health
Department:
Health
PROVINCE OF KWAZULU-NATAL

STANDARD OPERATING PROCEDURES ON THE **PREVENTION** AND **MANAGEMENT** OF **MALNUTRITION** IN KZN **APRIL** 2017

PHC Supervisors

District Nutrition Co-ordinators

DCST Paediatric Nurse

DCST PHC

Medical Managers

Nursing Managers

Nurses

Nutrition Advisors

Nutritionists

Hospital Dietitians

Social Workers

Psychologists

FIGHTING DISEASE, FIGHTING POVERTY, GIVING HOPE

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INTRODUCTION

This guideline adopts a simplified approach of Assess, Classify and Treat (ACT). In essence every individual receiving health care in the Department should have a nutritional status documented and were required appropriate nutrition therapy provided. The guidelines cover all age categories, and both under and over nutrition. Whilst the guidelines provide recommendations for the management of malnutrition, and in all cases includes those patients diagnosed with TB and HIV, it is worth noting that disease specific cases may present at health facility that require additional assessment and clinical judgement.

The format will be that of a Standard Operating Procedure (SOP), each numbered as per the contents page for ease of reference. The appendixes applicable to each SOP will follow the SOP for quick reference. See template below.

SOP 1: TITLE	**The title of the SOP for ease of reference from the contents page**
PURPOSE	The purpose of each SOP will be outlined to define why it exists and the target audience for implementation.
ASSESSMENT	This section will cover how to assess nutritional status in the category that the SOP is relevant to.
CLASSIFICATION	This section will cover how to classify nutritional status in the category that the SOP is relevant to.
TREATMENT / REFERRAL PROCESS	This section will cover how to treat the nutritional diagnosis following classification.
KEY MESSAGES	This section will cover key health education messages that should be covered with the patients or caregivers of patients that are referred to the in the SOP.
RELATED DOCUMENTS	The related documents section is for documents such as, policies, guidelines and other reading material the professional nurse can refer to for more background information in each section.
RELATED INDICATORS	The nutrition indicators applicable for different sections are included for the Nutrition Advisor to understand and monitor them and the Nutrition Advisor monthly monitoring tool is attached at the end of this document.

Assessment and Classification of Nutritional Status

Assessment is a systemic process of obtaining, verifying and interpreting data in order to make decisions about the nature and cause of nutrition-related problems. Proper assessment is an essential component of NACS. It serves as a basis for the other components therefore health workers must be skilled in nutrition assessment as a basis for providing appropriate, nutrition counselling and support. In children under 5, Growth Monitoring and Promotion is the critical process to ensure the optimum health of the child. Nutrition Assessment and Classification should be done for every child under 5 at every visit and recorded in the Road to Health Booklet (RtHB). The ABCDF (below) is the basis of nutrition assessment in every patient that visits a health facility.

Table 1: Summary on Nutrition Assessment per age category

	Anthropometry	Biochemical	Clinical Assessment	Dietary	Food Security
< 29 days	Weight / Length Growth assessment	Assess as is relevant to the medical diagnosis of the patient Laboratory values to interpret for nutritional assessment. Mainly used in hospitalised patients or HIV/TB/Diabetic chronic patients where blood tests are requested as part of routine care and treatment.	Check for oedema	Infant Feeding Assessment	Assess mothers dietary intake, and nutritional status
1 – 6 months	Weight / Length Nutritional Status Classification Growth Assessment		Check for oedema Dermatosis Eye Signs of Vitamin A deficiency	Infant feeding Assessment	Assess mothers dietary intake, and nutritional status
6 – 59 months	Weight / Height / MUAC Nutritional Status Classification Growth Assessment		Check for oedema Dermatosis Eye Signs of Vitamin A deficiency	Complementary feeding assessment in children < 2 years Dietary history from caregiver	Assess food security with caregiver
5 - 19 years	Weight / Height / MUAC / BMI for age Weight loss		Visible Wasting	Dietary history from caregiver & patient	Assess food security with caregiver
>19 years	Weight / Height / MUAC / BMI / Weight Loss Skinfold thickness in obese clients		Visible Wasting	Diet history from patient	Assess food security
Pregnant & Lactating Women	Weight / MUAC BMI if less than 20 weeks pregnant or > 6 weeks lactating Weight Loss		Visible Wasting	Diet history from patient	Assess food security

ANTHROPOMETRY

Weight, Height and MUAC are the standard anthropometric measurements to assess nutritional status. It is thus critical that all PHC are equipped with the requirements to take these measurements and the relevant staff trained.

BIOCHEMICAL

Review results of biochemical (blood and urine) tests as requested specific to the medical diagnosis. Important test to note that will impact on infant feeding are PCR of the infant and viral load of the mother.

CLINICAL

Clinical Assessment: Grades of Bilateral Pitting Oedema (Grading will affect feed volumes). Other Clinical Symptoms of Wasting / Malnutrition: Emaciated and weak appearance Thin, dry skin, Redundant skin folds caused by loss of subcutaneous fat, Thin, sparse hair that is easily plucked, Dry, atrophic, peeling skin with confluent areas of hyperkeratosis and hyperpigmentation

DIETARY

The diet history taken should be specific to the age of the patient, and should allow the health worker to determine if the nutrient intake is adequate to meet the dietary needs of the patient. This is professionally done by a dietitian at level 2 health care for disease specific nutrition support.

FOOD SECURITY

Assess food access and financial support

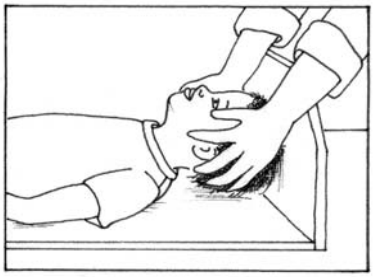
Assess	Classify	Manage
Financial Support: Does anyone in the household have regular income?	If yes, then classify as financially supported. If no, then classify as no financial support	If no financial support and food security is placing the patient at risk of developing malnutrition, refer to social worker for DSD / SASSA referral. Appendix:
Food Access: a) Have been days in the past few weeks when there has not been enough food available to feed the child? For example	If the answer to a and b is yes, then classify as serious food shortage. If the answer to a is yes and b is no, classify as food shortage.	For children under 18, pregnant and lactating women, and the elderly refer urgently to DSD / SASSA if Social Worker not available.

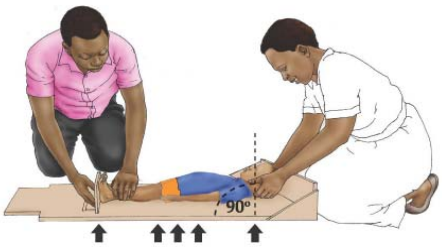
when you have had to skip meals yourself or for the child or give smaller amounts? b) If yes, then ask, does this happen every week?		

SOP 1: TITLE	**GROWTH MONITORING AND PROMOTION IN CHILDREN UNDER 5 YEARS OF AGE**
1.2 PURPOSE	To promote the early identification of malnutrition in children under 5, regular growth monitoring and promotion at every health facility visit
1.3 ASSESSMENT	**ASSESS** • Ask for the Child's RtHB to check for completeness • If the Child under 5 years does not have a RtHB, follow clinic procedures for a child who does not have RtHB • Follow standard GMP procedures to take the weight, height and MUAC of the child. • Record in the RtHB and plot the graphs. • Explain to the mother the interpretation of the graphs.
	ASSESS – Taking weight in children under 2 • Mother / caregiver to remove excess clothing, wet nappies from child to obtain an accurate weight • Use a paediatric scale. • If not possible do tarred weighing (weighing mother & child together) • Explain the weighing procedure to the mother. • The mother will remove her shoes and step on the scale to be weighed alone first. • The mother's weight appears on the display. Mother to remain standing on the scale. • Re-set the reading to zero. • Then give the mother her child to hold. • The child's weight will appear on the scale. • Record the child's weight.
	ASSESS – Taking weight in Children over 2 • Mother / caregiver to remove shoes, excess clothing from child to obtain an accurate weight • The child to step on the scale alone and stand very still. • The child must stand in the middle of the scale, feet slightly apart and remain still until the weight appears on the display. • Record the child's weight in the RtHB for children 2 – 5 years. Record the weight in clinic card for 2 – 18 years. • Child over 2 should remove heavy clothing and shoes before standing on scale. Encourage the client to wear similar clothes to all visits.
	Length and Height Child is less than 2 years old, measure the child's **length** lying down (recumbent) using a length

board /mat which should be placed on a flat, stable surface such as a table.

- Place the length board on a table or the ground.
- Remove the child's footwear and any head covering.
- Explain to the mother that she will need to assist with placing the baby on the length board and then help to hold the baby's head in place while you take the measurement.
- Place the child on her or his back in the middle of the board with arms at the sides and feet at right angles to the board. The heels, knees, buttocks, back of the head and shoulders should touch the board. Gently hold the child's head so eyes point straight up. Gently bring the top of the head to the fixed end of the board.
- Gently hold the child's ankles or knees. With the other hand, slide the moveable foot piece until both heels touch it.
- Immediately remove the child's feet from the foot piece to prevent kicking, holding the footboard securely with the other hand.
- Read the measurement aloud to the nearest 0.1 cm.
- Ask another health worker to repeat the measurement for verification and record.

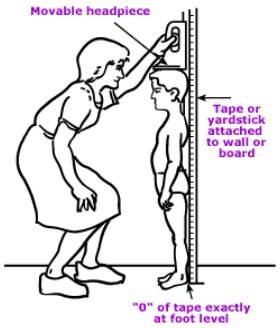


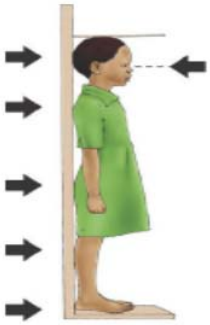


Measuring standing height

Child is aged 2 years or older, measure standing **height** unless the child is unable to stand. Use a height board mounted at a right angle between a level floor and against a straight, vertical surface such as a wall or pillar.

- Use a height board or fasten a non-stretchable tape measure securely to a wall. Place the height board vertically on a flat surface. Remove the client's shoes and headwear.
- Make sure the shoulder blades, buttocks and heels touch the vertical surface of the board. The feet should be flat on the floor, close together and touching the back of the board. The legs and back should be straight, with arms at the sides. The shoulders should be relaxed and touching the board. The head need not touch the board.
- Ask the client to stand straight and tall and look straight ahead.
- Gently hold the client's head to look straight ahead.
- Bring the moveable head piece to rest firmly on the top of the client's head.
- Ask another health worker or mother to hold the client's feet.
- Read the measurement aloud to the nearest 0.1 cm.





- If necessary, push gently on the tummy to help the child stand to full height.
- Still keeping the head in position use your other hand to pull down the headboard to rest firmly on top of the head and compress the hair.
- Read the measurement and record the child's height in centimetres Remember: If the child whose height you measured is less than 2 years old, add 0.7 cm to the height measure

CHECK FOR OEDEMA

Clinical Assessment: Grades of Bilateral Pitting Oedema (Grading will affect feed volumes)

Grade	Definition	
Absent or 0	No bilateral pitting oedema	
Grade +	Mild: both feet/ankles	Indication of severe acute malnutrition
Grade ++	Moderate: both feet, plus lower hands or lower arms	
Grade +++	Severe: generalized bilateral pitting oedema, including both feet, legs,	

		arms and face	

- Other Clinical Symptoms of Wasting / Malnutrition: Emaciated and weak appearanceThin, dry skin, Redundant skin folds caused by loss of subcutaneous fat, Thin, sparse hair that is easily plucked, Dry, atrophic, peeling skin with confluent areas of hyperkeratosis and hyperpigmentation

For children 0 – 5 years:
Plot the Weight for Age graph, Weight for Height graph, and Height for Age graph.
Do a Growth Assessment on the Weight for Age Graph, by reviewing the growth trend over the last 3 months.

Do a Nutritional Status Classification on all graphs.

CLASSIFICATION

CLASSIFICATION by Road to Health Booklet Charts

Weight-for-age:

- Above -
- **below -2 line** means a child is *underweight*
- **below -3** line means child is severely underweight

Length/height-for-age:

- **below -2 line** means a child is *stunted*,
- **below -3 line** means child is severely stunted
-

Weight for length / height:

- **between -2 & -3 line** means a child has *moderate acute malnutrition*
- **below -3 line** means child has *severe acute malnutrition*

- **above +2 line** means a child is overweight
- **above +3 line** means child is obese

CLASSIFICATION by MUAC

MUAC ≤ 11.5 : *Severe Acute Malnutrition*
MUAC 11.6 – 12.5 : *Moderate Acute Malnutrition*
MUAC > 12.5 : *Not acutely malnourished*

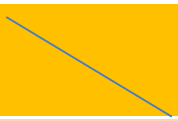
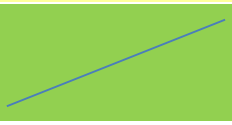
GROWTH ASSESSMENT

For all children, a growth assessment needs to be conducted to determine if the child may be at risk of developing acute malnutrition (NAM at risk). This growth assessment is done on the Weight for Age chart. The weight for age growth chart should always be

<table>
<tr><td></td><td>interpreted following the weight for height assessment and height for age assessment.

Why? A child who is overweight / obese is not growing well however does not require supplements, and thus the caregiver needs to be counselled differently than a child who is growing well.

A child who is stunting / stunted and found to be growth faltering (NAM at risk) needs to monitored very carefully and supplemented on a month to month basis to ensure the child does not become overweight / obese.

<table>
<tr><th>Weight for age Growth Curve</th><th>Assess & Classify</th></tr>
<tr><td>  </td><td>Losing weight
NAM at risk</td></tr>
<tr><td></td><td>No weight gain (stopped growing)
- NAM at risk</td></tr>
<tr><td>  </td><td>Poor weight gain (gaining weight inadequately)
NAM – at risk</td></tr>
<tr><td>  </td><td>Gaining weight well (adequately)</td></tr>
</table>
</td></tr>
<tr><td>MANAGEMENT</td><td>• For children identified with any degree of malnutrition (refer to the SOP 3: Children 6 – 59 months identified with malnutrition.
• For children who are growing well, are not acutely malnourished and not stunted, provide the key messages below.</td></tr>
<tr><td>KEY MESSAGES</td><td>• Mother / caregiver to always bring the Road to Health Booklet when visiting a health facility
• Weighing schedule: 0-2 years every month; > 2 years every 3 months;
• For children < 6 months, Refer to SOP 2: Malnutrition in Infants < 6 months old
• Review diet history of the child / adolescent. Ask caregiver on the number of meals and portion sizes eaten by the child / adolescent.
• For children 6 months - 5 years – counsel on appropriate complementary feeding and transitioning to family meals.</td></tr>
<tr><td>RELATED DOCUMENTS</td><td>Mother and Child Booklet.
Complementary Feeding Guidelines.
SOP’s in Infant and Young Child Feeding for further nutrition support as required.</td></tr>
<tr><td>RELATED DHIS INDICATORS</td><td>Child under 5 weighing rate.
Child under 2 underweight for age incidence.</td></tr>
</table>

SOP 2: TITLE	**Outpatient management of MAM & NAM at Risk in Children 6 – 59 months**
PURPOSE	To appropriately assess and classify malnutrition in children 6 – 59 months
ASSESSMENT	Refer to SOP 1: on Growth Monitoring and Promotion A detailed growth assessment from the Weight for Age chart must be done. Take diet and medical history from mother / caregiver to identify reasons for weight loss / poor weight gain or excessive weight gain.
CLASSIFICATION	Classify nutritional status of every child 1 – 59 months as described in SOP 1.
TREATMENT	

	Age 6 – 59 Months: Moderate Acute Malnutrition – Fortified Infant Cereal (IC), Lactose Free Energy Drink (LFED) & Ready to use therapeutic food (RUTF)			
	Infant Cereal (IC) **Daily**	**RUTF** **Daily**		**Monthly**
	Age 6-11 months: OSP- Infant Cereal and RUTF			
4.0 – 4.9kg 338kcal / day	50g 120kcal	3tsp(45g) 236kcal		6 x 250g boxes IC 3 x 450g RUTF
5.0 – 6.9kg 450kcal / day	50g 120kcal	4tsp(60g) 315kcal		6 x 250g box IC 4 x 450g RUTF
7.0 – 9.9kg 638kcal / day	50g 120kcal	7tsp(105g) 551kcal		6 x 250g box IC 7 x 450g RUTF
	Age 12 – 59 Months: Moderate Acute Malnutrition – Enriched Maize Meal (EMM) and RUTF, LFED			
	EMM Daily	**RUTF Daily**	**LFED Daily**	**Monthly**
4.0 – 4.9kg 338kcal / day	50g 179kcal	2tsp (30g) 156kcal		2 x 1kg pkt EMM 2 x 450g RUTF
5.0 – 6.9kg 450kcal / day	50g 179kcal	4tsp (60g) 315kcal		2 x 1kg pkt EMM 4 x 450g RUTF
7.0 – 9.9kg 638kcal/ Day	100g 358kcal	4tsp (60g) 315kcal		4 x 1kg pkt EMM 4 x 450g RUTF
10.0 – 14.9kg 938kcal / day	150g 537kcal	3tsp (75g) 394kcal		5 x 1kg pkt EMM 5 x 450g RUTF
15.0 – 19.9kg 1275kcal / day	150g 537kcal	8 tsp (120g) 630kcal		5 x 1kg pkt EMM 8 x 450g RUTF

Outpatient Management of Children 6 – 59 Months (Not Acutely Malnourished But at Risk)

	Age 6 – 59 Months: Not acutely malnourished but at risk (Not growing well) A deficit in the home diet of 50kcal is assumed. Supplement to provide additional 50kcal / kg / BW per day to prevent further growth faltering. Recommendation would be to use infant cereal independently. Add RUTF to other foods			
	Infant Cereal (IC) **Daily**	**RUTF** **Daily**		**Monthly**
	Age 6-11 months: Not acutely malnourished but at risk-Fortified Infant Cereal and RUTF			
4.0 – 4.9kg 338kcal / day	50g 120kcal	3 tsp (45g) 236kcal		6 x 250g boxes IC 3 x 450g RUTF
5.0 – 6.9kg 450kcal / day	50g 120kcal	4tsp (60g) 315kcal		6 x 250g box IC 4 x 450g RUTF
7.0 – 9.9kg 638kcal / day	50g 120kcal	7 tsp (105g) 551kcal		6 x 250g box IC 7 x 450g RUTF
	Age 12 – 59 Months: Not acutely malnourished but at risk – Enriched Maize Meal (EMM) and RUTF			
	EMM Daily	**RUTF Daily**	**LFED Daily**	**Monthly**
4.0 – 4.9kg 225kcal / day	50g 179kcal	1 tsp (15g) 79kcal		2 x 1kg pkt EMM 1 x 450g RUTF
5.0 – 6.9kg 300kcal / day	50g 179kcal	1.5tsp (22g) 116kcal		2 x 1kg pkt EMM 2 x 450g RUTF
7.0 – 9.9kg	100g	1 tsp (15g)		4 x 1kg pkt

	400kcal/ Day	358kcal	79kcal		EMM 1 x 450g RUTF
	10.0 – 14.9kg 625kcal / day	100g 358kcal	3tsp (45g) 236kcal		4 x 1kg pkt EMM 3 x 450g RUTF
	15.0 – 19.9kg 875kcal / day	150g 537kcal	4 tsp (60g) 315kcal		5 x 1kg pkt EMM 4 x 450g RUTF

KEY MESSAGES	The caregiver must bring the child monthly for follow up visits. Nutrition supplements must be provided to the child only as directed by the healthworker and not shared amongst the family. Educate the mother on the rationale behind therapeutic supplementation and that this is not a long term intervention. Explain that RUTF is a therapeutic feed specifically developed for children with malnutrition. It does not require water for preparation; however the child should drink water after consuming RUTF. For children > 6 months, wash the child's hands and face before feeding. Counsel mother on identifying danger signs as in RtHB (Vomiting, Unable to breastfeed, diarrhoea with sunken eyes or sunken fontanelle, diarrhoea with blood, chest in drawing, child < 2 years not feeding and has fever, child lethargic or unconscious, cough and breathing rate more than 50 breaths per minute). Counsel the mother on preparation of ORS at home and how to treat diarrhoea to prevent dehydration. Seek information to identify poor feeding practices or social circumstance that may have resulted in growth faltering. Refer to social worker if necessary Refer to complementary feeding guidelines as indicated in the Road to Health Booklet. Immunization, Vitamin A Prophylaxis Schedule and Deworming is up to date Ensure immunizations are caught up. Record all doses given in the RtHB.
RELATED DOCUMENTS	IMCI Nutrition Register – child who do not return for follow up must be directed to a CCG for a home visit using Appendix.
RELATED DHIS INDICATORS	Child under 5 Severe Acute Malnutrition Incidence (new cases) Child under 5 Not acutely malnourished but at risk Child under 5 food supplementation new

<table>
<tr><td>SOP 3: TITLE</td><td>Acute malnutrition in the child under 6 months of age</td></tr>
<tr><td>PURPOSE</td><td>To ensure that infants less than 6 months are accurately assessed and classified for malnutrition, and treated accordingly.</td></tr>
<tr><td>ASSESSMENT</td><td>Take the weight and length of all children less than 6 months of age as per SOP 1. Plot all charts in the Road to Health Booklet, and do a growth assessment.
Assess for oedema and clinical signs for malnutrition as per SOP 1.
Assess mother of the child as per SOP 4 below.
Feeding Assessment</td></tr>
<tr><td>CLASSIFICATION</td><td>WHZ < -3 or recent weight loss or failure to gain weight over 1 month or Oedema = Severe Acute Malnutrition

If any of the below are identified, the child may have a severe feeding difficulty.

-Structural abnormalities (e.g. cleft lip/palate, or more complex conditions affecting the face, jaw and mouth)

- Abnormalities of tone, posture and movement interfering with breastfeeding.

-Unable to support head or trunk control

-When held, infants head / arm falls to the sides

-Infant's body stiff / hard to contain or move

-Excessive jaw opening or jaw clenching

-Not willing / able to suckle at the breast or cup

-Coughing and tearing (signs of unsafe swallowing while breastfeeding)

WHZ between -2 and -3 and no clinical complication, alert and well, No IMCI danger signs = Moderate Acute Malnutrition.
If the child is not well attached to the breast, not suckling effectively or less than 8 breastfeeding in a day or receives other foods / drinks. Indicative of a moderate feeding difficulty.

<table><tr><td>Non – Breastfeeding Infant Assessment</td><td>In appropriate infant formula or feed being used.

Consuming less than 500ml of infant formula per 24 hours.
Refusing some feeds.
Receives other food / drinks in addition to BMS.</td><td>Refer to SOP for supporting the non – breastfeeding mother. Follow up in 1 week, if no progress, refer to in patient care.</td></tr></table></td></tr>
<tr><td>TREATMENT</td><td>SAM: Refer to SOP 5 Inpatient management of the child with acute malnutrition.</td></tr>
</table>

	MAM: Detailed feeding assessment to determine underlying cause of acute malnutrition. Follow up in 1 week. If non – breastfed, Refer to SOP for supporting the non – breastfeeding mother. Follow up in 1 week, if no progress, refer to in patient care. Severe Feeding Difficulty: refer for multi – disciplinary inpatient assessment & classification. Moderate Feeding Difficulty: First line counselling of mother on breastfeeding (SOP on Lactation Management and Support). Follow up in one week for progress. If no progress, refer to in – patient care.
KEY MESSAGES	• Treatment of the breastfed infant with F75 and diluted F100 during admission is not mixed feeding, and should be referred to as therapeutic management of the child. The mother needs to be consistently encouraged to feed on demand to keep up her supply so she is able to successfully rehabilitate the baby in preparation for discharge on breastmilk. • The child managed on infant formula during rehabilitation feeding, where relacation was impossible or unsuccessful should be discharged on infant formula via the dietitian, and followed up closely.
RELATED DOCUMENTS	• SOP on Lactation Management • SOP on Feeding the non – breastfed infant
RELATED DHIS INDICATORS	Child under 5 severe acute malnutrition case fatality rate

SOP 4: TITLE	**The mother of the child < 6 months with acute malnutrition**
PURPOSE	To ensure that mothers of children < 6 mothers of age are well care for, and if required receive the necessary nutrition support.
ASSESSMENT	MUAC for nutritional assessment. Check for:- Anaemia Tested for HIV (For all mothers who test HIV positive – refer to the SOP of Infant Feeding in the Context of HIV) & Tested for TB Assess for Food security, Child support grant status of child. Refer all cases of SAM admissions to the social worker for complete assessment. Check if the mother has any of the concerns below:- - The need to relactate following interruption of exclusive breastfeeding - Needs to express breastmilk and cup feed - Breast conditions: Engorgement, sore – - cracked nipples, mastitis, flat, inverted, long or large nipples, nipple pain, thrush - Perception of not having enough breastmilk. - Other concerns: mother lacks confidence; concerns about her diet; working away from her infant.

	Assess if mother is:- -Traumatised, in emotional crisis or rejecting infant -Depressed(feels alone/no social support, unsatisfied, has little decision making) -Domestic violence /abuse at home -Teenage mother with little / no social support
CLASSIFICATION	MUAC < 21cm – Severe Acute Malnutrition MUAC 21 – 23cm – Moderate Acute Malnutrition >23cm Not acutely malnourished.
TREATMENT / REFERRAL	As per SOP 9: Children, adults and adolescents with acute malnutrition Refer to social worker and psychologist if other issues.
KEY MESSAGES	Counsel the mother on healthy eating during lactation as per the Mother and Child Booklet.
RELATED DOCUMENTS	Mother and child booklet
RELATED DHIS INDICATORS	None

Age: 6-59 months (without complication) WLZ or WHZ <-3SD or MUAC <11.5 cm AND • Good appetite • Alert • No IMCI general danger signs	SAM without complications	Admitted to hospital for inpatient care. The MDT team should be made aware that this is a SAM child without complications and the patient is commenced on rehabilitation phase. Should the patient not be admitted for any reason, discharge via Dietitian for management on the Outpatient Therapeutic Programme (OTP) (Appendix 18).
Age: 6 – 59 months MUAC between 11.5cm – 12.4cm or WHZ between -3SD & -2SD	MAM	Outpatient Supplementary Programme (OSP)
Age 6 – 59 months MUAC >12.5cm WHZ between ≥2SD Assess the growth curve in the RtHB for poor weight gain, no weight gain or weight loss.	Not Acutely Malnourished but at risk for malnutrition.	Growth Monitoring and Promotion Support (GMPs)
Age 0 – 6 Months Gaining weight well Feeding well **Age 6 – 59 months** Gaining weight well >-2 SD MUAC > 12.5cm Assess the growth curve in the RtHB	Not Malnourished Growing well	Growth Monitoring and Promotion Routine (GMPr)

Complications to be assessed in a child with SAM in the SA treatment regime

If there is anthropometric confirmation of SAM, the following signs must be assessed and the presence of any indicates the urgent need for admission to hospital and intensive management as an inpatient.

- Less than 6 months old
- Anorexia (poor appetite)
- Intractable vomiting
- Convulsions
- Lethargy
- Unconsciousness
- Hypoglycaemia
- High fever (> 39oC)
- Hypothermia (< 36 oC)
- Severe dehydration
- Lower respiratory tract infection
- Persistent diarrhoea
- Respiratory distress e.g. tachypnea, chest in drawings
- Severe anaemia
- Eye signs of vitamin A deficiency
- Skin lesions
- Bleeding
- Shock
- Jaundice
- Weeping skin lesions
- Social complications impacting on care

3. INPATIENT MANAGEMENT OF SAM

SAM Patients admitted into inpatient will be of 2 categories.
SAM with complications - follow WHO ten step protocol from Step 1.
SAM with appetite and without complications - progress to rehabilitation phase.
The treatment has two phases, the stabilization phase, and the rehabilitation phase. There is gradual transition from the stabilization to rehabilitation phase. During the stabilization phase, aim is to restore the cellular function, control infection, ensure the child is kept warm, receives appropriate nutritional support (low protein, moderate calorie, trace element and appropriate mineral intake) and to detect/respond to serious complications such as low blood sugar, low temperature, poor feeding and diarrhoea. Only once the child begins to respond to this initial phase by losing oedema, developing a good appetite and becoming active should transition and rehabilitative feeding begin - usually after 3 to 7 days.

During rehabilitation phase, the child needs to rebuild body stores and wasted tissue. This phase is characterized by improving appetite and rapid weight gain. During this phase active social worker intervention should be facilitated and reestablishment of breastfeeding where possible, to ensure proper latching and feeding technique. The nutritional status of lactating mothers of all children less than 2 years should be assessed and she should be supplemented if necessary. Before discharge from inpatient care therapeutic targets must be met and appropriate follow up arranged. All healthcare workers managing the child with SAM at any point should be familiar with the referral pathway {Appendix 21}

Table 2 depicts a treatment timeline for SAM.
Table 2: Treatment timeline

Time frame for inpatient management severe acute malnutrition				
		Stablisation		
		Rehabilitation Days 1–2	Days 3–7	Weeks 2–6
1.	Hypoglycaemia	→		
2.	Hypothermia	→		
3.	Dehydration	→		
4.	Electrolytes	→		
5.	Infection	→	→	→
6.	Micronutrients	No iron	→ add iron	→
7.	Initiate	→	→	→
8.	Feeding			
9.	Catch up growth		→	→
10.	Sensory stimulation		→	→
11.	Prepare for follow up		→	→

3.1 STABILISATION PHASE

Step 1: Treat / Prevent Hypoglycaemia and Initiate "Stabilizing" Feeding

Hypoglycaemia and hypothermia usually occur together and is a sign of infection. Check for hypoglycaemia whenever hypothermia occurs. Frequent feeding is important in preventing both conditions. Coexisting hypoglycaemia and pyrexia is also an indicator of the child needing urgent medical attention

Treatment

Begin feeding immediately and do not miss feeds. Feed using a cup or spoon. Give a "stabilizing feed[2]" in a volume of 130 ml/kg/day divided into 3 hourly feeds, i.e. 16ml/kg 8 times daily. This feed will provide approximately 100kcal/kg/day of energy and between 1 - 1.5g/kg/day protein. If energy supplied is less than 100kcal/kg/day the child's body will further breakdown tissue and continue to deteriorate

- If the child has gross oedema (+++), reduce the volume to 100ml/kg/day[3]
- If danger signs, hypothermia or hypoglycaemia are present, feed a volume of 130 ml/kg/day **but** divided into 2 hourly feeds, i.e. 11 ml/kg 12 times daily, until these resolve.
- If the child is breastfed, encourage continued breastfeeding, but stabilizing feed is priority. Give stabilizing feed and breastfeed in between.

Children below 6 months should be offered F75 as therapeutic feed if full breastfeeding is not established.

- If feeds are refused/not finished (child should take at least 80% of each feed)[4] give the feeds via nasogastric (NG) tube. Prioritize oral feeding and only feed the leftover feed via NG tube. Check placement of tube before commencing feeding.
- Monitor 24 hour intake: record feed taken, leftover and estimated vomited. If feed is vomited offer the same amount to the child immediately. Monitor intake and output (i.e. vomiting, diarrhea, urine output) in Feed Chart /Fluid Balance sheets.
- Weigh children at the same time and plot the weight daily. Ensure scales are calibrated.
- The only exceptions to feeding immediately are:

- While shock is being corrected
- Surgical abdominal emergency / Ileus

Detect and Treat low blood sugar

- Test blood glucose level 3 hourly, you can stop 3hrly testing and resume routine testing when
- it is normal and stable for 24hours provided the child is not severely ill[5].

- If the blood glucose <3 mmol/L in asymptomatic child give:

- "stabilizing feed" immediately, **or**

- sugar solution, oral, 10 ml/kg **or**

- 50 ml bolus of 10% dextrose

[2] F75- is a stabilizing therapeutic feed that contains 75kcal energy and 0.9g protein per 100ml. It is low in protein, low in energy and has trace amounts of iron. A table of feed volumes - Appendix 4

[3] A table of feed volumes for gross oedema - Appendix 5

[4] A table of total volumes taken is found - Appendix 4 or 5

[5] If severely ill continue 3 hourly blood glucose testing

Check the Blood Glucose after 30 min. If the blood glucose is ≥3 mmol/l, continue normal feeds, monitor blood glucose see it remains above 3 mmol/L.

- If symptomatic or unresponsive hypoglycaemia give dextrose 10%[6], IV, 5 ml/kg of 10% glucose solution, given rapidly IV, followed by a maintenance fluid infusion containing 5-10 % glucose, e.g.½ DD, given at the maintenance rate
- Re Check the Blood Glucose after 30 min, if normal, continue feeds, monitor blood glucose see it remains above 3 mmol/L.

By keeping the child warm, feeding early and regularly, and treating infections, a low blood sugar can be avoided in most children with SAM.

If a child becomes unconscious and you are unable to check blood glucose, treat as low blood sugar while finding a way to confirm if the blood glucose is normal and exclude other causes such as meningitis.

[6] Mix 0.5ml/kg 50% Dextrose with 2ml/kg of water for injection in a syringe – give 2ml/kg of the resulting 10% dex- trose solution/ alternatively If 50% dextrose is unavailable, use 5ml/kg neonatal maintenance solution which also contains 10% dextrose.

Step 2. Treat and Prevent Hypothermia

Treat immediately if the temperature is below 35°C

- Begin feeding straight away (or start rehydration if diarrhoea with dehydration)

- Facilitate active re-warming. This involves:-

- Putting the child on the mother's bare chest (skin-skin contact) i.e. wrap mother and child in blankets – minimize clothing between the mother and child to ensure heat transfer to the child.

- Place a heater nearby.

- If no mother is present, or if mother-child heating is not possible, clothe and wrap the child, including the head with warmed blanket.

- If warmed water bottles are used due to failure of all other options **do not apply direct heat to the skin** as they may burn the child – place warmed water bottles outside of the blankets wrapping the child.

Monitor

- During reheating check temperature every 30minutes until stabilized > 36.5°C as children with SAM are also not able to prevent themselves becoming overheated (hyperthermic) which is also dangerous.

- Record temperature, pulse and respiration rates every 4 hours once established.

- To keep a child warm ensure the following
- Keep the child, and especially the head, covered at all times especially at night.
- Keep the child and clothing dry and change wet napkins regularly.
- Avoid exposure during examination or bathing
- Care for child in a warm area,(i.e. 25–30°C), away from window and avoid drafts
- Ensure regular correct feeding

Note: If a low reading thermometer is unavailable and the child's temperature is too low to regis- ter on an ordinary thermometer, assume the child has hypothermia.

Step 3. Prevent and treat dehydration

These children have poor cardiac function and are easily volume overloaded – Avoid intravenous (IV) infusions

A child with SAM and diarrhoea is at serious risk as they have poor ability to respond to bothshock and to fluid overload.

The most critical factor in managing a child with dehydration or shock is regular observation of the response to each therapeutic intervention.

Note: after treatment of shock reassess immediately, children on rehydration need 4 hourly assessments.

Anti-diarrhoeal medications are not used, i.e. kaolin and pectin, atropine and diphenoxylate, loperamide, antiemetics or pre/probiotics in the management of acute diarrhoea.

Determine if the child is in shock using table 3 and treat according to table 4.

Table 3: Recognizing shock and dehydration

Recognizing shock and dehydration	
Shock is recognized by one or more of the following:	
Compensated shock	Delayed capillary refilling time (> 3 seconds) Increased pulse rate Cool peripheries
Late (Preterminal)	Decreased level of consciousness Decreased blood pressure Decreased pulse volume
Dehydration is assessed after shock is dealt with	
Severe Dehydration	**Some Dehydration**
Eyes Sunken	Eyes Sunken
Very slow skin pinch/turgor (≥2sec)	Slow skin pinch/turgor (< 2 sec)
Drinking poorly	Drinks eagerly
	Irritable/restless
Other indicators of dehydration may be sought but are often less useful or less easily assessed e.g.: depressed fontanelle, absent tears, decreased passage of urine	

Table 4: Treating child in shock and the child not in shock for dehydration

Patient in shock	Patient not in shock
Give oxygen and treat immediately with normal saline (sodium chloride) 0.9%, IV or Ringers lactate 10ml / kg given as a bolus over 20 minutes and monitor for a response. • Reassess for presence of shock or circulatory overload. If shock has resolved proceed to manage dehydration. Monitor every 10 minutes for signs of circulation overload. • If signs of circulation overload are present – increasing liver span, rising pulse and respiratory rate, gallop rhythm, basal crepitations – stop infusion, manage appropriately. Consider need for referral for higher level of care and inotropes. • If shock has not improved or not resolved:- Repeat the fluid bolus while shock remains (providing evidence that circulatory overload is not present) until improvement is achieved, up to 3 times • After the 3 x10ml/kg boluses, i.e. total of 30 ml/kg has been given with inadequate response, a further bolus can be started and the patient should be moved to intensive care unit (ICU) for central venous pressure (CVP) monitoring and inotropic support. • Once shock has been treated and the child is stable proceed to the management of dehydration.	Check for Dehydration ***If no dehydration present*** Show the caregiver how to give ORS with a cup and spoon using frequent small sips. Encourage caregiver to give 10 ml/kg after each diarrhoeal stool until diarrhoea stops. Continue to give normal feeds and reassess for dehydration frequently. ***If dehydration (severe or some dehydration) is present*** • Give ORS for malnourished children (5ml / kg / every 15 minutes for 4 hours). Show the caregiver how to give ORS with a cup and spoon. • If child vomits wait 10 minutes and then continue to offer more slowly. • Encourage caregiver to continue feeding the child, especially breastfeeding. • Review hydration after 4 hours: general condition, capillary filling time, level of consciousness, skin turgor, sunken eyes, respiratory rate, abdomen, if passing urine and number/quality of stools • **Note:** If shock redevelops - treat as above for shock. ◦ If dehydration is improving - continue ◦ If there is no dehydration - prevent by offering 10ml/kg ORS orally after each loose stool ◦ If dehydration is not improving - consider IV fluids with great care

Only if child fails the above oral treatment for dehydration then:

- Treat with IV Darrows half strength with dextrose 5% starting at a rate according to weight.

Table 5: IV fluid rates according to weight

2-10 kg 11-20 kg 21-50 kg	10 ml/kg/hr 8 ml/kg/hr 6 ml/kg/hr
Fluid	½ Darrows / 5% DW
In addition to **ORAL FEEDS** at normal feed volumes and times	

If a child has very severe anaemia (<4g/dL) or severe anaemia (Hb 4-6g/dL) with respiratory distress:-

- Give packed cells 5ml/kg IV over 3 hours.
- Give furosemide 1mg/kg IV at the start and end of the transfusion.
- Keep a close eye for signs of fluid overload: further tachycardia, gallop rhythym, breathing
- even faster, puffy eyelids, enlarging liver size.

Encourage oral feeds to begin once level of consciousness is normal and child is not in severe distress.

Table 6: Response to assessment of child on IV treatment

Finding on assessment	Response
Shock	Treat for shock
No improvement or more dehydrated	Increase drip rate by 25%
Improving clinical condition	Continue current drip rate
No visible dehydration	Decrease drip rate by 30% until low enough to change to oral prevention
Repeat cycle 4 hourly until drip rate is low enough with no visible dehydration.	

Step 4: Correct Electrolyte Imbalance

All severely malnourished children have excess body sodium even though plasma sodium may be low (giving high sodium loads can kill). Deficiencies of potassium and magnesium are also present and may take at least 2 weeks to correct. Oedema is partly due to these imbalances. Do not treat oedema with a diuretic.

Electrolytes

- If the child's feed is made without CMVC mix then provide potassium chloride solution, 25 - 50mg / kg / dose, oral 8 hourly until oedema subsides. If < 10kg: 250mg. If > 10kg: 500mg

  Trace Element Mix Oral, daily:

  If < 10kg: 2.5ml
  If > 10kg: 5ml

Serum Potassium does not indicate total body potassium status. If the child is receiving RTU F75 or F100, or if the feed prepared contains CMVC, then additional potassium and magnesium is not required.

If the serum potassium is low, it is recommended to give potassium replacement.

Oral: if potassium is between 2.0 and 2.5mmol/L

IV: if potassium is less than 2.0mmol/L

STEP 5: Treat / Prevent Infection

In SAM, the usual signs of infection such as fever are often absent and infections are often hid- den. Early treatment of bacterial infections with effective antimicrobials improves the nutritional response to feeding, prevents septic shock and reduces mortality. Antibiotic use should be guided by local microbiological flora. The paediatric EDL recommends:-

START ANTIBIOTICS ON THE FIRST DAY AT ADMISSION.

1. **If the child has no danger signs, is alert and feeding well:**

- Amoxicillin, oral, 30mg/kg/dose 8 hourly for 5 days.

2. **All other children:**

- Ampicillin, IV/IM, 50mg/kg 6 hourly for 7 days. Avoid IV infusions if possible. Use heparin lock to avoid fluid overload because of poor cardiac reserves.

PLUS

- Gentamicin,IV, 6mg/kg once daily for 7 days.

As soon as there is a response and patient can tolerate oral medication change ampicillin to amoxicillin and continue with gentamicin:

- Amoxicillin, oral 30mg/kg/dose 8 hourly for a further 5 days.

3. **If the child is severely ill or fails to improve after 48 hours:**

- Third generation cephalosporin e.g. Ceftriaxone, IV/IM, 50mg/kg/dose once daily.

- If meningitis is suspected: 80mg / kg/ dose

****DO NOT USE CEFTRIAXONE IN NEONATES*

4. **If child does not improve after 5 days, or deteriorates, refer to higher level of care.**

INTESTINAL WORM INFESTATION

Treat after the stabilization phase:

Children 1 – 2 years of age:

Mebendazole, oral 100mg 12 hourly for 3 days.

Children > 2 years:

Mebendazole, oral 500mg as a single dose immediately.

HIV & TB

Actively investigate for HIV and TB as soon as possible.

TB is difficult to diagnose and confirm. Ask about contacts, symptoms. Do Tuberculin Skin Test (TST) and chest x ray. If TST negative, repeat just before discharge. If TB is clinically likely, pre- sumptive TB treatment is often reasonable, but once begun should be completed.

Counsel mother / caregiver and test for HIV. Once the child enters the rehabilitative phase, com- mence ART as per provincial guidelines.

HIV infected children with SAM should be closely monitored in the first 6-8 weeks of initiation on ART.

Step 6: Correct Micronutrient Deficiencies

This step aims to correct micronutrient deficiencies.

Micronutrients

Vitamin A

- Give single age specific high dose Vitamin A capsule if the child has severe measles and / or clinical signs of Vitamin A deficiency.
- For children without the above complications and who are receiving F75, F100 or RUTF, no high dose Vitamin A supplementation is required.

Folic Acid

Only give stat dose of 5mg on day 1. Do not give daily dose of folic acid and MVT if CMV mix is given or if a child is on F75, F100 or RUTF.

Iron

- Only give Iron after the stabilization phase is completed. Iron supplementation is only given once the child is gaining weight and oedema has resolved – usually after 7 days. Give,

2mg/kg elemental iron per dose 8 hourly with meals when the child is on F100. Stop iron when child is taking full prescribed amount of RUTF.

- In children that are HIV positive, check iron status using Ferritin test before supplementing.

Zinc

- Children with SAM who have diarrhoea should receive zinc in the same way as children with are not SAM. However, children with SAM receiving F75, F100 (RTU or prepared with CMVC) or RUTF should not be given additional zinc supplements even if they have diarrhoea, as these therapeutic foods contain the recommended amounts of zinc for diarrhoea.

Step 7: Start Cautious Feeding

In the stabilisation phase a cautious approach is required because of the child's fragile physiologi- cal state and reduced homeostatic capacity. Feeding should be started as soon as possible after admission and should be designed to provide just sufficient energy and protein to maintain basic physiological processes. The essential features of feeding in the stabilisation phase are:-

- Small, frequent feeds of low osmolarity and low lactose
- Oral or nasogastric feeds (never parenteral)
- Energy: 100kcal / kg / day
- Protein: 1.0 - 1.5g/kg/day
- Feed Volume: 130ml / kg / day fluid when there is no oedema or mild (+, ++oedema)
- (100ml /kg /day) if the child has gross oedema (+++)
- Continued breastfeeding for breastfed children.

The suggested F75 starter feeding schedules are designed to meet this need. Give from a cup. Very weak children may be fed from a spoon, dropper or syringe. Volume and feeding frequency is gradually increased.

Table 7: F75 Starter feeding schedule

Days	Frequency	Vol / kg / Feed	Vol / kg / day
1 – 2	2 hourly	11ml	130ml
3 – 5	3 hourly	16ml	130ml
6 – 7	4 hourly	22ml	130ml

- For children with good appetite and no oedema, this schedule can be completed in 2 – 3 days.
- Appendix 4 shows the volume / feed already calculated according to body weight. Appendix 5 shows the feed volumes for children with severe oedema.

- Use the admission weight to calculate how much to give, even if the child loses or gains weight in this phase.

- If after allowing for any vomiting, intake does not reach (105ml/kg/day) despite frequent feeds, coaxing and re-offering, give the remaining feed by NG tube.

MONITOR AND NOTE:-

- Amounts offered and left over

- Vomiting

- Frequency of watery stool

- Daily body weight

During the stabilisation phase, diarrhoea should gradually diminish and oedematous children should lose weight.

HIV-infected children with SAM in whom persistent diarrhoea does not resolve with standard management should be investigated to exclude carbohydrate intolerance and infective causes, which may require different management, such as modification of fluid and feed intake, or antibiotics.

Assess ward if infection control measures are in place, particularly on handwashing and sterilising of feeding utensils and equipment.

Once the child's appetite returns to normal, usually within a week and/or oedema is lost or reduced, the wasted tissues need to be rebuilt.

- Change to a "rehabilitation / rebuilding / catch-upfeed[7]" known as F100 or Diluted F100 (<6 months).

Feeding starts with a **Transition period which is a cautious changeover of feed to rehabilita- tion feed**

Transition Process:

- For the first 2 days (day 1 and 2) replace the stabilizing feed with rehabilitation feed at equal amounts you were giving during the stabilizing feed.

- On day 3, gradually increase the volume of the catch-up feed by 10 ml per feed until some feed remains unfinished. Note for breastfed infants less than 6 months, you will not increase feeds but rather progress to Step 8 (Rehabilitation feeding using the Supplementary Suckling Technique)

- Carefully monitor pulse and respiration rate during the transition phase. If respirations in- crease by 5 or more breaths / min and pulse by 25 or more beats / min for 2 successive 4 hourly readings, reduce the volume per feed.

[7] F100- is a nutrient dense therapeutic feed that contains 100kcal energy and 3g protein per 100ml- see appendix 6

Step 8: Achieve Catch up Growth

After the transition phase, a vigorous approach to feeding is required to achieve very high intakes and rapid weight gain of > 10g/kg/day. Feed freely as appetite permits up to 220kcal/kg/day(feed volume 150-220ml/kg/day)[8].

CHILD > 6 MONTHS

If the child is older than 6 months, give F100 as per the prescription table and introduce a balanced soft mixed high-energy diet and add oil or margarine or peanut butter to meals. Prepare food without added salt. Encourage breastfeeding for breastfed children.

- Progress to 5 feeds of F100 and ready to use therapeutic Food (RUTF). Replace the amounts of F100 gradually with RUTF at an exchange of 100ml F100 = 20g RUTF.
- The child may eat the ward diet as well.
- Ensure that the child is tolerating the RUTF at the prescribed amounts prior to discharge.
- Monitor weight gain and plot on weight chart daily. Desirable weight gain to rebuild wasted
- tissue is >10g/kg/day.
- Plot intake on 24 hour food intake chart
- Plan for ward feeds and plot on daily ward feeding chart

IF THE CHILD IS BELOW 6 MONTHS, CAREFULLY MANAGE THE REHABILITATION PHASE OF THE BREASTFEEDING INFANT LESS THAN 6 MONTHS AS BELOW:-

Rehabilitation Feeding in Infants less than 6 months using the Supplementary Feeding Technique.

The main objective is to restore exclusive breastfeeding. Therefore, stimulate and support breastfeeding and supplement the child's breastfeeding with dilute F100 while stimulating production of breast milk.

- Breastfeed on demand or offer breastfeeding every three hours for at least 20 minutes (more if the child cries or demands more). The infant should be breastfed as frequently as possible.
- Between one half and one hour after a normal breastfeeding session, give maintenance amounts of therapeutic milk.

Quantities of F100-Diluted

- F100-Diluted is given at 130 ml/kg bodyweight/day, distributed across eight feeds per day.
- Use the table below for maintenance amounts of F100-Diluted to give to infants using the supplementary suckling technique.

Regulation of Amount of F100-Diluted Given

- The progress of the infant is monitored by the daily weight.
- If the infant loses weight or has a static weight over three consecutive days but continues to be hungry and is taking all the F100-Diluted, add 5 ml extra to each feed.
- Maintenance amounts of F100-Diluted are given using the supplementary suckling technique. If the volume of F100-Diluted being taken results in weight loss, either the maintenance requirement is higher than calculated or there is significant malabsorption.

[8] A table of rehabilitation/rebuilding/ catch-up feed – Appendix 7

If the infant grows regularly with the same quantity of milk, it means the quantity of breast milk is increasing it means the intake from breast milk is increasing and the infant is taking adequate quantities to meet his/her requirements.

- The infant should be weighed daily with a scale graduated to within 10 g (or 20 g).

Maintenance Amounts of F100-Diluted for Breastfed Infants

Child's Weight (kg)	F100-Diluted or (ml per feed if 8 feeds per day)
≥ 1.2	25
1.3 – 1.5	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

Once Infant is Gaining Weight at 20 g per Day (Absolute Weight Gain)

- Gradually decrease the quantity of F100-Diluted by one-third of the maintenance intake so that the infant gets more breast milk.
- If the weight gain of 10 g per day is maintained for two-to-three days (after gradual decrease of F100-Diluted), stop F100-Diluted completely.
- If the weight gain is not maintained, increase the amount of F100-Diluted given to 75 percent of the maintenance amount for two-to-three days, and then reduce it again if weight gain is maintained

Feeding Procedure

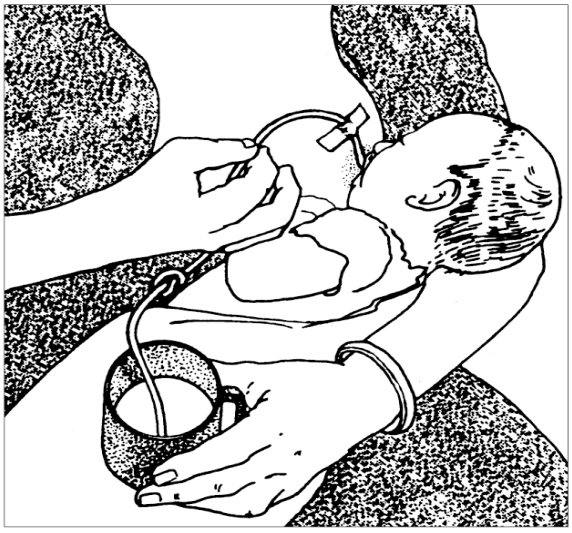
- Ensure good breastfeeding through good attachment and effective suckling. Avoid distractions and let the infant suckle the breast at his/her own speed.
- Build the mother's confidence to help milk flow.
- Encourage more frequent and longer breastfeeding sessions to increase milk production and remove any interference that might disrupt breastfeeding.
- Use the supplementary suckling technique to provide maintenance amounts of F100-Diluted OR, feed by cup and saucer or NGT by drip (using gravity not pumping).
- Only feed with a NGT when the infant is not taking sufficient milk by mouth. The use of NGT should not exceed three days and should be used in the stabilisation phase only.

Feeding Technique

Use the supplementary suckling technique to re-establish or commence breastfeeding and also to provide maintenance amounts of F100-Diluted to severely malnourished infants. This technique entails the infant sucking at the breast while also taking supplementary F100-Diluted from a cup through a fine tube that runs alongside the nipple. The infant is nourished by the supplementary F100-Diluted while suckling stimulates the breast to produce more milk. The steps required in using the supplementary suckling technique are simple. The caregiver holds a cup with the F100-Diluted. The end of a NGT (size nº8) is put in the cup and the tip of the tube is placed on the breast, at the nipple. The infant is offered the breast with the right attachment. The cup is placed 5-10 centimetres (cm) below the level of the nipple for easy suckling. When the child suckles more strongly, the cup can be lowered to up to 30 cm.

After 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 convenient, the tube is then left exposed to direct sunlight.

Figure 1. Supplementary Suckling Technique



CHILD < 6 MONTHS WITH NO PROSPECT OF BREASTFEEDING

If the child less than 6 months is not breastfed, give diluted F100 at 130ml / kg / day. Feed 3 hourly. Increase feeds as per the child's appetite. In preparation for discharge via the dietitian the child can be switched to infant formula. Monitor for tolerance.

SOP 6: TITLE	The Neonate (< 29 days old)
PURPOSE	To ensure that the neonate is accurately assessed, classified and treated.
ASSESSMENT	- Daily weight recordings and assessment for oedema. - Conduct Feeding Readiness Assessment in the Neonate - Monitoring Growth in the Neonate
CLASSIFICATION	Infants less than < 29 days of age should be assessed on growth since birth:- Ideal rate of weight gain should be ≥15g/kg/day (at 2 -3 weeks after birth). Infants found not be meeting this or found to have lost weight, need to managed in hospital, counselled extensively and monitored on infant feeding practices as per the prescribed treatment protocols.
TREATMENT	Refer to appendices:- • Feeding the sick / premature baby • Neonatal SOP on fluids and feeds • Fluid Management Guideline for sick or premature neonates • Refer to SOP on Lactation Management and Support). Barriers to optimum infant feeding need to be addressed whilst mum is in hospital with infant and followed up within a week of discharge. (See section on Infants < 6 months later on)
KEY MESSAGES	
RELATED DOCUMENTS	KZN Neonatal and Paediatric for In – Patient Management: Enteral and Parenteral Nutrition IMCI Guidelines for Children < 2 months old

RELATED DHIS INDICATORS	

SOP 7: TITLE	The premature / low birth weight infant
PURPOSE	To define what are premature and low birth infants, to appropriately classify their nutritional status thereafter. Whilst a premature infant is almost always low birth weight, a low birth weight infant was not always premature.
ASSESSMENT	What is a low birth infant? **Low Birth Weight** (LBW) Infant is any infant born with a birth weight less than **2,5 kg.**

Classification according to GESTATION	
Term	**Gestation**
Extremely preterm	<28 weeks
Very preterm	28-<32 weeks
Moderate preterm	32 - <37 weeks
Moderate preterm birth may be further split to focus on late preterm birth	34 - <37 weeks

What is a premature infant?

Preterm birth is defined as:

- All births before **37 complete weeks of gestation** or

Classification according to BIRTH WEIGHT	
Term	**Birth weight**
Low Birth Weight (LBW)	< 2 500 g
Very Low Birth Weight (VLBW)	< 1 500 g
Extremely Low Birth Weight (ELBW)	< 1 000 g
Micronate	< 750 g

EVALUATION OF GROWTH RATE:

- **Ideal rate of weight gain: ≥ 15 g/ kg / day** (At 2-3 weeks after birth)

Expect an initial weight loss of 5-15% of birth weight during the first week of life. Birth weight should be regained at 10-14 days after birth in both preterm and term infants.

- **Ideal length accretion rate: 0,8 – 1,0 cm / week**
- **Ideal head circumference accretion rate: 0,5 – 0,8 cm / week**

Head circumference measurements should be done weekly while the infant remains in hospital.

The growth chart recommended by most for use in assessing the premature infant is **Fenton's updated version**. These revised growth charts were developed based on the growth patterns of the foetus (as has been determined by the size at birth in the large population studies) and the term infant (based on the WHO Growth standard). The revised preterm growth chart, harmonized with the WHO Growth standard at 50 weeks, may support an improved transition of preterm infant growth monitoring to the WHO charts. **When using the WHO growth charts in the RTHB, ensure that weight is plotted according to the corrected gestational age of the infant. It is very important to take the growth curve (trend) into consideration for Premature infants.**

CLASSIFICATION & TREATMENT

Prem OR Low Birth Weight as classified above		
Weight Gain (Assess)	**Classification (NAM, MAM, SAM)**	**Treat**
< birth weight OR < 5 g / kg /day weight gain	SAM **Refer to hospital immediately**.	WHO 10 steps (<6 months protocol).
5 – 10 g / kg / day weight gain	MAM **Refer to hospital**.	If breastfed: Assess Breastfeeding (supply, attachment, ability to suckle, output, frequency and length of feeds) and encourage skin to skin. In the absence of a breastfeeding mother, assess formula feeding practises (mixing, dilution, frequency, hygiene).
10 – 15 g / kg / day weight gain	NAM @ risk	If breastfed: Assess Breastfeeding (supply, attachment, ability to suckle, output, frequency and length of feeds) and encourage skin to skin. In the absence of a breastfeeding mother, assess formula feeding practises (mixing, dilution, frequency, hygiene)

			Follow-up to clinic in a week to reassess weight
	≥15 g / kg /day weight gain	NAM	Ideal rate of weight gain. Continue breastfeeding support and growth monitoring.
TREATMENT	As above.		
KEY MESSAGES	COMPLEMENTARY FEEDING FOR PRETERM INFANTS Factors to consider when deciding on the time to commence with the introduction of complementary food for a LBW infant are: 1) The **degree of prematurity** 2) The **chronological age**, and 3) The **developmental** level. It is important that preterm infants have head control and are > 5kg when complimentary feeds start. It is common for preterm infants to be texture aversive, speech therapists and occupational therapists may need to be involved.		
RELATED DOCUMENTS			
RELATED DHIS INDICATORS			

SOP 8: TITLE	**Out patient management of the child with severe acute malnutrition (6 - 59 months)**
PURPOSE	In consideration that the WHO recommends that children with SAM without complications can be treated as outpatients, this section has been included for the minority of SAM children who live close to a health facility and can afford more frequent follow up visits to the dietitian. This section may also be utilised in instances of the caregiver refusing admission of the child with SAM or if the medical officer declines admission due to risk for nosocomial infection and limited ward space.
ASSESSMENT	The Outpatient Therapeutic program (OTP) is aimed at providing treatment for children 6-59 months with severe acute malnutrition (SAM) who have an appetite and are without medical complications and were not admitted for inpatient management. These children are the SAM ambulatory cases according to DHIS. Ambulatory/Outpatient services can be accessed through delivery of OTP at any of the following service points: ● ***Primary Health Care Clinic:*** If Patient is able to easily access the nearest PHC clinic for weekly visits and the PHC clinic is well prepared to provide adequate OTP care. OR ● ***Hospital Outpatient Department:*** If Patient is able to easily access the Hospital Dietetics Department for weekly visits

CLASSIFICATION	There are 2 types of SAM cases without medical complications that will be managed as outpatients: **Type 1:** Recovering SAM cases referred from Inpatient care to OTP Children who have been referred from inpatient care or another outpatient care site should not be given routine medicines for a second time as they have already been administered to them. The child's records and documentation should be checked for details of medications already given and, where applicable, the remaining schedule of medications and supplements should be continued according to inpatient protocol. **Type 2:** Newly Identified SAM cases admitted directly to Outpatient care / OTP.
TREATMENT	**Dietary Treatment** Children receive RUTF based on a dose of +- 200 kcal/kg bodyweight/day given as a take-home feed. A weekly supply of RUTF is provided depending on the child's bodyweight. The dietary treatment is managed at home, with the child attending outpatient care sessions on a weekly basis for monitoring health and nutritional status and replenishing stocks of RUTF. Use the RUTF look-up table below for the amounts of RUTF to give on each weekly visit, based on the child's weight at the time of the visit. Explain the daily amount the child will need to consume to the caregiver. **Dietary Treatment using RUTF** Child's Weight (kg) Grams per day Tubs per week 4.0* – 4.9 180 (12 tsp) 3 x 450g 5.0 – 6.9 225 (15 tsp) 4 x 450g 7.0 – 8.4 250 (18 tsp) 4 x 450g 8.5 – 9.4 315 (21 tsp) 5 x 450g 9.5 – 10.4 375 (25 tsp) 6 x 450g 10.5 – 11.9 420 (28 tsp) 7 x 450g ≥12 465 (31 tsp) 8 x 450g
KEY MESSAGES	
RELATED DOCUMENTS	
RELATED DHIS INDICATORS	

SOP 6: TITLE	**CHILDREN WITH SPECIAL NEEDS & MALNUTRITION**
PURPOSE	To ensure that children identified with neuro – development disorders, e.g. cerebral palsy are classified early and appropriately managed to promote optimal nutrition and prevent severe / chronic states of malnutrition.
ASSESSMENT	Assess nutritional status as indicated in SOP 1. Should the health care worker be unable to take the length / height of the child to assess for wasting, then MUAC can be measured to classify for acute malnutrition.

	- Assess the eating and drinking classification system (EDACS) of the child as below.
CLASSIFICATION	MUAC < 11.5 = SAM MUAC 11.5 – 12.4 = MAM Children 3 – 5 years with normal MUAC but who present with < Level 2 EDAC should be classified as NAM at Risk EDACS CLASSIFICATION for children over 3 years (See Appendix for full descriptors of Levels) **Level I** Eats and drinks safely and efficiently. **Level II** Eats and drinks safely but with some limitations to efficiency. **Level III** Eats and drinks with some limitations to safety; there may be limitations to efficiency. **Level IV** Eats and drinks with significant limitations to safety. **Level V** Unable to eat or drink safely – tube feeding may be considered to provide nutrition.
TREATMENT	Treatment of the child with neurodevelopment delays or disorders should be managed by a multi – disciplinary team from as early as possible, to promote optimal nutritional intake. Nutritional treatment / rehabilitation would follow the same protocol as children without these delays. SAM – Referral for inpatient management. MAM – Outpatient supplementation programme NAM at Risk – Outpatient supplementation programme
KEY MESSAGES	
RELATED DOCUMENTS	
RELATED DHIS INDICATORS	

SOP 9: TITLE	Child over 5 years, adolescence and adults with acute malnutrition
PURPOSE	To ensure that children over 5, adolescence and adults with acute malnutrition are accurately assessed, classified and treated.
ASSESSMENT	
CLASSIFICATION	
TREATMENT	

5 - 9 YEARS

CATEGORY	PRODUCT	DAILY SERVING		MONTHLY ISSUE
MAM / NAM (high risk) 500kcal / day	EMM	100g	2 x 50g serving	3 x 1kg pckt
	RUTF	30g	2tsp	2 x 450g tubs
	LFED			
SAM 1000kcal / day	EMM	100g	2 x 50g serving	3 x 1kg pckt
	RUTF	120g	8tsp	8 x 450g tubs
	LFED			

10 - 14 YEARS

CATEGORY	PRODUCT	DAILY SERVING		MONTHLY ISSUE
MAM / NAM (high risk) 610kcal / day	EMM	100g	2 x 50g serving	3 x 1kg pckt
	RUTF	45g	3tsp	3 x 450g tubs
	LFED			
SAM 1220kcal / day	EMM	200g	4 x 50g serving	6 x 1kg pckt
	RUTF	90g	6tsp	6 x 450g tubs
	LFED			

>15 YEARS

CATEGORY	PRODUCT	DAILY SERVING		MONTHLY ISSUE
MAM / NAM (high risk) 630kcal / day	EMM	100g	2 x 50g serving	3 x 1kg pckt
	RUTF	60g	4tsp	4 x 450g tubs
	LFED			
SAM 1260kcal / day	EMM	200g	4 x 50g serving	6 x 1kg pckt
	RUTF	105g	7tsp	7 x 450g tubs
	LFED			

PREGNANT

CATEGORY	PRODUCT	DAILY SERVING		MONTHLY ISSUE
MAM / NAM (high risk) 915kcal / day	EMM	100g	2 x 50g serving	3 x 1kg pckt
	LFED	120g	2 x serving	4 x 1kg pckt
SAM 1545kcal / day	EMM	200g	4 x 50g serving	6 x 1kg pckt
	LFED	180g	3 x serving	6 x 1kg pckt

LACTATING

CATEGORY	PRODUCT	DAILY SERVING		MONTHLY ISSUE
MAM / NAM (high risk) 1130kcal / day	EMM	100g	2 x 50g serving	3 x 1kg pckt
	LFED	120g	2 x serving	4 x 1kg

		RTUF	45g	3tsp	3 x 450g tubs
	SAM 1760kcal / day	EMM	200g	4 x 50g serving	6 x 1kg pckt
		LFED	180g	3 x serving	6 x 1 kg
		RUTF	60g	4tsp	4 x 450g tubs

KEY MESSAGES	
RELATED DOCUMENTS	Guidelines for the management of TB & HIV Maternity Guidelines 2015
RELATED DHIS INDICATORS	Number of adults > 15 years on food supplements

SOP 10: TITLE	**Childhood Stunting**
PURPOSE	To create and awareness of the problem of childhood stunting so that prevention can be intensified.
ASSESSMENT	Assess height and age for all children under 5, as outlined in SOP 1: Growth Monitoring and Promotion.
CLASSIFICATION	***Length/height-for-age:*** • **below -2 line** means a child is *stunted*, • **below -3 line** means child is severely stunted
PREVENTION	**Management of Childhood Stunting**

Step	Action
Step 1: Improve nutritional status of pregnant & lactating women	Ensure that pregnant and lactating mothers are adequately nourished. Assessment of nutritional status and nutrition education during pregnancy.
Step 2: Improve Optimal breastfeeding practices	Breastfeeding is key to ensuring a child's healthy growth and development. Early initiation and exclusive breastfeeding for six months provides protection against gastrointestinal infections, which can lead to severe nutrient depletion and therefore stunting. Breast milk is also a key source of nutrients during infection. Continued breastfeeding in the second year contributes significantly to intake of key nutrients that are lacking in low-quality complementary diets in resource-poor settings
Step 3: Complementary Feeding	Improve the quality of the diet of children 6 – 24 months with additional emphasis on quality of nutrition education at health facilities and community events. Greater dietary diversity and the consumption of foods from animal sources are associated with improved linear growth.
4. Integrate Nutrition	Prevention of infections requires household practices such as proper

	with nutrition sensitive interventions such as household, environmental, socioeconomic and cultural factors	hand-washing with soap, the success of which depends on behaviour change to adopt the practice (culture), the availability of safe water (water supply), and the affordability of soap (socioeconomic status). Similarly, the availability of high-quality foods (food supply) and affordability of nutrient-rich foods (socioeconomic status) will affect a family's ability to provide a healthy diet and prevent child stunting.
	Interventions targeted at increasing exclusive breastfeeding rates; reducing rates of anaemia in women of reproductive age, and reducing the rate of infants born with low birth weight are all associated with a decreased risk of stunting. Children who present with stunting only, and no other forms of nutrition should not be given nutrition supplements as this can promote the development of obesity.	
KEY MESSAGES	Stunted children who experience rapid weight gain after the age of 2 years have an increased risk of becoming overweight or obese later in life. Such weight gain is also associated with a higher risk of coronary heart disease, stroke, hypertension and type 2 diabetes. Thus parents and caregivers should be cautious not to feed children energy dense and nutrient poor foods.	
RELATED DOCUMENTS	IMCI Guidelines	
RELATED DHIS INDICATORS	None	

SOP 11: TITLE	**The child under 5 identified with overweight and obesity**
PURPOSE	
ASSESSMENT	
CLASSIFICATION	
TREATMENT	
KEY MESSAGES	
RELATED DOCUMENTS	
RELATED DHIS INDICATORS	Child under 5 years overweight – new

SOP 12: TITLE	**Adolescence (5 – 19 years old) with overweight / obesity**
PURPOSE	Over nutrition results in overweight and obesity, which are descriptions of a person's body mass index (weight/height) and indicate that they carry too much weight for their height. Being overweight or obese increases the risk of chronic diseases such as coronary heart disease, diabetes, and hypertension. The purpose of this section is to promote the early identification of children under 5 at risk of becoming overweight and obese. It is also important to manage children over 5 and adolescence with overweight and obesity, to

<table>
<tr><td></td><td colspan="2">prevent the condition progressing into adulthood.</td></tr>
<tr><td>ASSESSMENT</td><td colspan="2">The weight and height for all adolescence should be taken at every visit.</td></tr>
<tr><td>CLASSIFICATION</td><td colspan="2">Calculate the BMI for the adolescent using the BMI Wheel or the calculation below.
Weight / (Height x Height) = BMI in kg/m^2.
Plot the BMI for the adolescent gender specific chart. Classify using the table below and the chart.

<table><tr><td>Child / Adolescent > 5 years: > 2 SD BMI for age</td><td>Obese</td></tr><tr><td>Child / Adolescent > 5 years: Between + 1 and +2SD BMI for age</td><td>Overweight</td></tr></table></td></tr>
<tr><td>REFERRAL & TREATMENT</td><td>Stage 1 – Overweight / Obese

Treatment at PHC or Hospital</td><td>Individualised nutrition education with main caregiver. Encourage intake of 5 or more servings of fruits and vegetables per day, minimize or eliminate consumption of sugar-containing beverages, Decrease hours of television / electronic devices time and increase (> 1 hour of physical activity per day). Reduce added fat and sugar in the diet, e.g fried foods, processed foods (chips, sweets, chocolate, juices, biscuits)</td></tr>
<tr><td></td><td>Stage 2 – Overweight / Obese no progress at PHC or Hospital after 2 visits

Structured Weight Management</td><td>Can be implemented in a primary care setting with a dietitian & occupational therapist, includes stage 1 guidelines plus increased structure of meals and snacks with attention to energy density of foods and assessment of physical activity level.</td></tr>
<tr><td></td><td>Stage 3 – Obese at Hospital only

Comprehensive Multidisciplinary Intervention</td><td>Should be implemented at hospital level with a multidisciplinary team and outside facilities for structured physical activity, includes increased structured physical activity (with involvement of physiotherapist / occupational therapist) and dietary program.

Psychologist intervention for behavioural therapy if required.</td></tr>
<tr><td>KEY MESSAGES</td><td colspan="2"></td></tr>
<tr><td>RELATED DOCUMENTS</td><td colspan="2">Integrated School Health Policy
Youth Friendly Services</td></tr>
<tr><td>RELATED INDICATORS</td><td colspan="2">School learner overweight rate</td></tr>
</table>

<table>
<tr><td>SOP13: TITLE</td><td>Adults with overweight / obesity</td></tr>
<tr><td>PURPOSE</td><td>To assess all adults attending health care facilities for overweight and obesity and to provide the appropriate dietary treatment to prevent perpetuation of the disease state and promote good nutritional status.</td></tr>
<tr><td>ASSESSMENT</td><td>Assess all adults for weight, height and then calculate BMI.
In patients classified with overweight / obesity, measure waist circumference for on – going follow up to measure progress.</td></tr>
<tr><td>CLASSIFICATION</td><td>CLASSIFY:

The International Classification of adult underweight, overweight and obesity according to BMI

<table>
<tr><th>Classification</th><th colspan="2">BMI (kg/m²)</th></tr>
<tr><th></th><th>Principal cut-off points</th><th>Additional cut-off points</th></tr>
<tr><td rowspan="2">Normal range</td><td rowspan="2">18.50 - 24.99</td><td>18.50 - 22.99</td></tr>
<tr><td>23.00 - 24.99</td></tr>
<tr><td>Overweight</td><td>≥25.00</td><td>≥25.00</td></tr>
<tr><td rowspan="2">Pre-obese</td><td rowspan="2">25.00 - 29.99</td><td>25.00 - 27.49</td></tr>
<tr><td>27.50 - 29.99</td></tr>
<tr><td>Obese</td><td>≥30.00</td><td>≥30.00</td></tr>
<tr><td rowspan="2">Obese class I</td><td rowspan="2">30.00 - 34.99</td><td>30.00 - 32.49</td></tr>
<tr><td>32.50 - 34.99</td></tr>
<tr><td rowspan="2">Obese class II</td><td rowspan="2">35.00 - 39.99</td><td>35.00 - 37.49</td></tr>
<tr><td>37.50 - 39.99</td></tr>
<tr><td>Obese class III</td><td>≥40.00</td><td>≥40.00</td></tr>
</table>

Waist Circumference (WC)
Increased WC is an indicator of abdominal obesity and is a known risk factor for increased risk for CHD. Should the cut-off for WC be exceeded, it places an individual at risk for the development of NCDs. The universally recognised cut-offs for waist circumference are:

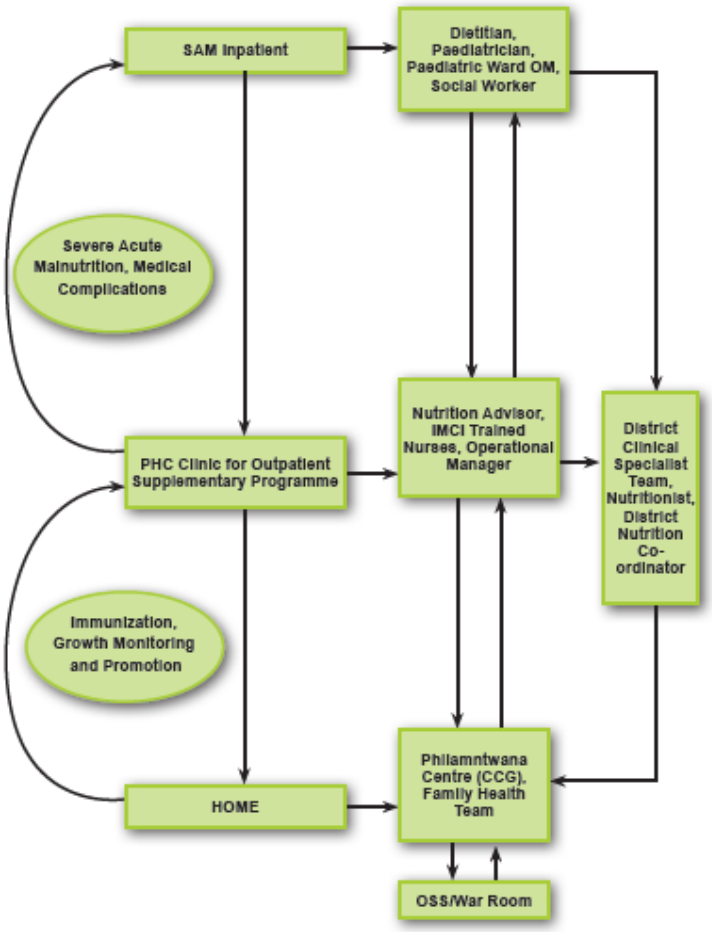
African and Caucasian Men : > 94cm

African, Asian and Caucasian Women : > 80cm

Asian Men : > 90cm

BMI and WC are quick and easy to measure and provide useful information in identifying those that are overweight, obese and at risk for CHD.</td></tr>
<tr><td>TREATMENT</td><td>The prevention and management of overweight and obesity is multi – faceted, and requires multi – disciplinary approach.
Attached are the dietary meal plans to assist in the nutrition management of overweight and obesity.</td></tr>
</table>

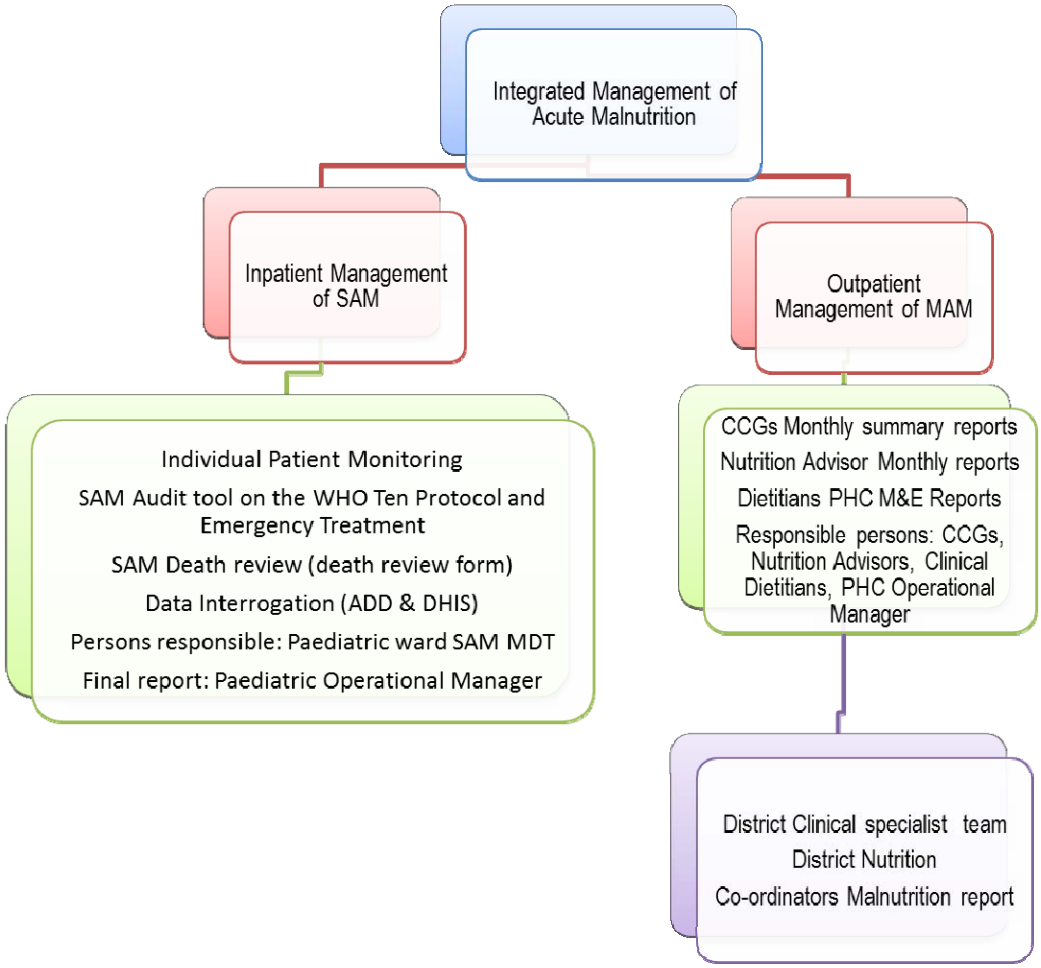
KEY MESSAGES	
RELATED DOCUMENTS	KZN Guidelines on the prevention and management of overweight and obesity.
RELATED DHIS INDICATORS	Adults with BMI > 30

SOP 14: TITLE	**Community Outreach**
PURPOSE	To promote early detection of malnutrition at community level and thus less complicated cases of SAM.
TOOLS	Nutrition – CCG Follow up tool
REFERRAL PATHWAY	
KEY MESSAGES	
RELATED DOCUMENTS	
RELATED DHIS INDICATORS	MUAC Screened by CCG

MONITORING AND EVALUATION

An effective M&E Framework will help to identify desired outcomes from implementation. In the context of the current guidelines, monitoring will take place at inpatient level by the hospital based MDT and at outpatient level by the PHC team. All relevant team members should be familiar with and able to use the monitoring tools.

Monitoring and Evaluation Framework



DATA MANAGEMENT

Data Verification, Data Review, Data Analysis and Feedback Systems

- Data Verification processes or systems are an internal data checking mechanism.
- Review and feedback systems promote awareness, entrench data management, ensure involvement and ownership and contribute towards effective utilization of data

- Check data collection tools (previous months data) for completeness and understanding
- Tick register, nutrition supplementation register, weekly summary, monthly summary
- Compare data with the DHIS report
- Identify any gaps and discrepancy in the data
- Clarifications must be provided for any discrepancies in data (i.e. error in recordings etc.)
- Make recommendations and comments for correction of data
- Check data flow at point of collection, with FIO at data verification meetings, and DIO.

CONTACT LISTS, RESOURCES & REFERENCES

District Database of Department of Social Development Contacts