload.
- They require skilled health persons to insert, re-site and maintain the cannula: staff time is the limiting factor in most resource poor settings.
- The administration of IV drugs takes more time, from higher grades of staff, than giving oral drugs.
- IV preparations are much more expensive than oral preparations and the cannula itself is expensive.
- Insertion of the cannula is painful and distressing for the child and they frequently need to be re-inserted.
- The cannula restricts the movements of the child and impairs feeding, washing, play and care.
- Extravasations into the tissue can cause skin necrosis and other complications.



Example of fluid extravasation with scalp necrosis and resiting of cannula several times.

ANNEX 17 – HISTORY AND EXAMINATION SHEET

History sheet for severe complicated malnutrition/Failure to respond - page 1

SAM N°..... **Parent's name:**..... **First name:**..... **Age**.....*d/m/y* **Sex** .....

Date of examination: ...../...../..... **Examiner's name**..... **Status** .....

Who is giving the history? *patient/mother/ father/ sister/ grandmother/ aunt/ other*.....

Is this person the main **caretaker** for the patient at home? *yes/ no* If not, who is the **caretaker**?.....

History of present illness

How long has the patient been ill? .....*h/ d/ wk/ mo/ yr*

What are the **complaints** - in the patient's own words - and how long has each been present?

1..... .....*h/ d/ wk/ mo/ yr*
2..... .....*h/ d/ wk/ mo/ yr*
3..... .....*h/ d/ wk/ mo/ yr*
4..... .....*h/ d/ wk/ mo/ yr*

Describe the details of the complaints, how they have progressed, and the factors associated with each one

.....

.....

.....

.....

.....

.....

.....

.....

Systematic questions (give additional details of abnormal findings above)

Appetite *hungry/ normal/ poor/ very poor* **Weight** is *decreasing/ steady/ increasing .....d/ wk/ mo*

Swelling: *none/ feet/ legs/ face/ all over.....d/ wk/ mo* **Eyes** sunken *no/ recent/ longstanding*

Diarrhoea *N Y .....h/d/wk/mo* stools per day ..... *Normal/ watery/ soft/ blood/ mucus/ green/ pale*

Vomiting *N Y .. ..h/d/wk/mo*. No per day..... Repeated episodes of Diarrhoea *N Y*

Breathing: *normal/ fast/ noisy/ difficult* for .....*h/d/wk* **Cough**: *N Y* - for.....*d/wk/mo*

Fever *N Y* **Convulsions** *N Y* **Unconsiousness** *N Y*

Treatment: Patient has already seen *Dr/ Clinic/ Hospital/ Traditional healer* .....times for this illness.

Treatment given .....

Past and social history

Past diseases: describe.....

Mother / father absent *N Y* reason..... .....*wk/mo/yr* **Patient**: *twin/ fostered/ adopted/ orphan*

Gestation: *early/ normal* or.....*wk/ mo* **Birth weight:** *large/ normal/ small* or .....*Kg~~/Lb~~*

Mother's age .....yr nº live births ..... nº Living children ..... **Family** eating together: nº adults..... nº children.....

Resources (food income crops livestock).....

Diet history

breast feed alone for .....*wk/ mo* age stopped breast feeding.....*wk/mo*

Food before ill *breast/ milk/ porridge/ family plate/ fruit/ leaves/ drinks/ other*

Food since ill *breast/ milk/ porridge/ family plate/ fruit/ leaves/ drinks/ other*

Last 24h -describe

.....

Examination sheet for severe complicated malnutrition/Failure to respond - page 2 - Examination

SAM N□..... Parent's name:..... First name:..... Age.....d/m/y Sex .....

General does the patient look: *not-ill/ ill/ very ill/ comatose*
Mood and behaviour *normal/apathetic/ inactive/ irritable/repeated movements*
Development / regression Patient can: *sit/ crawl/ stand/ walk*

Ear Nose & Throat

Eyes *normal/ conjunctivitis/ xerosis/ keratomalacia mild/ mod/ severe*
Mouth *normal/sore/red/smooth tongue/candida/herpes/angular stomatitis*
Membrane Colour: *normal/pale/jaundiced/cyanosed* **Gums** *normal/ bleeding*
Ears *normal/ discharging* **Teeth** number —/— *normal/ caries/ plaque*

Respiratory system & Chest

Breathing *normal/ noisy/ asymmetrical/ laboured/ wheeze/ indrawing*
Rate **...../min or** *more /less* **than** *50/60* **Chest** *normal/ asymmetric/ pigeon/ sulcus*

Cardiovascular system & Hydration

Oedema *none/+/++/+++/uncertain feet/ pretibial/ hands/ face/ generalised*
Hydratation *normal/ dehydrated/ shock/ uncertain* **Passing urine** N Y
Eyes *normal/ sunken/ staring* **Peripheries** *normal/ warm/ cold.*
Capillary refill *quick/ slow/ very slow* **.....**secs **Visible veins** *full/ normal/ empty*
Pulse rate ...../min *normal/ strong/ weak* **Heart sounds** *normal/ gallop/ murmur*

Gastro-Intestinal

Stool *not seen/ normal/ soft/ watery/ green/ pale/ mucus/ blood/*
Abdomen: *normal/ distended/ tender/ visible peristalsis /ascites*
bowel sounds: *normal/ active/ quiet/ absent* **splash** N Y
Liver .....cm below costal margin *normal/ firm/ hard smooth/ irregular*
Spleen *not felt/ felt/ large - normal/ firm/ hard - tender/ painless*

Nervous system

Tone *normal/ stiff/ floppy*
Meninges *normal /stiff neck /Brudzinski /fontanelle bulging*
Reflexes *normal/ symmetrical/ asymmetrical/increased/ decreased/ absent*

Skin Hair Bone Lymph Nodes

Skin change *none/mild/mod/severe peeling/ raw / ulcers infection/ cuts/ bruises*
Perineum *normal/rash/raw /candida* **Purpura** N Y
Hair *black/ brown/ red/ blond normal/easily plucked/ balding*
Scabies *none/ local/generalised* **Eyelash** *normal/ long*
Lymph nodes *none/ groin/ axilla/ neck Tender/ painless Soft/ firm/ hard/ fixed*
Ribs ends *normal/ swollen/ displaced* **Gynecomastia** N Y

Describe abnormalities below and draw on diagram

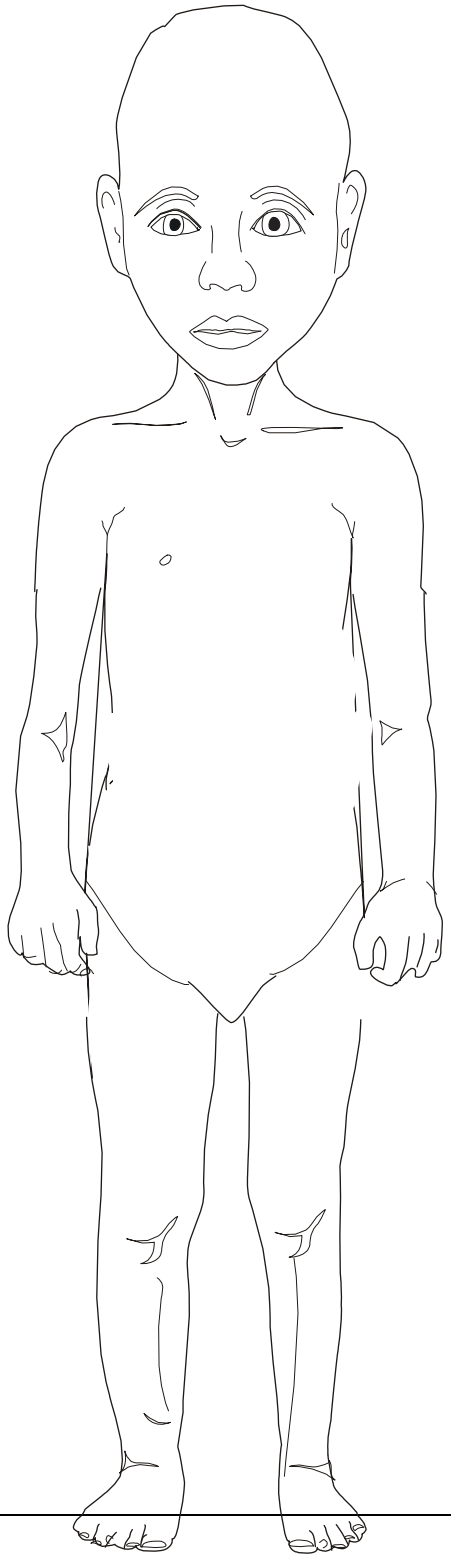
.....

.....

.....

.....

.....



Diagnoses 1:..... 2:..... 3 .....

ANNEX 18 – RECOVERY PHASE AS AN IN-PATIENT FACILITY (IPF)

Although it is highly desirable that the recovery phase be managed on an out-patient basis, this is not always possible.

If there is no capable caretaker, impossible home circumstances, no other family willing to care for the child, an abandoned child without an available orphanage, no operational OTP service or no supply of RUTF:

Then patients may have to be kept in the IPF until fully recovered.

This annex details the treatment of such patients.

The principles of the treatment in the facility and in the community are exactly the same; however, the diet, organisation and documentation differ.

It is not efficient to keep children and caretakers in an acute hospital ward for the recovery phase. They should be resident in a separate structure. The best structures to use are local style houses with which the patients and caretakers are familiar; in the absence of such a structure, tents in the grounds of the hospital/health centre can be used.

Diet (F100 or RUTF)

Breast-fed children should **always** get breast-milk before they are given F100 or RUTF and also **on demand**.

In the Recovery Phase (Phase 2), the patients have an **unlimited** intake (but almost never take more than 200kcal/kg/d).

Either F100 or RUTF are used in Phase 2 in IPF; they are nutritionally equivalent (except that F100 does not have added iron, RUTF does contain adequate iron) and one can substitute for the other.

F100 (100ml = 100 kcal): five to six feeds of F100 are given. One porridge **may** be given for patients who are more than 24 months of age (approximately 8Kg); it is neither necessary nor desirable to give porridge – but many children demand food with which they are familiar and then it can be given as a separate meal and used as an inducement for the child to take the therapeutic food. It is better to give the porridge as the last feed in the evening to ensure that adequate F100 is taken during the day and to give time for the porridge to digest overnight.

RUTF can be used for in-patients. The advantages of use in the IPF are that it requires less staff time and supervision, no preparation is necessary, the food can be taken throughout the day and the mother can feed the child by herself overnight; there is also no need to give the child additional iron.

Some children prefer F100 and others RUTF. However, taking a single food for several weeks is monotonous and many older patients welcome a change in diet. One can give F100 during the day when there are adequate staff and RUTF for evening and overnight feeding.

Give the amounts shown in the table.

The amount of F100 or RUTF to OFFER at each feed for 5 or 6 feeds per day or RUTF for the whole day to be used in the recovery phase in an IPF: If the patients take the whole amount then more should be offered

Class of weight Kg	6 feeds/ day		5 feeds/day		Whole† day
	F100	RUTF	F100	RUTF	RUTF
	ml/feed	g/feed	ml/feed	g/feed	g/day
<3 kg	*Full strength F100 and RUTF are not given below 3kg: use F100dilute*				
3.0 to 3.4	110	20	130	25	120
3.5 – 3.9	125	20	150	25	130
4.0 – 4.9	135	25	160	30	150
5.0 – 5.9	160	30	190	35	175
6.0 – 6.9	180	35	215	40	200
7.0 – 7.9	200	35	240	45	220
8.0 – 8.9	215	40	260	45	235
9.0 – 9.9	225	40	270	50	250
10.0 – 11.9	230	45	280	50	260
12.0 – 14.9	260	50	310	60	290
15.0 – 19.9	300	55	360	65	330
20.0 - 24.9	370	65	440	80	400
25.0 – 29.9	420	75	500	90	450
30.0 – 39.9	450	80	540	100	500
40 – 60	530	100	640	120	600

†One sachet of commercial RUTF contains about 92g and 500kcal (one gram = 5.4kcal)

When RUTF is given, as much water as satisfies the patient's thirst must be offered during and after each feed. Because RUTF can be kept safely the amount for the whole day can be given once per day. This is then eaten at the patient's leisure, in his/her own time. But the aid-nurse should periodically check on the amount taken, assess the child's appetite and ensure that the caretaker does not consume the diet.

Note: Iron is added to the F100 in Phase 2. Add 1 crushed tablet of ferrous sulphate (200mg) to each 2 litres to 2.4litres of F100. For lesser volumes: 1000 to 1200ml of F100, dilute one tab of ferrous sulphate (200mg) in 4ml water and add 2ml of the solution. For 500ml to 600ml of F100, add 1ml of the solution. Alternatively, if there are few children, iron syrup can be given to the children.

RUTF already contains the necessary iron.

Surveillance in phase 2	Frequency
Weight and oedema	3 times per week
Body temperature is measured	Every morning
The standard clinical signs (stool, vomiting, etc.)	Every day
MUAC is taken	Every week
Appetite is judged from the amount taken	Intake record is kept on chart

The other routine treatments are the same as that given to OTP patients: 1) de-worming, 2) measles vaccination and 3) vitamin A before being discharge.

The Criteria to move back from Phase 2 to the Acute Phase (Phase 1) in the IPF are the same as given for OTP patients.

The discharge criteria are the same as those given for OTP patients.

ANNEX 19 – INFANT SS CHART

SS-Chart for Infants with SS feeding (less than 6 months or 3kg)

SAM-Number……..

Registration No…… **IPF** Code……

Sheet No…… **IPF N**ame……

Family Name Day care/Pediatric W/Other

Patient's Name…… **A**ge (day or mo.)……

Address…… **B**irthdate___/___/___

…… **Sex**……

Phone-No……

Major Problems

1 ……

2 ……

3 ……

Admission Date___/___/__

Time……..am/pm

New Admission ☐

Relapse

Readmission Y / N

If Y, Type

Reg No ……

Breastfed……..Y / N

Receiving other feed…..Y / N

Discharge Date___/___/___

Successfully **T**reated ☐

Dead ☐ Time ……..am/pm ……..

Cause of death……

Defaulter ☐

Med. **R**eferral ☐ To…… ……..

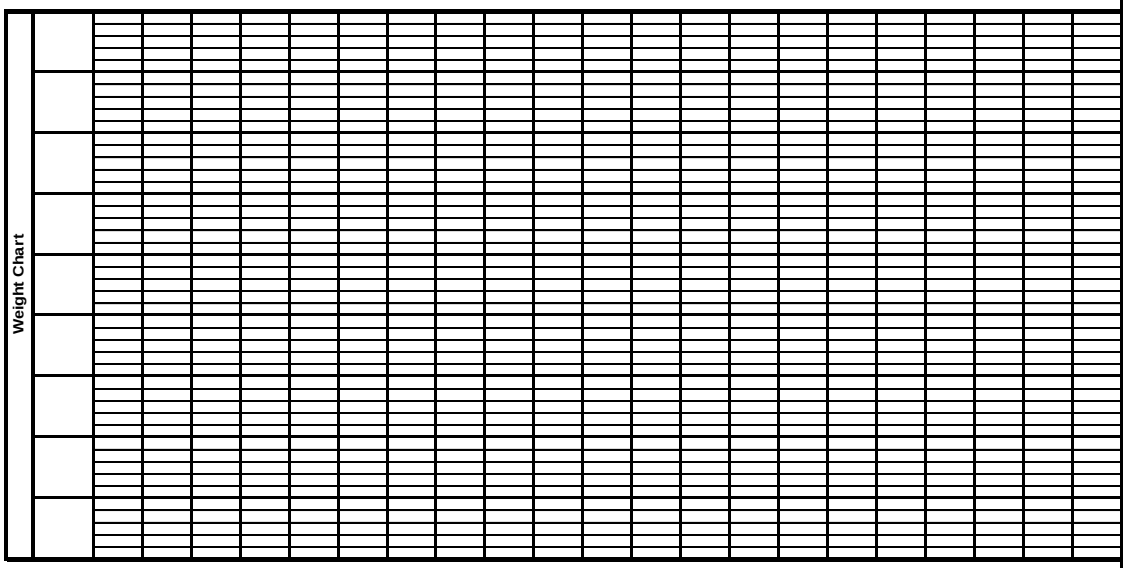
Non **R**esponse to treatment ☐

Reason admission **1) G**row th Monitoring static: Y / N - **2) W**eight/**L**ength...Y / N **3) W**eight/**A**ge Y / N 4) **C**omplication Y / N if Y …… - **5) Œ**dema Y /N

Anthropometry

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date																					
Length (cm)																					
Weight (kg.g)																					
Wt for Ht (Z/%)																					
Œdema (0 to +++)																					

Weight Chart



Therapeutic Diet

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date																					
# feeds/day																					
Infant **F**ormula/**F**100Dil																					
SS ml / feed																					

A=Absent
V=Vomit
R=Refused
NG=tube
IV=IV Fluid

Amount taken

100% 3/4 1/2 1/4

=ml=extra

Time Hr	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Surveillance

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Alert/**L**ethargic (A/L)																					
Stool (0 to +++)																					
Vomit (0 to +++)																					
Dehydrated (0 to +++)																					
Cough (0 to +++)																					
Shock (0 to +++)																					
Resp. rate /mn																					
Pale Conjunct. (0 to +++)																					
Temp. **AM** (Ax/Rec)																					
Temp. **PM** (Ax/Rec)																					

Routine Medicines

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Antibiotic 1 Time																					
Antibiotic 2 Time																					
Malaria Rx																					

Special Medicine

Antibiotic 3 Time																					

Enter Name, dose and route of administration (oral-po, intramuscular-IM, or intravenous-IV) for each drug. Enter an X in the upper left corner if prescribed - the nurse signs the box when the drug is given.

Mother Trt

Mutlivitamin																					
Vitamin A																					
Malaria Rx																					
CSB																					

Test Results

Hb/Pcv																					
Malaria smear																					
Glucose																					

OBSERVATION

Card Y☐ N☐	DATES Birth	1
BCG		
Polio		
DPT		

DISCHARGE Education Given On	Dates	Sig.
Causes of malnutrition		
Diarrhoea, RTI, Fever		
Skin, eye and ear infection		
Play and stimulation		
Child nutrition		
Child care		
Hygiene		
Sexually Transmitted Disease		
Family Planning		
Other……		
Immunisation up to date	Y	N
Breastfeeding on discharge	Y	N

ANNEX 20 – INFANTS WITHOUT ANY PROSPECT OF BEING BREAST-FED

These young infants are particularly vulnerable because they have neither a mother nor the protection of breast milk.

Anthropometry in these small infants is difficult and imprecise. MUAC is not yet used in this age group. Where there is a growth monitoring program change infants that are losing weight or have crossed weight-for-age centile lines because their weight is static can be admitted.

Admission Criteria[77]

AGE	ADMISSION CRITERIA
Infant less than 6 months or less than 3 kg with no prospect of being breast-fed	➢ The infant is not gaining weight at home (by serial measurement of weight during growth monitoring, i.e. change in weight-for-age) **or** ➢ W/L (Weight-for-Length) less than <-3 Z **or** ➢ Presence of bilateral œdema.

When there is no prospect of being given breast milk then severely malnourished, less than 6 months old infants should be treated according to the standard protocol with the following modifications.

Acute phase

The diet should normally be based upon Generic Infant formula except for those with oedema when F75 is used in the acute phase. Generic infant formula is preferred, however, F100diluted can be used, but full strength F100 must never be used[78]. (See table below for amounts in the different phases). The criteria for using an NG-Tube and passage to transition phase are the same as for older children.

The infants must have antibiotics routinely and the management of complications is the same as for older infants and children.

Transition Phase

If the infant has been taking F75 during the acute phase then this is changed to Generic Infant Formula (or F100diluted) during the transition Phase. Otherwise there is no change in the diet given, but the volume offered is increased by about one third.

Recovery phase

During Recovery-phase, twice the volume of Generic Infant Formula (or F100diluted) is OFFERED to the infants. This is a large amount to encourage rapid catch up growth; they must NEVER be force fed. The frequency of feeding can be reduced to 6 times per day.

[77] There are no standards for infants below 45cm and the increments to judge nutritional status require precise scales that are not generally available. The in-patient therapeutic unit is not appropriate for managing premature and low-birth-weight non-breast-fed infants below 45cm in length. These infants should be referred to the neonatology service/nursery and given infant formula.

[78] NEVER use full strength F100 – it can cause hypernatraemic dehydration in these infants. There has been very little experience in treating these infants in the developing world. In the developed world special formula for premature infants is used – if available it is suggested that these formula are used. The diets given can be the same as those given to infants being fed with the SS-technique. Nearly all these infants have been born prematurely or have had intra-uterine growth retardation, with low birth weight. Thus, the aetiology of the "malnutrition" in the small infant is normally different from the older child.

Look up table of the amounts of Generic Infant formula, F100dilute or F75 to give for infants not breast-fed in the Acute, Transition and Recovery phases.

	Acute Phase	Transition Phase	Recovery Phase
Class of weight (kg)	Amount (ml) of Generic Infant Formula F100dilute or F75 to give per feed		
	8 feeds/day	8 feeds/day	6 feeds/day
≤ 1.5 kg	30	40	60
1.6 – 1.8	35	45	70
1.9 – 2.1	40	55	80
2.2 – 2.4	45	60	90
2.5 – 2.7	50	65	100
2.8 – 2.9	55	75	110
3.0 – 3.4	60	80	120
3.5 – 3.9	65	85	130
4.0 – 4.4	70	95	140

CRITERIA for DISCHARGE

When the infant reaches -1.5Z score weight-for-height and is gaining weight at 20g/d s/he can be discharged.

The infants will be discharged on generic infant formula.

It is essential that the caretaker has access to adequate amounts of generic infant formula. This has to be supplied by the clinic or orphanage/foster parents. Commercially produced formulae are nearly always unaffordable by families with malnourished young infants when no mother or wet-nurse is available. Most caretakers[79] (fathers, siblings) in this situation over-dilute the formula to make it "stretch" and last longer, others use the cheapest milk, which will be dried whole milk, evaporated or condensed milk; these are all unsuitable for the growth and development of the previously malnourished infant.

The caretaker (father/siblings) must have the knowledge and facilities to prepare the formula milk safely.

Follow-up for these infants and their caretakers is very important and should be organised by the outreach worker in conjunction with the community volunteers.

[79] In many areas with a high prevalence of HIV there are substantial numbers of "child-headed households", where the adults have all died. These children looking after children present a particular difficulty in terms of livelihood, knowledge, exploitation etc. The whole household needs direct assistance.

ANNEX 21 – MONTHLY REPORT OTP

OTP - MONTHLY STATISTICS REPORT - MANAGEMENT OF SEVERE ACUTE MALNUTRITION - OTP

National MoH Logo here

OTP CODE	
Name of the FACILITY	
Type of Facility	otp /mobile
REGION	
District	
OPENING DATE	

Implementing agency	
Report prepared by	
Report period from ddmmyy	
report period to ddmmyy	
Date of submission	
Name/code of IPF used by this OTP	

Age Group	Total beginning of the month (Beg)	New admissions			RE-ADMISSION after defaulting (<2mo) (Trad)	INTERNAL TRANSFER (from IPF or another OTP) (Tin)	Total Entry to facility (Cin)	Transfer	Discharges					Total discharges (Dtot)	Total end of the month (End)
		W/H<-3 z-score *or* MUAC<115mm *or*	OEDEMA (Aoed)	RELAPSE (Arel)				INTERNAL TRANSFER (to IPF or OTP) (Tout)	DEAD (Dead)	CONFIRMED DEFAULTER (DefN)	UN-CONFIRMED DEFAULTER (DefU)	NON-RESPONDER (refused transfer to IPF)	CURED (Dcur)		
6-23months															
24-59months															
> 59months															
TOTAL															
UPDATE of previous report								%	%	%	%	%	%		

age group	Previous balance from monthly report ...../.....			New balance		
	Death	Defaulter confirmed	Defaulter unconfirmed	Death	Defaulter confirmed	Defaulter unconfirmed
6-23 months						
24-59 months						
> 59 months						

RUTF	In stock	In	Out	Balance
Box				

1 Box ..... sachets

Amoxycillin				
Malaria				
other				

Errors of admissions	No

New admission = Patient directly admitted to your programme to start the nutritional treatment. Marasmic (Amar), Kwashiorkor (Aoed) or Relapse (Arel) admissions are recorded in 3 different col
Re-admission after defaulting (Ared) = Patient that has defaulted from a nutritional therapeutic treatment and he is re-admitted in your unit within a period of less than 2 months
If the defaulter is coming back after 2 months, then he is recorded as a new admission.
Internal transfer (from IPF or another OTP) (Tin) = Patient that was in the IPF or another OTP and then transferred to the OTP.
Cured (Dcur) = Patient that has reached the discharge criteria
Death (Dead) = Patient that has died while he was in the programme (or during transfer from your OTP to IPF. The death has to be confirmed by a home visit
Defaulter confirmed (DefN) = Patient that is absent for 2 consecutive weighing (2 weeks), confirmed by a home visit, outreach worker, volunteer or neighbour
Defaulter unconfirmed (DefU) = Patient that has left the programme but his outcome (true defaulting or death) is not confirmed/ verified by a home visit
Non-responder (Dmed) = Patient that has failed to respond to treatment after investigation, was transferred to IPF but refused to go
Internal Transfer (to IPF or another OTP) (D6): when a patient was in your OTP and then transferred to IPF or to another OTP.
Total end of the month (End) = Total beginning of the month (Beg) + Total admissions (Cin) - Total discharges (Dtot) - Internal transfer (Tout)

ANNEX 22 – MONTHLY REPORT IPF

IPF - MONTHLY STATISTICS REPORT - MANAGEMENT OF SEVERE ACUTE MALNUTRITION - IPF

Country National Logo

FACILITY CODE	
Name of the FACILITY	
Type of Facility	
REGION	
District	
OPENING DATE	

Implementing agency	
Report prepared by	
Report period from ddmmyy	
report period to ddmmyy	
Date of submission	
List any OTPs outside the district using this IPF	

Age Group	Total beginning of the month (Beg)	New admissions			RE-ADMISSION after defaulting (<2mo) (Trad)	INTERNAL TRANSFER (from OTP or another IPF) (Tin)	Total Entry to facility (Cin)	Transfer	other EXIT from Facility				Total Exit (Cout)	Total end of the month (End)
		W/H<-3 z-score *or* MUAC<115mm *or* MUAC<180mm (Amar)	OEDEMA (Aoed)	RELAPSE (Arel)				SUCCESSFULLY TREATED/ internal transfer to OTP (Tout)	DEAD (Dead)	DEFAULTER (DefN)	NON RESPONDER/ MEDICAL REFERRAL (Dmed)	CURED (Dcur)		
< 6 months														
6-23 months														
24-59 months														
>59 months														
Total														
								%	%	%	%	%		

Errors of admissions	No

Products	In stock	In	Out	Balance
F75 (sachet)*				
F100 (sachet)*				
RUTF (box)				

* for 500ml or 2l

Drugs	In stock	In	Out	Balance

New admission = Patient directly admitted to IPF (acute-Phase 1) with no SAM-Number assigned

Internal transfer (from OTP or another IPF) (Tin) = Patient that was in an OTP or another IPF and has been transferred to the IPF.

Dead (Dead) = Patient that has died in the IPF.

Defaulter (DefN) = Patient that is absent for 2 consecutive weighing (2days)

Successfully treated (Tout) = s/he has been successfully treated and s/he has been transfered to an OTP or is gaining weight on exclusive breast milk.

Non-response/Medical referral (Dmed) = Patient that has failed to respond to treatment and has been referred to another service/hospital who will take over management.

Internal transfer (to OTP or another IPF) (Tout) = Patient that was in the IPF and is transferred to an OTP to continue treatment.

Total end of the month (End) = Total beginning of the month (Beg) + Total admissions (Cin) - Total exit (Cout)

ANNEX 23 – SUPERVISION CHECK-LIST FOR THE DISTRICT NUTRITION OFFICER/FOCAL POINT

Period: From ____/____/____to ___/____/____/ **R**egion: _____ **D**istrict : _____

No OTPs Visited:..... Functioning:..... No HC Visited:..... Functioning:.....

No IPF Visited..... Functioning:..... No Hospitals Functioning:..... No district's OTPs using the IPF

Total Population:..... % of Catchment pop..... (<5km)

New OTP: YES / NO if Yes, Name..... Code..... Closed: YES / NO if YES, Name.....Code.....

New Staff Expected YES / NO Allocated YES / NO If YES, No.....

Reason for visits – routine/results of reports/staff problems/logistic problems/patient complaints

High defaulting / high death / screening results / coverage low / other.....

ACTIVITIES	YES	NO	COMMENTS
1. Protocol applied in all the OTPs			%
2. Protocol applied in the IPF			
3. Supervision of the OTP			No of OTP visited:
4. Supervision of the IPF			No:
5. Internal Transfer system in place			Transport Free – Paid by .....
6. Internal Transfer form, communication between OTP/IPF working, etc.			No transfer..... Death during transfer ..... Not arriving.....
7. SAM-Number used for Internal transfer			Y / N
8. On job Training activities needed for OTP			If Yes, which OTP & how many?
9. On job Training activities needed for IPF			If Yes, which IPF & how many?
10. On job Training during the Period			If Yes, where & how many?
11. New staff appointed in OTP			
12. New staff appointed in OTP Trained			
13. New staff appointed in IPF			
14. New staff appointed in IPF Trained			
15. Monthly Reports a) Received from the OTP Last month, b) Transmitted to the HMIS			**a)N° R**eceived: **N° E**xpected: **b)T**ransmitted to HMIS:
16. Material lacking in any OTPs?			If yes, Name of the OTP: Action taken:
17. RUTF lacking in any OTPs?			If yes, Name of the OTP: Action taken:
18. F75-F100-RUTF lacking in IPF?			If yes, Products: Action taken:

19. Systematic Treatment lacking in OTP			If yes, Name of the OTP: Action taken:
20. Systematic Treatment lacking in IPF			If yes, Name of the drug: Action taken:
21. Staff Paid last month in OTP / IPF			
22. Meeting last month with the OTP/IPF supervisors			Last date:
23. Meeting last month with the DHMT			Last date:
24. Meeting with the other team members in the district (for community mobilisation)			
25. Any activities for Community Mobilisation at district level			If yes, which?
26. Community Mobilization Evaluated			
27. Regular Meetings of CHW in each OTP			
28. Are there adequate CHWs in each OTP			Total no: Expected no:…….
29. Training Material distributed to the HC for Community Mobilisation			
30. District Storage in Good Condition for the Therapeutic food?			
31. ....for Drugs			
32. Stock Cards Updated in District/OTPs/ IPF			
33. Rupture of RUTF in previous 2 mo at district level			If yes, explain
34. Rupture of Drugs in previous 2 mo at district level			If yes explain
35. Any Delivery/Transport Problems of supplies (e.g. RUTF) to OTP?			
36. OTP Structures in bad shape			
37. OTP Structures with NO/insufficient Water			

Joint the monthly reports of the months and the supervision of the OTP / IPF

Name, surname	Position	Qualification	e-mail	Phone

Date: Position: Signature:

ANNEX 24 – OTP SUPERVISION FORM

Date: ..... District:..... Site:..... Code.....

Supervision visit while the OTP is running? yes / no ; Month of the last visit.....By.....

Person interviewed during the visit

Name	Position	Qualification	Employed by

STAFF & TRAINING

Staff of the OTP/HC:

Number	Qualification	Responsible for	Salaries/ Incentives given last month	Training on SAM if Yes, date of the last training	Present/Absent the day of the visit
	CHW/Volunteers				

Conclusion & Actions taken: .....

.....

PROTOCOL

Copy of the protocol? *yes / no*. If Yes, Version No:.....
Posters on OTP/HC wall? *yes / no*. If Yes, which ones?.....
Protocol READ? *yes / no* KNOWN?*yes / no* DIFFICULTIES in UNDERSTANDING? *Yes /No*
If Yes, which part? .....

Conclusion & Actions taken: .....

.....

TOOLS – MATERIALS – PRODUCTS

Register? *yes / no* Charts? *yes / no* Card for the patient?*yes / no*
Transfer form? *yes / no* Look up Tables? *yes/no* . If No, which ones are missing?.....
Drinkable water available? *yes / no* If No, Actions taken.....
Sugar water available? *yes / no* If No, Actions taken.....
Health Education material available? *yes / no*
Anthropometric material present and in good condition? *yes / no*
If not, please precise for MUAC.....lenght-board.....Scale..... Others.....
Routine medicine available? *yes / no* If not, which one?.....

Other Specific drugs available? *yes / no* ; which ones .....

Logistics resources (motorbike, car, truck – petrol)? *yes / no*, if no, what arrangements have been made.....

RUTF available? *yes / no* ; if not why? .....
Structures: Any problem to report.....

Conclusion & Actions taken: .....

.....

ACTVITIES OBSERVED (on patients and/or written on the charts)

Observed or Written on the charts of the 2 last months	**Total Checked**	**Totally Adequate**	**Directly observed**	**Quality**				**Remarks**
				A +1	B +.5	C -.5	D -1	
1.Welcome the patients								
2. Flow of the patients								
3. Passive screening								
4.N° of patients coming from CHW/ volunteers								
5.Length/height checked								
6.Weight measurement								
7. MUAC								
8.Oedema								
9.Degree of œdema								
10.WH Zscore								
11. Criteria of admission								
12. OTP chart filled in								
13.Discharge Criteria								
14. App. Test at admission								
15.Register & SAM N°								
16.Frequency of the measurements								
17.Frequency of RUTF distribution								
18.Absents Noted on chart?								
19. Diff. Of Unconfirmed & Confirmed Defaulters?								
20. Temp. taken & written?								
21.Medical Examination taken & written								
22. Appetite test done correctly & written								
23. Syst. Treat. given & written								
24.No. Sachets given &written								
25. Health Education given								
26. Other specific drugs given								
27.Failure to Respond to treatment diagnosed?								

28.Home visit according to criteria?								
29.Type of discharge written on the chart and register								
30.HV of the Unconfirmed defaulter written on chart?								
31.HV of the absents done and written on the chart?								
32.Stock card of RUTF updated								
33. Stock card of routine drugs updated								
34. Internal Transfer noted in the register? Form with chart?								
35.Respect of transfer criteria?								
36.Internal transfer back from IPF?								
37. Transfer form attached to the chart?								
38.Monthly report adequately filled in								
39. Monthly report sent on time								
40.Charts securely stored in order by SAM N° and registration N°								
Total score								

STRUCTURE - STORAGE

Shelter: *yes / no* Hygiene: *yes / no* Other: .....
Adequate Storage: *yes / no* If No, explain .....

COORDINATION

Date of the last District Meeting ...../...../.....
Date of the last transport of RUTF ...../...../.....
Date of the last Meeting with the CHW ...../...../.....

Remarks .....

CONCLUSION & ACTION TO BE TAKEN FOR THE NEXT MONTH

Date ..... Signature of person interviewed .....Signature of evaluator.....

ANNEX 25 – IPF SUPERVISION FORM

Date: _____/_____/_____ District:_____Site:_____ Code_____

Supervision visit during FEEDING? *Yes / No* ; Month of the last visit……By……

Person interviewed the day of the visit

Name	Position	Qualification	Employed by

STAFF & TRAINING

Staff of the IPF

Grade/ Qualification	Number	Responsible for	Salaries/ Incentives given last month	Training on SAM if Yes, date of the last training	Length of time in IPF: n° expected to transfer/leave soon	Present/Absent on day of the visit – if absent give reason (ill/leave etc)

Conclusion & Actions taken:_____

_____

PROTOCOL

Copy of the protocol? *Yes / no* If Yes, Version No:_____

Posters on the wall? *Yes / No*. If Yes, which ones?_____

Protocol READ? *Yes / no* KNOWN? Yes / No DIFFICULTIES UNDERSTANDING? *Yes / No*

If Yes, which parts? _____

Conclusion & Actions taken:_____

_____

STRUCTURE

Integrated within the MoH? Yes / no

Health Centre: Yes / no - Hospital: Yes / no - Other Yes / no Specify……

Type of structure: Separate IPF / IPF in Paediatric Ward/ Day Care Non-Residential/ Residential / Other ……

Organisation responsible:…… MoH / Private / NGO /Other specify……..

Reference Centre for ALL the OTPs in ~~all~~ the district. If Not, specify the OTPs (codes) not covered by the IPF ……..

OPD *Yes / no* Screening ? *Yes / No* If Not, why? _____

Register?_____Lenght board?_____scale?_____MUAC?_____

If Not, why?_____

Emergency Ward: Screening? *Yes / No* If Not, why? _____

Register?_____Lenght board?_____scale?_____MUAC?_____

If No, why?_____

Posters? *Yes / no* Protocol? *Yes / No* Emergency Staff trained? *Yes / No*

Storage:

Therapeutic products separate from the IPF *Yes / no* If yes, specify_____

Drugs Yes / no If yes, specify_____

Other Material Yes / no If yes, specify_____

Conclusion & Actions taken:_____

_____

TOOLS – MATERIALS – PRODUCTS

Anthropometric material present and in good condition? *Yes / no*
If not, MUAC_____Lenght board_____Scale_____Others_____

IMAM Register used? *Yes / no*

Multi-Charts used? *Yes / no* SS-Infant Charts *Yes / no* Critical care charts *Yes / no*

Other records kept (hospital charts) *Yes / no*

Transfer form? *Yes / no*

Look up Tables? *Yes / no* If no, which ones are missing?_____

Drinkable water available? *Yes / no* If No, Actions taken_____

Hand-washing facilities within IPF *Yes / no.* If yes are they used? *Yes / no*

Sugar water available? *Yes / no* If No, Actions taken_____

F75 present and used *Yes / no* – commercial / made in IPF

F100 present and used *Yes / no* – commercial / made in IPF

RUTF available and used? *Yes / no*

ReSoMal available and used *Yes / no*

Routine medicine available? *Yes / no* If not, which ones?_____

Specific drugs available? *Yes / no* ; If no, which ones? _____

Blood transfusion available *Yes / no*

Laboratory/radiology facilities available *Yes / no* – if yes, which tests.....

Health Education materials available? *Yes / no*

Toys for children present? *Yes / no* *On beds / on floor / locked away*

Conclusion & Actions taken:_____

_____

ACTVITIES OBSERVED (on patients and/or written on the charts)

Observed or Written on the charts of the 2 last months	Checked	Totally Adequate	Directly observed	Quality				Remarks
				A +1	B +.5	C -.5	D -1	
1-Screening								
Screening in OPD								
Screening in Emergency W.								
N° Transferred appropriately								
N° Transfer Form filled in								
N° Patients referred directly								
2-Measurements								
Length/height checked								
Weight								
MUAC								
Oedema & degree								
WH Z score								
3-Admission								
Sugar water /drinking water available								
Medical History &examination form filled in								
Appetite Test								
Transfer form with SAM-N°								
Register & SAM N°								
4-Management Acute Phase								
Breastfeeding before feeds								
Washing hands before feeds								
F75 Feeds prepared								
Feeds given, observed & chart completed								
Syst. treatment								
Multichart filled								
Critical care charts used properly								
Other specific drugs given								
Criteria for Transition phase respected								
Fail-to- Respond in IPF recognised and managed								
5-Transition Phase & exit								
RUTF/F100 given & written								
Feeds well given								
Water available								
Health Education given								
Type of exit written on the chart and register completed								
6-Less than 6 months								
Treatment implemented								
SST- Chart used & filled-in								

F100 dilute preparation								
Treatment correctly applied?								
Position of the mother & infant during SS-T?								
Systematic treatment given?								
7-Stock								
Stock card of Therapeutic foods maintained and updated								
Stock card of routine drugs updated								
8-Monitoring								
Internal Transfer noted in the register? Form attached to the IPF chart?								
Transfer Criteria applied.								
Monthly report from last month filled in correctly								
Monthly report sent on time								
Charts kept securely in order by SAM No and registration No								
9-Coordination								
Attend regular meetings with IMAM team								
Good communication withOTPs								
Transport arranged with the district for patients and products?								
Total								

CONCLUSION & ACTION TO BE TAKEN FOR THE NEXT MONTH

Date _____ Signature of person interviewed _____

Signature of Evaluator_____

ANNEX 26 – EXAMPLE S OF RECIPES FOR F75, F100 AND RESOMAL USING CMV

Note that all these recipes give products that have a higher osmolarity than the commercial packaged products and are more likely to provoke refeeding diarrhoea. They can be used when there is no possibility of pre-packaged products being available and there are adequate kitchen facilities and expertise to make the diets – ALL the ingredients must be present.

*F75

Type of milk	Milk (g)	Eggs (g)	Sugar (g)	Oil (g)	Cereal powder (g)*	CMV** (red scoop=6g)	Water (ml)
Dry Skim Milk	25	0	70	27	35	½	Up to 1000
Dry Whole Milk	35	0	70	20	35	½	Up to 1000
Fresh cow milk	280	0	65	20	35	½	Up to 1000
Fresh goat milk	280	0	65	20	40	½	Up to 1000
Fresh buffalo milk	230	0	65	15	40	½	Up to 1000
Evaporated milk	110	0	65	20	40	½	Up to 1000
Whole Eggs	0	80	70	20	40	½	Up to 1000
Egg yolks	0	50	70	15	40	½	Up to 1000

* Cereal powder should be roasted ("puffed") and then ground finely and the other ingredients should be added. Alternatively "puffed" rice or roasted flour can be added to the mixure.
** CMV = Special Mineral and Vitamin mix adapted to severe acute malnutrition treatment

*F100

Type of milk	Milk (g)	Eggs (g)	Sugar (g)	Oil (g)	CMV** (red scoop=6g)	Water (ml)
Dry Skim Milk	80	0	50	60	½	Up to 1000
Dry Whole Milk	110	0	50	30	½	Up to 1000
Fresh cow milk	900	0	50	25	½	Up to 1000
Fresh goat milk	900	0	50	30	½	Up to 1000
Fresh Buffalo milk	750	0	60	10	½	Up to 1000
EVAPORATED milk	350	0	50	30	½	Up to 1000
Whole eggs	0	220	90	35	½	Up to 1000
Egg yolks	0	170	90	10	½	Up to 1000

*ReSoMal

Ingredient	Amount
Standard WHO-ORS	one l-litre packet
CMV(Mineral &Vitamin mix)**	1 red scoop (6 gr.)
Sucrose (sugar)	50 g
Water	2000 ml

ANNEX 27 – RUTF SPECIFICATION

Ready to Use Therapeutic Food (RUTF)

Severely malnourished patients have specific nutrient requirements that are different from normal children. These are best supplied using specialised therapeutic foods, such as F75, F100 and RUTF. Ready to use therapeutic food (RUTF) is an essential component of OTP as it allows patients to be treated at home. RUTF is a complete food for the severely malnourished, with a specific nutrient composition equivalent to F100.

There are currently several commercial types of RUTF: Lipid based pastes and bars. Several countries are producing their own RUTF using the standard recipe so that these products that nutritionally equivalent to F100, and have been shown to be physiologically similar to both F100 and the commercial RUTFs. An important difference between F100 and RUTF is that RUTF contains iron (in the correct amount for the recovering severely malnourished patient) whereas F100 used in the recovery phase requires iron supplementation.

RUTF-paste is a ready-to-eat therapeutic spread usually presented in individual sachets or pots. It is composed of vegetable fat, peanut butter, skimmed milk powder, lactoserum, maltodextrin, sugar, and a mineral and vitamin complex.

Instructions for use: Clean drinking water must be made available to children during consumption of ready-to-eat therapeutic food. The product should only be given to children who can express their thirst. It is contra-indicated for children who are allergic to cow's milk, proteins or peanuts and those with asthma or other allergic disease.

Recommendations for use: In the management of severe acute malnutrition in therapeutic feeding, it is recommended to use the product in phase 2 (two) in the dietetic management of severe acute malnutrition. In IPFs for phase 1 use milk based diet F75.

Storage of RUTF: Some commercial RUTFs (such as Plumpy'nut®) have a shelf life of 24 months from manufacturing date. Locally produced RUTFs that are not packed under nitrogen in a sealed container have a shelf life of 3 to 6 months. Keep stored in a cool and dry place.

Table: Mean Nutritional Value of RUTFs (based upon plumpy'nut®)

	For 100 g	**Per sachet of 92 g**		**For 100 g**	**Per sachet of 92 g**
Energy	545 kcal	500 kcal	Vitamin A	910 mcg	840 mcg
Protein	13.6 g	12.5 g	Vitamin D	16 mcg	15 mcg
Lipid	35.7 g	32.86 g	Vitamin E	20 mg	18.4 mg
Calcium	300 mg	276 mg	Vitamin C	53 mg	49 mg
Phosphorus	300 mg	276 mg	Vitamin B1	0.6 mg	0.55 mg
Potassium	1 111 mg	1 022 mg	Vitamin B2	1.8 mg	1.66 mg
Magnesium	92 mg	84.6 mg	Vitamin B6	0.6 mg	0.55 mg
Zinc	14 mg	12.9 mg	Vitamin B12	1.8 mcg	1.7 mcg
Copper	1.8 mg	1.6 mg	Vitamin K	21 mcg	19.3 mcg
Iron	**11.5 mg**	**10.6 mg**	Biotin	65 mcg	60 mcg
Iodine	100 mcg	92 mcg	Folic acid	210 mcg	193 mcg
Selenium	30 mcg	27.6 mcg	Pantothenic acid	3.1 mg	2.85 mg
Sodium	< 290 mg	< 267 mg	Niacin	5.3 mg	4.88 mg

RUTF- bars (based upon BP-100®)

RUTF-bars are a compressed food product for use in the rehabilitation phase (Phase 2) of severely malnourished children and adults. The nutritional specifications are similar to therapeutic milk F100. As with the paste the RUTF-bars also contain iron.

Who to give RUTF-bars: Children from 12 months old, adolescents and adults who are severely malnourished in the rehabilitation phase (Phase 2) of the treatment. RUTF-bars should never be used for patients below 6 months old.

How to use RUTF-bars: they can be eaten as a biscuit directly from the pack together with sufficient drinking water (250ml to 300ml per bar), or crumbled into water and eaten as porridge. For children 12 to 24 months of age, the bars should always be given as porridge due to their problems demanding water when thirsty.

Storage of RUTF-bars: BP100® has a shelf life of 2 years in an unopened package. After breaking the aluminium foil bag the product should be used within 1-2 weeks depending on the storage conditions. Porridge made of BP100 and water should be used within 3 hours.

Packaging: BP100 is compressed into tablets of 28.4g. Each package of BP100 (510g net) contains 18 tablets packed into 9 bars in grease-proof paper (1 bar = 2 tablets = 300 Kcal).

Local production of RUTF

The minimum required ingredients for RUTF are as follows:

Four basic ingredients of RUTF: sugar; Dried Skim Milk; oil; and a vitamin and mineral supplement. In addition up to 25% of the weight of the product can come from vegetable sources such as oil-seeds, groundnuts or cereals such as oats provided that the nutrient density is the same as that found in F100.

In addition to good nutritional quality (protein, energy and micronutrients), RUTF should have the following attributes:

- taste and texture suitable for young children
- does not need additional processing such as cooking before consumption
- resistant to contamination by micro-organisms and a long shelf life without sophisticated packaging
- ingredients are low cost and readily available in developing countries

Recently WHO/UNICEF/WFP/SCN have produced DRAFT specifications for RUTF. They are as follows:

Ready to use therapeutic food.

High energy, fortified ready to eat food suitable for the treatment of severely malnourished children. This food should be soft or crushable, palatable and should be easy for young children to eat without any preparation. At least half of the protein contained in the product should come from milk products.

Nutritional composition:

Moisture content	2.5% maximum
Energy	520-550 Kcal/100g
Proteins	10 to 12 % total energy
Lipids	45 to 60 % total energy
Sodium	290 mg/100g maximum
Potassium	1100 to 1400 mg/100g
Calcium	300 to 600 mg/100g
Phosphorus (excluding phytate)	300 to 600 mg/100g
Magnesium	80 to 140 mg/100g
Iron	10 to 14 mg/100g
Zinc	11 to 14 mg/100g
Copper	1.4 to 1.8 mg/100g
Selenium	20 to 40 µg
Iodine	70 to 140 µg/100g
Vitamin A	0.8 to 1.1 mg/100g
Vitamin D	15 to 20 µg/100g
Vitamin E	20 mg/100g minimum
Vitamin K	15 to 30 µg/100g
Vitamin B1	0.5 mg/100g minimum
Vitamin B2	1.6 mg/100g minimum
Vitamin C	50 mg/100g minimum
Vitamin B6	0.6 mg/100g minimum
Vitamin B12	1.6 µg/100g minimum
Folic acid	200 µg/100g minimum
Niacin	5 mg/100g minimum
Pantothenic acid	3 mg/100g minimum
Biotin	60 µg/100g minimum
n-6 fatty acids	3% to 10% of total energy
n-3 fatty acids	0.3 to 2.5% of total energy

Reference document for F100 composition: Management of severe malnutrition - a manual for physicians and other senior health workers. WHO, Geneva, 1999. Available at: http://www.who.int/nutrition/publications/en/manage_severe_malnutrition_eng.pdf

Note: iron is added to RUTF in contrast to F100.

Safety: The food shall be free from objectionable matter; it shall not contain any substance originating from micro-organism or any other poisonous or deleterious substances like

antinutritional factors, heavy metals or pesticides in amounts that may represent a hazard to health of severely malnourished patients.

- Aflatoxin level: 5 ppb maximum.
- Micro-organism content: 10 000/g maximum
- Coliform test: negative in 1 g
- Clostridium perfringens: negative in 1 g
- Yeast: maximum 10 in 1 g.
- Moulds: maximum 50 in 1g.
- Pathogenic Staphylococci: negative in 1 g.
- Salmonella: negative in 125g
- Listeria: negative in 25g

The product should comply with the International Code of Hygienic Practice for Foods for Infants and Children of the Codex Alimentarius Standard CAC/RCP 21-1979. All added mineral and vitamins should be on the Advisory List of Mineral Salts and Vitamin compounds for Use in Foods for Infants and Children of the Codex Alimentarius Standard CAC/GL 10-1979

The added mineral salts **should be water soluble**[80] and readily absorbed, they should not form insoluble components when mixed together. This mineral mix should have a positive non-metabolizable base sufficient to eliminate the risk of metabolic acidosis or alkalosis. [81]

Information on how to produce RUTF in countries is available at: http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/CBSM/tbp_4.pdf

[80] Many manufacturers use insoluble salts such as magnesium hydroxide, zinc oxide, ferrous fumarate, copper oxide etc. This is unacceptable as although these salts are cheap and tasteless, they are not available for the malnourished child. **Any RUTF made with these salts should be rejected by the purchaser as failing to conform with the generic specifications.**

[81] The nonmetabolizable base can be approximated by the formula: estimated absorbed mmoles (sodium + potassium + calcium + magnesium) - (phosphorus+chloride). The mineral mix recommended for F100 by WHO is an example of mineral mix with suitable positive nonmetabolizable base.

ANNEX 28 – DRUG DOSES IN THE SEVERELY MALNOURISHED

ANTIBACTERIALS

Amoxicillin (first line antibiotic, routine treatment OTP and IPF)					
Administer		oral	oral	oral	oral
Dose	50 – 100 mg/kg/d				
Presentation		suspension 125mg/5ml	suspension 250mg/5ml	capsule 250mg	capsule 500mg
3 – 5 Kg	125 mg * 2	5ml x 2	2.5ml x 2	½ x 2	
5 – 10 kg	250 mg * 2	10ml x 2	5ml x 2	1 x 2	½ x2
10 – 20 kg	500 mg * 2	–	10ml x 2	2 x 2	1 x2
20 – 35 kg	750 mg * 2	–	–	3 x 2	1½ x2
> 35 kg	1000 mg * 2	–	–	4 x 2	2 x2

1) Dose not normally critical can be doubled.
2) Amoxicillin is supplied as sodium salt – care in case of sodium sensitivity
3) Resistance to amoxicillin is common.
4) May be adverse reactions with some viral infections (Epstein-Bar virus, CMV and possibly HIV)

Ampicillin (need for IV penicillin)	
Administer	IV, IM
Dose	100-200 mg/kg/d
Presentation	500mg /1g vials
times/day	4
3 – 5 kg	250mg X 4
5 – 10 kg	500mg x 4
10 – 20 kg	1g X 4
20 – 35 kg	2g x 4
> 35 kg	3g x 4

1) IV preferred over IM: injection painful
2) Give by perfusion over at least 30mins, reduce dose with renal impairment
3) DO NOT give alongside Gentamicin (separate IV by at least one hour) or give gentamicin IM as it inactivates the gentamicin
4) Presented as the Sodium salt – use as low a dose a possible in case of sodium sensitivity (especially in Kwashiorkor and heart failure)
5) In severe infections use second/third line antibiotics in view of widespread resistance and high sodium administration with large doses

Gentamicin (first/second line, with signs of infection)			
Administer	5mg/kg/d once daily	IM/IV	IM/IV
Presentation		10 mg/ml	40 mg/ml
		2ml vial	2ml vial
<=3 kg	10mg	1 ml x1	0.25 ml x1
3.1-5.0 kg	20mg	2 ml x1	0.5 ml x1
5.1 – 10 kg	40mg	4 ml x1	1 ml x1
10.1 –15 kg	60mg	6 ml x1	1.5 ml x1
15.1 - 20 kg	80mg	8 ml x1	2 ml x1

20-35 kg	140mg	14 ml x1	3.5 ml x1
>35 kg	200mg	20 ml x1	5 ml x1

1) IM or IV. IM preferred if Penicillins/cefotaxime given IV
2) May result in antibioma with poor absorption in severely wasted children
3) Approx 5mg/kg/d once daily but young infants 3.5mg/kg
4) Danger of nephrotoxicity and ototoxicity
5) Do not give IV at the same time as amoxicillin, ampicillin, cloxacillin, cefotaxime (separate by at least one hour as they inactivate gentamicin)
6) in very severely oedematous children give by estimated oedema free weight

Precaution – if magnesium sulphate is given by IM injection together with gentamicin may cause neuromuscular blockage - monitor respiratory function

Cefotaxime

(first/second line, with signs of infection)

administer	IM/ IV
dose	50-100 mg/kg/d
presentation	250 mg/ vial
	2 times/ day
3 – 5 Kg	100 mg x 2
5 – 10 kg	200 mg x 2
10 – 20 kg	400 mg x2
20 – 35 kg	800 mg x 2
> 35 kg	1g x 2

1) Preferred to ceftriaxone particularly for gram-negative septicaemia
2) Do not give in same infusion as gentamicin -separate by at least one hour; cefotaxime can inactivate the gentamicin
3) IM injection is very painful use lidocaine containing diluent
4) IV injection do not dilute with lidocaine
5) May deplete vitamin K in liver, if prolonged usage considered give vitamin K
6) In severe infections frequency can be increased to 4 times daily

Ciprofloxacin

(second line, septicaemia, septic shock)

Administer	dose	oral	IV
Presentation	30mg/kg/d	250mg	2mg/ml
	3 times/ day	tablet	vial
3 – 5 Kg	50 mg x 3	1/4 tab x3	25 ml x3
5 – 10 kg	100 mg x 3	1/2 tab x3	50 ml x3
10 – 20 kg	200 mg x 3	1 tab x3	100 ml x3
20 – 35 kg	400 mg x 3	2 tab x3	200 ml x3
> 35 kg	800 mg x 3	3 tab x3	400 ml x3

1) Very well absorbed orally - give oral or by NGT on empty stomach if possible - IV reserved for vomiting and very severe infection
2) ORAL give either before or after food
3) Absorption reduced by dairy products (e.g. F75, F100), antacids, calcium, iron and zinc salts - do not give with Zinc tablets
4) Avoid giving with artemether+lumefantrine (Coartem)
5) DO not give IM
6) IV Infusion concentration not to exceed 2mg/ml
7) Infuse slowly over at least 60mins
8) COMBINE with cefotaxime to prevent emergence of resistance

Cloxacillin (staphylococcal infection)					
Administer	Dose	Oral	Oral	Oral	IM/IV
Presentation	100-200 mg/kg/d	125mg/ml	500mg	1g	500mg/vial
	3 times/ day	suspension	capsule	capsule	vial
3 – 5 Kg	62.5-250mg x3	2ml x 3	1/2 x 3	--	250mg x 3
5 – 10 kg	100-300mg x3	3ml x 3	1 x 3	1/2 x 3	500mg x 3
10 – 20 kg	250-750mg x3	8ml x 3	2 x 3	1 x 3	1g x 3
20 – 35 kg	1g - 1.5g x3	--	3 x 3	2 x 3	2g x 3
> 35 kg	2-6g x3	--	3 x 3	2 x 3	2g x 3

1) For suspected or diagnosed systemic staphylococcal infection (especially staph. Pneumonia)
2) Parenteral therapy preferred for severe infection
3) Supplied as the sodium salt
4) Do not give IV at the same time as gentamicin – separate by at least 1 hour and flush cannula

Metronidazole (small bowel overgrowth, amoebiasis, giardia)				
Administer	Dose	Oral	Oral	IV
Presentation	10-12 mg/kg/d	40 mg/ml	200 mg	500 mg
	1-2 time/ day	suspension	tablet	100 ml vial
3 – 5 Kg	30-60 mg x1	1 ml x 1		5 ml x 1
5 – 10 kg	60-100 mg x1	2 ml x 1	1/4 x 1	10 ml x 1
10 – 20 kg	120-200 mg x1	4 ml x 1	1/2 x 1	10 ml x 2
20 – 35 kg	250-350 mg x1	10 ml x 1	1 x 1	30 ml x 2
> 35 kg	400-500 mg x1	10 ml x 1	1 x 2	50 ml x 2

1) Very high bioavailability: oral route strongly recommended. Well absorbed rectally
2) Can give a double dose as the first loading dose
3) Use suspension if possible
4) Do not give for more than 7 days
5) WHO recommends reduction of standard dose (30mg/kg/d) to 1/3 with hepatic impairment – in SAM maximum dose is 10-12mg/kg/d by pharmacodynamics studies
6) Take suspension before food and tablets with or after food

ANTIFUNGALS

Nystatin (gastro-intestinal candidiasis)	
Administer	oral
dose	400,000 IU / d
	4 times/ day
3 – 60 Kg	100,000 x 4

1) Not for systemic candidiasis. For Oral, oesophageal, gastric and rectal candidiasis only
2) Dose can be safely increased to 500,000 IU 4 times daily to treat severe gastrointestinal candidiasis
3) Give after meals

Fluconazole (systemic candidiasis and fungal infection)			
Administer	Dose	Oral	IV
presentation	3-6mg/kg/d	50mg	2mg/ml
	1 time/ day	capsule	vial
3 – 5 Kg	15mg/d	1/3 x 1	5ml x 1
5 – 10 kg	30mg/d	1/2 x 1	10ml x 1
10 – 20 kg	60mg/d	1 x 1	20ml x 1
20 – 35 kg	120mg/d	2 x 1	40ml x 1
> 35 kg	200mg/d	4 x 1	50ml x 1

1) Bioavailability of oral preparation is excellent
2) Avoid giving with artemether +lumefantrine (coartem)
3) Oral preparation contains sodium benzoate
4) IV preparation give by SLOW infusion over at least one hour
5) A double dose can be given on the first day of treatment
6) Young infants – give same dose but on alternate days

Miconazole (cutaneous ringworm, candidiasis and other fungal infections)	
presentation	Cream or ointment
	2%
	2 times/ day
3 – 60 kg	topical x2

1) Apply twice daily to dry skin lesions
2) Continue for at least 10 days.
3) Can be used for all ages.
4) Do not apply to ulcerated skin lesions or mucus membranes.
5) Supplied as the nitrate.

ANTI-MALARIALS

Artemether + Lumefantrine (Coartem) **Oral Malaria treatment**					
Administer	initially	8h	24h	48hr	Total tablets
3 – 5 Kg	1/2 tab	1/2 tab	1/2 tab x 2	1/2 tab x 2	3
5 – 10 kg	1 tab	1 tab	1 tab X2	1 tab X2	6
10 – 20 kg	2 tab	2 tab	2 tab X2	2 tab X2	12
20 – 35 kg	3 tab	3 tab	3 tab x2	3 tab x2	18
> 35 kg	4 tab	4 tab	4 tab x2	4 tab x2	24

1) Dispersible tablets 20mg/120 mg per tablet
2) 6-dose regimen = initial dose followed at 8, 24, 36, 48 and 60 hrs by further doses
3) Avoid giving with Ciprofloxacin, Fluconazole, erythromycin
4) Tablets can be crushed
5) If dose is vomited within 1 hour repeat the dose
6) If Coartem not available, use Artemether-amodiaquine tablets at the same dose (not recommended because of hepatotoxicity)

Artemether **(IM - initial treatment for severe malaria)**						
Administer		IM	IM		IM	IM
	day 1 only - loading dose			**subsequent days (max 7)**		
Presentation	dose	20mg/ml	40mg/ml	dose	20mg/ml	40mg/ml
	1 time/day	ampoule	ampoule		ampoule	ampoule
3 – 5 Kg	10-15mg	0.7 ml X 1	0.4ml x 1	5-8mg	0.4ml x 1	0.2ml x 1
5 – 10 kg	15-30mg	1.2 ml x 1	0.6 ml x 1	8-15mg	0.6ml x 1	0.3ml x 1
10 – 20 kg	30-65mg	2.5ml x 1	1.2 ml x 1	15-30mg	1.2 ml x 1	0.6 ml x 1
20 – 35 kg	85-110mg	4.5ml x 1	2.2 ml x 1	30-65mg	2.2 ml x 1	1.1 ml x 1
> 35 kg	110-170mg	7.0ml x 1	3.5ml x 1	85-110mg	3.5 ml x 1	1.8ml x 1

1) Dose 3.2mg/kg initially then 1.6 mg/kg x1, until patient can take oral medication
2) USE 1ml syringe to measure and give small doses
3) NOTE there are 20, 40 and 80mg/ml preparations available, do not use the 80mg/ml for small children
4) Maximum length of treatment 7 days
5) Always follow Artemether with complete (6-dose) oral course of Coartem
6) may affect plasma potassium levels and cardiac function
7) AVOID use with ciprofloxacin, Fluconazole and Erythromycin
8) The solution is made up in peanut oil

Artesunate **(initial treatment severe malaria)**				
Administer	rectal	rectal	IM or IV	IM or IV
Presentation	50mg	200mg	60mg ampoule	60mg ampoule
	Suppository	Suppository	day 1 **0 and 12hr**	daily
3 – 5 Kg	1 sup	1/4 sup	10mg x 2	10mg x 1
5 – 10 kg	1 sup	1/4 sup	20mg x 2	20mg x 2
10 – 20 kg	2 sup	1/2 sup	40mg x 2	40mg x 1
20 – 35 kg	4 sup	1 sup	60mg x 2	60mg x 1
> 35 kg	6 sup	2 sup	100mg x 2	100mg x 1

1) Rectal dose can be used initially

2) Rectal dose approx 10mg/Kg for ill children
3) NOTE IV/IM preparation prepared in 5% Sodium bicarbonate solution
4) For IV use further dilution in 5% glucose before IV infusion
5) Use with caution in kwashiorkor and heart failure because of sodium content
6) IV give 2.4mg/kg at 0, 12, 24hr and then daily until oral treatment can be given
7) Always follow with a full 6-dose course of Coartem

SCABICIDE

Permethrin **(scabies/lice – ectoparasites)**		
Presentation	Cream	Lotion
	5%	1%
3 – 60 kg	once	once

1) Apply over whole body, wash off after 12 hours.
2) If washed with soap within 8 hours repeat.
3) Ensure webs between fingers and toes, wrists, axilla, perineum and buttocks are covered.
4) Do not apply to mucus membranes, or ulcerated skin
5) Same chemical as used in Impregnated bed nets

HEART FAILURE

Furosemide / Frusemide **(only for use in heart failure)**				
Administer	Dose	Oral	oral	IV/IM
Presentation	0.5-2 mg/kg/dose	suspension	tablet	10 mg/ml
	2-3 times/ day	4 mg/ml	40 mg	2 ml ampoule
3 – 5 Kg		2 ml	1/4	1 ml
5 – 10 kg		5 ml	1/2	2 ml
10 – 20 kg		10 ml	1	4 ml
20 – 35 kg		15 ml	1	5 ml
> 35 kg		20 ml	2	7.5 ml

1) Only use for HEART FAILIURE
2) NEVER give for oedema mobilisation (it can exacerbate oedema which is related to potassium deficiency)
3) For children normal oral dose 0.5-1mg/kg
4) Maximum oral dose 3 x 4mg/kg = 12mg/kg (80mg) per day
5) Normal IV dose 0.5-1mg/kg
6) Maximum IV dose 3 x 4 mg/kg
7) Causes loss of potassium, magnesium etc as well as sodium and water
8) Not ever effective in Heart failure in SAM – can use higher doses.

ALTERNATE DRUGS that may be used when recommended drugs are unavailable

Ceftriaxone	
Administer	IM/ IV
Dose	50-100mg/kg/d
Presentation	250mg/ vial
	2 times/ day
3 – 5 Kg	100mg x 2
5 – 10 kg	200mg x 2
10 – 20 kg	400mg x2
20 – 35 kg	800mg x 2
> 35 kg	1g x 2

1) Prefer cefotaxime if available
2) CAREFUL: incompatible with Ringer Lactate and any calcium containing fluid - cefotaxime precipitates
3) Very painful if given IM
4) Can cause electrolyte disturbance,
5) Supplied as sodium salt
6) Gives false positive urinary glucose (reducing substances) and Coomb's test
7) For children maximum dose 1g

Amoxicillin + Clavulanic acid (Augmentin)				
Administration	Dose	Oral	Oral	Oral
Preparation	25 - 50 mg/kg/d	125mg/5ml	250mg/5ml	500 mg
	3 x per day	suspension	suspension	tablet
3 – 5 Kg	62.5 mg x3	2.5 ml X 3		
5 – 10 kg	125 mg x3	5 ml X 3	2.5 ml x 3	1/4 x3
10 – 20 kg	250 mg x3	10 ml X 3	5 ml X 3	1/2 X3
20 – 35 kg	500 mg x3			1 x 3
> 35 kg	750 mg x3			1 x 3

1) Exact dose not critical: can be doubled in case of severe infection with sensitive organisms
2) Ratio is fixed at 1mg of amoxicillin with 0.25mg clavulinic acid - dose expressed in terms of amoxicillin content
3) The risk of acute liver toxicity has been estimated to be about six times higher with amoxicillin+clavulanic acid than with amoxicillin alone
4) The preparation contains sodium
5) The pharmacology of clavulinic acid has not been ascertained in SAM

Chloramphenicol				
Administration	Dose	Oral	Oral	IV
Presentation	25mg/kg/d	30mg/ml	250mg	1000mg
	2 times/ day	suspension	capsule	vial
3 – 5 Kg	**Never give to small babies**			
5 – 10 kg		2ml x 2	1/4 x 2	75mg x 2
10 – 20 kg		4ml x 2	1/2 x 2	125mg x 2
20 – 35 kg		8ml x 2	1 x 2	250mg x 2

> 35 kg		12ml x 2	2 x 2	500mg x 2

1) Only use if there is no alternative or where microbiological facilities exist to show sensitivity and specific infections are diagnosed (e.g. typhoid fever, rickettsia, listeria, Wipple's disease, Q-fever, psittacosis)
2) Use cefotaxime, ceftriaxone or ciprofloxacin instead if available
3) Increases serum iron levels, therefore extra care needed in kwashiorkor. Iron increase is due to marrow toxicity
4) Never give to patients <5kg. In infants and those with immature liver function causes “grey baby syndrome” (Vomiting, greenish diarrhoea, abdominal distension, hypothermia, pallid cyanosis, irregular respiration, circulatory collapse) which is clinically similar to severe sepsis/hepatic failure in SAM children
5) Do not use Oily suspension for injection (0.5g/ml)

ANNEX 29 – SFP REGISTRATION BOOK

Serial No.	Reg No.	SAM No (if any)	First Name	Last name	Address & Phone	Type of admission (New Adm, Relapse, Transfer in from SFC, Read<2mo)	Sex F/M	DOB ddmmyy	Age mo	Admission									
										Date ddmmyy	Weight kg.g	Height/ Length cm	W/H z	SAM Weight kg.g / <-3Z	MAM Weight kg.g / <-2Z	Discharge Target Weight kg.g	MUAC mm	Discharge Target MUAC mm	Ration Name total kg.g
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

Serial No.	Vitamin A		Albendazole		Others		Visit 2				Visit 3				Visit 4				Visit 5				Visit 6				Visit 7				Visit 8				Visit 9				Discharge						Observations
	Date ddmmyy	Dosage	Date ddmmyy	Dosage	Date ddmmyy	Dosage	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	MUAC mm	Ration Name total kg.g	Date ddmmyy	Wt kg.g	W/HZ	MUAC mm	Ration Name total kg.g	Type of discharge (Cure, Dead, Defaulter, Non Respond, Transfer Out to hosp/OTP/SFC)	
1																																												
2																																												
3																																												
4																																												
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ANNEX 30 – RATION CARD

Admission date (ddmmyy)	
SFC Name	
Location	
Refer from	
First Name	
Last Name	
Address	
SFC Reg No	
DoB ddmmyy	
Age (mo)	
Sex	M / F

Target Weight(W)_____MAM W_____SAM W_____Target MUAC_____

Visit	Date mmmdd	Weight kg.g	MUAC Cm	Ration	Observation
Adm					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

Disch. date (ddmmyy) _____

Cured ☐

Defaulter ☐

cause _____

Circle the right answer

Transfer To OTP IPF Other

cause _____

Non Respond ☐

cause _____

Dead ☐

cause _____

	Date	Dosage	Remarks
Vit A			
Albendazole			
Other			

ANNEX 31 – SFP MONTHLY REPORT

SFP - MONTHLY STATISTICS REPORT - MANAGEMENT OF MODERATE ACUTE MALNUTRITION

Logo MoH

SFP Code	
Name of the FACILITY	
Type of Facility	
COUNTY	
District	
OPENING DATE	

Implementing agency	
Report prepared by	
Report Period from ddmmyy	
Report Period to ddmmyy	
Date of submission	

Age Group	Total begining of the month	New Admissions		Internal Transfer IN		Total Admissions	Discharge						Total discharge	Total end of the month
		W/H ≥ -3 & < -2 Z score or MUAC ≥ 11.5 & < 12.5 cm	Relapse	Read after default<-2mo	Other SFC		CURE	DEAD	DEFAULTER	NON RESPOND	REFERRAL to OTP	INTERNAL TRANSFER TO OTHER SFC		
6-59 month														
							%	%	%	%		%		
		Admissions MUAC < 21.0 cm												
Pregnant and lactating women														
							%	%	%	%		%		

Error of admission	no

specify type & month _____

Products (sachets)	Beginning Month	In	Out	Losses	End Month	Request	Expiry date

ANNEX 32 – ADVANTAGES AND DISADVANTAGES OF DRY AND WET FEEDING

WET FEEDING

Advantages

- Useful when firewood and cooking utensils are so difficult to find that the household has difficulties in preparing meals.
- The security situation is so bad that the beneficiaries are put at risk when carrying supplies of food home or storing food at home.
- It is easier to ensure that the beneficiary receives the food s/he requires. (less sharing of the food).
- It is easier to ensure that the ration is prepared correctly and that the hygiene is good.
- It is possible to use the mothers' time in the centre to do nutrition and hygiene education with them.

Disadvantages

- As the presence of the mother/caretaker and beneficiary is required at the centre every day for most of the day is causes problems in the daily tasks of the household.
- There is an increased risk of transmission of diseases having malnourished children concentrated together all day.
- The centre requires many more staff than a dry centre.
- The centre requires more infrastructure than a dry centre.
- The capacity for rapid reaction to changes in the situation is lower.
- There is a possibility that the food in the centre will be used to substitute for the beneficiaries share of food in the household defeating the purpose of the supplementary ration.

DRY FEEDING

Advantages

- Dry feeding requires fewer resources (personnel, structure) than wet feeding and there is no evidence to show that wet feeding is more effective than dry feeding.
- A greater number of beneficiaries can be supported.
- Less disruption of the families rhythm as the distribution requires that the mother or caretaker are away from home for a shorter time leading to better coverage and lower defaulter rates.
- It keeps responsibility for preparation and feeding within the home.
- It is more appropriate for dispersed populations.
- Less risk of cross infections.
- It is quicker to put in place a dry feeding centre.

Disadvantages

- There is no guarantee that the beneficiary will receive the ration.
- Monitoring of the nutritional status of the beneficiary is less frequent.
- More difficult to do educational activities.
- Requires more food per beneficiary.

ANNEX 33 – NUTRIENT DENSITY FOR SUPPLEMENTARY FOODS USED FOR MAM

		Per 100g		Per 1000 kcal	
Nutrient	**Unit**	**Minimum**	**Maximum**	**Minimum**	**Maximum**
Energy	**Kcal**	**350**	**400**	**1000**	**1000**
Protein	g	8	12	23	35
Fat	g	14	18	40	52
Carbohydrate	g	any	any	any	any
Sodium (Na)	mg		<300		<860
Potassium (K)	mg	630	700	1800	2000
Magnesium (Mg)	mg	120	150	340	430
Phosphorus (P)	mg	370	500	1000	1500
Zinc (Zn)	mg	9.5	13	27	37
Calcium (Ca)	mg	400	500	1140	1430
Copper (Cu)	mg	1	1.2	2.8	3.4
Iron (Fe)	mg	8.5	13	24	37
Iodine (I)	µg	100	140	290	400
Selenium (Se)	µg	25	35	70	100
Manganese (Mn)	mg	0.4	0.45	1.1	1.3
Thiamin (B1)	mg	>0.50		>1.4	
Riboflavin (B2)	mg	>1.50		>4.3	
Pyridoxine (B6)	mg	>1.10		>3.0	
Cabalamine (B12)	µg	>2.30		>6.6	
Folate	µg	>240		>680	
Niacin	mg	>15		>40	
Ascorbate (Vit C)	mg	>50		>140	
Pantothenic acid	mg	>2.3		>6.6	
Biotin	µg	>11		>30	
Retinol (Vit A)	µg	950	1100	>2700	3140
Cholecalciferiol (D)	µg	10	20	30	60
Tocopherol (E)	mg	>13		>35	
Phytomenadione (K)	µg	>30		>85	
n-6 fatty acid	% energy	3	10	3	10
n-3 fatty acid	% energy	0.3	2.5	0.3	2.5
The ratios of nutrients should always be within these limits					
Ca/P ratio	mol/mol	0.8	1.2	0.8	1.2
Zn/Cu ratio	mol/mol	5	15	5	15
Zn/Fe ratio	mol/mol	0.8	3	0.8	3
Total Fat	% energy	30	45	30	45
Protein	% energy	7	18	7	18