

Training Course on The Management of **ACUTE MALNUTRITION**



3rd edition, 2019
Addis Ababa, Ethiopia



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MINISTRY OF HEALTH - ETHIOPIA
የዜጎች ጤና ለሃገር ብልጽግና
HEALTHIER CITIZENS FOR PROSPEROUS NATION

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The first National Protocol on the Management of Severe Acute Malnutrition (SAM) for Ethiopia was developed in 2004 and the 2nd and updated version was made available as of March 2007. The training course material was developed on 2011 titled “*Training Course on the Management of SAM*” using the WHO “*Training Course on the Management of SAM, 2002*” as template but taking most of the contents from the “National Protocol for the Management of SAM, 2007”. The Third National Protocol for the management of acute malnutrition incorporated updates from the 2013 World Health Organization (WHO) global recommendations on the management of severe acute malnutrition in infants and children and revised. The revised guideline was launched in June 2019 by the FMOH titled “National Guideline for Management of Acute Malnutrition, Ethiopia”. Subsequently, the training package has been revised in line with the national guideline. The training package incorporates both the in-patient and outpatient management of acute malnutrition.

This third edition of the training materials was developed through the technical and financial support from World Health Organization (WHO), Ethiopia and the valuable input of from the national experts from regional referral hospitals and teaching institutions, United Nations Children’s Fund (UNICEF), World Food Programme (WFP), and experts from implementing Non-Governmental Organizations. It is our strong belief that this training package will contribute significantly to the efforts being made to improve the quality of care provided for malnourished children and pregnant & lactating women.

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ACRONYMS

F75	Formula 75 Kcal
F100	Formula 75 Kcal
IU	International Units
MUAC	Mid Upper Arm Circumference
NGT	Naso-Gastric Tube
OPD	Out Patient Department (of health facility)
ORS	Oral Rehydration Salt
OTP	Out-patient Therapeutic Program
ReSoMal	Rehydration Solution for severely malnourished patients
RUTF	Ready-to-Use Therapeutic Food
RWG	Rate of Weight Gain
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Program
TFU	Therapeutic Feeding Unit
TFP	Therapeutic Feeding Program
WFH	Weight for Height
WFL	Weight for Length
Hgb	Hemoglobin

1.1 Assess and Classify infants age under 6 months for Severe Acute Malnutrition (SAM)

Ask	Look and Feel	Sign	Classify	Treat
<p>Ask for signs of medical complications:</p> <p>Is the patient:</p> <ul style="list-style-type: none"> Too weak to suckle effectively? Vomiting everything? 	<p>1. Check for presence of bilateral pitting edema</p> <ul style="list-style-type: none"> Does the infant have bilateral pitting edema? Is the infant's WFL < -3 z-score? <p>2. Check for medical complications for treatment purposes</p> <ul style="list-style-type: none"> Poor appetite Intractable vomiting Convulsions Lethargy, not alert Unconsciousness High fever (axillary temp. >38.5 °C) Lower respiratory tract infection (LRTI) Dehydration Persistent diarrhea Severe anemia 	<ul style="list-style-type: none"> Any grade of bilateral pitting edema (+, ++ or +++) <p>OR</p> <ul style="list-style-type: none"> WFL < -3 z score 	<p>SAM with or without medical complications.</p>	<p>Refer/ Admit in SC.</p>

1. PRINCIPLES OF CARE

1.2 Assess and Classify Children age 6 – 59 months for acute malnutrition

Ask	Look and Feel	Sign	Classify	Treat
Ask for signs of medical complications: Is the patient: ▪ Unable to breastfeed, drink or feed? ▪ Vomiting everything?	1. Check for presence of bilateral pitting edema ▪ Does the child have bilateral pitting edema? ▪ If yes, is it +++ (generalized involving upper arms and face)? 2. Check MUAC ▪ Is the child's MUAC <11.5cm? 3. Check the WFH ▪ Is the child's WFH <-3 z-score?	▪ Bilateral pitting edema +++ ▪ Any grade of bilateral pitting edema combined with severe wasting, (MUAC <11.5 cm or WFH <-3 z score) ▪ Bilateral pitting edema +, ++, OR ▪ Severe wasting, (MUAC <11.5 cm or WFH <-3 z score) AND any of the following medical complications: ▪ Poor appetite ▪ Intractable vomiting ▪ Convulsions ▪ Lethargy, not alert ▪ Unconsciousness ▪ High fever ▪ Lower respiratory tract infection (LRTI) ▪ Dehydration ▪ Persistent diarrhea ▪ Severe anemia ▪ Hypoglycemia ▪ Hypothermia ▪ Severe skin lesions ▪ Eye signs of vitamin A deficiency	Complicated SAM	Refer/Admit in SC.
Does the patient have: ▪ Blood in stool? ▪ Diarrhea > 14days? ▪ Cough > 14 days, or had contact with TB patients? ▪ Bleeding tendencies? ▪ History of recent sunken eyes? ▪ Convulsion(s)	4. Check for medical complications: ▪ Poor appetite ▪ Intractable vomiting ▪ Convulsions ▪ Lethargy, not alert ▪ Unconsciousness ▪ High fever (axillary temp. >38.5 °C) ▪ Lower respiratory tract infection (LRTI) ▪ Dehydration ▪ Persistent diarrhea ▪ Severe anemia ▪ Hypoglycemia, ▪ Hypothermia (axillary temp.<35°C) ▪ Severe skin lesions ▪ Eye signs of vitamin A deficiency.	▪ Bilateral pitting edema + or ++ OR ▪ MUAC <11.5 cm OR ▪ WFH <-3 z-score AND ▪ Appetite test passed ▪ Clinically well and alert		
		▪ MUAC ≥ 11.5 to <12.5 cm OR ▪ WFH ≥ -3 to <-2 z scores AND ▪ Clinically well and alert	MAM	Admit in TSFP and counsel on appropriate IYCF Practices
		▪ MUAC ≥ 12.5 cm OR ▪ WFH ≥ -2 z score AND ▪ No bilateral pitting edema	No acute Malnutrition	Congratulate and counsel the mother on appropriate IYCF practices

***Edema grading:** bilateral edema below ankles (+); below the knees & the elbows (++); generalized edema involving the upper arms & face (+++). **Dermatosis grading:** few discolored or rough patches of skin (+); multiple patches on arms and/or legs (++); flaking skin, raw skin or fissures (openings in the skin) is grade +++ dermatosis.

**** Most of the treatment protocols and procedures indicated in this training module also apply to children over 5 years of age. However, some areas may need to be changed to fit the age range, particularly the MUAC cut-off point for admission**

1.3 Weight-for-Length Reference card

(WHO 2006 Child Growth Standards)

Boys' weight (kg)				Length ^a	Girls' weight (kg)			
-3 SD	-2 SD	-1 SD	Median	(cm)	Median	-1 SD	-2 SD	-3 SD
1.9	2.0	2.2	2.4	45	2.5	2.3	2.1	1.9
2.0	2.2	2.4	2.6	46	2.6	2.4	2.2	2.0
2.1	2.3	2.5	2.8	47	2.8	2.6	2.4	2.2
2.3	2.5	2.7	2.9	48	3.0	2.7	2.5	2.3
2.4	2.6	2.9	3.1	49	3.2	2.9	2.6	2.4
2.6	2.8	3.0	3.3	50	3.4	3.1	2.8	2.6
2.7	3.0	3.2	3.5	51	3.6	3.3	3.0	2.8
2.9	3.2	3.5	3.8	52	3.8	3.5	3.2	2.9
3.1	3.4	3.7	4.0	53	4.0	3.7	3.4	3.1
3.3	3.6	3.9	4.3	54	4.3	3.9	3.6	3.3
3.6	3.8	4.2	4.5	55	4.5	4.2	3.8	3.5
3.8	4.1	4.4	4.8	56	4.8	4.4	4.0	3.7
4.0	4.3	4.7	5.1	57	5.1	4.6	4.3	3.9
4.3	4.6	5.0	5.4	58	5.4	4.9	4.5	4.1
4.5	4.8	5.3	5.7	59	5.6	5.1	4.7	4.3
4.7	5.1	5.5	6.0	60	5.9	5.4	4.9	4.5
4.9	5.3	5.8	6.3	61	6.1	5.6	5.1	4.7
5.1	5.6	6.0	6.5	62	6.4	5.8	5.3	4.9
5.3	5.8	6.2	6.8	63	6.6	6.0	5.5	5.1
5.5	6.0	6.5	7.0	64	6.9	6.3	5.7	5.3
5.7	6.2	6.7	7.3	65	7.1	6.5	5.9	5.5
5.9	6.4	6.9	7.5	66	7.3	6.7	6.1	5.6
6.1	6.6	7.1	7.7	67	7.5	6.9	6.3	5.8
6.3	6.8	7.3	8.0	68	7.7	7.1	6.5	6.0
6.5	7.0	7.6	8.2	69	8.0	7.3	6.7	6.1
6.6	7.2	7.8	8.4	70	8.2	7.5	6.9	6.3
6.8	7.4	8.0	8.6	71	8.4	7.7	7.0	6.5
7.0	7.6	8.2	8.9	72	8.6	7.8	7.2	6.6
7.2	7.7	8.4	9.1	73	8.8	8.0	7.4	6.8
7.3	7.9	8.6	9.3	74	9.0	8.2	7.5	6.9
7.5	8.1	8.8	9.5	75	9.1	8.4	7.7	7.1
7.6	8.3	8.9	9.7	76	9.3	8.5	7.8	7.2
7.8	8.4	9.1	9.9	77	9.5	8.7	8.0	7.4
7.9	8.6	9.3	10.1	78	9.7	8.9	8.2	7.5
8.1	8.7	9.5	10.3	79	9.9	9.1	8.3	7.7
8.2	8.9	9.6	10.4	80	10.1	9.2	8.5	7.8
8.4	9.1	9.8	10.6	81	10.3	9.4	8.7	8.0
8.5	9.2	10.0	10.8	82	10.5	9.6	8.8	8.1
8.7	9.4	10.2	11.0	83	10.7	9.8	9.0	8.3
8.9	9.6	10.4	11.3	84	11.0	10.1	9.2	8.5
9.1	9.8	10.6	11.5	85	11.2	10.3	9.4	8.7
9.3	10.0	10.8	11.7	86	11.5	10.5	9.7	8.9
9.5	10.2	11.1	12.0	87	11.7	10.7	9.9	9.1
9.7	10.5	11.3	12.2	88	12.0	11.0	10.1	9.3
9.9	10.7	11.5	12.5	89	12.2	11.2	10.3	9.5
10.1	10.9	11.8	12.7	90	12.5	11.4	10.5	9.7
10.3	11.1	12.0	13.0	91	12.7	11.7	10.7	9.9
10.5	11.3	12.2	13.2	92	13.0	11.9	10.9	10.1
10.7	11.5	12.4	13.4	93	13.2	12.1	11.1	10.2
10.8	11.7	12.6	13.7	94	13.5	12.3	11.3	10.4
11.0	11.9	12.8	13.9	95	13.7	12.6	11.5	10.6
11.2	12.1	13.1	14.1	96	14.0	12.8	11.7	10.8
11.4	12.3	13.3	14.4	97	14.2	13.0	12.0	11.0
11.6	12.5	13.5	14.6	98	14.5	13.3	12.2	11.2
11.8	12.7	13.7	14.9	99	14.8	13.5	12.4	11.4
12.0	12.9	14.0	15.2	100	15.0	13.7	12.6	11.6

Note: A more detailed table is available at http://www.who.int/childgrowth/standards/weight_for_length/en.

a. Length is measured for children aged under 2 years or, if age is not known, below 87 cm.

When recumbent length cannot be measured: Recumbent length is on average 0.7 cm greater than standing height; although the difference is of no importance to individual children, when recumbent length cannot be measured, a correction may be made by adding 0.7 cm to the height if the child is aged under 2 years (or below 87 cm if age not known).

1.4 Weight-for-Height Reference Card

(WHO 2006 Child Growth Standards)

Boys' weight (kg)				Height ^a	Girls' weight (kg)			
-3 SD	-2 SD	-1 SD	Median	(cm)	Median	-1 SD	-2 SD	-3 SD
5.9	6.3	6.9	7.4	65	7.2	6.6	6.1	5.6
6.1	6.5	7.1	7.7	66	7.5	6.8	6.3	5.8
6.2	6.7	7.3	7.9	67	7.7	7.0	6.4	5.9
6.4	6.9	7.5	8.1	68	7.9	7.2	6.6	6.1
6.6	7.1	7.7	8.4	69	8.1	7.4	6.8	6.3
6.8	7.3	7.9	8.6	70	8.3	7.6	7.0	6.4
6.9	7.5	8.1	8.8	71	8.5	7.8	7.1	6.6
7.1	7.7	8.3	9.0	72	8.7	8.0	7.3	6.7
7.3	7.9	8.5	9.2	73	8.9	8.1	7.5	6.9
7.4	8.0	8.7	9.4	74	9.1	8.3	7.6	7.0
7.6	8.2	8.9	9.6	75	9.3	8.5	7.8	7.2
7.7	8.4	9.1	9.8	76	9.5	8.7	8.0	7.3
7.9	8.5	9.2	10.0	77	9.6	8.8	8.1	7.5
8.0	8.7	9.4	10.2	78	9.8	9.0	8.3	7.6
8.2	8.8	9.6	10.4	79	10.0	9.2	8.4	7.8
8.3	9.0	9.7	10.6	80	10.2	9.4	8.6	7.9
8.5	9.2	9.9	10.8	81	10.4	9.6	8.8	8.1
8.7	9.3	10.1	11.0	82	10.7	9.8	9.0	8.3
8.8	9.5	10.3	11.2	83	10.9	10.0	9.2	8.5
9.0	9.7	10.5	11.4	84	11.1	10.2	9.4	8.6
9.2	10.0	10.8	11.7	85	11.4	10.4	9.6	8.8
9.4	10.2	11.0	11.9	86	11.6	10.7	9.8	9.0
9.6	10.4	11.2	12.2	87	11.9	10.9	10.0	9.2
9.8	10.6	11.5	12.4	88	12.1	11.1	10.2	9.4
10.0	10.8	11.7	12.6	89	12.4	11.4	10.4	9.6
10.2	11.0	11.9	12.9	90	12.6	11.6	10.6	9.8
10.4	11.2	12.1	13.1	91	12.9	11.8	10.9	10.0
10.6	11.4	12.3	13.4	92	13.1	12.0	11.1	10.2
10.8	11.6	12.6	13.6	93	13.4	12.3	11.3	10.4
11.0	11.8	12.8	13.8	94	13.6	12.5	11.5	10.6
11.1	12.0	13.0	14.1	95	13.9	12.7	11.7	10.8
11.3	12.2	13.2	14.3	96	14.1	12.9	11.9	10.9
11.5	12.4	13.4	14.6	97	14.4	13.2	12.1	11.1
11.7	12.6	13.7	14.8	98	14.7	13.4	12.3	11.3
11.9	12.9	13.9	15.1	99	14.9	13.7	12.5	11.5
12.1	13.1	14.2	15.4	100	15.2	13.9	12.8	11.7
12.3	13.3	14.4	15.6	101	15.5	14.2	13.0	12.0
12.5	13.6	14.7	15.9	102	15.8	14.5	13.3	12.2
12.8	13.8	14.9	16.2	103	16.1	14.7	13.5	12.4
13.0	14.0	15.2	16.5	104	16.4	15.0	13.8	12.6
13.2	14.3	15.5	16.8	105	16.8	15.3	14.0	12.9
13.4	14.5	15.8	17.2	106	17.1	15.6	14.3	13.1
13.7	14.8	16.1	17.5	107	17.5	15.9	14.6	13.4
13.9	15.1	16.4	17.8	108	17.8	16.3	14.9	13.7
14.1	15.3	16.7	18.2	109	18.2	16.6	15.2	13.9
14.4	15.6	17.0	18.5	110	18.6	17.0	15.5	14.2
14.6	15.9	17.3	18.9	111	19.0	17.3	15.8	14.5
14.9	16.2	17.6	19.2	112	19.4	17.7	16.2	14.8
15.2	16.5	18.0	19.6	113	19.8	18.0	16.5	15.1
15.4	16.8	18.3	20.0	114	20.2	18.4	16.8	15.4
15.7	17.1	18.6	20.4	115	20.7	18.8	17.2	15.7
16.0	17.4	19.0	20.8	116	21.1	19.2	17.5	16.0
16.2	17.7	19.3	21.2	117	21.5	19.6	17.8	16.3
16.5	18.0	19.7	21.6	118	22.0	19.9	18.2	16.6
16.8	18.3	20.0	22.0	119	22.4	20.3	18.5	16.9
17.1	18.6	20.4	22.4	120	22.8	20.7	18.9	17.3

Note: A more detailed table is available at http://www.who.int/childgrowth/standards/weight_for_height/en/.

a. For children aged 2 years and above (or, if age not known, 87 cm or more), height is measured. When standing height cannot be measured: Recumbent length is on average 0.7 cm greater than standing height; although the difference is of no importance to individual children, when standing height cannot be measured, a correction may be made by subtracting 0.7 cm from the length if the child is aged 2 years or above or has a length of 87.0 cm or more

1.5 Appetite Testing Techniques

Appetite is a very important indicator of the clinical situation of a patient. A poor appetite means that the child has a serious problem and need to be referred for inpatient care.

Steps to follow

1. The appetite test should be conducted in a separate quiet area.
2. Explain to the care taker the purpose of the appetite test and how it will be carried out.
3. The care taker should wash his/her hand.
4. The care taker should sit comfortably with the child on his lap and should either offer the RUTF from the packet or put a small amount on his finger and give it to the child.
5. The care taker should offer the child the RUTF gently, encouraging the child all the time. If the child refuses then the care taker should continue to quietly encourage the child and take time over the test. The test usually takes a short time but may take up to thirty minutes. The child **must not** be forced to take the RUTF.
6. The child needs to be offered plenty of water to drink from a cup as he/she is taking the RUTF.

Interpreting the Result of the Appetite Test

To determine whether the child passes or fail the test:-

Pass appetite test

1. A child that takes at least some amount of RUTF, he/she passes the appetite test.
2. Explain to the care taker the treatment option is OTP.
3. Register the result on the OTP card.

Fail appetite test

1. A child that does not take the RUTF at all, then the child fails the appetite test.
2. Explain to the care taker the choice of treatment is inpatient care; and explain the reasons for recommending in-patient care.
3. Refer the patient to the nearest TFU/SC for in-patient management.

2. INITIAL MANAGEMENT

Treatment of children 6-59 months with SAM

Stabilization Phase

- Treat medical complications

2.1 Treat Dehydration

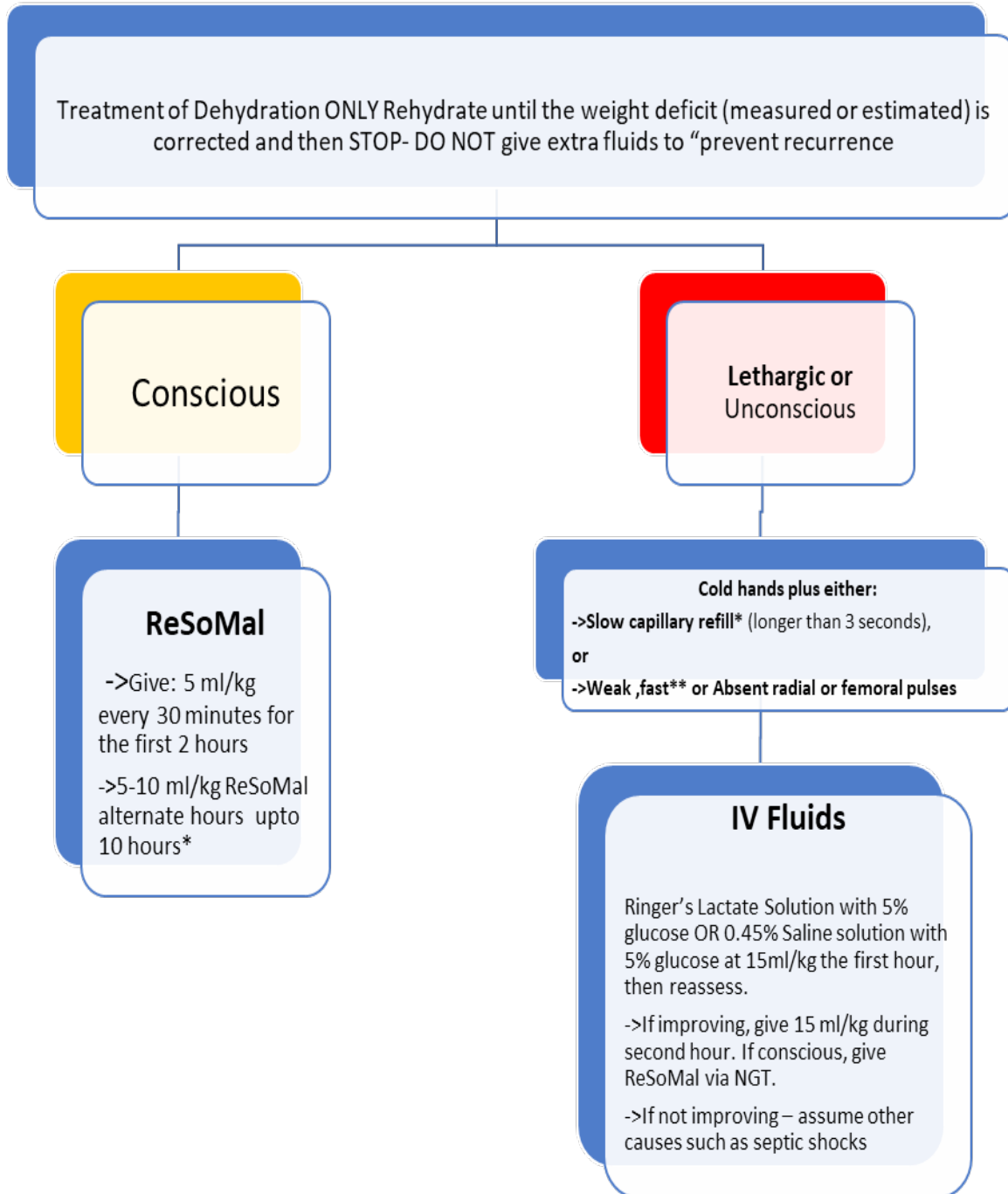


Figure 1: Flow chart- management of dehydration

- Monitor a child who is on treatment for dehydration as follows:

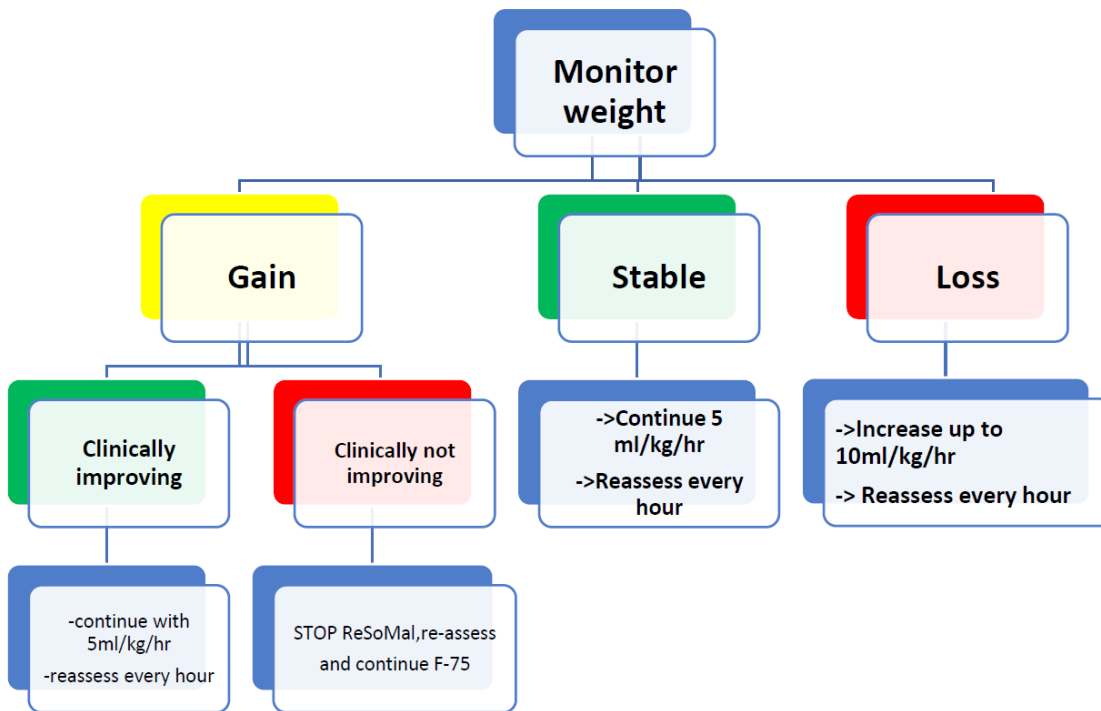


Figure 2: Monitoring a child on rehydration with ReSoMal

2.2 Treat Shock

The severely malnourished child is considered to have shock if he/she is lethargic or unconscious and has cold hands plus either:

- Slow capillary refill (longer than 3 seconds), or
- Weak, fast or absent radial or femoral pulses and
- Absence of signs of heart failure in an edematous child

- **Give oxygen**
- **Keep the child warm**
- **Give IV fluids**
 - a) Check the starting respiratory and pulse rates and record them on the Multi-chart and also on the shock follow up chart on table 5. Also record the starting time.
 - b) Infuse IV fluid at 15ml/kg over 1 hour. Use one of the following solutions, listed in order of preference:
 - Ringer's lactate solution with 5% glucose
 - * 0.45 % normal Saline with 5% glucose * (add 125 ml of 40 % or 100 ml of 50% glucose to 1 liter of 0.45% saline to make this fluid)
 - c) *If either of these is used, add sterile potassium chloride (20 mmol/l) if possible.
 - d) Observe the child and check respiratory and pulse rates every 10 minutes (see the shock follow up chart below). Follow the liver size too.

- e) If the respiratory rate (by 5 breaths per minute) and pulse rate (by 25 pulses per minute) increase and child is gaining weight, stop the IV rehydration and assume septic or cardiogenic shock.
- f) If respiratory rate and pulse rate are slower after 1 hour, the child is improving. Repeat the same amount of IV fluids for another hour. Continue to check respiratory and pulse rates every 10 minutes.
- g) After 2 hours of IV fluids, switch to oral or nasogastric rehydration with ReSoMal. Give 5-10 ml/kg ReSoMal in alternate hours with F-75 for up to 10 hours or until fully rehydrated.
- h) If the child fails to improve after the first hour of IV fluids, then assume that the child has septic shock. Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood transfusion.
- i) When blood is available, stop all oral intake and IV fluids, give a diuretic to make room for the blood, and then transfuse whole fresh blood at 10 ml/kg slowly over 3 hours. If there are signs of heart failure, give packed cells instead of whole blood as these have a smaller volume.

2.3 Treat Hypoglycemia

- The child is hypoglycemic if the blood glucose level is < 54 mg/dl or the child is lethargic, limp, or unconscious.
 - **f the child can drink**, give 50 ml bolus of 10% glucose or 10% sucrose orally.
- If the child is alert but not drinking, give the 50 ml by NG tube.
 - **If the child is lethargic, unconscious, or convulsing**, give 5 ml/kg body weight of sterile 10% glucose by IV, followed by 50 ml of 10% glucose or sucrose by NG tube*. If the IV dose cannot be given immediately, give first dose through NG tube.
 - *If the child will be given IV fluids for shock, there is no need to follow the 10% IV glucose with an NG bolus, as the child will continue to receive glucose in the IV fluids.
 - Start feeding F-75 half an hour after giving glucose and give it every half-hour during the first 2 hours. For a hypoglycemic child, the amount to give every half-hour is ¼ of the 2-hourly amount shown on the F-75 Reference Card.
 - Take another blood sample after 2 hours and check the child's blood glucose again.
 - If blood glucose is 54 mg/dl (3mmol/l) or higher, change to 3-hourly feeds (8 feeds per day) of F-75.
 - If it is still low, make sure antibiotics and F-75 have been given. Keep giving F-75 every half-hour and Treat with second-line antibiotics.

2.4 Treat hypothermia

A child is hypothermic if the **rectal temperature is below 35.5 °C** or if the **axillary temperature is below 35 °C**.

Maintain temperature as follows:

- Cover the child, including his head.
- Move the child away from windows.
- Maintain room temperature of 28 and 32 °C (82.4-89.6 °F) if possible. If it is not possible to warm the room, let the child sleep snuggled up to the mother, and cover them with a blanket.
- Keep the child covered at night.
- Promptly change wet clothes or bedding.

Actively re-warm the hypothermic child as follows;

- Have the mother hold the child with his skin next to her skin when possible (kangaroo technique), and cover both of them. Keep the child's head covered. Give warm Fluid to mother.
- Use a heater or incandescent lamp with caution. Use indirect heat (not too close). Monitor temperature every 30 minutes to make sure the child does not get too hot. Stop re-warming when the child's temperature becomes normal.
- Treat for hypoglycemia and infection.

2.5 Treat severe anemia

- A child has severe anemia if his/her hemoglobin is < 4 g/dl (or packed cell volume <12%). Transfuse the child as follows if the child has severe anemia in the first 48 hours:
- Stop all oral intake and IV fluids during the transfusion.
- Look for signs of congestive heart failure such as fast breathing, respiratory distress, rapid pulse, engorgement of the jugular vein, cold hands and feet, cyanosis of the fingertips and under the tongue.
- Give Furosemide 1 mg/kg, given by IV.
- If there are no signs of congestive heart failure, transfuse whole fresh blood at 10 ml/kg slowly over 3 hours. If there are signs of heart failure, give 10 ml/kg
- packed cells over 3 hours instead of whole blood.

Note: - If the child's Hgb is 4 - 6 gm/dl and has respiratory distress consider blood transfusion. If anemia occurs between 48 hours to 14 days, rule out dilutional anemia before transfusion.

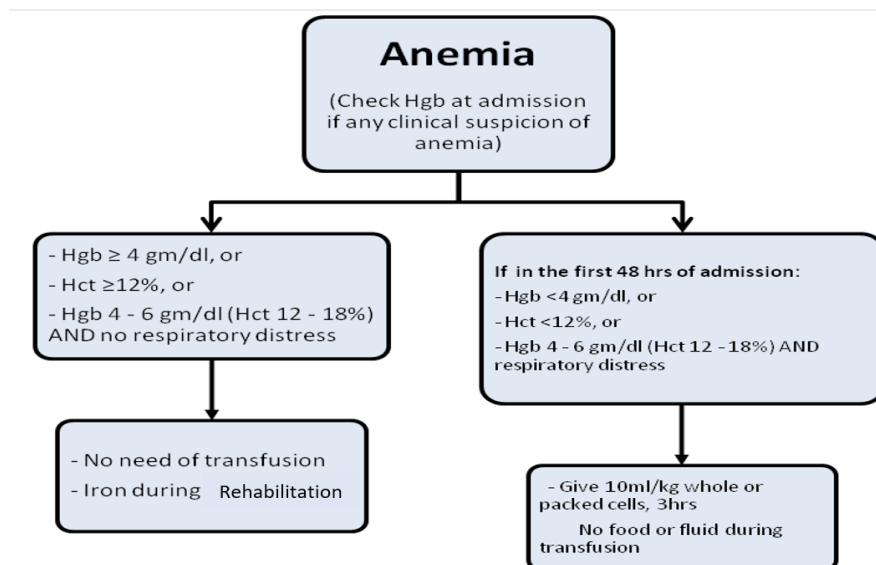


Figure 3: Flow chart for treatment of very severe anemia

2.6 Treatment Eye signs

Doses are as follows. Instill drops into the affected eye(s):

- i. Gentamycin (0.3%), tetracycline (1%): 1 drop, 3-4 times daily for 7 to 10 days
- ii. Atropine (0.1%): 1 drop, 3 times daily for 3 to 5 days.

If the child has: Bitot's spots only (no other eye signs)
<ul style="list-style-type: none"> No eye drops needed
If the child has: pus or inflammation
<ul style="list-style-type: none"> Give tetracycline (1%) or gentamicin (0.3%) eye drops or tetracycline eye ointment (1%)
If the child has: corneal clouding or corneal ulceration
<ul style="list-style-type: none"> Give both: <ul style="list-style-type: none"> Tetracycline (1%) or gentamicin (0.3%) eye drops or tetracycline eye ointment (1%) Atropine (0.1%) eye drops

i. Give vitamin A immediately as follows:

Child's age	Vitamin A Oral Dose
< 6 months	50,000 IU
6 - 11 months	100,000 IU
12 -59 months	200,000 IU

Some severely malnourished children sleep with their eyes open. Nurses should gently close the child's eyes while sleeping to prevent abrasion.

2.7 Treat Heart Failure

A child is in heart failure if the following signs are present:

- Physical deterioration with weight gain,
- Sudden increase in liver size and tenderness of the liver,
- Increased respiratory rate, 'grunting' breathing, and crepitations in lungs,
- Prominent superficial and neck veins,
- Increased edema or reappearance of edema.

Note: Children with edema do not necessarily present weight gain during heart failure if the expanded circulation is due to mobilization of edema fluid from the tissues to vascular space.

Treat as follows:

- Stop all intakes of oral or IV fluids. Small amounts of sugar-water can be given orally to prevent hypoglycemia.
- Give Furosemide (1 mg/kg) single dose, repeat if necessary.

2.8 Severe dermatosis

- Bathe children daily unless they are very sick. If a child is very sick, wait until the child is recovering to bathe him/her.
- Treat severe (+++) dermatosis as follows:
 - ✓ Bathe for 10-15 min/day in 1% potassium permanganate solution*.
Sponge the solution onto affected areas while the child is sitting in a basin.
 - To make a 1% solution, dissolve a crystal in enough water so that the color is slightly purple and still transparent. This dries the lesions, helps to prevent loss of serum and inhibits infection.
 - ✓ If the child is too sick to be bathed, dab 1% potassium permanganate solution on the open skin lesions, and dress oozing areas with gauze to keep them clean.
 - ✓ Apply gentian violet to the affected areas if potassium permanganate solution is not available.
 - ✓ Apply castor oil ointment, petroleum jelly, or paraffin gauze dressing to raw areas.
 - ✓ If the diaper area becomes colonized with candida, use nystatin ointment or cream after bathing.
 - ✓ Leave off diapers (nappies) so the affected area can dry. Be sure to dry the child well after a bath and wrap the child warmly.

2.9 Management of Abdominal Distension

The following measures should be taken:

- Give Gentamicin IV once daily plus Ampicillin IV every 6 hours
- Consider adding Chloramphenicol or Ceftriaxone IV
- Stop all other drugs that may be causing toxicity (such as metronidazole)
- Give a single IM injection of magnesium sulphate (2ml of 50% solution).
- Pass an NG-tube 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 either a further dose of sugar-water should be given or the fluid returned to the stomach.
- There is frequently gastric and esophageal candidiasis: give oral nystatin suspension or fluconazole.
- Keep the child warm

If the child’s level of consciousness is poor give intravenous glucose:

- Do not put up a drip at this stage. Monitor the child carefully for 6 hours, without giving any other treatment.
- Improvement is measured 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 – and 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 feeding table – subsequently adjust by the volumes of gastric aspirated).

❖ 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. 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.
- 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.

2.10 Antibiotic Reference Card

If:	Give:	
No complications	Amoxicillin oral: 25 mg/kg every 12 hours for 5-7 days	
Complications (shock, hypoglycaemia, hypothermia, dermatosis with raw skin/fissures, respiratory or urinary tract infections, or lethargic/sickly appearance)	Gentamycin IV or IM (7.5 mg/kg), once daily for 7 days, plus:	
	Ampicillin IV or IM (50 mg/kg), every 6 hours for 2 days	Followed by amoxicillin oral: 25 mg/kg, every 12 hours for 5 days
If resistance to amoxicillin and ampicillin, and presence of medical complications:	See details of drug on standard treatment guideline In the case of sepsis or septic shock: IM ceftriaxone (for children/infants beyond 1 month: 50 mg/kg every 8 to 12 hours) + oral/ IV ciprofloxacin ³ (5–15 mg/kg 2 times per day) If suspected staphylococcal infections: add Cloxacillin (12.5–50 mg/kg/ dose 4 times a day, depending on the severity of the infection)	
If HIV-positive or HIV Exposed Child	Treat of medical complications should be like any SAM patient without HIV-infection or exposure. In addition to the Cotrimoxazole prophylaxis the child is on.	
If a specific infection requires an additional antibiotic, also give:	Specific antibiotics as directed in the standard treatment guidelines	
<p>1If the child is not passing urine; Gentamicin may accumulate in the body and cause renal failure and deafness. Do not give the second dose until the child is passing urine.</p> <p>2If amoxicillin is not available, give Ampicillin, 50 mg/kg orally every 6 hours for 5 days.</p> <p>3 if ciprofloxacin bioavailability decreases when given with the milk, so should be given 2 hours after the milk is given.</p>		

Doses for Selected Antibiotics

Table 1: Doses for Specific Formulation		
ANTIBIOTIC	ROUTE/DOSE/ FREQUENCY/ DURATION	FORMULATION
Amoxicillin	Oral :25 mg/kg every 12 hours for 7days	Syrup, 125 mg/5 ml
		Syrup, 250 mg/5 ml
Metronidazole	Oral: 5mg/kg twice a day for 4 days maximum	Suspension, 40mg/ml
Ampicillin	IV or IM: 50 mg/kg every 6 hours for 2 days	Vial of 500 mg mixed with 2.1 ml sterile water to give 500 mg /2.5 ml
Benzylpenicillin	IV or IM: 50,000 units/kg body weight every 6 hours for 5 days	IV: vial of 600 mg mixed with 9.6 ml sterile water to give 1,000,000 IU/10 ml
		IM: vial of 600 mg mixed with 1.6 ml sterile water to give 1,000,000 IU/2 ml

WEIGHT in Kg	AMPICILLINE (50mg/Kg/dose)	GENTAMYCIN (5-7.5 mg/Kg/day)	CHLORAMPHENICOL (25/Kg/dose)	CEFTRIAXONE (50mg/kg/ dose)
	4 times/day for 2 days	Once per day for 2 days.	3 times/day	2times per day
	Vial of 500mg/2.5ml	10 mg/ml ampoule	1000mg/10ml	1000mg/10ml ampoule
<5	1ml	2.5 ml	1 ml	2 ml
5-10	2 ml	5 ml	2 ml	4 ml
10-20	4 ml	10 ml	4 ml	8 ml
20-35	6ml	15 ml	6 ml	12 ml
>35	8 ml	20 ml	10 ml	20 ml

2.11 Routine Medicines

- Give routine medicines according to routine medicine table.
- With the exception of Amoxicillin, the other medicines/vaccine are given when the below mentioned conditions are fulfilled.

Routine medicines

	Direct admission to in-patient (Stabilization center)	Direct admission to out-patient (OTP)
Amoxicillin	- Every day total 5-7 days - For 5 days if IV ampicillin was initially given for 2 days	- 1 dose at admission + give treatment for 7 days at home
Measles (from 9 months old)	- 1 vaccine at admission, if not vaccinated - 1 vaccine at discharge	1 vaccine on the 4 th week (4 th visit) if not vaccinated
Iron	- given two days after entering transition phase, if transition is with F-100. Not to be given if the child is on RUTF.	No - iron is already in all RUTF
Deworming	- 1 dose at the start of Rehabilitation Phase	1 dose on the 2 nd week (2 nd visit)

2.12 Management of cholera/Acute watery Diarrhea in severe acute malnutrition

Key Messages:

- All patients with SAM and suspected cholera must be treated at a Cholera Treatment Centre (CTC) as rehydration should be addressed before nutrition care and treatment is initiated.
- Nutritional status of patients with cholera should be assessed as management differs, if the patient has SAM.
- Patients with SAM have altered physiology so they must be rehydrated slowly. IV fluids should only be used for SAM patients in shock because of the high risk of fluid overload and heart failure.
- Children with SAM and cholera must be treated for dehydration using low-osmolarity Oral Rehydration Salt (ORS). **Do not use ReSoMal.**
- During rehydration, closely monitor signs of fluid overload.
- Patients with SAM and cholera should be treated with the same therapeutic feeds, following the feeding protocol for patients with SAM and medical complications.
- As soon as the patient has recovered from cholera/AWD nutritional status should be re-assessed and the child referred to the SC.
- Breastfed infants should continue with breastfeeding as it the safest source of nutrition.

Principles of Management:

Diagnosis:

- A diagnosis of cholera/AWD is considered if:
 - There is evidence of high output diarrhea (one stool an hour).
 - Diarrhea appears pale and straw in color.
 - Diarrhea may be accompanied by vomiting and nausea.
 - A patient's family members have been diagnosed with or have been suspected of having cholera/AWD.
- A diagnosis of SAM
 - There is evidence of high output diarrhea (one stool an hour).
 - Is there bilateral pitting edema?
 - Is MUAC <11.5cm?
 - Is WFH <-3 z-score?
- In infants 0-6 months check:
 - Is there bilateral pitting edema?
 - Is WFL <-3 z-score?

For a patient with SAM and diarrhea, do a rapid diagnostic test (Crystal VC Dipstick), a screening test for cholera/AWD, if available. Collect stool samples for confirmatory diagnostic testing.

Note: Diagnosis of SAM in patients with cholera/AWD can be difficult as dehydration can cause loss of body weight and affect the MUAC and WFH/WFL measurement. Weight and MUAC must be re-assessed after rehydration and at discharge from the CTC to confirm the nutritional status and refer for appropriate nutrition care and treatment.

- Diagnosis of dehydration in a patient with SAM and cholera/AWD is considered if:
 - There is a clear history of a recent change in the patient's appearance.
 - The eyes are sunken since the start of diarrhea or vomiting (history confirmed by mother or caretaker).
- Diagnosis of shock in a patient with SAM should be considered if the patient shows signs of
 - Weak, or absent radial or femoral pulse,
 - cool or cold hands and feet or low or unrecordable blood pressure,
 - if there is loss of consciousness

Management

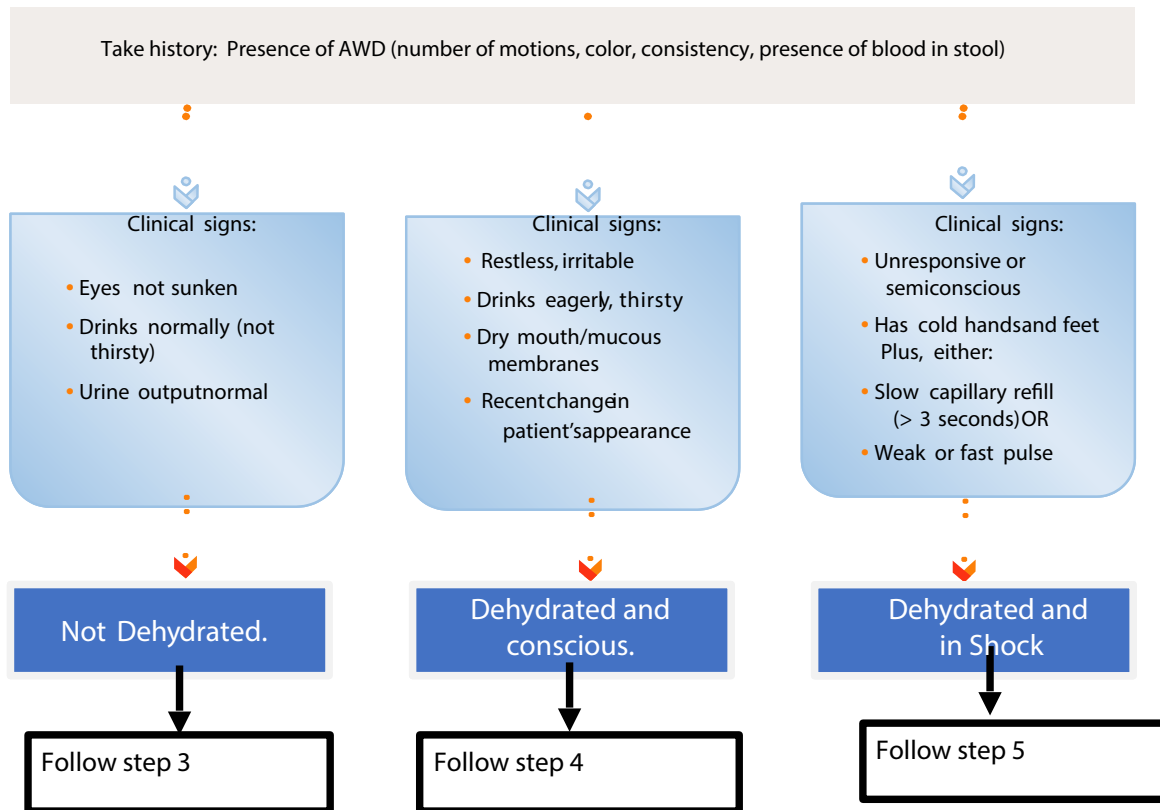
- Cholera/AWD results in extensive loss of fluid and electrolytes and can kill rapidly so rehydration should be addressed before nutrition care and treatment initiated. Do not keep patients with cholera/AWD in OTP or SC, immediately refer them to a CTC for rehydration and to avoid cross infection.
- Management depends on the dehydration status of the patient. See steps 1 to 7 below for details.
- Oral rehydration with low osmolarity ORS should be used. ReSoMal should not be used to rehydrate patients with SAM and cholera/AWD.
- Patients with SAM and cholera/AWD, who present with dehydration but are not in shock, should be rehydrated slowly using ORS.
- Because of the high risk of fluid overload and heart failure, IV hydration should be avoided in children with SAM and cholera/AWD unless if the patient is in shock.
- Therapeutic foods already contain adequate zinc, therefore children with SAM and AWD receiving F-75, F-100 or RUTF should not receive additional zinc supplements.
- Breastfed children should continue to breastfeed.

STEPS: Management of cholera/AWD with SAM

STEP 1: Determine nutritional status

- Does the patient have SAM?
- If no, use the Standard Rehydration Procedures for cholera/AWD and refer to the cholera treatment clinical guidelines
- If yes, follow step 2 (assess for dehydration and shock in the SAM patient)

STEP 2: Assess dehydration and shock in patients with SAM



STEP 3: Treatment for non-dehydrated patients with SAM and cholera/AWD

- Continue breastfeeding and age-appropriate food.
 - Administer ORS to replace ongoing losses:
 - If < 2 years old, 30-50 ml per loose stool
 - If > 2 years old, 50-100ml per loose stool
- As soon as the patient is stable, refer to the SC for the management of SAM

STEP 4: Treatment for dehydrated patients with SAM and cholera/AWD - CONSCIOUS and able to drink.

- 5ml/kg of ORS every 30 minutes for the first 2 hours
- 5-10 ml/kg per hour of ORS, alternating with F-75, for a maximum of 10 hours or until the fluid deficit is corrected
- Adjust ORS intake during rehydration phase to compensate for on-going fluid loss

- in high-output stooling
- After rehydration give:
 - If <2 years and wasted, 50-100 ml of ORS orally after each watery stool.
 - If > 2 years and wasted, 100-200ml of ORS orally after each loose stool.
 - If the child has bilateral pitting edema, give 30 ml of ORS orally per each loose stool.
- If the patient cannot drink adequately or is unable to drink, administer ORS via NGT.

STEP 5: Treatment for dehydrated patients with SAM and cholera - in shock

- If the patient has the following signs of shock:
 - Unresponsive or semi-conscious.
 - Absent or weak pulse.
 - Cold hands and feet.
- Give IV treatment as follows:
 - Give IV Ringer lactate with 5% dextrose.
 - 15ml/kg/h for the first hour then reassess, if there is improvement (decrease in respiratory and pulse rates), same amount repeated for another one hour.
 - After 2 hours of IV fluids, give 10ml/kg per hour of ORS orally or via NGT until the deficit is corrected or until the patient is fully rehydrated.
 - Adjust IV flow rate during the rehydration phase to compensate for ongoing fluid loss in high-output stooling.
 - Check every 10 minutes for heavy or labored breathing.
 - In case of presence of one or more signs of fluid overload or cardiac failure (heavy, labored breathing, engorged jugular vein pressure or increased edema) then stop the IV and consult a physician.

STEP 6: Ongoing monitoring

Continue to check the patient's status. Re-assess the following after 1 hour:

- If the breathing status worsens, then stop IV infusion.
- If you do not see improvement, consider septic shock.
- If you do see improvement continue the same amount of IV fluid for the next one hour

STEP 7: Rehydration complete

- Rehydration is complete when:
 - Patient is no longer thirsty.
 - Urine production has normalized.
 - Other signs of dehydration have resolved.
- Once hydration is re-established, measure MUAC. If MUAC is still less than 11.5 cm, continue with treatment for non-dehydrated children with SAM.
- Initiate feeding and treat medical complications such as hypothermia and/or hypoglycemia.

3. Feeding

3.1 Children 6 - 59 months with SAM

3.2 Stabilization phase

- Feed with F-75 according to the F-75 reference card,

3.3 F-75 Reference Card

For children of different weights, NO oedema or with mild or moderate oedema (0 + ++).					
Child weight (kg)	Volume of F-75 per feed (ml) ^a			Daily total (130 ml/kg)	80% of daily total ^a minimum)
	Every 2 hours ^b (12 feeds)	Every 3 hours ^c (8 feeds)	Every 4 hours (6 feeds)		
2.0	20	30	45	260	210
2.2	25	35	50	286	230
2.4	25	40	55	312	250
2.6	30	45	55	338	265
2.8	30	45	60	364	290
3.0	35	50	65	390	310
3.2	35	55	70	416	335
3.4	35	55	75	442	355
3.6	40	60	80	468	375
3.8	40	60	85	494	395
4.0	45	65	90	520	415
4.2	45	70	90	546	435
4.4	50	70	95	572	460
4.6	50	75	100	598	480
4.8	55	80	105	624	500
5.0	55	80	110	650	520
5.2	55	85	115	676	540
5.4	60	90	120	702	560
5.6	60	90	125	728	580
5.8	65	95	130	754	605
6.0	65	100	130	780	625
6.2	70	100	135	806	645
6.4	70	105	140	832	665
6.6	75	110	145	858	685
6.8	75	110	150	884	705
7.0	75	115	155	910	730
7.2	80	120	160	936	750
7.4	80	120	160	962	770

7.6	85	125	165	988	790
7.8	85	130	170	1014	810
8.0	90	130	175	1040	830
8.2	90	135	180	1066	855
8.4	90	140	185	1092	875
8.6	95	140	190	1118	895
8.8	95	145	195	1144	915
9.0	100	145	200	1170	935
9.2	100	150	200	1196	960
9.4	105	155	205	1222	980
9.6	105	155	210	1248	1000
9.8	110	160	215	1274	1020
10.0	110	160	220	1300	1040
10.2	110	165	220	1326	1060
10.4	115	170	225	1352	1080
10.6	115	175	230	1378	1100
10.8	115	175	235	1404	1125
11.0	120	180	240	1430	1145
11.2	120	180	245	1456	1165
11.4	125	185	245	1482	1185
11.6	125	190	250	1508	1205
11.8	130	190	255	1534	1225
12.0	130	195	260	1560	1250
12.2	130	200	265	1586	1270
12.4	135	200	270	1612	1290
12.6	135	205	275	1638	1310
12.8	140	210	275	1664	1330
13.0	140	210	280	1690	1350
13.2	145	215	285	1716	1375
13.4	145	220	290	1742	1395
13.6	145	220	295	1768	1415
13.8	150	225	300	1794	1435
14.0	150	230	305	1820	1455
14.2	155	230	310	1846	1475
14.4	155	235	310	1872	1500
14.6	160	235	315	1898	1520
14.8	160	240	320	1924	1540
15.0	165	245	325	1950	1560

^aVolumes in these columns are rounded to the nearest 5 ml.

^bFeed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds.^cAfter a day on 3-hourly feeds: If no vomiting, less diarrhea, and finishing most feeds, change to 4-hourly feeds

**** For weight above 10.0 kgs use by adding the volume for two different weight that sums up to the desired weight (eg:- 11kg then the volume for 9 kg plus the volume for 2 kg.)

F-75 reference chart (edema +++)

Weight with +++ oedema (kg)	Volume of F-75 per feed (ml) ^a			Daily total (100 ml/kg)	80% of daily total ^a (minimum)
	Every 2 hours ^b (12 feeds)	Every 3 hours ^c (8 feeds)	Every 4 hours (6 feeds)		
3.0	25	40	50	300	240
3.2	25	40	55	320	255
3.4	30	45	60	340	270
3.6	30	45	60	360	290
3.8	30	50	65	380	305
4.0	35	50	65	400	320
4.2	35	55	70	420	335
4.4	35	55	75	440	350
4.6	40	60	75	460	370
4.8	40	60	80	480	385
5.0	40	65	85	500	400
5.2	45	65	85	520	415
5.4	45	70	90	540	430
5.6	45	70	95	560	450
5.8	50	75	95	580	465
6.0	50	75	100	600	480
6.2	50	80	105	620	495
6.4	55	80	105	640	510
6.6	55	85	110	660	530
6.8	55	85	115	680	545
7.0	60	90	115	700	560
7.2	60	90	120	720	575
7.4	60	95	125	740	590
7.6	65	95	125	760	610
7.8	65	100	130	780	625
8.0	65	100	135	800	640
8.2	70	105	135	820	655
8.4	70	105	140	840	670
8.6	70	110	145	860	690
8.8	75	110	145	880	705

9.0	75	115	150	900	720
9.2	75	115	155	920	735
9.4	80	120	155	940	750
9.6	80	120	160	960	770
9.8	80	125	165	980	785
10.0	85	125	165	1000	800
10.2	85	130	170	1020	815
10.4	85	130	175	1040	830
10.6	90	135	175	1060	850
10.8	90	135	180	1080	865
11.0	90	140	185	1100	880
11.2	95	140	185	1120	895
11.4	95	145	190	1140	910
11.6	95	145	195	1160	930
11.8	100	150	195	1180	945
12.0	100	150	200	1200	960
12.2	100	155	205	1220	975
12.4	105	155	205	1240	990
12.6	105	160	210	1260	1010
12.8	105	160	215	1280	1025
13.0	110	165	215	1300	1040
13.2	110	165	220	1320	1055
13.4	110	170	225	1340	1070
13.6	115	170	225	1360	1090
13.8	115	175	230	1380	1105
14.0	115	175	235	1400	1120
14.2	120	180	235	1420	1135
14.4	120	180	240	1440	1150
14.6	120	185	245	1460	1170
14.8	125	185	245	1480	1185
15.0	125	190	250	1500	1200

^aVolumes in these columns are rounded to the nearest 5 ml. ^bFeed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhoea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds. ^cAfter a day on

3-hourly feeds: If no vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.

3.4 Transition Phase

- **Criteria to transfer the child from Phase 1 to transition phase:**
 - Return of appetite (i.e., easily finishes all F-75 milk.) and
 - Subsiding bilateral pitting
 - No IV line, No NGT and
 - Medical complications are improving

Note: children with +++ edema should wait in stabilization phase at least until their edema has reduced to ++ edema. These children are particularly vulnerable

- **Treatment of Medical Complications:**
Continue treating medical complications

Routine Medicines and Antibiotics:

Continue routine medicines

- **Feeding**

There are two feeding options:

1. Give RUTF
 - Introduce RUTF gradually alongside F-75.
 - Some children may initially refuse the RUTF; continue to offer RUTF at every feed until they begin to eat the prescribed amounts
 - When the patient is taking entire amount of the daily prescribed amount of RUTF, he/she should be referred to OTP and continue treatment at home. Use RUTF reference table for transition phase to determine the amount of RUTF.
2. Give F-100
 - Can be used for transition for special cases where RUTF is not available or for those who cannot tolerate RUTF (unacceptable after performing acceptance test).
 - The same amount as the last F-75 feed you gave in Stabilization phase, if the child can't take RUTF.

First 48 hours (2 days)	•Give F-100 every 4 hours in the same amounts that were given the F-75. Do not increase the volume for 2 days.
Day 3	•Add 10 ml at each meal until the child finishes his meal. If the child does not finish a meal, offer the same amount for the next meal; if he/she finishes then, further increase the next meal by 10 ml.
Following days	•Continue until the child leaves a bit of most of his meals (usually, when the volume reached around 30 ml / kg per meal).
If the child is being breastfed	•Encourage mothers to breastfeed between F-100 rations.

3.5 Quantities of RUTF in transition Reference card

Child's weight	Daily weight of RUTF (g)	Number of RUTF sachets per day (if one sachet = 92g).
3	83	1
3.2	88	1
3.4	94	1
3.6	99	1.2
3.8	105	1.2
4.9	135	1.5
4.2	116	1.5
4.4	121	1.5
4.6	127	1.5
4.8	132	1.5
5	138	1.5
5.2	144	1.5
5.4	149	1.75
5.6	155	1.75
5.8	160	1.75
6	166	1.75
6.2	171	2
6.4	177	2
6.6	182	2
6.8	188	2
7	193	2.2
7.2	199	2.2
7.4	204	2.2
7.6	210	2.5
7.8	215	2.5
8	221	2.5
8.2	226	2.5
8.4	232	2.5
8.6	237	2.75
8.8	243	2.75
9	248	2.75
9.2	254	2.75
9.4	259	3
9.6	265	3
9.8	270	3
10	276	3

3.6 F-100 Reference Card:

Range of Volumes for Free-Feeding with F-100

Child weight (kg)	Range of volumes per 4-hourly feed of F-100 (6 feeds daily)		Range of daily volumes of F-100	
	Minimum (ml)	Maximum (ml) ^a	Minimum (150 ml/kg/day)	Maximum (220 ml/kg/day)
2.0	50	75	300	440
2.2	55	80	330	484
2.4	60	90	360	528
2.6	65	95	390	572
2.8	70	105	420	616
3.0	75	110	450	660
3.2	80	115	480	704
3.4	85	125	510	748
3.6	90	130	540	792
3.8	95	140	570	836
4.0	100	145	600	880
4.2	105	155	630	924
4.4	110	160	660	968
4.6	115	170	690	1012
4.8	120	175	720	1056
5.0	125	185	750	1100
5.2	130	190	780	1144
5.4	135	200	810	1188
5.6	140	205	840	1232
5.8	145	215	870	1276
6.0	150	220	900	1320
6.2	155	230	930	1364
6.4	160	235	960	1408
6.6	165	240	990	1452
6.8	170	250	1020	1496
7.0	175	255	1050	1540
7.2	180	265	1080	1588
7.4	185	270	1110	1628
7.6	190	280	1140	1672
7.8	195	285	1170	1716
8.0	200	295	1200	1760
8.2	205	300	1230	1804
8.4	210	310	1260	1848
8.6	215	315	1290	1892
8.8	220	325	1320	1936
9.0	225	330	1350	1980
9.2	230	335	1380	2024
9.4	235	345	1410	2068
9.6	240	350	1440	2112
9.8	245	360	1470	2156
10.0	250	365	1500	2200

^a Volumes per feed are rounded to the nearest 5 ml.

3.7 Transfer back to Stabilization Phase

➤ Criteria to Move Back from the Transition Phase to the Stabilization Phase

- The patient should be moved back to the stabilization phase if there is:
- Weight gain of more than 10 g/kg/day in association with an increase in respiratory rate (indicative of excess fluid retention)
- Increasing or developing edema
- A rapid increase in the size of the liver
- Any sign of fluid overload
- Tense abdominal distension
- A complication that necessitates an IV infusion
- A need for feeding by NGT
- Significant refeeding diarrhea leading to weight loss

NOTE: It is common for patients to have some change in stool frequency when their diet changes. This does not need to be treated unless there is weight loss. Having several loose stools without weight loss is not a criterion for moving back to the stabilization phase

3.8 Rehabilitation Phase

Transfer from Transition Phase to Rehabilitation Phase:

➤ Criteria to Move from the Transition Phase to Rehabilitation in the OTP

- A good appetite: Passes the appetite test and takes entire amount of the daily RUTF ration.
- Edema reduced to moderate (++) or mild (+). If wasting with bilateral pitting edema, edema should completely disappear.
- Medical complications are resolving.
- Clinically well and alert.

➤ Criteria to Move from the Transition Phase to the Rehabilitation Phase in SC (for the Very Few Exceptions Who Cannot Transition to RUTF)

- A good appetite: Takes all the F-100 prescribed for the transition phase (150 kcal/kg/day).
- Edema reduced to moderate (++) or mild (+). If wasting with bilateral pitting edema, edema should completely disappear.
- Medical complications are resolving.
- Clinically well and alert

Routine Medicines & Antibiotics

- Continue routine medicines as in Stabilization phase (if not completed)
- Deworm the child

Deworming dose and schedule

	Give a single dose if child is ≥ 2 years and didn't get within the previous 6 months			
Age	Mebendazole 500 mg tablet, or 5 tablets of 100 mg	Mebendazole Syrup, 100mg/5ml	Albendazole 400mg tablet	Albendazole Syrup, 100mg/5ml
2 - 5 years	1 tablet (500mg)	5 tsp (25ml)	1 tablet	4 tsp (20ml)

- **Give Iron**

- Add 1 crushed tablet of ferrous sulphate (200 mg) to each 2 to 2.4 liters of F100. For lesser volumes: 1000 to 1200 ml of F100, dilute one tab of ferrous sulphate (200 mg) in 4 ml of the solution. For 500 ml to 600 ml of F100, add 1ml of the solution
- Don't give iron to a child who is taking RUTF.

Weight of Child	Dose of Iron Syrup: Ferrous Fumarate 100mg per 5ml (20mg elemental iron per ml)
3 up to 6 kg	0.5 ml
6 up to 10 kg	0.75 ml
10 kg to 15 kg	1 ml

- **Give measles Vaccine on discharge**

- All children who were not vaccinated should get measles vaccine at admission and discharge.
- The discharge dose is given if the child is not transferred to OTP.
- If child is transferred to OTP, the discharge dose is given at 4th week at OTP.

Feeding

There are two feeding options for Phase 2:

1. If the child has been on RUTF during transition, continue RUTF.

Use RUTF reference table for Rehabilitation phase to determine the amount of RUTF.

3.9 Reference Chart: RUTF reference table for Rehabilitation

Amount of RUTF to Give (92 g Sachet Containing 500 Kcal)			
Weight (Kg)	Sachets per Day	75% of Daily Ration	Sachets per Week
3.5 - 3.9	1 ½	1 ¼	11
4.0 - 5.4	2	1 ½	14
5.5 - 6.9	2 ½	2	18
7.0 - 8.4	3	2 ½	21
8.5 - 9.4	3 ½	2 ¾	25
9.5 - 10.4	4	3	28
10.5 - 11.9	4 ½	3 ½	32
≥ 12	5	4	35

2. If the child has been on F-100 during transition:

- Preferably use RUTF as above or
- Continue with F-100 if the child refuses RUTF. Use F 100 reference table for phase 2 to determine the amount of F 100.

Transfer back from Rehabilitation phase to Stabilization Phase:

Transfer a child back to Stabilization Phase from Rehabilitation phase if:

- Develops any signs of a complication
- Develops or increases edema.
- Develops re feeding diarrhea, which is sufficient enough to bring weight loss.
- Loses weight for 2 consecutive weighing
- Has static weight for 3 consecutive weighing
- Fulfills any of the criteria of "failure to respond to treatment"

3.10 Discharge criteria for Children 6 – 59 months with SAM

Children age 6-59 months and who will complete their Rehabilitation phase treatments as inpatient should be discharged from Stabilization Center if they fulfill the following criteria:

Discharged after Full Recovery (CURED) in SC:	
Note: The same anthropometric indicator that is used to identify and confirm SAM on admission should be used to determine recovery and discharge from treatment.	
A. If admitted with bilateral pitting edema, discharge cured when:	
<ul style="list-style-type: none"> ➤ No bilateral pitting edema for 2 consecutive visits ➤ AND MUAC \geq 12.5 cm or WFH/WFL \geq -2 z-score ➤ AND Clinically well and alert 	
B. If admitted with MUAC, discharge cured when:	
<ul style="list-style-type: none"> ➤ MUAC \geq 12.5 cm ➤ AND No bilateral pitting edema ➤ AND Clinically well and alert 	
C. If admitted based on WFH/WFL, discharge cured when:	
<ul style="list-style-type: none"> ➤ WFH/WFL \geq -2 z-score ➤ AND No bilateral pitting edema ➤ AND Clinically well and alert 	

Note: Transfer from in-patient care to OTP is not considered as a discharge rather it is a transfer out to OTP

All children with SAM should be discharged to supplementary feeding program (SFP) for follow up where this is available.

Management of infants less than 6 months with SAM

3.11 Infants below six months with possibility of breast feeding

- These children should always be treated in an in-patient unit and should not be admitted to outpatient treatment. RUTF is not suitable for infants.
- The whole objective of treatment of these patients is to return them to full exclusive breast feeding.
- The main admission criterion is failure of effective breast feeding and the main discharge criterion is gaining weight on breast milk alone.

3.12 Stabilization Phase – Transition – Rehabilitation Phase 2

Treatment of complications

The treatment of complication is similar to children 6 -59 months

Feeding

For breast feed infants, there is no as such a separate phase. The main aim is to secure breast feeding. There is no need to start with F-75 and then switch to F-100 diluted unless the infant has edema. For infants with edema, feed with F-75 according to reference chart.

The objective is to supplement the child's breastfeeding with therapeutic milk while stimulating breast milk production.

- The infant should be breastfed as frequently as possible. Breastfeed every 3 hours for at least 20 minutes (more if the child cries or demands more).
- Between 30 minutes and 1 hour after a normal breastfeeding session, give maintenance amounts of therapeutic milk.
- Give F-100-Diluted to breastfed infants without bilateral pitting edema.
- F-100-Diluted is prepared by adding 30% water to dilute full strength F-100.
- Give F-75 to infants with bilateral pitting edema and change to F-100-Diluted when the edema is resolved.
- Never give full strength F-100 to infants 0-6 months old.
- Quantities of F-100-Diluted or F-75 to Give the Breastfed Infant
- Give F-100-Diluted or F-75 every 3 hours (8 feeds per day).
- Use the reference tables for amounts of F-100-Diluted or F-75 to give to infant.
- Use the **supplementary suckling technique**. The quantity of F-100-Diluted or F-75 should not be increased as the child starts to gain weight

Supplementary Suckling Technique (SST)

Use the SST to re-establish or commence breastfeeding, and to provide maintenance amounts of F-100-Diluted to severely malnourished infants. The technique entails having the infant suckle the breast while also taking supplementary F-100-Diluted through a fine tube that runs alongside the nipple. The infant is nourished by the supplementary F-100-Diluted through a fine tube that runs alongside the nipple. The infant is nourished by the supplementary F-100-Diluted and the suckling stimulates the breast to produce more milk. Follow the steps below:

The caregiver holds a cup of F-100-Diluted or F-75

- One end of an NGT (size n° 8) is put in the cup and the other end of the tube is placed on the breast, at the nipple.
- The infant is offered the breast, ensuring proper attachment.
- The cup should be held 5–10 cm below the level of the nipple for easy suckling. If the child has a strong suckle, the cup can be lowered to up to 30 cm below nipple-level.

After SST feeding is completed, the tube is flushed through with clean water using a syringe. It is then spun (twirled) rapidly to remove the water in the lumen of the tube by centrifugal force. If possible, the tube is then exposed to direct sunlight to kill bacteria.

Breast-feed every 3 hours for at least 20 minutes, more often if the child cries or seems to want more. Young infants should be nursed in a separate space from the older malnourished children. This can be a "breast-feeding corner"

Routine Medicines:

- Ferrous sulphate: when the child suckles well and starts to grow.

Dose of Iron

Weight of Child	Dose of Iron Syrup: Ferrous Fumarate 100mg per 5ml (20mg elemental iron per ml)
3–6 kg	0.5 ml
6–10 kg	0.75 ml
10–15 kg	1 ml

**Note that the above dosages are very small (less than 1/4 teaspoon) and need to be measured with a syringe.*

- Give antibiotics according to the antibiotic reference card.

3.13 Infants below six months with no prospect of breastfeeding

- This treatment applies to infants less than 6 months with SAM and for whom there is no prospect of being breast-fed (e.g. no mother, no wet-nurse).

Stabilization Phase

Treatment of complications

- The treatment of complication is similar to children 6 – 59 months

Feeding

- **Infants without edema:** Feed with diluted F 100 according to F-100 diluted reference chart below.
- **Infants with edema:** Feed with F 75 according to reference chart.

Routine medicines

- Ferrous sulphate: when the child suckles well and starts to grow.
- Give antibiotics according to the antibiotic reference card

3.14 Reference Card - Diluted F-100 Therapeutic milk feeds in Stabilization phase, for infants less than 6 months who are breastfed or not breastfed

Weight of Infant (kg)	Total feed volume in 24h (ml)	Volume of feed according to feed frequency (per 24 hours)					
		12 feeds (ml)	10 feeds (ml)	8 feeds (ml)	7 feeds (ml)	6 feeds (ml)	5 feeds (ml)
1.2	240	20	20	25	30	35	45
1.3	240	20	25	30	30	35	45
1.4	240	20	25	30	35	40	45
1.5	240	20	25	30	35	40	45
1.6	300	25	30	35	40	45	60
1.7	300	25	30	35	40	45	60
1.8	300	25	30	40	40	45	60
1.9	300	25	30	40	45	50	60
2.0	300	25	35	40	45	50	65
2.1	300	25	35	40	45	50	65
2.2	360	30	35	45	50	60	70
2.3	360	30	35	45	50	60	70
2.4	360	30	35	45	50	60	70
2.5	420	35	40	50	55	65	75
2.6	420	35	40	50	55	65	75
2.7	420	35	40	50	55	65	75
2.8	420	35	40	55	60	65	75
2.9	420	35	40	55	60	70	80
3.0	480	40	45	60	65	75	85
3.1	480	40	45	60	65	75	85
3.2	480	40	45	60	65	75	85
3.3	480	40	45	60	65	75	85
3.4	480	40	45	60	65	75	85
3.5	480	40	50	65	70	80	95
3.6	480	40	50	65	70	80	95
3.7	480	40	50	65	70	80	95
3.8	480	40	50	65	70	80	95
3.9	480	40	50	65	70	80	95
4.0	540	45	55	70	75	85	110
4.1	540	45	55	70	75	85	110
4.2	540	45	55	70	75	85	110
4.3	540	45	55	70	75	85	110
4.4	540	45	55	70	75	85	110
4.5	600	50	60	80	90	95	120
4.6	600	50	60	80	90	95	120
4.7	600	50	60	80	90	95	120
4.8	600	50	60	80	90	95	120
4.9	600	50	60	80	90	95	120
5.0	720	60	70	90	100	110	130
5.1	720	60	70	90	100	110	130
5.2	720	60	70	90	100	110	130
5.3	720	60	70	90	100	110	130
5.4	720	60	70	90	100	110	130
5.5	720	60	80	100	110	120	150
5.6	720	60	80	100	110	120	150
5.7	720	60	80	100	110	120	150
5.8	720	60	80	100	110	120	150
5.9	720	60	80	100	110	120	150
6.0	840	70	85	110	120	140	175

Note: when the weight is between the given weight on this table give the feed for the lowest weight (eg: - 5.75 kg then give the feed volume for 5.7Kg)

3.15 Transition Phase and Rehabilitation Phase

A. Feeding

- In transition and Rehabilitation phase use Diluted F100 (RUTF is not suitable for these children) at inpatient facility.
- During Transition Phase, the amount of diluted F100 in Stabilization phase is increased by one third.
- During Rehabilitation phase, give diluted F 100 according to.

B. Routine Medicines

Continue routine medicines as in Stabilization phase

3.16 Reference card: Diluted F-100 Therapeutic milk feeds in transition for infants less than 6 months who are not breastfed

Weight of Infant (kg)	Total feed volume in 24h (ml)	Volume of feed according to feed frequency (per 24 hours)					
		12 feeds (ml)	10 feeds (ml)	8 feeds (ml)	7 feeds (ml)	6 feeds (ml)	5 feeds (ml)
1.2	300	25	25	35	40	45	60
1.3	300	25	30	40	40	45	60
1.4	300	25	30	40	45	50	60
1.5	300	25	30	40	45	50	60
1.6	360	30	40	45	50	60	70
1.7	360	30	40	45	50	60	70
1.8	360	30	40	50	50	60	80
1.9	360	30	40	50	60	65	80
2.0	360	30	45	50	60	65	85
2.1	360	30	45	50	60	65	85
2.2	480	40	45	60	65	80	90
2.3	480	40	45	60	65	80	90
2.4	480	40	45	60	65	80	90
2.5	540	45	50	65	70	85	100
2.6	540	45	50	65	70	85	100
2.7	540	45	50	65	70	85	100
2.8	540	45	50	70	80	90	105
2.9	540	45	50	70	80	90	105
3.0	600	50	60	80	85	100	110
3.1	600	50	60	80	85	100	110
3.2	600	50	60	80	85	100	110
3.3	600	50	60	80	85	100	110
3.4	600	50	60	80	85	100	110
3.5	600	50	65	85	90	105	125
3.6	600	50	65	85	90	105	125
3.7	600	50	65	85	90	105	125
3.8	600	50	65	85	90	105	125
3.9	600	50	65	85	90	105	125

4.0	720	60	70	90	100	110	145
4.1	720	60	70	90	100	110	145
4.2	720	60	70	90	100	110	145
4.3	720	60	70	90	100	110	145
4.4	720	60	70	90	100	110	145
4.5	780	65	80	105	125	125	155
4.6	780	65	80	105	125	125	155
4.7	780	65	80	105	125	125	155
4.8	780	65	80	105	125	125	155
4.9	780	65	80	105	125	125	155
5.0	960	80	90	115	130	145	170
5.1	960	80	90	115	130	145	170
5.2	960	80	90	115	130	145	170
5.3	960	80	90	115	130	145	170
5.4	960	80	90	115	130	145	170
5.5	960	80	105	130	145	155	195
5.6	960	80	105	130	145	155	195
5.7	960	80	105	130	145	155	195
5.8	960	80	105	130	145	155	195
5.9	960	80	105	130	145	155	195
6.0	1080	90	110	145	155	180	225

How total feed volumes are calculated for initial feeding

The lower the weight of the infant, the higher the volume of feed per kg required. As a guide, the average volume of feed /kg, according to weight in the transition phase is:

Weight	Feed ml/kg/24 hours*
1.2 – 1.5 kg	225 ml/kg
1.6 – 1.9 kg	205 ml/kg
2.0 – 3.0 kg	200 ml/kg
3.1 – 3.5 kg	180 ml/kg
3.6 – 6.0 kg	170 ml/kg

*average rounded to nearest 5ml. Refer to the large table to manage individual infants.

3.17 Reference card: Diluted F-100 Therapeutic milk feeds in the Recovery Phase for infants less than 6 months who are not breastfed

Weight of Infant (kg)	Total feed volume in 24h (ml)	Volume of feed according to feed frequency (per 24 hours)					
		12 feeds (ml)	10 feeds (ml)	8 feeds (ml)	7 feeds (ml)	6 feeds (ml)	5 feeds (ml)
1.2	360	30	30	40	50	55	70
1.3	360	30	40	50	50	55	70
1.4	360	30	40	50	55	65	70
1.5	420	35	40	50	60	70	80
1.6	480	40	50	55	65	70	90
1.7	480	40	50	55	65	70	90
1.8	480	40	50	65	65	70	95
1.9	480	40	50	65	70	80	95
2.0	480	40	55	65	70	80	105
2.1	480	40	55	65	70	80	105
2.2	600	50	55	70	80	95	110
2.3	600	50	55	70	80	95	110
2.4	600	50	55	70	80	95	110
2.5	660	55	65	80	90	105	120
2.6	660	55	65	80	90	105	120
2.7	660	55	65	80	90	105	120
2.8	660	55	65	90	95	110	130
2.9	660	55	65	90	95	110	130
3.0	780	65	70	95	105	120	135
3.1	780	65	70	95	105	120	135
3.2	780	65	70	95	105	120	135
3.3	780	65	70	95	105	120	135
3.4	780	65	70	95	105	120	135
3.5	780	65	80	105	110	130	150
3.6	780	65	80	105	110	130	150
3.7	780	65	80	105	110	130	150
3.8	780	65	80	105	110	130	150
3.9	780	65	80	105	110	130	150
4.0	840	70	90	110	120	135	175
4.1	840	70	90	110	120	135	175
4.2	840	70	90	110	120	135	175
4.3	840	70	90	110	120	135	175
4.4	840	70	90	110	120	135	175
4.5	960	80	95	130	145	150	190
4.6	960	80	95	130	145	150	190
4.7	960	80	95	130	145	150	190
4.8	960	80	95	130	145	150	190
4.9	960	80	95	130	145	150	190
5.0	1140	95	110	145	160	175	210
5.1	1140	95	110	145	160	175	210
5.2	1140	95	110	145	160	175	210
5.3	1140	95	110	145	160	175	210
5.4	1140	95	110	145	160	175	210
5.5	1140	95	130	160	175	190	240
5.6	1140	95	130	160	175	190	240
5.7	1140	95	130	160	175	190	240
5.8	1140	95	130	160	175	190	240
5.9	1140	95	130	160	175	190	240
6.0	1320	110	135	175	190	225	280

How total feed volumes are calculated for catch-up/rehabilitation (non-breastfed infants)

The lower the weight of the infant, the higher the volume of feed per kg required. As a guide, the average volume of feed /kg, according to weight in the catch-up phase is:

Weight	Feed ml/kg/24 hours*
1.2 – 1.9 kg	270 ml/kg
2.0 – 3.0 kg	270 ml/kg
3.1 – 3.5 kg	240 ml/kg
3.6 – 6.0 kg	230 ml/kg

*average rounded to nearest 5ml. Refer to the large table to manage individual infants.

3.18 Discharge criteria for infants below 6 months with SAM

Children age less than 6 months should be discharged from in-patient care if they fulfill the following criteria:

Discharge Criteria for the Breastfed Infants 0-6 Months
➤ Successful re-lactation and effective breastfeeding has been achieved.
➤ Gaining weight on exclusive breastfeeding (i.e. more than 5 g/kg/day for at least 3 successive days).
➤ No bilateral pitting edema
➤ Infant has been checked for immunization and other routine interventions.
➤ Mothers or caregivers have been linked with community-based follow-up and support.

Note: There are no anthropometric criteria for discharge of the breast-fed infant who is gaining weight.

Discharge Criteria for the Non-Breastfed Infants 0-6 Months
➤ Infant is feeding well with the replacement feed.
➤ Has adequate weight gain and has a WFL \geq -2 z-score.
➤ No bilateral pitting edema
➤ Infant has been checked for immunization and other routine interventions.
➤ Mothers or caregivers have been linked with community-based follow-up and support.

3.19 Monthly Statistics Report for SAM and MAM

Monthly statistics report for SAM

Region:

Zone:

Woreda:

Type of facility:

Name of Facility: _____

Report Prepared by: _____

Month/Year of Reporting: _____

SEVERE ACUTE MALNUTRITION (SAM)

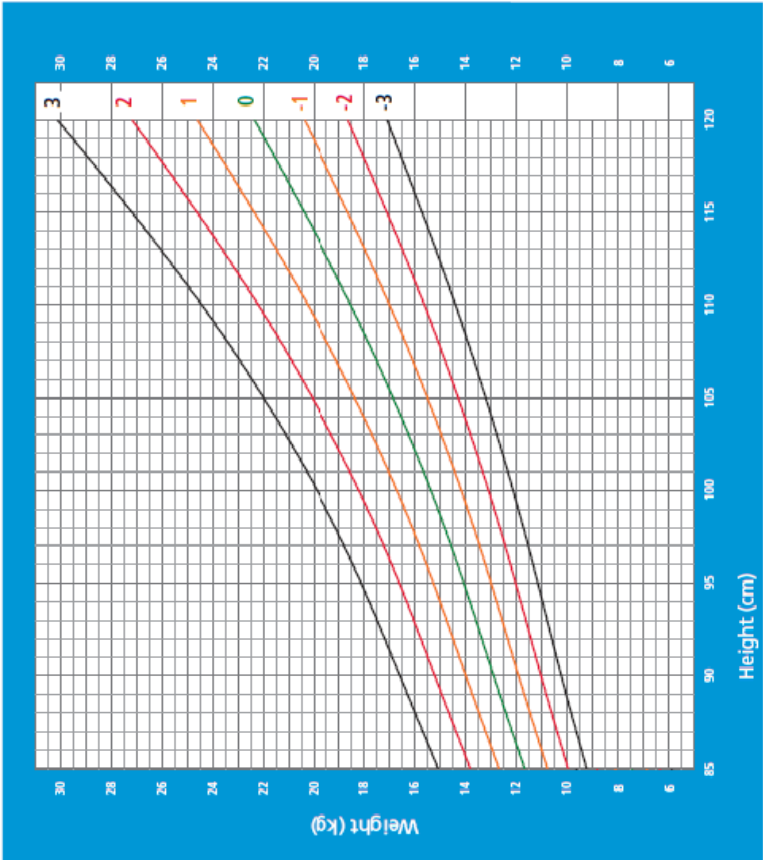
Service	Age	New Admissions			Re-admissions		Transfer-in from OTP, SC or other facility (G)	Entry [(H)+F+G]	Cured (I)	Died (J)	Defaulter (K)	Non-responder (L)	Stabilized to OTP (M)	Total discharged [(N)+H+K+L]	Transfer-out to SC or other facility (O)	Exit [(P)+N+O+M](Q)=A+H+P)	Total at the end of the month
		Total at the beginning of the month (A)	MUAC or WFL/WFL (B)	Bilateral pitting Oedema (C)	Released defaulters (D)	Returned defaulters (E)											
Outpatient therapeutic program (OTP)	6-59 months																
	Total																
Stabilization center (SC)	< 6 months																
	6-59 months																
	Total																
													Target (Sphere standards) >75% <10% <15% %				

Weight for Height Chart in Z-Scores (WHO Growth Chart)



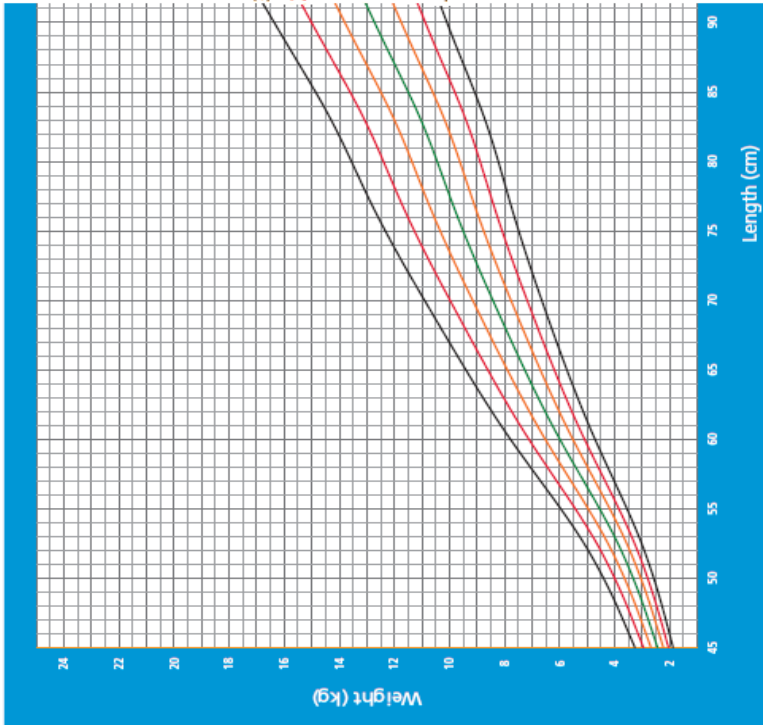
Weight-for-height BOYS

2 to 5 years (z-scores)



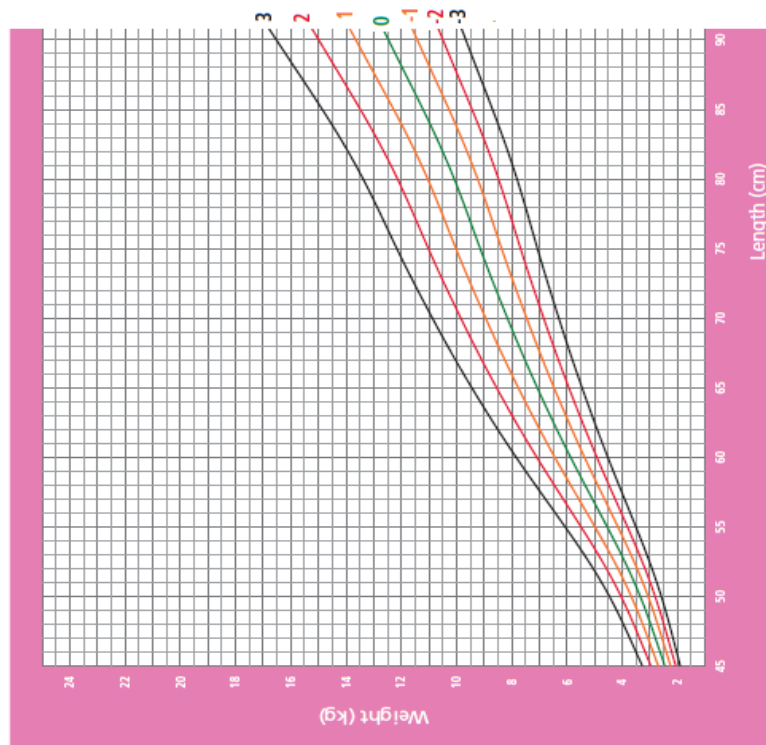
Weight-for-length BOYS

Birth to 2 years (z-scores)



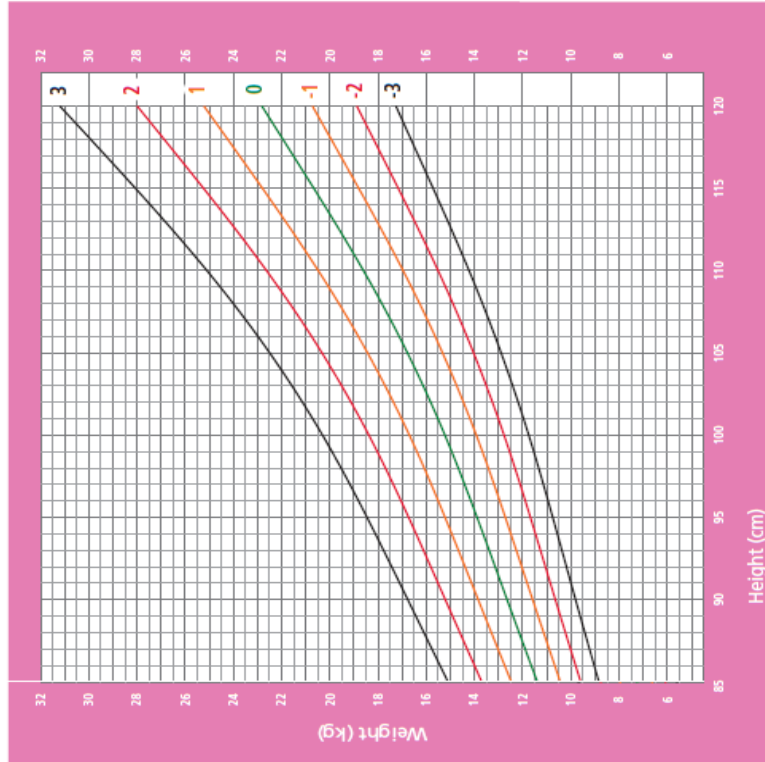
Weight-for-length GIRLS

Birth to 2 years (z-scores)



Weight-for-height GIRLS

2 to 5 years (z-scores)



WHO Child Growth Standards

