

Mangement of severe acute malnutrition in Cambodian children 6-59 months

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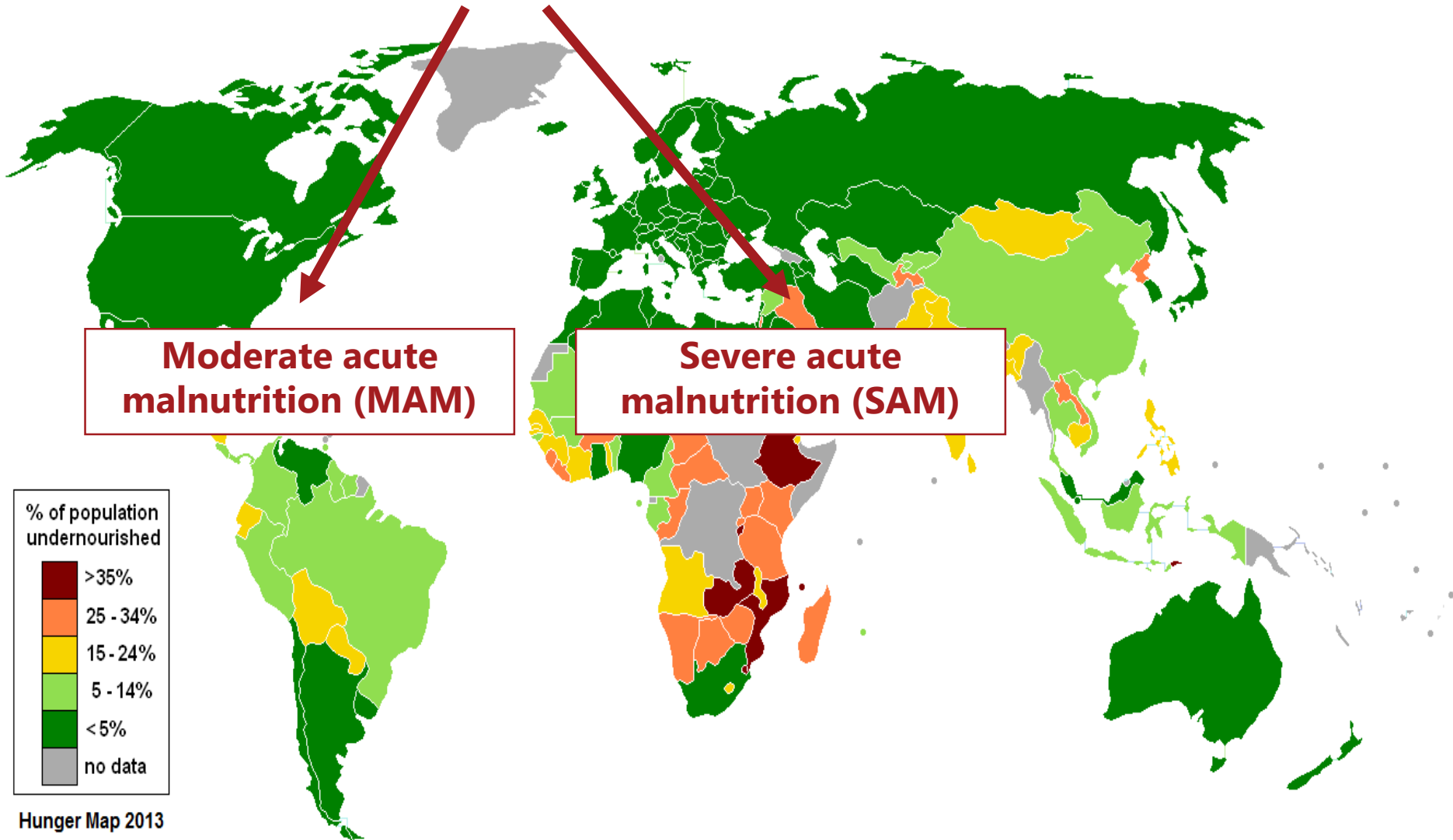
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UNIVERSITY OF COPENHAGEN



Acute malnutrition- A problem worldwide



Identifying a child with SAM?

Measure anthropometric measures



Body weight.



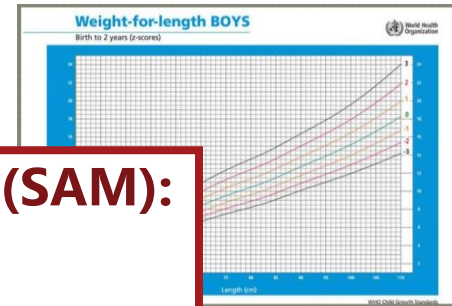
Severe acute malnutrition (SAM):

WHZ: < -3

MUAC: < 11.5 cm

Presence of bilateral pitting oedema

Infants > 6 months but weight < 4 kg



Weight-for-length (WHZ).



Assessment of mid-upper-arm circumference (MUAC).



Assessment of bilateral pitting oedema.



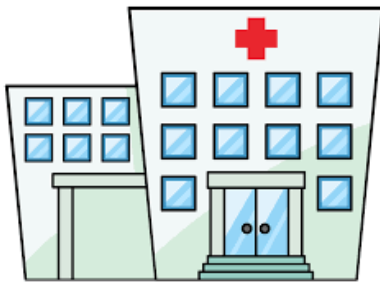
Bilateral pitting oedema



Clinical signs of SAM.

How to find children with SAM?

**Children arriving at the hospital/health center-
measure all children.**



**Community-based mass screenings
in high-risk areas.**



© Can Stock Photo - csp31115049

**Screening in local NGO supporting
children from poor households.**



**Village Help Support Group
(VHSG).**



Children with SAM with and without complications

Referral to nearest health center/hospital



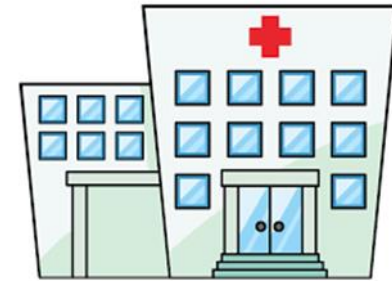
Assessing at health center/hospital:

- Bilateral pitting oedema.
- MUAC.
- Medical assessment.
- Appetite test if SAM.

Presence of medical complications and/or no appetite.

If RUTF is available.
No presence of medical complications and have an appetite (appetite test).

Hospital



Inpatient treatment of complications and SAM.

Appetite test.

Home



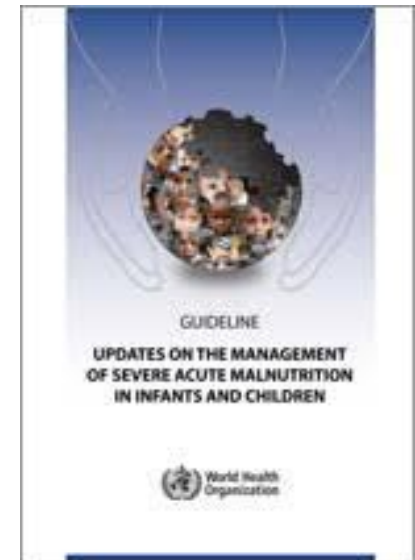
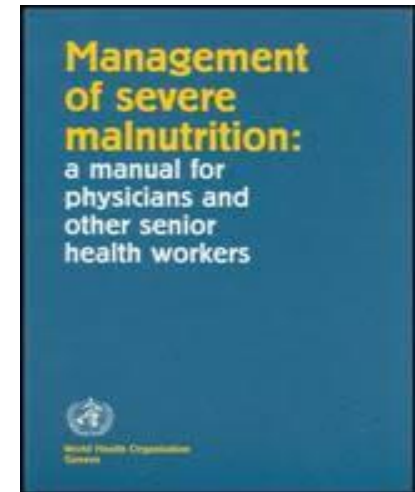
Outpatient treatment of SAM.

Inpatient treatment of SAM- WHO

The general principles of the inpatient care (WHO protocol) are:

- 1) Treat and prevent hypoglycemia.
 - 2) Treat and prevent hypothermia.
 - 3) Treat and prevent dehydration (hypovolemic shock).
 - 4) Correct electrolyte imbalance.
 - 5) Start oral feeding.
 - 6) Treat complications.
 - 7) Identify and treat underlying problems, including Vitamin A deficiency, severe anemia, Beriberi and heart failure.
- These 10 steps are accomplished in two phases:**
1. An **initial stabilization** phase.
 2. A **longer rehabilitation** phase.

- 8) Achieve transition to catch-up diet (F-75 and BP-100™).
- 9) Provide sensory stimulation and emotional support.
- 10) Prepare for follow up (outpatient) after stabilization and complications have been treated.



Inpatient treatment of SAM

Hospital-based treatment



The steps of inpatient care following identification include:

- 1) Triage at OPD or at admissions.
 - Check signs of hypoglycemia and hypothermia.
 - Determine if the child is SAM.
- 2) Admission in the pediatrics/malnutrition ward, including prevention and treatment of hypoglycemia and hypothermia.
- 3) Systematic treatment with antibiotics.
- 4) Assessment and treatment of medical complications, including monitoring of danger signs.
 - Severe dehydration – Give ReSoMal.
 - Septic shock.
 - Congestive heart failure.
 - Severe anemia (keep in mind: Hemoglobin disorder).
 - Severe vitamin A deficiency.
 - Dermatositis and/or kwashiorkor (oedema).
 - (HIV and TB status).

Inpatient treatment of SAM (continued #1)

Hospital-based treatment

The steps of inpatient care following identification include:

5) Feeding the child until stabilization and transition.

Initial phase

- Start initial phase with feeding immediately after the child has been admitted with F-75.
- F-75 is a milk powder dissolved in water.
- F-75 contains 75 kcal/100 ml usually for 2-7 days.
- F-75 contains no iron.
- Patient should be fed 8 times/day at 2-3h intervals.
- Encourage breastfeeding.

Rehabilitation phase

- Gained appetite and release of oedema – F-100 for a few days.
- F-100 contains 100 kcal/100 ml + iron.
- Transition to RUTF.

6) Correct micronutrient deficiencies

- Done through F-75, F-100 or RUTF.
- Vitamin A is given at the discharge from SAM treatment. (outpatient)

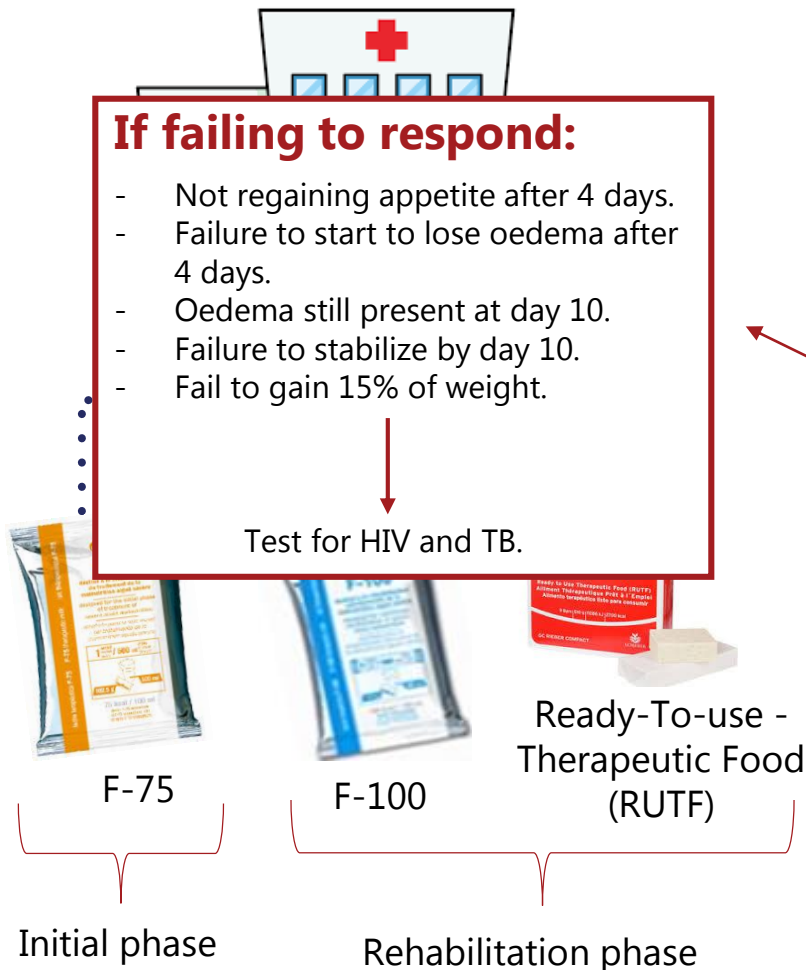


Inpatient treatment of SAM (continued #2)

Hospital-based treatment

The steps of inpatient care following identification include:

- 7) Emotional stimulation and sensorial development.
 - Rehabilitation with the mother.
 - Ensure good environment.
 - Play and physical activities.
- 8) Monitoring of management progress.
 - Monitoring the progress of the child.
 - **Each feed:**
 - Quantity F-75, F-100 or RUTF.
 - Amount and frequency of vomiting.
 - Frequency of breastfeeding.
 - **Once daily:**
 - Weight/weight gain.
 - Oedema.
 - Frequency and type of stools.
 - Dehydration and cough.
 - Liver size and palmar pallor.
- 9) Prepare for and ensure follow up after discharge.
 - Gained appetite, minor complications, the child can eat at least 75% the RUTF.



Outpatient treatment of SAM

Home-based treatment follow up at health centers/hospital



Ready-To-use -Therapeutic
Food (RUTF)

Before going home (hospital/health center):

- First dose of antibiotics + other needed medications.
- Test appetite.
- Counselling on feeding with RUTF.
- Breastfeeding practices.
- Home hygiene practices.
- Review danger signs.
- Check immunization status, if not vaccinated plan vaccination at 1st follow up visit.
- Food ration provided based on child's weight.

Outpatient treatment of SAM

Follow-up schedule (health center/hospital):

- 1st follow up visit 7 days (give RUTF for 2 weeks).
- 2nd follow up visit 14 days after 1st follow-up visit (give RUTF for 2 weeks).
- 3rd follow-up visit 14 days after 2nd follow-up (give RUTF for 3 weeks).
- Follow-up continues for a minimum of 2 months.
- Medical check-up, appetite test, weight, height, MUAC and oedema assessment, food ration and feeding counseling.



Home-visit:

- Absent for 2 continuative follow-up visit.
- Eat less than 75% of RUTF by 2nd follow up visit.
- Below admission weight on 2nd follow up visit.
- Weight loss for any follow-up visit.
- Static weight for 2 consecutive follow up visits.
- Refused hospital referral.



Routine drugs in outpatient treatment of SAM

Routine medicines for treatment of SAM without complications				
Name of Product	When	Age/Weight	Prescription	Dose
Vitamin A*	At discharge	6 months to < 1 year	100 000 IU	Single dose
		≥ 1 year	200 000 IU	
Amoxicillin	At admission	All Beneficiaries	25mg/kg/dose	2 times/day for 7 days
Mebendazole	1 st follow-up visit	< 1 year	DO NOT GIVE	None
		12-23 months	250 mg	Single dose
		24-59 months	500 mg	
Measles vaccination	At admission if not received at 9 months	From 9 months	Standard	Give 2 nd dose at 18 months

Outpatient discharge criteria

Discharged as cured:

- WHZ > -2 or MUAC > 12.5 cm and no oedema for 2 consecutive follow-up visits with a minimum length of stay in follow-up of 2 months and clinically well.

Referred:

- Referred to inpatient care if not responding (lost weight for 2 consecutive follow-up/or static weight for 2 consecutive follow-up) or severe medical complications.

Defaulted:

- Absent for 2 consecutive follow-up visits.

Non-cured:

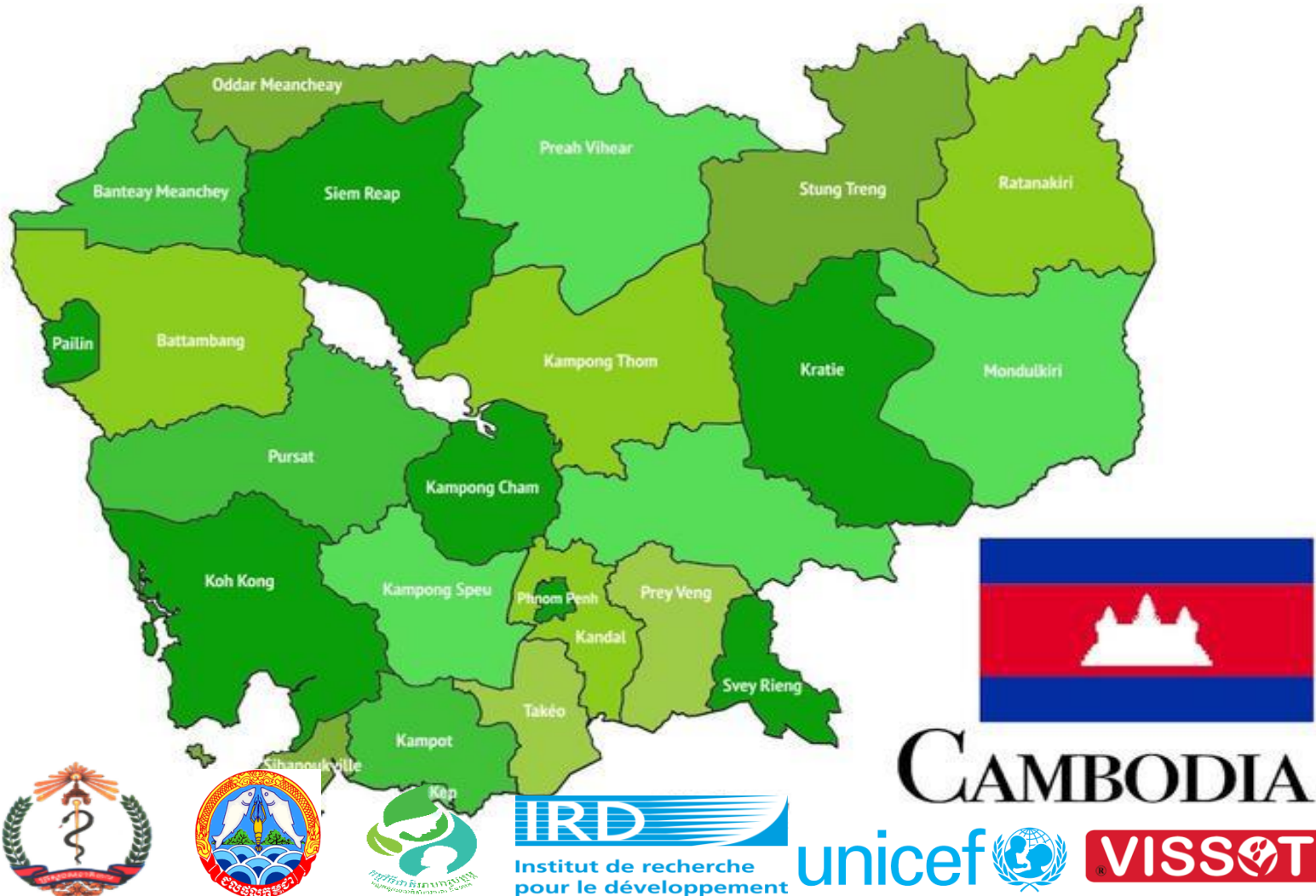
- Discharge criteria not reached after 4 months.

Died:

- Died during time registered for outpatient treatment of SAM.



Example of recent activities on SAM treatment in Cambodia



Development of locally produced RUTF

- Low acceptability of commonly used RUTF, BP-100™.



- Adapt RUTF to local taste and preferences using locally available ingredients (mung beans, soya beans, fish, rice, coconut).
- Make Cambodia independent from importing RUTF's.
- Reduce cost by replacing milk powder with small dried fish powder.



*Photo credit:
Arnaud Laillou.*

Num Trey fish paste wrapped into a crispy wafer.



Wafer and paste production at Vissot (local producer).

Trials

Acceptability trial

- Test acceptability among children and their caregivers.
- Taste trial of Num Trey paste, Num Trey wafer and BP-100™.
- The National Pediatric Hospital, Phnom Penh, Cambodia.
- Acceptability evaluated on a 5-point hedonic scale using smiley faces for 8 organoleptic qualities and a ranking.



Effectiveness trial

- To test the effectiveness of the locally produced fish-based RUTF (Num Trey) compared with the imported milk-based RUTF (BP-100™) in the treatment of severe acute malnutrition in Cambodian children (6-59 months).
- National Pediatric Hospital, Phnom Penh, Cambodia.
- Eight weeks intervention trial with follow-up every 2nd week.

Outcomes – Effectiveness trial

Primary outcome

- ✓Weight gain (g/kg/day).

Sample size

The expected weight gain was >4g/kg/day for both RUTFs.

Sample size: 49 children per group- planned to recruit 60 in each group (total n=120).

Secondary outcomes

- ✓Body composition changes during treatment.
- ✓Micronutrients status (iron, vitamin A, zinc, fatty acids, complete blood count).
- ✓Immunological parameters (C-reactive protein (CRP), Alpha-1 acid glycoprotein (AGP) and leptin).
- ✓Perception of the products by the caretaker (acceptability/focus group discussion).
- ✓Energy intake.
- ✓Changes in Height-for-age z-score, MUAC, weight (kg), muscle area and fat.
- ✓Eating patterns (food refusal, household sharing).
- ✓Morbidity (diarrhea, vomiting, skin rash, cough, fever).



Trial design



Home-based single-blinded randomized controlled trial.

Children were individually randomized to **1 of 2** RUTF's for 8 weeks.

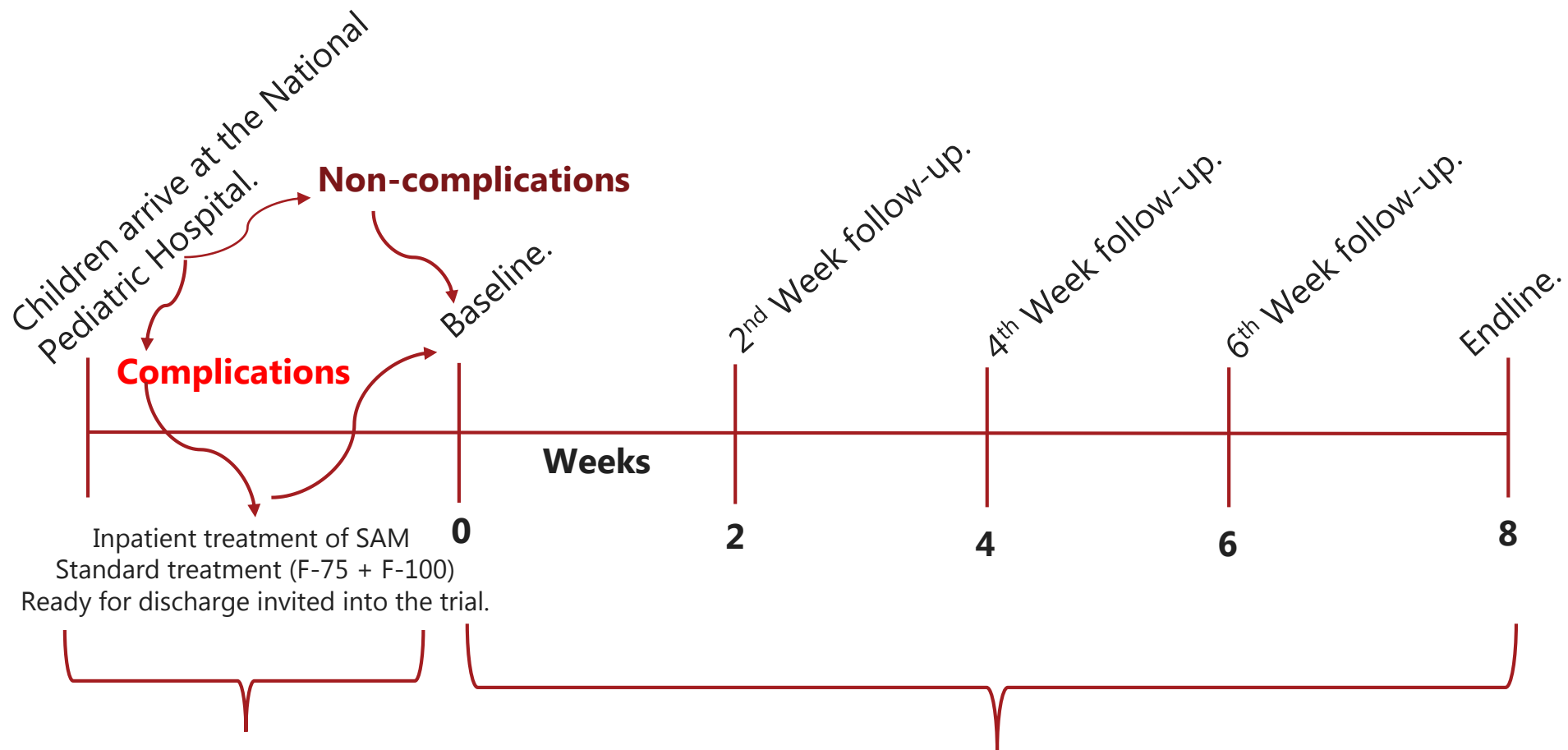
Num Trey RUTF



BP-100™



Timeline of treatment



Children **NOT** included in the trial.

Home-visits & Focus
group discussions.

Started 1st September 2015 until 6th January 2017.



**Thank you for your
attention!**