STANDARD TREATMENT WORKFLOW (STW)

Severe Acute Malnutrition with Complications

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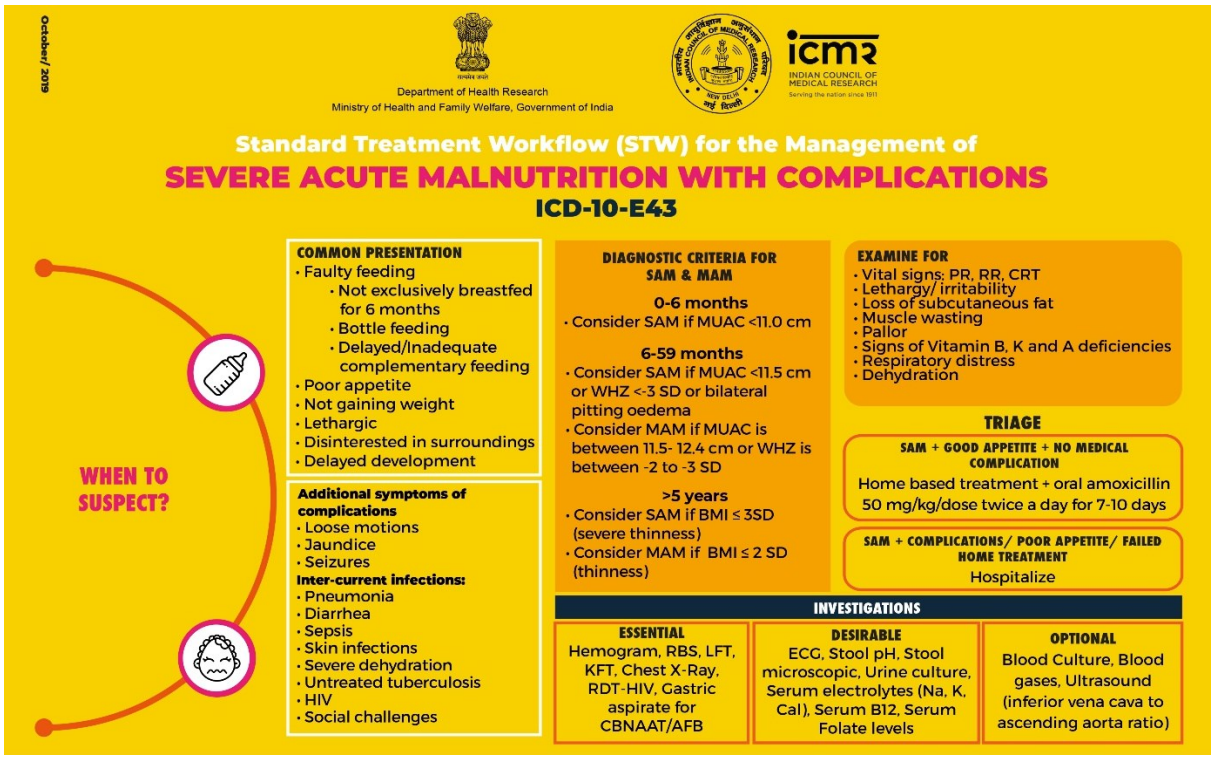

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Standard Treatment Workflow (STW) for the Management of

SEVERE ACUTE MALNUTRITION WITH COMPLICATIONS

ICD-10-E43

WHEN TO SUSPECT?

COMMON PRESENTATION
- Faulty feeding
  - Not exclusively breastfed for 6 months
  - Bottle feeding
  - Delayed/Inadequate complementary feeding
- Poor appetite
- Not gaining weight
- Lethargic
- Disinterested in surroundings
- Delayed development

Additional symptoms of complications
- Loose motions
- Jaundice
- Seizures

Inter-current infections:
- Pneumonia
- Diarrhea
- Sepsis
- Skin infections
- Severe dehydration
- Untreated tuberculosis
- HIV
- Social challenges

DIAGNOSTIC CRITERIA FOR SAM & MAM

0-6 months
- Consider SAM if MUAC <11.0 cm

6-59 months
- Consider SAM if MUAC <11.5 cm or WHZ <-3 SD or bilateral pitting oedema
- Consider MAM if MUAC is between 11.5- 12.4 cm or WHZ is between -2 to -3 SD

>5 years
- Consider SAM if BMI ≤ 3SD (severe thinness)
- Consider MAM if BMI ≤ 2 SD (thinness)

EXAMINE FOR
- Vital signs: PR, RR, CRT
- Lethargy/ irritability
- Loss of subcutaneous fat
- Muscle wasting
- Pallor
- Signs of Vitamin B, K and A deficiencies
- Respiratory distress
- Dehydration

TRIAGE

SAM + GOOD APPETITE + NO MEDICAL COMPLICATION
Home based treatment + oral amoxicillin 50 mg/kg/dose twice a day for 7-10 days

SAM + COMPLICATIONS/ POOR APPETITE/ FAILED HOME TREATMENT
Hospitalize

INVESTIGATIONS

ESSENTIAL	DESIRABLE	OPTIONAL
Hemogram, RBS, LFT, KFT, Chest X-Ray, RDT-HIV, Gastric aspirate for CBNAAT/AFB	ECG, Stool pH, Stool microscopic, Urine culture, Serum electrolytes (Na, K, Cal), Serum B12, Serum Folate levels	Blood Culture, Blood gases, Ultrasound (inferior vena cava to ascending aorta ratio)

TREATMENT

A. STABILISATION PHASE: Monitor vitals, urine frequency, stool/vomitus volumes
INTAKE: IVF (DNS) 4 ml/kg/hr for 2-3 days with early/concomitant initiation of oral feeds (130 ml/kg/day)

CONDITION	PLACE OF TREATMENT	TREATMENT
INFECTIONS (empirically)	Facilities for supportive monitoring, investigations and IVF	• Inj., Ampicillin – 50 mg/kg/iv or im X 6hrly Plus inj. Gentamicin- 7.5 mg/kg iv or im, OD for 7-10 days • If no response within 48 hrs or critically ill give inj. Ceftriaxone 50 mg/kg, OD for 7-10 days • When accepting orally, switch to oral amoxicillin 40-45 mg/kg/dose twice a day for 7 days • If prolonged diarrhea (>7 days): Metronidazole 10-12 mg/kg, 8 hrly for 7-10 days (inj.ectable or oral)
HYPOGLYCEMIA (RBS <54mg/dL)	Facilities for supportive monitoring, investigations and IVF	Conscious: 50 ml of 10% Dextrose or 1 tsf sugar in 3 tsf water orally
	Transfer to intensive care facility to manage shock	Unconscious: 5 ml/kg of 10% Dextrose IV NO IMPROVEMENT treat as shock
HYPOTHERMIA (<35.5 °C or 96 °F)	Facilities for supportive monitoring, investigations and IVF. Plus warmer	Skin to skin care with mother (infants) Warming under warmer, incandescent lamp or warmer
	Intensive care facility to manage shock	NO IMPROVEMENT treat as shock
SEVERE DEHYDRATION	Facilities for supportive monitoring, investigations and IVF	Conscious: 50 ml of 10% Dextrose or 1 tsf sugar in 3 tsf water orally
	Transfer to intensive care facility to manage shock	Unconscious: 5 ml/kg of 10% Dextrose IV NO IMPROVEMENT treat as shock
ELECTROLYTE IMBALANCE (emperically)	Facilities for supportive monitoring, investigations and IVF	Potassium: 3-4 mmol/kg/D, orally for 2 wks Magnesium: 0.4-0.6 mmol/kg/D1 IM followed by oral for 2 wks
ANEMIA	Facilities for supportive monitoring, investigations and IVF	Whole blood /PRBC transfusion (10 ml/kg over 3 hrs) : if Hb <4 gm/dL or Hb 4-6.5 gm/dL with respiratory distress with close monitoring and hy. Furosemide (1 mg/kg) at start of transfusion

B. REHABILITATION PHASE (Transfer to NRC when child meets criteria for discharge* & accepts home available foods)

FEEDING
Place of treatment: Facilities for supportive monitoring

Treatment:
a. 6 months and above: F75 at least 5 times/day gradually increasing to give 150-200 kCal/kg/day (usually 2-3 days) then switch to F100 for next 5-7days with introduction of home available food
b. Below 6 months: same as above with return to exclusive breastfeeding where ever possible

ELECTROLYTES
Place of treatment: Facilities for supportive monitoring

Treatment:
a. Zinc: 2 mg/kg/day X 2wks orally
b. Copper: 0.3 mg/kg/day X 2 wks orally
c. Iron: 3 mg/kg/day once weight gain has started orally for 6 weeks

VITAMINS
Place of treatment: Nutritional rehabilitation center (NRC)

Treatment:
a. Vitamin A: >12 months- 2 lac iu, 6-12 months: 1 lac iu, <6 months: 0.5 lac iu if food not fortified
b. Vitamin D, A, B Complex: RDA

***CRITERIA FOR DISCHARGE FROM HOSPITAL TO OUTPATIENT CARE:** Clinically well and alert; no or resolving medical complications; no or resolving oedema (if present); satisfactory oral intake has a good appetite (taking at least 75% of target calorie intake of 150- 200 kcal/kg/day & 0-6 months old have weight gain of 3-5 gm/kg/day for three days).

PRIMARY FAILURE OF TREATMENT: (a.) Failure to regain appetite by day 4 **(b.)** Failure to lose oedema by day 4 **(c.)** Oedema still present Day 10 **(d.)** Failure to gain at least 5g/Kg/day for 3 consecutive days on catchup diet. *Look for unrecognized congenital abnormality, inborn errors of metabolism, immune deficiency, other major organ dysfunction, and malignancy.*

APPETITE TEST: Passed if, a child not fed for last 2 hours, when fed by mother in a quiet place consumes in 1 hour:
- 7-12 months: of ≥ 25 ml/kg of F100
- > 12 months: of locally prepared ready to eat food **

AMOUNT TO BE GIVEN: 15 gms or more if < 4 kg; 25 gms or more if 4 – 7 kg; 35 gms or more if 7-10 kg
**[Mixture of Roasted groundnut 1000 gm , Milk powder 1200 gms, Sugar 1120 gms, Coconut oil 600 gms. To be kept refrigerated for not more than 1 week.]

HOW TO PREPARE F75 AND F100	F75	F100
FRESH WHOLE CREAM MILK	300 ml	900 ml
SUGAR	100 gm	75 gm
VEGETABLE OIL	20 ml	20 ml
ADD WATER TO GET TOTAL VOLUME OF	1 Litre	1 Litre

ABBREVIATIONS

WHZ: Weight for Height Z-score
SAM: Severe Acute Malnutrition
MUAC: Mid-upper Arm Circumference
SD: Standard Deviation (from median)
MAM: Moderate Acute Malnutrition
BMI: Body Mass Index

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

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This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.