

Treatment of severe acute malnutrition with medical complications (e.g., Infections)

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Description of condition and intervention

Malnutrition is primarily present in children under five years of age living in low- and middle-income countries, in regions such as South Asia and sub-Saharan Africa. Approximately 14.3 million children from this age-group suffer from severe acute malnutrition (SAM). Acute malnutrition occurs when there is a combination of pathological causes and reduction in diet quality or food intake. The definition of acute malnutrition has varied over time with a various of names and overlapping definitions, including "protein-energy-malnutrition, wasting, kwashiorkor and marasmus. Marasmus (very thin for height according to Weight for length/Height or mid-upper arm circumference, MUAC) and kwashiorkor (edematous malnutrition) was earlier used to differentiate between types of sever acute malnutrition, a newer version of WHO's terminology replaced these terms with severe acute malnutrition. Complications like dehydration, infection (fever) and vitamin deficiencies may develop in malnourished children. Current evidence brief focusses on the treatment of SAM with any of the complications in the inpatient health care settings. This evidence briefs informs on the effectiveness and costs involved in management of . Source: (UpToDate, Lenters L et al 2016). This evidence brief assesses effects and costs for one intervention being analyzed in FairChoices: DCP analytical tool (For an overview of other interventions, see appendix below and the separate evidence briefs for these):

International guidelines for acute malnutrition

Organization	Diagnostic criteria for acute malnutrition	Applicability in LIC & Lower MIC settings
WHO and UNICEF	<p>The use of a cut-off for weight-for height of < -3 standard deviations (SD) of the WHO standards or a Mid-Upper Arm Circumference cut-off < 115 mm or presence of bilateral oedema (clinical sign) is recommended to identify infants and children with SAM.</p> <p>Infants with SAM over six months or children who have medical complications, poor appetite, or fail the appetite test, or having severe oedema or are present with one or more Integrated Management of Childhood Illness (IMCI) should be treated as inpatients until recovery (management and prevention of dehydration, hypoglycaemia, hypothermia, septic shock, severe anaemia, infections, dietary treatment (F75 and F100). The feeding approach for children under six months should prioritize exclusively breastfeeding by the mother or other caregivers. For infants with SAM with no oedema where breastmilk is not possible or in small amounts should be given commercial generic infant formula or F-75 either alone or as a supplement together with breastmilk.</p>	

Source: Guideline: Updates on the Management of Severe Acute Malnutrition in Infants and Children. WHO Guidelines Approved by the Guidelines Review Committee. Geneva 2013.

Intervention attributes

Type of interventions & delivery platform

Table 1: Type of interventions & delivery platform

Intervention	Type	Delivery platform
Management of severe acute malnutrition with medical complications	Curative	First level hospital

Equity

In addition to considerations like cost-effectiveness and health systems factors, dimensions of equity can be relevant for priority setting. The opportunity for a long and healthy life varies according to the severity of a health condition that individuals might have, so there are inequities in individuals' opportunities for long and healthy lives based on the health conditions they face. Metrics used to estimate the severity of illness at an individual level can be used to help prioritize those with less opportunity for lifetime health. FairChoices: DCP Analytics Tool uses Health adjusted age of death (HAAD), which is a metric that estimates the number of years lived from birth to death, discounting years lived with disability. A high HAAD thus represents a disease less severe in terms of lifetime health loss, while a low HAAD represents a disease that is severe on average, causing early death or a long period of severe disability. It is also possible to estimate the distribution of HAAD across individuals with a health condition. FairChoices shows for each intervention an average HAAD value of the conditions that are affected by respective interventions that have health effects. Additionally, a plot shows HAAD values for around 290 conditions (Johansson KA et al 2020).

Time dependence

High level of urgency

Population in need of interventions

Table 2: Population in need of interventions

Intervention	Treated population		Affected population		Disease state addressed
	Treated age	Treated fraction	Affected age	Affected fraction	

Management of severe acute malnutrition with medical complications	0 to 5 years	Incidence cases, both genders: According to <i>Henriksen et al.</i> Affected fraction is 0.1 (<i>Unpublished work in progress</i>)	0 to 5 years	Those with the condition, both genders: According to <i>Henriksen et al.</i> Affected fraction is 0.1 (<i>Unpublished work in progress</i>)	Protein-energy malnutrition
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Disease state addressed

This intervention targets severe acute malnutrition with medical complications in children

Intervention effect and safety

Table 3: Effect and safety of treatment for severe acute malnutrition with complication

Effect of intervention	Certainty of evidence
Mortality Bhutta et al reported by following the WHO protocol for facility based management of SAM caused a relative risk of 0.45 (95% CI 0.32–0.62).	

Model assumptions

Table 4: Summary of model parameters and values used in FairChoices – DCP Analytical Tool

Category	Model parameter	Notes
Intervention	Management of severe acute malnutrition without complications	
Cost calculation		

Treated population	See table 2	Epidemiological data from Global Burden of Disease study
Effect calculation		
Affected Population	See table 2	
Affected gender	See table 2	
Affected fraction age	See table 2	
Affected fraction	See table 2	
Comparison		
Mortality Reduction (RRR)	0,55	

Intervention Cost

The total unit cost is estimated to be **USD 177.19** (Year: 2020) per child per case for the management of uncomplicated SAM according to *Henriksen et al. (Unpublished Work in progress)*

References

Bhutta, Zulfiqar A., et al. "Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?." *The lancet* 382.9890 (2013): 452-477.

Lenters et al 2016: Lenters L, Wazny K, Bhutta ZA. Management of Severe and Moderate Acute Malnutrition in Children. In: Black RE, Laxminarayan R, Temmerman M, Walker N, editors. Reproductive, Maternal, Newborn, and Child Health: Disease Control Priorities, Third Edition (Volume 2). Washington (DC)2016.

Guideline: Updates on the Management of Severe Acute Malnutrition in Infants and Children. WHO Guidelines Approved by the Guidelines Review Committee. Geneva2013.

Henriksen ES, Økeland J, Malawim O, Said S, Kaur G, Rava` MS, et al. Economic evaluation of nutritional interventions in Zanzibar: An analysis using FairChoices – DCP analytic tool.(Work in progress)

Appendix

Literature Review for effectiveness & safety

This literature search is an example of level 4 evidence(metaanalysis) for intervention inputs taken from DCP3. (Despite low significant level for efficacy)

Level of evidence of efficacy studies:

1. Low (expert opinions, case series, reports, low-quality case control studies)
2. Moderate (high quality case control studies, low quality cohort studies)
3. High (high quality cohort studies, individual RCTs)
4. Very high (Multiple RCTs, metaanalysis, systematic reviews, clinical practice guidelines)

An overview of all NUTR interventions in FairChoices-DCP analytical tool (Interventions assessed in this evidence brief are marked in bold)

NUTR01-01	Daily Iron Folic acid supplementation (pregnant women)
NUTR01-02	Calcium supplementation, pregnancy
NUTR01-03 households	Food and caloric supplementation to pregnant women in insecure
NUTR01-04-02	Promotion of breastfeeding and/ or complementary feeding
NUTR01-05	Intermittent Iron-folic acid supplementation (Menstruating women)
NUTR01-06	Food to non-pregnant women in insecure households
NUTR01-02-01-01	Daily iron supplementation for children 6 to 23 months
NUTR01-02-01-02	Daily iron supplementation in children health center
NUTR01-02-02	Intermittent iron supplementation in children (24 -59 months)
NUTR01-02-03	Vitamin A supplementation to children 6 to 59 months
NUTR01-02-04	Zink to children 6 to 59 months
NUTR01-02-05	Food to children in insecure households
NUTR01-03-01	Management of severe acute malnutrition without medical complications
NUTR01-03-02 complications	Management of severe acute malnutrition associated with medical

