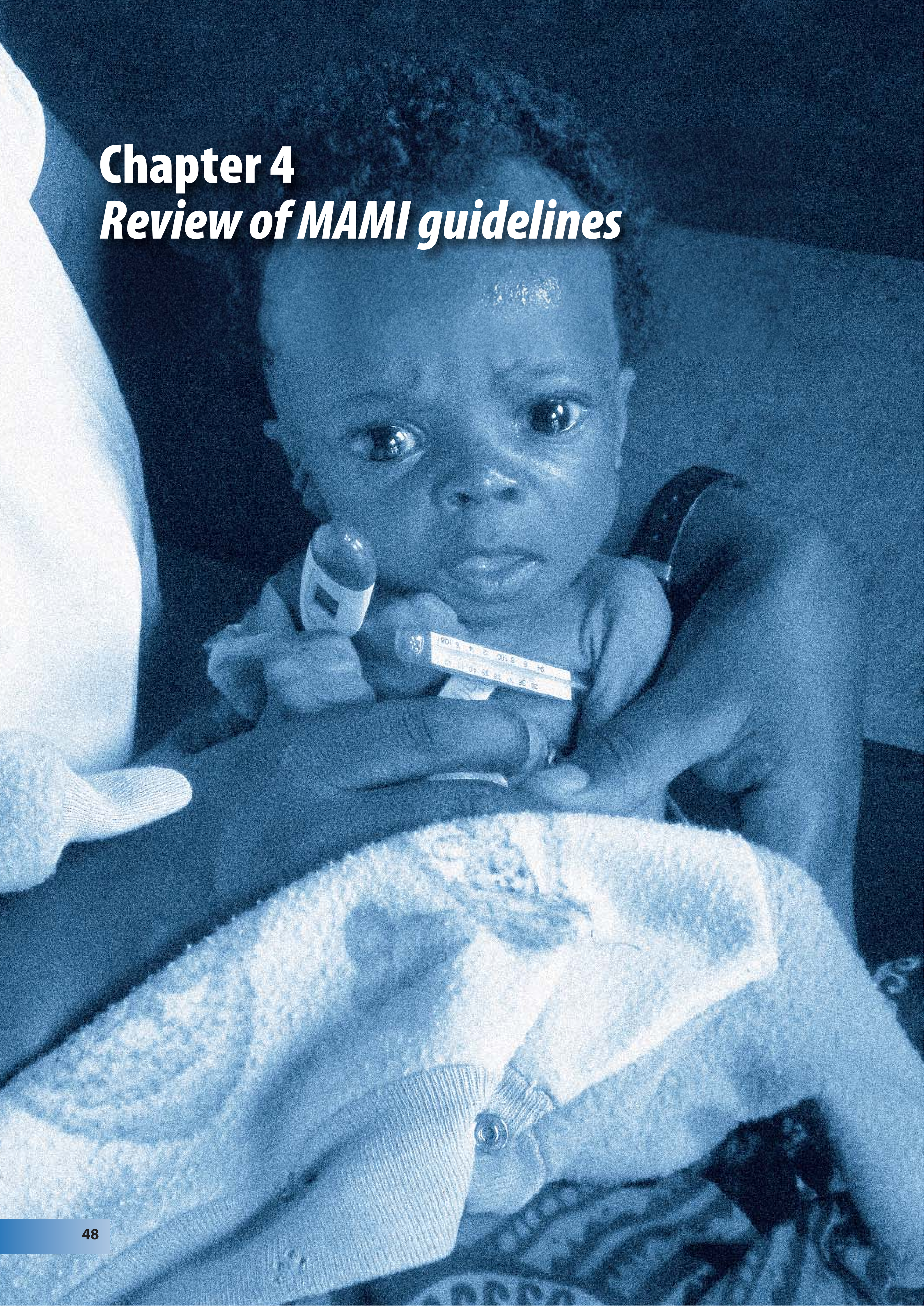
Chapter 4
Review of MAMI guidelines



Chapter 4: Review of MAMI guidelines

This chapter reviews current guidelines on the management of acute malnutrition, both inpatient and community-based. The chapter looks at similarities and differences on how infants <6m are treated and identifies strengths, weaknesses and gaps in guidance materials.

4.1 Why population burden of disease matters

A review of current recommended approaches to managing acute malnutrition in infants <6m was carried out to:

- Contextualise and help interpret quantitative feeding programme data (Chapter 5)
- Contextualise and help interpret qualitative data from key informant interviews (Chapter 6)
- Help set a baseline for future progress in the management of infants <6m malnutrition by:
  - Understanding the range of current practices
  - Understanding the focus and emphasis of current guidelines
  - Identifying strengths of current guidelines
  - Identifying gaps in current guidelines

4.2 Methods

SAM and MAM guidelines and protocols (collectively referred to as guidelines from heron) were identified by purposive sampling of:

- Published guidelines available in print and on-line
- Final and draft guidelines, obtained via MAMI steering group members and key informants.

Key themes and topics relevant to infants <6m were identified and tabulated. Internationally recognised AGREE (Appraisal of Guidelines for Research and Evaluation) criteria were used to appraise guideline quality[130] (see Box 5). A formal AGREE scoring was not applied to each individual guideline, as this was beyond the scope of the MAMI Project. Instead an overview discussion highlights common issues.

Box 5: 'AGREE' CRITERIA *(Appraisal of Guidelines for Research & Evaluation)*

Scope and Purpose

1. The overall objective(s) of the guideline should be specifically described.
2. The clinical question(s) covered by the guideline should be specifically described.
3. The patients to whom the guideline is meant to apply should be specifically described.

Stakeholder Involvement

4. The guideline development group should include individuals from all the relevant professional groups.
5. The patients' views and preferences should be sought.
6. The target users of the guideline should be clearly defined.
7. The guideline should be piloted among end users.

Rigour of Developement

8. Systematic methods should be used to search for evidence.
9. The criteria for selecting the evidence should be clearly described.
10. The methods used for formulating the recommendations should be clearly described.
11. Health benefits, side effects and risks should be considered.
12. There should be an explicit link between recommendations & supporting evidence.
13. The guideline should be externally reviewed by experts prior to publication.
14. A procedure for updating the guideline should be provided.

Clarity and Presentation

15. The recommendations should be specific and unambiguous.
16. Different options for diagnosis and/or treatment of the condition should be presented.
17. Key recommendations should be easily identifiable.
18. The guideline should be supported with tools for application.

Applicability

19. Potential organisational barriers in applying recommendations should be discussed.
20. Potential cost implications of applying the recommendations should be considered.
21. The guideline should presents key review criteria for monitoring and audit purposes

Editorial Independence

22. The guideline should be editorially independent from the funding body.
23. Conflicts of interest of guideline development members should be recorded.

4.3 Guidelines overview

A total of 37 (14 international and 23 national) guidelines were identified for review. Table 5 presents an overview of the international organizations and countries represented. International guidelines were defined as generic guidelines, owned and written by one lead agency, UN or NGO, and intended for use in multiple settings. National guidelines were focused on one particular setting, often led by a Ministry of Health or other equivalent government body. The list presented is unlikely to be exhaustive. Other guidelines are known to be in development but were not available for this review.

Similarities between guidelines

The many similarities between documents were striking. This partly reflects common 'evolutionary origins'. The 'common ancestor' of almost all current guidelines is the 1999 WHO guideline on management of SAM.[131] This formalised the 'phased' (stabilisation and rehabilitation) treatment of acute malnutrition and included a description of the 'ten steps' approach to care (see Figure 8 in chapter 2). Thus WHO (1999) is widely referenced and often directly summarised in subsequent documents. CMAM approaches represent another major step forward in the 'evolution' of treatment for SAM and many guidelines also draw on Valid (2006) as a key source.[132]

This 'common origins' finding has several implications. If two programmes use the same guidelines then it is, in theory, possible to compare programme outcomes and assess impact of context factors, such as

quality of implementation or patient profiles. Common terminologies and shared understandings also enable global sharing of ideas and staff exchange. A possible disadvantage of having guidelines that come as a 'package', is that individual elements become 'standard' and difficult to withhold, even if the underlying evidence for them is slim.

Differences between guidelines

There are many minor inter-guideline variations. Mostly these are explanations of particular issues, rather than major differences in approach. This makes it difficult to disentangle whether guidelines themselves or other factors (e.g. severity of disease, availability of resources to implement the guidelines, willingness and ability of staff to implement the guidelines, background social circumstances impacting SAM/MAM) are responsible for good or bad patient outcomes. It is especially difficult to infer the effects of multiple minor variations.

IFE Module 2 stands out as different from the other guidelines reviewed here. Whilst created as a training tool, IFE Module 2 provides a 'stop gap' in MAMI guidance. Chapter 8 of Module 2 is specifically devoted to the management of SAM in infants <6m, the basis for which is the collation of SAM guidelines and experiences of NGOs, as well as expert authorship from relevant professionals and field teams. Consequently IFE Module 2 content on SAM largely reflects many of the NGO approaches and guidelines reviewed by the MAMI Project, with a strengthened breastfeeding component.

Evolutionary developments across the guidelines

The main development since the WHO (1999) inpatient guidelines is that outpatient approaches to SAM treatment are now widely accepted for cases without medical complications. The majority of recent guidelines recognise outpatient-based models of care as complementary to inpatient care.

Also notable is that national SAM/MAM guidelines obtained for this report are very recent, mostly from the last two to three years, the oldest being Burundi in 2002. It is not known whether there were earlier guidelines pre-dating these. Whatever the case, there is evidently a clear trend towards both global rollout of SAM/MAM strategies and increasing national ownership of SAM/MAM guidelines.

Focus on infants <6m in current guidelines

The majority of guidelines have a separate section focusing explicitly on infants <6m, which varies widely in length. A few, including WHO (1999), recognize infants <6m only indirectly as part of a broader age group, e.g. children <5 years. In the CTC Manual (Valid, 2006), one of the foundation reference materials for CMAM, infants <6m are only referred to in one small section.

Table 5: Overview of available acute malnutrition guidelines

			Guideline type					Authors / contributors					
Region	**Country or Organ-ization**	**Guideline**	**Date**	**CMAM or Inpatient only**	**SAM or MAM focus**	**language**	**draft or final**	**MoH**	**UNICEF**	**WHO**	**Interna-tional NGO or consultant**	**Local NGO or consul-tant**	**notes**
International guidelines:													
International	WHO	Management of severe malnutrition: a manual for physicians & other senior health workers*	1999	Inpatient only	SAM	English, Spanish, French, Portuguese	FIN	n/a	n/a	Y	Y	n/a	available on WHO website http://www.who.int / nutrition/publications/ severemalnutrition/ 9241545119/en/ index.html
	WHO	Guidelines for the inpatient treatment of severely malnourished children *	2003	Inpatient only	SAM	English, French, Spanish	FIN	n/a	n/a	Y	n/a	n/a	available on WHO website http://www.who.int /nutrition/publications/ severemalnutrition/ 9241546093/en/ index.html
	WHO	Manual for the health care of children in humanitarian emergencies	2008	CMAM	both SAM and MAM	English	FIN	n/a	n/a	Y	n/a	n/a	available on WHO website: http://whqlibdoc.who. int/publications/2008/ 9789241596879_eng.pdf
	WHO	Pocket book of Hospital care for children (Guidelines for the management of common illnesses with limited resources)*	2005	Inpatient only	SAM	English, French, Portuguese, Russian	FIN	n/a	n/a	Y	Y	n/a	available on WHO webs http://www.who.int/ child_adolescent_health/ documents/9241546700/ en/index.html *Noted that this "updates & expands guidelines in WHO 2000 'Management of the child with a serious infection or severe malnutrition'"*
	WHO	Handbook IMCI Integrated Management of Childhood Illness*	2005	n/a	MAM (for SAM guidance is to refer to hospital)	English, French	FIN	n/a	Y	Y	Y	n/a	available on WHO web http://www.who.int/child _adolescent_health/ documents/9241546441 /en/index.html This is a book focused on all aspects of paediatric care at primary care level, of which assessment & treatment of malnutrition is just one chapter
	Action Contre la Faim (Claudine Prudhon)	Assessment & Treatment of Malnutrition in Emergency Situations *(Manual of Therapeutic Care & Planning for a Nutritional Programme)*	2002	Inpatient only	both SAM and MAM	English	FIN	n/a	n/a	n/a	Y	n/a	Book covering multiple aspects of nutrition: treatment is just one section
	MSF	Nutrition Guidelines (1st edition)	1995	inpatient only	both SAM and MAM	English	FIN	n/a	n/a	n/a	Y	n/a	Book covering multiple aspects of nutrition: treatment is just one section

Table 5 cont'd

			Guideline type					Authors / contributors					
Region	**Country or Organization**	**Guideline**	**Date**	**CMAM or Inpatient only**	**SAM or MAM focus**	**language**	**draft or final**	**MoH**	**UNICEF**	**WHO**	**Internat-ional NGO or consultant**	**Local NGO or consul-tant**	**notes**
International guidelines:													
International	**MSF**	**Nutrition Guidelines**	May 2006	CMAM	both SAM and MAM	English	FIN	n/a	n/a	n/a	Y	n/a	Update of 1995 guidelines, though available in electronic version rather as a book
	MSF	**Guideline Infants less than 6 months old (Benson) MSF - OCBA**	Oct 2007	n/a	SAM	English	?	n/a	n/a	n/a	Y	n/a	This is a chapter ocused on infants alone and is one of a wider set of guidelines relating to malnutrition
	Valid International	**Community-based Therapeutic Care (CTC), A field manual (first edition)**	2006	CMAM	both SAM and MAM	English	FIN	n/a	n/a	n/a	Y	n/a	book describing multiple aspects
	UNHCR	**Handbook for Emergencies (third edition)**	Feb 2007	CMAM	both SAM and MAM	English	FIN	n/a	n/a	n/a	Y	n/a	Available online http://www.unhcr.org/publ/PUBL/ 471db4c92.html NB Interesting to note that 3rd edition has significantly more IYCF detail than 2nd
	UNHCR	**The management of Nutrition in Major Emergencies**	2000	Inpatient only	both SAM and MAM	English	FIN	n/a	n/a	Y	Y	n/a	book covering multiple aspects of nutrition
	IFE Core Group	**Infant Feeding in Emergencies IFE module 2, version 1.1 for health and nutrition workers in emergency situations, for training, practice and reference**	Dec 2007	n/a	SAM	English	FIN	n/a	n/a	n/a	Y	n/a	Training module covering externsive details of IYCF especially skilled breastfeeding support produced in UN and NGO collaboration with expert collaborators and review. Includes a chapter dedicated to management of acutely malnourished infants <6m (Chapter 8), supported by content in other chapters. Available on ENN website: http://www.ennonline.net/resources/view.aspx?resid=4
	ICRC (International Committee of the Red Cross)	**Nutrition Manual for Humanitarian Action**	Aug 2008	n/a		English	FIN	n/a	n/a	n/a	Y	n/a	Book covering multiple aspects of nutrition. Includes 1 chapter on Therapeutic Feeding and 1 on Supplementary Feeding Available on ICRC website: http://www.icrc.org/web/eng/siteeng0.nsf/html/p0820

Table 5 cont'd

			Guideline type					Authors / contributors					
Region	Country or Organ-ization	Guideline	Date	CMAM or Inpatient only	SAM or MAM focus	language	draft or final	MoH	UNICEF	WHO	Interna-tional NGO or consultant	Local NGO or consult-ant	notes
National guidelines													
1. a) Eastern Africa	Burundi	Protocole National de Nutrition	Aug 2002	Inpatient only		French	FIN	Y	Y	Y	Y	Y	
	Ethiopia	Protocol for the Management of Severe Acute Malnutrition	Mar 2007	CMAM	SAM only	English	FIN	Y	Y	Y	no	Y	
	Madagascar	Depistage et prise en charge de la malnutrition aigue	Sep 2007	CMAM	both SAM and MAM	French	FIN	Y	Y	Y	?	?	
	Malawi	Guidelines for the Management of Severe Acute Malnutrition (book T3)	2007	Inpatient only	SAM	English	FIN	Y	Y	Y	Y	Y	One of a set of guidelines on acute malnutrition - others focus on CMAM. Separate MAM / CMAM guidelines available
	Mozambique	Manual de Orientacao para Tratamento da Desnutricao Aguda Grave	Jun 2008	CMAM	both SAM and MAM	Portugese	Dr	Y	Y	?	Y	Y	recently replaced 2007 protocol
	Tanzania	Management of Acute Malnutrition National Guidelines	2008	CMAM	both SAM (main focus) and MAM	English	FIN	Y	Y	Y	Y	Y	includes checklist of SAM management
	Uganda	Integrated Management of Acute Malnutrition	Nov 2006	inpatient only	both SAM and MAM	English	Dr	Y	Y	?	Y	?	reference made to separate guidelines focused on therapeutic feeding centres
	Zambia	Integrated Management of Acute Malnutrition	2009	CMAM	both SAM (main focus) and MAM	English	Dr	Y	?	?	Y	?	includes supervision checklist
	Zimbabwe	Guidelines for the Management of Severe Acute Malnutrition through Community-based Therapeutic Care (CTC)	2008	CMAM	both SAM (main focus) and MAM	English	FIN	Y	Y	n/s	Y	Y	guidelines include: 1) supervision checklist 2) indicators for assessing quality & appropriateness Reference also made to the "Zimbabwe therapeutic feeding protocol" which outlines details of infant <6m care

Table 5 cont'd

			Guideline type					*Authors / contributors*					
Region	**Country or Organ-ization**	**Guideline**	**Date**	**CMAM or Inpatient only**	**SAM or MAM focus**	**language**	**draft or final**	**MoH**	**UNICEF**	**WHO**	**Interna-tional NGO or consultant**	**Local NGO or consult-ant**	**notes**
National guidelines													
1.b) Middle Africa	**DRC**	**Protocol National de Prise en Charge de la Malnutrition Aigue**	Oct 2008	CMAM		French	FIN	Y	Y	?	Y	?	Acknowledgements page blank
	Sudan (Southern)	**Guidelines for the Management of Severe Acute Malnutrition**	Jul 2008	CMAM	SAM	English	Dr	Y	Y	Y	Y	?	references WHO (1999), Valid (2006) & Golden & Grellety as sources
	Sudan (North)	**National Integrated Manual on the Management of Severe Acute Malnutrition in health facilities & at community level**	Jan 2008	CMAM	SAM	English	Dr	Y	Y	Y	Y	n/s	(for medical doctors and senior health workers)
1.d) Southern Africa	**Botswana**	**Guidelines for the Management of Severe Acute Malnutrition in Children**	Jun 2007	CMAM	SAM	English	Dr	Y	Y	Y	Y	Y	noted that developed in line with WHO reference manuals, 1999, 2003
1.e) Western Africa	**Burkina Faso**	**None yet - in draft**	n/s	CMAM	both SAM and MAM	French	Dr	?	?	?	?	?	only draft outline available
	Cote D'Ivoire	**Protocole National de Prise en charge de la malnutrition severe**	May 2005	Inpatient only (CMAM type home treatment noted in annex		French	FIN	Y	Y	Y	Y	Y	
	Guinea	**Protocole National de Prise en Charge de la Malnutrition Aigue**	May 2008	CMAM	SAM and MAM	French	FIN	Y	Y	?	?	?	
	Mali	**Protocole National de la prise en charge de la malnutrition aigue**	Dec 2007	CMAM	SAM and MAM	French	Dr	Y	Y	Y	Y	Y	
	Niger	**Protocol National de Prise en Charge de la Malnutrition Aigue**	Dec 2006	CMAM	both SAM and MAM	French	FIN	Y	Y	Y	Y	Y	

Table 5 cont'd

			Guideline type					*Authors / contributors*					
Region	**Country or Organ-ization**	**Guideline**	**Date**	**CMAM or Inpatient only**	**SAM or MAM focus**	**language**	**draft or final**	**MoH**	**UNICEF**	**WHO**	**Interna-tional NGO or consultant**	**Local NGO or consult-ant**	**notes**
National guidelines													
	Senegal	**Protocole de prise en charge de la malnutrition aigue**	May 2008	CMAM	both SAM and MAM	French	FIN	Y	Y	Y	Y	Y	
	Afghanistan	**Community-based Management of Acute Malnutrition programme in Aqcha and Mardyan District of Jawzjan Province Northern Afghanistan (Stabilization Centre Guidelines)**	June 2008	CMAM	SAM	English	Dr	Y	Y	Y	No	Y	compiled by Save the Children UK
	India	**Indian Academy of Paeditrics guidelines**	2006	Inpatient only	SAM	English	FIN	Y	Y	Y	No	Y	Published in journal 'Indian Paediatrics, (2007: 44: 443-61)
	Pakistan	**Protocol for the inpatient treatment of severely malnourished children in the Pakistan earthquake emergency**	Dec 2005	Inpatient only	SAM	English	Dr	Y	Y	Y	Y	Y	based on WHO 1999 protocol
	Sri Lanka	**None yet - in draft Management of Severe Acute Undernutrition: Manual for Health Workers in Sri Lanka**	n/s	CMAM	both SAM and MAM	French	Dr	?	?	?	?	?	only draft outline available

*These WHO resources are the same guideline produced in different formats.

4.4 Guideline Comparisons

4.4.1 Case definitions of SAM & MAM (general)

See Table 6 for an overview of case definitions. All guidelines reviewed use anthropometry as the main indicator for SAM/MAM. All also acknowledge oedematous malnutrition as an indicator of SAM.

Weight-for-height vs. weight-for-age
Most guidelines use weight-for-length criteria as recommended by WHO (1999). Cutoffs for SAM and MAM are also mostly consistent with WHO (1999). Exceptions are the 2008 WHO Manual on healthcare of children in emergencies and IMCI guidelines, which both use weight-for-age as the main indicator (although IMCI also uses visible severe wasting as an alternative). This difference must be addressed.

NCHS vs. WHO-GS (in context of z-score vs. %-of-median)
NCHS growth references are still dominant in the guidelines reviewed. Only Sri Lanka and Mozambique explicitly use WHO-GS, though several other guidelines do footnote their availability alongside NCHS. It is only recently, in May 2009 that UNICEF and WHO released a joint statement formally recommending the new WHO-GS for identifying severe acute malnutrition[133]. It is likely therefore that their use will increase in the coming years. Some of the possible implications of this change for infants are discussed in Chapter 3.

MUAC
MUAC is increasingly used in SAM/MAM guidelines. It is an independent admission criterion noted alongside weight-for-height, and in a small number or guidelines (Valid 2006, Uganda 2006), it is the major case definition criterion. No guidelines recommend its use in infants <6m.

Table 6: Case definitions of SAM & MAM

			Case Definitions of SAM & MAM								
Country or Organization	**Guideline**	**Date**	**Growth 'norm'** (alternative, if noted)	**Index** (WH: weight for height; WA: weight or age)	**Main Recommended indicator** (+ alternative, if noted)	**Indicator presented in tables** (if shown)	**Case definition SAM** (in **all** guidelines, oedema =SAM)	**MUAC-based case definition of SAM**	**Case definition MAM**	**MUAC-based case definition of MAM**	**Notes**
International guidelines											
WHO	**Management of severe malnutrition: a manual for physicians & other senior health workers**	1999	NCHS	WH	z-score (% of median)	WHZ (NCHS) boys & girls split sex tables	<-3 WHZ (<70% WHM)	not used	-3 ≤ WHZ <-2 (70 to 79% WHM)	not used	Length measured if child <85cm or <2 years. Height if >85cm or >2years
WHO	**Guidelines for the inpatient treatment of severely malnourished children**	2003	NCHS	WH	z-score (% of median)	WHZ (NCHS) boys & girls split sex tables	<-3 WHZ (<70% WHM)	not used	-3 ≤WHZ <-2 (70 to 79% WHM)	not used	Length measured if child <85cm & height if >85cm
WHO	**Manual for the health care of children in humanitarian emergencies**	2008	n/s	WA	low weight-for-age	weight-for -age chart show in annex, but lines are not labelled	~ MUAC <110mm (>6months) ~ visible severe wasting	<110mm (if child >6 months old)	no visible severe wasting, MUAC >110mm very low weight-for-age	n/s	
WHO	**Pocket book of Hospital care for children**	2005	NCHS	WH	z-score OR % of median	WHZ (NCHS) boys & girls split sex tables	<-3 WHZ OR <70% WHM	not used	n/s	n/s	Length measured if child <85cm & height if >85cm
WHO	**Handbook IMCI Integrated Management of Childhood Illness**	2005	n/s	WA	Visible severe wasting Low weight-for-age	weight-for -age chart show in annex, but lines are not labelled	Low weight-for-age	not used	n/s	n/s	notes that on weighing child should wear light clothing
Action Contre la Faim (Claudine Prudohn)	**Assessment & Treatment of Malnutrition in Emergency Situations**	2002	NCHS	WH (WA is described)	% of median (z-score)	WHM (NCHS/ WHO 1982) combined sex WHZ (NCHS/ WHO 1983) split sex	<70% WHM (<-3 Z-score	<110mm (noted as controversial if length <75cm)	WHM ≥70% and <80% (WHZ ≥-3 and <-2)	≥110mm and <120mm	Length measured if <2 years age, height if >2year (85cm a proxy if age unknown) Noted that WHM predicts death better than WHZ. Use WHZ only when WHM rejects a high risk child
MSF	**Nutrition Guidelines (1st edition)**	1995	NCHS	WH	% median (z-score)	WHM (NCHS/ WHO 1982) combined sex WHZ (NCHS/ WHO 1983) split sex	<70% WHM (<-3 Z-score)	<110mm (if child >12 months or >75cm length)	WHM ≥70% and <80% (WHZ ≥-3 and <-2)	<135mm referred for screen, but only enrolled if fulfils WHM or WHZ criteria	Length measured if <2 years age, height if >2years (85cm a proxy if age unknown)

Table 6 cont'd

			Case Definitions of SAM & MAM								
Country or Organization	Guideline	Date	Growth 'norm' (alternative, if noted)	Index (WH: weight for height; WA: weight or age)	Main Recommended indicator (+ alternative, if noted)	Indicator presented in tables (if shown)	Case definition SAM (in **all** guidelines, oedema =SAM)	MUAC-based case definition of SAM	Case definition MAM	MUAC-based case definition of MAM	Notes
International guidelines											
MSF	**Nutrition Guidelines**	May 2006	NCHS	WH	% median (notes z-scores used in some countries	n/a	<70% WHM (<-3 Z-score)	<110mm (if child >6 months old)	WHM ≥70% and <80% (WHZ ≥-3 and <-2)	n/s	
MSF	**Protocol Infants less than 6 months old (Benson) MSF - OCBA**	Oct 2007	n/s	WH	% of median	WHM (NCHS/ WHO 1982) combined sex WHZ (NCHS/ WHO 1983) split sex	<70% WHM	n/a (focus is on infants <6m)	n/a	n/a	
Valid International	**Community-based Therapeutic Care (CTC), A field manual (first edition)**	2006	NCHS	MUAC*	Unadjusted MUAC % median or Z-score noted	no tables shown	<70% WHM<-3 WHZ	<110mm (if length >65cm)	WHM ≥70% and <80% (WHZ ≥-3 and <-2)	110mm to <125mm	* MUAC emphasised as primary measure(WH noted)
UNHCR	**Handbook for Emergencies (third edition)**	Feb 2007	NCHS*	WH	% of median OR z-score	no tables shown	<70% WHM (or <-3 Z-score)	<110mm (if aged 6 to 59months)	70% to 79% WHM (-3 to -2 WHZ)	110mm to <125mm	also mention LBW babies (no details given) * recognised WHO & states that UNHCR is in process of assessing the new standards
UNHCR	**The management of Nutrition in Major Emergencies**	2000	NCHS	WA	z-score (% of median)	WHZ (NCHS) boys & girls split sex tables	<-3 WHZ (<70% WHM)	<-3 Z MUAC-for-age / MUAC-for-height	≥-3 to <-2 WHZ (70 to 79% WHM	≥-3 Z MUAC-f-age/ MUAC-f-height to <-2z	notes that on weighing child should wear light clothing
IFE Core Group	**Infant Feeding in Emergencies IFE Module 2, version 1.1**	Dec 2007	NCHS	WH	% of median	tables not shown	<70% WHM (NCHS)	n/a (focus is on infants <6m)	n/s	n/s	n/s
ICRC	**Nutrition Manual for Humanitarian Action**	Aug 2008	NCHS	WH (describes other indices, incl WA, MUAC)	z-score (describes other indicators)	WHZ (NCHS) boys & girls split sex tables (MUAC by age Z-score tables also given)	several described, including <-3 WHZ (NCHS) and MUAC-for-height <-3z (75% median)	<110mm (<125mm also referred to as 'severe' in anthro-pometry chapter)		140 or 135mm to 125mm	Length measured if <2 years age, height if >2 years notes that anthropometry should not be the only basis of admission
National guidelines											
Burundi	**Protocole National de Nutrition**	Aug 2002	NCHS	WH	% of median	combined sex, WHM (NCHS)	<70% WHM (NCHS)	<110mm (if length >65cm)	between 70 to 79% WHM	<125mm	height <65cm equated with age <6 months no reference given for tables

Table 6 cont'd

			Case Definitions of SAM & MAM								
Country or Organization	**Guideline**	**Date**	**Growth 'norm'** (alternative, if noted)	**Index** (WH: weight for height; WA: weight or age)	**Main Recommended indicator** (+ alternative, if noted)	**Indicator presented in tables** (if shown)	**Case definition SAM** (in **all** guidelines, oedema =SAM)	**MUAC-based case definition of SAM**	**Case definition MAM**	**MUAC-based case definition of MAM**	**Notes**
National guidelines											
Ethiopia	**Protocol for the Management of Severe Acute Malnutrition**	Aug 2002	NCHS	WH	% of median	combined sex, WHM (NCHS)	<70% WHM (NCHS)	<110mm (if length >65cm)	between 70 to 79% WHM	<125mm	height <65cm equated with age <6 months no reference given for tables
Madagascar	**Depistage et prise en charge de la malnutrition aigue**	Sep 2007	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm (if length >65cm)	70 to 79% WHM	n/s	
Malawi	**Guidelines for the Management of Severe Acute Malnutrition (book T3)**	2007	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm (ages 1 to 5 years)	70 to 79%	110 to 119mm	*(NB printed as a card separate to the book)*
Mozambique	**Manual de Orientacao para Tratamento da Desnutricao Aguda Grave**	Jun 2008	WHO-GS (2007 protocol used NCHS)	WH	% of median	* table labelled "% of median (WHO-2004) joint sex	<70% WHM	<110mm	70 to 79% WHM	110 to 125mm	* appears to have calculated weight cut-offs based on WHO (2006) boys median tables Length measured if child <85cm & height if >85cm
Tanzania	**Management of Acute Malnutrition NATIONAL Guidelines**	2008	NCHS	WH	% of median OR z-score	WHZ (NCHS) boys & girls split sex tables	<70% WHM OR <-3 WHZ	<110mm (6-59m or 65 to 110cm)	70-79% WHM or <-2SD	110-120mm	Length measured if child <85cm & height if >85cm
Uganda	**Integrated Management of Acute Malnutrition**	Nov 2006	n/s	MUAC emphasis-ed	Unadjusted MUAC *% median or Z-score noted*	no tables shown	*<70% WHM <-3 WHZ*	<110mm *(if length >65cm and/or >6months)*	*WHM ≥70% and <80% (WHZ ≥-3 and <-2)*	110mm to <125mm	
Zambia	**Integrated Management of Acute Malnutrition**	2009	NCHS*	WH	% of median	no tables shown	<70% WHM OR <-3 WHZ	<110mm (6-59m)	WHM ≥70% and <80% (WHZ ≥-3 and <-2)	≥110 and <125mm	*WHO GS noted as a footnote in the introduction but not thereafter **z-score noted once in introduction but not thereafter)
Zimbabwe	**Guidelines for the Management of Severe Acute Malnutrition through Community-based Therapeutic Care (CTC)**	2008	NCHS	WH	% of median	WHZ (NCHS) boys & girls split sex tables	<70% WHM	<110	70 to 80%	110 to 125mm	Length if <85cm or <2 years, Height ≥85cm or >2years

Table 6 cont'd

			Case Definitions of SAM & MAM								
Country or Organization	**Guideline**	**Date**	**Growth 'norm'** (alternative, if noted)	**Index** (WH: weight for height; WA: weight or age)	**Main Recommended indicator** (+ alternative, if noted)	**Indicator presented in tables** (if shown)	**Case definition SAM** (in **all** guidelines, oedema =SAM)	**MUAC-based case definition of SAM**	**Case definition MAM**	**MUAC-based case definition of MAM**	**Notes**
National guidelines											
DRC	**Protocol National de Prise en Charge de la Malnutrition Aigue**	Oct 2008	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm (if length >65cm)	70 to 79.9%	110 to 119mm	
Sudan (Southern)	**Guidelines for the Management of Severe Acute Malnutrition**	Jul 2008	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm (for height >65cm)	70 to 79.9%	n/s	Length measured if child <85cm & height if >85cm **WHO GS noted as a footnote in the introduction but not thereafter* ** z-score noted once in introduction but not thereafter
Sudan (North)	**National Integrated Manual on the Management of Severe Acute Malnutrition in health facilities and at community level**	Jan 2008	NCHS	WH	% of median OR z-score	draft - not yet inserted	<70%	<110mm (with length >65cm or >1year old)	≥-3 to <-2 WHZ or 70 to 79% WHM	n/s	Length if <85cm or <2 years, Height ≥85cm or >2years *(tables state 85cm cutoff, text gives age OR 85cm cutoff)*
Botswana	**Guidelines for the Management of Severe Acute Malnutrition in Children**	Jun 2007	NCHS	WH	% of median	annexes not complete (draft guidelines)	<70% WHM (NCHS)	<110mm	n/s	n/s	Length measured if child <85cm & height if >85cm equates age <6months with height <65cm **z-score noted once in introduction but not thereafter*
Burkina Faso	**Guidelines for the Management of Severe Acute Malnutrition in Children**	Jun 2007	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm	≥70 to <80% WHM	110 to 125mm	equates age <6months with height <65cm
Cote D'Ivoire	**Protocole National de Prise en charge de la malnutrition severe**	May 2005	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm	n/s	n/s	Length measured if child <85cm & height if >85cm equates age <6months with height <65cm
Guinea	**Protocole National de Prise en Charge de la Malnutrition Aigue**	May 2008	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm (if height >65cm)	≥70 to <80% WHM	110 to 125mm	Length measured if child <85cm & height if >85cm

Table 6 cont'd

			Case Definitions of SAM & MAM								
Country or Organization	**Guideline**	**Date**	**Growth 'norm'** (alternative, if noted)	**Index** (WH: weight for height; WA: weight or age)	**Main Recommended indicator** (+ alternative, if noted)	**Indicator presented in tables** (if shown)	**Case definition SAM** (in **all** guidelines, oedema =SAM)	**MUAC-based case definition of SAM**	**Case definition MAM**	**MUAC-based case definition of MAM**	**Notes**
National guidelines											
Mali	**Protocole National de la prise en charge de la malnutrition aigue**	Dec 2007	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NCHS)	<110mm (if height >65cm)	≥70 to <80% WHM	110 to 119mm	Length <85cm, Height ≥85cm equates age <6months with height <65cm
Niger	**Protocol National de Prise en Charge de la Malnutrition Aigue**	Dec 2006	NCHS	WH	% of median	WHM (NCHS) combined sex	<70% WHM (NHCS) *(WHZ<-3 WHO is footnoted as an alternative case definition)*	<110mm (for height >65cm)	70% to <80% WHM	n/s	Length if <85cm or <2 years, Height ≥85cm or >2years
Senegal	**Protocole de prise en charge de la malnutrition aigue**	May 2008	NCHS	WH	% of median OR z-score	WHM (NCHS) combined sex	<70% WHM OR <-3 WHZ	<110mm (if aged 6 to 59 months)	≥-3 to <-2 WHZ or 70 to 79% WHM	110 to 125mm	Length if <2 years, Height if >2 years <65cm length seen as proxy for <6months age
Afghanistan	**Community-based Management of Acute Malnutrition programme in Aqcha and Mardyan District of Jawzjan Province Northern Afghanistan**	June 2008	not specifited	WH	% median (z-score)	annexes not complete (draft guidelines)	<70% WHM (or <-3 WHZ)	<110mm	n/s	n/s	Length measured if child <85cm & height if >85cm if age unknown, <65cm length is proxy for <6months age
India	**Indian Academy of Paediatrics guidelines**	2006	NCHS	WH	% median (z-score)	not shown	<70% WHM (or <-3 WHZ)	<110mm	n/s	n/s	
Pakistan	**Protocol for the inpatient treatment of severely malnourished children in the Pakistan earthquake emergency**	Dec 2005	NCHS	WH	% median (z-score)	not shown (footnotes suggest that Z-score table as in WHO 1999 guidelines likely to be inserted)	<70% WHM (or <-3 WHZ)	not stated	n/s	n/s	Length measured if child <85cm & height if >85cm
Sri Lanka	**Management of Severe Acute Undernutrition: Manual for Health Workers in Sri Lanka**	2007	WHO	WH	z-score	WHZ (WHO) split sex	<-3Z WHZ (WHO)	no	n/s	n/s	Length measured if child <2years & height if >2years

4.4.2 Infant <6m SAM and MAM case definitions

See Table 7 for overview.

Infant <6m severe acute malnutrition (SAM)

In all of the guidelines infants <6m with SAM are treated as inpatients. This includes CMAM guidelines where the management strategy is referral of malnourished infants <6m for inpatient care. Weight-for-length criteria are always the same as for older children, though sometimes this is implied rather than directly stated.

Infants >6m but <3 or 4kg

There is often a 'secondary criterion' of a child >6 months but <3 or 4 kg. Some guidelines recommend these should have the same initial treatment as an infant <6m.

Infants <6m and length <65cm

Several guidelines implicitly or explicitly equate age <6 months and length <65cm, sometimes using length as a proxy for age. However confusion arises when these measures conflict, e.g. infant is known to be >6 months but length is <65cm. It is not clear which treatment protocol should be applied and if a MUAC measurement is valid if length is <65cms.

Length < 49cm

Some guidelines make an allowance for where length <49cm and so W/H cannot be measured. For example, IFE Module 2 recommends "visibly severe thinness" where measurement of W/L is not possible, and mentions that some agencies use a criterion of <2.1kg irrespective of length. WHO-GS go down to 45cm as the minimum length in length-for-height tables. This represents almost -3 z length-for-age at birth: not being able to determine a weight-for-length should therefore be much less of an issue in the future.

Measurement of weight in infants <6m

None of the guidelines draws attention to particular considerations in the anthropometric assessment of infants <6m (see Section 9.3.2). Research has shown weighing scales used in emergencies to be largely unsuitable for weighing infants <6m.[134]

Assessment of age

Since birth is a recent event in an infant <6m, it is in theory easier to accurately assess age than for older children. None of the guidelines gives details of age assessment of how to best do this e.g. use of calendar to elicit exact age in months.

Infant <6m moderate acute malnutrition (MAM)

Identifying and treating infants <6m with MAM is not specifically dealt with in any of the guidelines except one (Burkina Faso). Infant MAM is only recognized implicitly, by assuming that the same MAM weight-for-length criteria applicable to older children are applicable to infants. Management therefore requires inference from other sections of the guidelines, e.g. where lactating mothers with infants <6m are admitted to SFP. IFE Module 2 focuses on skilled breastfeeding support for moderately malnourished infants (implicitly including infants <6m).[135] Burkina Faso stands out by explicitly stating that infants with MAM should be treated by their mothers receiving SFP rations and health and nutrition education.

Further assessment recommended for infants <6m

Some guidelines recommend initial admission to an 'assessment' area where breastfeeding can be more closely observed. No current guideline differentiates complicated vs. uncomplicated infant <6m acute malnutrition.

Clinical admission criteria for infants <6m

Many guidelines recommend clinical admission criteria, in addition to anthropometry. Common criteria include "an infant who is too weak or feeble to suckle" and "mother not producing enough milk". Minor variations of emphasis and phrasing (e.g. 'not enough milk' with weight loss vs. 'not enough milk' alone) make it likely that there are significant inter-programme variations in terms of which infants <6m are admitted to care. It is also not clear whether carer reports or clinician assessments should carry the greater weight. Inter-user variations in interpreting even the very same guidelines are very likely.

Table 7: Infant <6m SAM & MAM case definitions

		Separate guideline for infants <6m?				*Case Definition (Infants) ~ for admission*			
Country or Organization	**Guideline**	**Infant <6m SAM**	**Infant <6m MAM**	**Pages of guideline devoted to infants** */ total pages (excl. annexes)*	**% of guideline devoted to infants**	**Who apart from infants <6m should follow infant guidelines**	**Anthropometric criteria** *(except for MUAC, which is not used for infant <6m, assume same case definitions of SAM, MAM unless otherwise stated)*	**Clinical criteria**	**Notes**
International guidelines:									
WHO	**Management of severe malnutrition: a manual for physicians & other senior health workers 1999**	not specifically mentioned.*		n/a	n/a	n/a	n/a	n/a	Preface states that protocol refers to "malnourished children under 5 years of age"
WHO	**Guidelines for the inpatient treatment of severely malnourished children, 2003**	not specifically mentioned.		n/a	n/a	n/a	n/a	n/a	
WHO	**Manual for the health care of children in humanitarian emergencies 2008**	not specifically mentioned		n/a	n/a	n/a	n/a	n/a	~ noted that patients needing inpatient care should be treated following "current WHO guidelines"
WHO	**Pocket book of Hospital care for children 2006**	yes	n/s	1/24	4%	no other groups noted	same	not specified	separate chapter on "supportive care" gives details of breastfeeding issues, including supplementary suckling
WHO	**Handbook IMCI Integrated Management of Childhood Illness 2005**	yes	yes	n/a		no other groups noted	n/a	n	Recommends that infants and children with severe malnutrition are referred urgently too hospital, and does not cover their specific treatment
Action Contre la Faim (Claudine Prudohn)	**Assessment & Treatment of Malnutrition in Emergency Situations, 2002**	yes	yes	5/58 (of section on treatment)	9%	<4kg	same	**1)** Too weak to suckle effectively; and/or **2)** Mother not producing enough milk	~ notes that infant <6m should be nursed in a separate area of the ward ~ also suggests pressing on mothers breasts to check for presence of milk
MSF	**Nutrition Guidelines (1st edition), 1995**	yes	n/s	1/46	2%	no other groups noted	same	Not specifically stated	in "Infant feeding" section, infant not defined to mean infant <6m alone
MSF	**Nutrition Guidelines, 2006**	yes	n/s	14/191	7%	no other groups noted	WHM <70%	**1)** Weight loss or growth stagnation (1 to 2 weeks) **2)** Too weak to suckle **3)** Insufficient breastmilk **4)** Inappropriate alternative infant feeding	whole chapter in the book devoted to infant <6m recognised LBW, preterm infants notes need for mechanical scales accurate to 10g

Table 7 cont'd

		Separate guideline for infants <6m?				Case Definition (Infants) ~ for admission			
Country or Organization	Guideline	Infant <6m SAM	Infant <6m MAM	Pages of guideline devoted to infants / total pages (excl. annexes)	% of guideline devoted to infants	Who apart from infants <6m should follow infant guidelines	Anthropometric criteria (except for MUAC, which is not used for infant <6m, assume same case definitions of SAM, MAM unless otherwise stated)	Clinical criteria	Notes
International guidelines:									
MSF	Protocol Infants less than 6 months old (Benson) MSF – OCBA 2007	yes	n/s	(10/10)	(100%)	<3kg being breast-fed	WHM <70%	**1)** Infant too weak or feeble to suckle effectively (independent of WHM)	one chapter from a wider set of guidelines notes need for a 'breastfeeding corner'notes no growth standards for infants whose length <49cm and that the nutrition unit is not appropriate for treating premature and LBW infants <49cm. These should be referred to nursery for appropriate care
Valid International	Community-based Therapeutic Care (CTC), A field manual (first edition) 2006	yes	n/s	0.5/13 pages on inpatient care	4%	no other groups noted	WHM <70%	visible wasting	Guideline does not attempt to directly address infant <6m treatment, referring instead to other guidelines, notably the 2001 Operational Guidance on Infant & Young Child Feeding in Emergencies, volume 1
UNHCR	Handbook for Emergencies (third edition) 2007	yes	not directly	infant U6m mentioned in several paragraphs mixed in main text		no other groups noted	same	"visible severe wasting in conjunction with difficulties in BF"	- notes that infantsU6 SAM treatment is based on promotion of BF (if possible) - details not described
UNHCR	The management of Nutrition in Major Emergencies 2000	infant <6m malnutrition recognised, but not split into SAM & MAM		1/24	4%	no other groups noted	same	not specifically stated	States that "for malnourished infants <6m, it is the mother who should be included, NOT the infants (infants should be exclusively breastfed)"
IFE Core Group	Infant Feeding in Emergencies IFE Module 2, version 1.1 2007	yes	yes	17/114 pages focus just on infant with SAM (see notes)	(15%)	>6months old but <65cm ~ 4kg	WHM <70%	failure to gain weight at home or under management at a breastfeeding corner	One chapter (8) focuses exclusively on infant <6m severe malnutrition. Chapter 5 adrresses low birth weight infants,"visibly thin"/moderately malnourished infants and malnourished mothers. The whole 223 page manual directly or indirectly addresses this age group through guidance on skilled assessment and support for breastfeeding.
ICRC	Nutrition Manual for Humanitarian Action 2008	no (notes TFP often restricted to <5years)	no	n/a	n/a	n/a	n/a	n/a	no separate section for care of infant <6m. Does however have a paragraph on BF. Notes it as an "absolute priority, and every effort should be made to encourage or restore it"

4.4 Guideline Comparisons

Table 7 cont'd

		Separate guideline for infants <6m?				Case Definition (Infants) ~ for admission			
Country or Organization	**Guideline**	**Infant <6m SAM**	**Infant <6m MAM**	**Pages of guideline devoted to infants** */ total pages (excl. annexes)*	**% of guideline devoted to infants**	**Who apart from infants <6m should follow infant guidelines**	**Anthropometric criteria** *(except for MUAC, which is not used for infant <6m, assume same case definitions of SAM, MAM unless otherwise stated)*	**Clinical criteria**	**Notes**
National guidelines:									
Burundi	**Protocole National de Nutrition 2002**	yes	n/s	5/33	15%	<6m or <3kg being BF	same	**1)** Mother does not have enough milk AND infant loosing weight **2)** Infant too weak to suckle and loosing weight even if mother does have milk	
Ethiopia	**Protocol for the Management of Severe Acute Malnutrition 2007**	yes	n/s	8/81	10%	no other groups noted	WHM <70%	too weak or feeble to suckle effectively (any WH)	Protocol notes no growth standards for infants whose length <49cm and that the nutrition unit is not appropriate for treating premature and LBW infants <49cm. These should be referred to nursery and given infant formula.
Madagascar	**Depistage et prise en charge de la malnutrition aigue 2007**	yes	n/s	3/52	6%	<3.5kg	WHM <70%	**1)** Too weak or feeble to suckle effectively *or* **2)** Mother does not have enough milk and infant is loosing weight	
Malawi	**Guidelines for the Management of Severe Acute Malnutrition (book T3) 2007**	yes	yes (in group 'infants <6m with nutrition problems but not SAM')	10/38	26%	<3kg	WHM <70%	**1)** Infant not gaining or loosing weight but not SAM *or* **2)** Mother reports insufficient BM *or* **3)** Weak or feeble and not suckling well but not SAM	Protocol notes no growth standards for infants whose length <49cm and that the nutrition unit is not appropriate for treating premature and LBW infants <49cm - should be referred to nursery for appropriate care
Mozambique	**Manual de Orientacao para Tratamento da Desnutricao Aguda Grave 2008**	yes	n/s	8/91	9%	<3kg	WHM <70%	**1)** Too weak or feeble to suckle effectively *or* **2)** Not gaining weight at home	
Tanzania	**Management of Acute Malnutrition NATIONAL Guidelines 2008**	yes	n/s	1/67	1%	-	same	not stated	Protocol has only 1 paragraph which states "If the mother is breastfeeding, assist her to breastfeed or express breastmilk. Give the prescribed amount of F75 in addition to the breastmilk"

Table 7 cont'd

		Separate guideline for infants <6m?				***Case Definition (Infants)*** ***~ for admission***			
Country or Organization	**Guideline**	**Infant <6m SAM**	**Infant <6m MAM**	**Pages of guideline devoted to infants** *(/ total pages (excl. annexes)*	**% of guideline devoted to infants**	**Who apart from infants <6m should follow infant guidelines**	**Anthropometric criteria** *(except for MUAC, which is not used for infant <6m, assume same case definitions of SAM, MAM unless otherwise stated)*	**Clinical criteria**	**Notes**
National guidelines:									
Uganda	**Integrated Management of Acute Malnutrition 2006**	yes	n/s	1/53	2%	2%	same	not stated	reference made to separate guidelines focused on therapeutic feeding centres reference also make to link with IMCI guidelines
Zambia	**Integrated Management of Acute Malnutrition 2009**	yes (but see notes)	n/s	1/35	3%	<3kg	WHM <70%	**1)** Infant <6m unable to breastfeed	~ Though infant <6m SAM recognised briefly as "special cases", stated elsewhere that these guidelines are targeted at 6 to 59m children. Thus no separate section or chapter for infant <6m. ~ Also references separate "National guidelines" for full details of treatment during (inpatient) stabilisation
Zimbabwe	**Guidelines for the Management of Severe Acute Malnutrition through Community-based Therapeutic Care (CTC) 2008**	yes (but see notes)	n/s	1/56	2%	n/s	n/s	not stated	~ reference made to separate guidelines focused on therapeutic feeding centres ~ infants <6m not otherwise focused on in this guideline in the chapter on "Stabilisation Centre" care
DRC	**Guideline National de Prise en Charge de la Malnutrition Aigue 2008**	yes	n/s	5/68	7%	<3.5kg	<70% WHM	**1)** Too weak or feeble to suckle effectively (any WH) *or* **2)** Mother does not have enough milk to feed her child *or* **3)** Not gaining (or loosing) weight at home	
Sudan (Southern)	**Guidelines for the Management of Severe Acute Malnutrition 2008**	yes	n/s	7/103	7%	<3kg being breast-fed	<70% WHM	**1)** Too weak or feeble to suckle effectively (any WH) **2)** Not gaining (or loosing) weight at home	noted that RUTF inappropriate as "reflex of swallowing is not yet present"
Sudan (North)	**National Integrated Manual on the Management of Severe Acute Malnutrition in health facilities and at community level 2008**	yes	n/s	7/103	7%	<3kg being breast-fed	<70% WHM	**1)** Too weak or feeble to suckle effectively (any WH) **2)** Not gaining weight at home	notes that infant <6m should be ideally be nursed in a separate area of the ward

Table 7 cont'd

		Separate guideline for infants <6m?				Case Definition (Infants) ~ for admission			
Country or Organization	**Guideline**	**Infant <6m SAM**	**Infant <6m MAM**	**Pages of guideline devoted to infants** */ total pages (excl. annexes)*	**% of guideline devoted to infants**	**Who apart from infants <6m should follow infant guidelines**	**Anthropometric criteria** *(except for MUAC, which is not used for infant <6m, assume same case definitions of SAM, MAM unless otherwise stated)*	**Clinical criteria**	**Notes**
National guidelines:									
Botswana	**Guidelines for the Management of Severe Acute Malnutrition in Children 2007**	yes	n/s	6/28	21%	<3kg being breast-fed	same	**1)** Too weak or feeble to suckle effectively (any WH) *or* **2)** Mother does not have enough milk to feed her child	Protocol notes no growth standards for infants whose length <49cm and that the nutrition unit is not appropriate for treating premature and LBW infants <49cm. These should be referred to nursery and given infant formula.
Burkina Faso	**None yet - in draft**	yes	yes	5/57	9%	<3kg OR length <65cm (a proxy for age)	same	**1)** Mother does not have enough milk and baby loosing weight **2)**Infant too weak to suckle and loosing weight even if mother has milk	SFP recommended for mothers of MAM infants <6m. General health and nutrition education also recommended
Cote D'Ivoire	**Protocole National de Prise en charge de la malnutrition severe 2005**	yes	n/s	10/65	15%	<3kg OR length <65cm (a proxy for age)	<70% WHM (NCHS) (for non-breastfed infant)	**1)** Mother does not have enough milk and baby loosing weight (does not matter what exact WHM is at assessment) **2)**Infant too weak to suckle and loosing weight even if mother has milk	Protocol notes no growth standards for infants whose length <49cm and that the nutrition unit is not appropriate for treating premature and LBW infants <49cm. These should be referred to nursery and given infant formula
Guinea	**Protocole National de Prise en Charge de la Malnutrition Aigue 2008**	yes	n/s	8/98	8%	<3kg	<70% WHM (NCHS)	**1)** Mother does not have enough milk and baby loosing weight (does not matter what exact WHM is at assessment) **2)** Infant too weak to suckle and loosing weight even if mother has milk	
Mali	**Protocole National de la prise en charge de la malnutrition aigue 2007**	yes	n/s	4/97	4%	<3kg	<70% WHM (NCHS)	**1)** Mother does not have enough milk and baby loosing weight **2)** Infant too weak to suckle and loosing weight even if mother has milk	noted that RUTF inappropriate as "reflex of swallowing is not yet present"
Niger	**Protocole de prise en charge de la malnutrition aigue 2008**	yes	yes (mother referred to SFP)	7/93	8%	<3kg	<70% WHM (NCHS)	Main criterion is "failure of effective breastfeeding":1) Too weak or feeble to suckle effectively (no matter what weight-for-height)2) Not gaining (or loosing) weight at home	notes that infant <6m should be nursed in a separate area of the ward

Table 7 cont'd

		Separate guideline for infants <6m?				Case Definition (Infants) ~ for admission			
Country or Organization	Guideline	Infant <6m SAM	Infant <6m MAM	Pages of guideline devoted to infants */ total pages (excl. annexes)*	% of guideline devoted to infants	Who apart from infants <6m should follow infant guidelines	Anthropometric criteria *(except for MUAC, which is not used for infant <6m, assume same case definitions of SAM, MAM unless otherwise stated)*	Clinical criteria	Notes
National guidelines:									
Senegal	**Protocole de prise en charge de la malnutrition aigue 2008**	yes	n/s	3/45	7%	not mentioned	<70% WHM (NCHS)	**1)** Too weak to suckle and loosing weight even if mother has milk **2)** Loosing weight with mother who has insufficient milk	
Afghanistan	**Community-based Management of Acute Malnutrition programme in Aqcha and Mardyan District of Jawzjan Province Northern Afghanistan 2008**	yes	n/s	5/26	19%	<3kg being breast-fed	same	Main criterion is "failure of effective breastfeeding": **1)** Too weak or feeble to suckle effectively **2)** Not gaining weight at home	Protocol notes no growth standards for infants whose length <49cm and that the nutrition unit is not appropriate for treating premature and LBW infants <49cm. These should be referred to nursery and given infant formula
Guinea	**Protocole National de Prise en Charge de la Malnutrition Aigue 2008**	yes	n/s	8/98	8%	<3kg	<70% WHM (NCHS)	**1)** Mother does not have enough milk and baby loosing weight (does not matter what exact WHM is at assessment) **2)** Infant too weak to suckle and loosing weight even if mother has milk	
India	**Indian Academy of Paeditrics guidelines 2006**	Not explicitly. Intro does mention children aged 0 to 4 years	n/s	0/14	0%	n/a	n/a	n/a	No specific details of infant <6m treatment noted in protocol summary.
Pakistan	**Protocol for the inpatient treatment of severely malnourished children in the Pakistan earthquake emergency 2005**	not exlplicitly	n/s	n/s	n/s	n/s	n/s	n/s	
Sri Lanka	**Management of Severe Acute Undernutrition: Manual for Health Workers in Sri Lanka 2007**	target group for protocol is 0 to 59 months	n/s	no separate section for infant <6m	n/s	not mentioned	same	not specified	Outpatient care noted as only for 6 to 59 month old children

4.4.3 Key medical treatments for infants <6m

See Table 8 for overview.

Admission procedures

Admission procedures for SAM and MAM include a basic medical history and clinical examination. Some guidelines annex a template 'history/examination' proforma, thereby standardizing admission practices. Few guidelines suggest significant extra or different admission procedures for infants <6m. Exceptions and possible models for future guidelines include:

- IFE Module 2 provides the most detail of various aspects of presentation, including recognizing low birth weight infants, infant feeding status (e.g. breastfed or not) and full assessment of breastfeeding (with dedicated sections and a standard checklist).
- MSF 2006 highlights "Additional history, including feedings other than EBF; presence and attitude of the mother, state of the infant, flow of mother's milk and attachment and suckling."
- Botswana's national guidelines note the need to observe breastfeeding "position, attachment, suckling, breast conditions"
- Cote d'Ivoire suggests that suck can be assessed by inserting a finger into the infant's mouth.
  Adequacy of current admission procedures will be reviewed in detail in Chapter 9.

Treatment guidelines

All guidelines recognize a phased approach to care. Many go into significantly more detail on the WHO (1999) 'ten steps'. There is, however, no specific focus on infants <6m with the exception of IFE Module 2.

Specific treatments

Where sections on infant <6m exist in guidelines, they commonly recommend vitamin A, folic acid, iron (usually mixed into the therapeutic milk, but only once the child has improved and is in recovery phase) at appropriate doses. For malaria, local guidelines are referred to. Antibiotics are universally recommended. The most common first line therapy is amoxicillin, with several minor variations in dose/ dose regimen. Second line therapy is often not directly covered in the infant section of the guideline. If noted, initial ampicillin (with switch after two days to oral amoxicillin) plus gentamycin is common.

Kangaroo care[ii] for nursing young / small infants is noted in many guidelines, but often only as a treatment for hypothermia rather than as a default 'ideal' position for infants <6m. One exception is IFE Module 2, where Kangaroo care is recommended to "prevent or treat hypothermia" in severely malnourished infants, and also as the default treatment of low birth weight infants, supported by detailed content[136].

HIV

Details of HIV-related issues are limited in most guidelines. Those written most recently seem to have greater detail, which probably reflects increased availability of antiretroviral treatments. Where HIV is mentioned, explicit links and references to local HIV-specific guidelines are not made. This is an area for future developers to address, to ensure closer links between services (see Section 9.9 for more HIV considerations).

[ii] Kangaroo care is a technique where the infant is held in continuous skin-to-skin contact with an adult, usually the mother. It facilitates temperature regulation, reduces infant stress, and helps establish and maintain breastfeeding.

Table 8: Key medical treatments recommended for infants <6m

Country or Organization	Guideline	Treatment objective	Admission	Vitamin A	Folic acid	1st line antibiotic	2nd line antibiotic	Anti-malarial	Iron	Other	Kangaroo care
International guidelines											
WHO	**Management of severe malnutrition: a manual for physicians & other senior health workers 1999**	n/a	Clinical assessment	50,000IU (on admission) followed by small daily doses	5mg dose at admission, then daily dose of 1mg	cotrimoxazole x2 per day for 5 days	ampicillin (50mg/kg/ 6hrs im for 2 days) then amoxicillin 15mg/kg/ 8hrs orally for 5days plus gentamycin 7.5mg/kg daily for 7 days	Recommends following national guidelines	all get iron on completion of stabilisation phase		not specified
WHO	**Guidelines for the inpatient treatment of severely malnourished children, 2003**	n/a	Clinical assessment	50,000IU (on admission) followed by small daily doses	50,000IU (on admission) followed by small daily doses	If no complications cotrimoxazole x2 per day for 5 days if complications amp + gent as above		not specified	3mg/kd/ day (once improved)		not specified
WHO	**Manual for the health care of children in humanitarian emergencies 2008**	n/a	n/a	50,000IU (on admission)	not routinely	amoxicillin	not specified	according to national guideline	not routinely		not specified
WHO	**Pocket book of Hospital care for children 2005**	n/s	Clinical assessment	50,000IU (on admission) then small daily dose	5mg on admission then 1mg/day	cotrimoxazole x2 per day for 5 days	as above	not specified	3mg/kg/ day (once improved)	also notes 2mg/kg/ day zinc and 0.3mg/ kg/day copper	not specified
WHO	**Handbook IMCI Integrated Management of Childhood Illness 2005**	n/a	n/a	n/a	n/a	n/a	n/s	n/a	n/a	n/a	n/a
ACF	**Assessment & Treatment of Malnutrition in Emergency Situations 2002**	Increase mothers milk supply until BM alone sufficient for growth	clinical examination mentioned but no details given	50,000IU on days 1,2 and at discharge	5mg single dose at admission	amoxicillin 20mg/kg x3 per day for 10 days	not specified	according to national protocol	in F100 dilute (once improved)		noted as part of hypo-thermia prevention
MSF	**Nutrition Guidelines (1st edition) 1995**	stated that BF should be promoted and continued during the whole treatment course	no additional details specified	notes that vit A should not be given due to possible toxicity	no specific details given	no specific details given	not specified	no specific details given	no specific details given		not specified

Table 8 cont'd

Country or Organization	Guideline	Treatment objective	Admission	Vitamin A	Folic acid	1st line antibiotic	2nd line antibiotic	Anti-malarial	Iron	Other	Kangaroo care
International guidelines											
MSF	**Nutrition Guidelines 2006**	reduce mortality & morbidity - discharge on EBF	- additional history: - feeds other than EBF; presence + attitude of mother; - state of infant, - flow of mother's milk, - attachment, suckling	50,000 IU (further doses if xeropthalmia)	5mg single dose at admission	not specified	treat only if infant has malaria - need for nets to prevent transmission also noted	daily or weekly supplementation described in micronutrients chapter			yes - diagram included
MSF	**Protocol Infants less than 6 months old (Benson) MSF - OCBA 2007**	To return infants to full EBF	no additional details specified	50,000 IU (further doses if xeropthalmia)	5mg single dose at admission	amoxicillin 35-50mg/kg x2 per day for 5 days plus gentamicin	not specified	not specified	in F100dil (once improved)		yes - diagram included
Valid	**Community-based Therapeutic Care (CTC), A field manual (first edition) 2006**	n/a	no additional details specified	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
UNHCR	**Handbook for Emergencies (third edition) 2007**	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
UNHCR	**The management of Nutrition in Major Emergencies 2000**	treat mother not infant	treat mother not infant	n/a	n/a	n/a	n/s	n/a	n/a	n/a	n/a
IFE Core Group	**Infant Feeding in Emergencies IFE Module 2, version 1.1 2007**		Details described	50,000IU (admission only)	5mg single dose	n/s	n/s	n/s	ferrous sulphate, in F100 dilute (once improved)	Gives extensive details of supportive care for breast-feeding	Yes, including to prevent as well as treat hypothermia
ICRC	**Nutrition Manual for Humanitarian Action 2008**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
National guidelines											
Burundi	**Protocole National de Nutrition 2002**	n/s	no additional details specified	50,000 IU at admission	5mg single dose at admission	amoxycillin from 2kg, 20mg/kg x3 per day	not specified	not specified	ferrous sulphate, in F100dilute (once improved)		not specified
Ethiopia	**Protocol for the Management of Severe Acute Malnutrition 2007**	To return infants to full EBF	no additional details specified	50,000IU (admission only)	2.5mg single dose	amoxycillin from 2kg, 30mg/kg x2 per day plus gentamycin	not specified not clear whether gentamycin is 1st or 2nd line treatment	national protocol (coartem from 3 months)	ferrous sulphate, in F100 dilute (once improved)		not specified

Table 8 cont'd

Country or Organization	Guideline	Treatment objective	Admission	Vitamin A	Folic acid	1st line antibiotic	2nd line antibiotic	Anti-malarial	Iron	Other	Kangaroo care
National guidelines											
Madagascar	**Depistage et prise en charge de la malnutrition aigue 2007**	To ensure mother can produce milk of sufficient quantity and quality for infant to grow normally	no additional details specified	not specified	not specified	not specified	not specified	not specified	not specified		noted in general section on hypothermia
Malawi	**Guidelines for the Management of Severe Acute Malnutrition (book T3) 2007**	To stimulate BF until sufficient to allow the infant to grow properly	no additional details specified	50,000IU (admission only)	5mg single dose	amoxycillin 15mg/kg x3 / day, phase 1 + 4 days extra)	ampicillin iv and gentamycin im	not specified	in F100dil (once improved)		noted as treatment for hypothermia in general section
Mozambique	**Manual de Orientacao para Tratamento da Desnutricao Aguda Grave 2008**	n/s	no additional details specified	not specified	5mg single dose	amoxycillin 20mg/kg x3 per day plus gentamycin	not specified	not specified	in F100dil (once improved)	HIV-related treatments noted for exposed infants	noted in general section on hypothermia
Tanzania	**Management of Acute Malnutrition NATIONAL Guidelines 2008**	n/s	not stated	50,000 IU d1 (+d2, d14 if clinical signs deficiency)	5mg single dose	amoxycillin 15mg/kg x3 per day for 5 days	ampicillin plus gentamycin 7.5mg/kg daily for 7 days	not specified	3mg/kg/day elemental iron once improved		noted as a treatment for hypothermia in general section
Uganda	**Integrated Management of Acute Malnutrition 2006**	n/s	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Zambia	**Integrated Management of Acute Malnutrition 2009**	n/s	no additional details specified	50,000IU at admission	not specified	not specified	not specified	not specified	not specified	not specified	not specified
Zimbabwe	**Guidelines for the Management of Severe Acute Malnutrition through Community-based Therapeutic Care (CTC) 2008**	n/s	n/s	50,000IU at admission	5mg at admission	amoxycillin from 2kg, 20mg/kg x3 per day for 7-10 days		not for <4kg infants	not specified	not specified	not specified
DRC	**Protocol National de Prise en Charge de la Malnutrition Aigue 2008**	n/s	no additional details specified	50,000 IU at admission only (not if oedema)	not specified	amoxycillin from 2kg, 30mg/kg x2 per day	not specified	not specified	not specified	Notes 'health education and social care' (for all children)	not specified

Table 8 cont'd

Country or Organization	Guideline	Treatment objective	Admission	Vitamin A	Folic acid	1st line antibiotic	2nd line antibiotic	Anti-malarial	Iron	Other	Kangaroo care
National guidelines											
Sudan (Southern)	**Guidelines for the Management of Severe Acute Malnutrition 2008**	To improve or re-establish BF	no additional details specified (though disability, maternal illness, maternal trauma noted as problem which can affect infant feeding)	50,000 IU at admission only	2.5mg single dose at admission	amoxycillin from 2kg, 30mg/kg x2 per day plus gentamycin	not specified	not specified	ferrous sulphate, in F100dilute, once improved		not specified
Sudan	**National Integrated Manual on the Management of Severe Acute Malnutrition in health facilities and at community level 2008**	To return infants to full EBF	no additional details specified	50,000 IU at admission only	2.5mg single dose at admission	amoxycillin from 2kg, 30mg/kg x2 per day plus gentamycin	not specified	not specified	ferrous sulphate, in F100dilute, once improved		noted as treatment for hypother-mia in general section
Botswana	**Guidelines for the Management of Severe Acute Malnutrition in Children 2007**	~ Treat SAM ~ Restore to health ~ Reduce mortality ~ Treat complications & associated diseases ~ Maintain or improve maternal milk production	~ Observe breastfeeding (position, attachment, suckling, breast conditions) ~ medical consultation (history, examination)	50,000 IU at admission only	2.5mg single dose at admission	amoxycillin from 2kg, 20mg/kg x3 per day	not specified	according to national guidelines	ferrous sulphate 6mg elemental iron/kg/ day (once improved, growing)	Briefly mentions 'health education and social care' (for all children)	noted as a treatment for hypother-mia in general section
Burkina Faso	**None yet - in draft**	To increase the quality and quantity of BF	no additional details specified	50,000 IU at admission only	5mg single dose at admission	amoxycillin, from 2kg 25mg/kg x3 per day	not specified	not specified	ferrous sulphate (once improved)		not specified
Cote D'Ivoire	**Protocole National de Prise en charge de la malnutrition severe 2005**	To re-establish effective EBF (NOT necessarily to regain 85% WHM)	Note ~ Whether preterm ~ Birth weight ~ Feeds (aside from BM) ~ Strength of infant suck (by inserting finger into mouth)	not specified	5mg single dose at admission	amoxycillin from 2kg, 20mg/kg x3 per day	not specified	no treatment if tests negative 7 days artesunate if positive	in F100dil (once improved)	Notes that risk of hypother-mia & hypoglycae-mia high ==> infants to be nursed close together and monitored closely	not specified
Guinea	**Protocole National de Prise en Charge de la Malnutrition Aigue 2005**	To supplement maternal BF and get to the point where infant growing well on BF alone	no additional details specified	50,000 IU at admission only	2.5mg single dose at admission	amoxycillin, from 2kg 30mg/kg x2 per day + gentamycin	not specified	not specified	in F100dil (once improved)		noted as a treatment for hypother-mia in general section

Table 8 cont'd

Country or Organization	Guideline	Treatment objective	Admission	Vitamin A	Folic acid	1st line antibiotic	2nd line antibiotic	Anti-malarial	Iron	Other	Kangaroo care
National guidelines											
Mali	**Protocole National de la prise en charge de la malnutrition aigue 2007**	n/s	no additional details specified	50,000 IU at admission only	2.5mg single dose at admission	amoxycillin, from 2kg 20mg/kg x3 per day		not specified	in F100dil (once improved)		noted as a treatment for hypothermia in general section
Niger	**Protocol National de Prise en Charge de la Malnutrition Aigue 2006**	To return infants to full EBF	no additional details specified	50,000 IU at admission only	2.5mg single dose at admission	amoxycillin, from 2kg 30mg/kg x2 per day	not specified	not specified	in F100dil (once improved)		not specified
Senegal	**Protocole de prise en charge de la malnutrition aigue 2008**	To return infants to full EBF	no additional details specified	not noted	2.5mg single dose at admission	amoxycillin from 2kg, 20mg/kg x2 per day for 7 days	not specified	not specified	not specified		not specified
Afghanistan	**Community-based Management of Acute Malnutrition programme in Aqcha and Mardyan District of Jawzjan Province Northern Afghanistan (Stabilization Centre Guidelines) 2008**	To return infants to full EBF	no additional details specified	50,000 IU at admission only	2.5mg single dose at admission	amoxycillin from 2kg, 30mg/kg x2 per day	add gentamycin (do not use chloram-phenicol)	according to national guidelines	in F100dil (once improved)		noted in section on hypothermia, with implication that is recommended for all children
India	**Indian Academy of Paeditrics guidelines 2006**	n/s	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pakistan	**Protocol for the inpatient treatment of severely malnourished children in the Pakistan earthquake emergency 2005**	n/s	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sri Lanka	**Management of Severe Acute Under-nutrition: Manual for Health Workers in Sri Lanka 2007**	n/s	no additional details specified	"according to national protocol"	not specified	amoxycillin 15mg/kg x3 per day for 5 days	gentamycin 7.5mg/kg for 7 days plus ampicillin iv for 2 days then	not specified	3mg/kg/day once improving/gaining weight		noted in section on hypothermia as prevention/ treatment

4.4.4 Nutritional treatments for infants <6m

> ***"Careful attention to infant feeding and support for good practice can save lives. Preserving breastfeeding, in particular, is important not just for the duration of any emergency, but may have lifelong impacts on child health and on women's future feeding decisions.***
>
> ***Every group of people has customs and traditions about feeding infants and young children. It is important to understand these and work with them sensitively while promoting best practice."***
>
> Operational Guidance on IFE, v2.1, 2007 &
> UNHCR Handbook for Emergencies, 3rd Edition

See Table 9 for summary. Most guidelines divide infants into those who have the opportunity to breastfeed and those who do not. These will be dealt with in turn.

Treatment objective
'Restoration of effective exclusive breastfeeding' (or similar phrasing implying the same) is a commonly stated treatment objective for infants <6m. This differs from the goal for older children, who aim for a nutritional 'cure' (commonly >80 or 85% weight-for-height / >-2 or -1 z-scores).

Breastfed infants
Most guidelines encourage the continuation of breastfeeding. However, details of breastfeeding support are rarely described. Exceptions are IFE Module 2 and the WHO pocket handbook of hospital care (2005). For infants <6m who can breastfeed, three hourly breastfeeding of ten to 20 minutes is generally recommended in guidelines. Some encourage more frequent feeds as demanded by the infant. Practical details of how to support and optimize breastfeeding are very limited. This makes prior specialist skills necessary to be able to implement and build on guidelines. Existing materials on breastfeeding support are rarely referenced.

All guidelines imply that infants <6m admitted to treatment would need at least short term supplemental feeds, with the exception of IFE Module 2 that gives the option of breastfeeding/expressed breastmilk alone where an infant is suckling and breastmilk supply is adequate. Diluted F100 was the most frequently recommended supplemental milk. Some guidelines mention F75 for infants with oedema. IFE Module 2 includes commercial infant formula as an option and advises against 'home prepared' F75 in this age-group.

The supplementary suckling (SS) technique as a means of supplemental feeding is widely referenced and thoroughly described in guidelines, including with pictures and diagrams in many[137]. Using SS, weight gain criteria (20g per day cited by many guidelines) are used to signify that breastmilk production is improving. After a few days with good weight gain, the volume of supplemental milk is reduced. If weight gain continues, supplemental milk is stopped entirely and the infant is monitored to see whether he/she continues to gain weight on exclusive breastfeeding alone.

A minimum admission length is sometimes specified (e.g. nine to 11 days minimum, which includes two to three days each for phase one and two, plus five days for exclusive breastfeeding). Other guidelines urge a short as possible admission, depending on weight gain. All emphasise a need to ensure the infant is gaining adequate weight and is clinically well on exclusive breastfeeding alone, prior to discharge.

Non-breastfed infants
Possible reasons for not breastfeeding are not generally listed, with the exception of IFE Module 2. Though rare, none of the guidelines reviewed mention medical contra-indications to breastfeeding [138]. The same supplemental milk recommended for breastfed infants is often recommended for this group: diluted F100 or sometimes F75 for infants with oedema, fed by cup. Only a small number of guidelines explicitly warn of the hygiene risks of bottle/teat feeding.

The major difference for non-breastfed infants <6m arises in the rehabilitation phase of treatment. Here, volume of supplemental milk doubles to enable catch-up growth. Non-breastfed infants may also require transition to an appropriate breastmilk substitute, e.g. transition from diluted F100 to a commercial infant

formula. Rather than an 'adequate weight gain' discharge criterion, the non-breastfed infant is typically expected to reach the same anthropometric targets as older children prior to discharge (>80% or >85% weight-for-length).

Very few guidelines go into details about the challenges of long term use of infant formula, follow-up needs and resources required, and how to source supplies. Likewise, few note alternatives, such as wet nursing or modified animal milks. No guideline suggests that complementary foods or RUTF be started before six months.

Infant and young child feeding support in older age-group

The lack of breastfeeding-specific guidance in current guidelines also has implications for older severely malnourished children, where breastmilk should continue to contribute significantly to their energy and nutrient intake. This compromises achievement of the Sphere indicator "as much attention is attached to breastfeeding and psychosocial support, hygiene and community outreach as to clinical care" (Correction of malnutrition standard 2: severe malnutrition).

Table 9: Nutritional treatments for infants <6m

Country or Organization	Guideline	Division into 'breast-fed' and 'non-BF'	Breast feeding	Breastfeeding (details)	Supplemental milks (BF infant)	Supplemental milk route (BF inf.ant)	Supplemental milk feed frequency (BF infant)	Supplemental feed amount (BF infant)	rehab phase (BF infant)	duration of phases (BF infant)	Discharge (BF infant)	No maternal breast feeding available
International guidelines												
WHO	**Management of severe malnutrition, 1999**	n/a	"should be continued"	Noted in section on preparation for discharge	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WHO	**Guidelines for the inpatient treatment of severely malnourished children, 2003**	n/a	"breastfeed as often as child wants"	noted in section on preparation for discharge	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WHO	**Manual for the health care of children in humanitarian emergencies 2008**	n/a	not noted		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WHO	**Pocket book of Hospital care for children 2005**	no	"if child is breastfed, continue with this"	separate chapter on supportive care has details on supporting BF	In order of preference: **1)** BM alone **2)** Infant formula **3)** F100 dilute	not specified (SS described in different chapter)	8 times per day	details not specified	details not specified	not specified	not specified	expressed breastmilk (if available); formula milk or infant formula; modified animal milk
ACF	**Assessment & Treat-ment of Malnutrition in Emergency Situations 2002**	>6month but <4kg infants are separate	Every 3 hours	~ BF for 10-20 mins ~ Give BMS one hour after BF	Diluted F100	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/day)	~ if weight increasing for 15 days then half amount F100dil ~ stop SS after further 3 days	minimum stay would be 15 + 3 + 5 = 23 days	Once gaining weight for 5 days without SS	Diluted F100* (protocol for >6month but <4kg infants)
MSF	**Nutrition Guidelines (1st edition) 1995**	yes	"should be promoted and continued during the whole of treatment"	BMS AFTER each session on the breast	Reconstituted enriched formula milk (recipie given)	small spoon or syringe	5-6 times per day	105 kcal/kg/day	no specific details	not specified	not specified	Enriched formula milk (recipe given)
MSF	**Nutrition Guidelines 2006**	yes	Every 3 hours Every 2 hours for <1.5kg more often if infant wants	~ BF for 10-20 mins ~ Give BMS one hour after BF	SDTM (therapeutic milk)	supplementary suckling	8 times per day	100-120 kcal/kg/day	start Transition on day 10 (max d.15). When BM output increases, weight increasing, decrease STDM by 50%. If still gaining weight by 5g/kg/day, stop SDTM	phase 1 10-15 days then according to progress	Once gaining weight for 5 days without SS	SDTM (therapeutic milk)

Table 9 cont'd

Country or Organization	Guideline	Division into'breast-fed' and 'non-BF'	Breast feeding	Breastfeeding (details)	Supplemental milks (BF infant)	Supplemental milk route (BF inf.ant)	Supplemental milk feed frequency (BF infant)	Supplemental feed amount (BF infant)	rehab phase (BF infant)	duration of phases (BF infant)	Discharge (BF infant)	No maternal breastfeeding available
International guidelines												
MSF	**Protocol Infants less than 6 months old (Benson) MSF - OCBA 2007**	yes	Every 3 hours more often if infant wants	~ BF for 10-20 mins ~ Give BMS 30-60mins after BF	F100dil (F75 if oedema)	supplementary suckling	8 times per day	100-120 kcal/kg/day	decrease to 50% of maintenance once baby gaining 20g/day stop completely once gaining >10g/day	according to progress	few more days without SS - can also go once child BF greedly if mother wishes	F100 dilute OR F75 for marasmus f75 for kwashiorkor
Valid	**Handbook for Emergencies(third edition) 2007**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
UNHCR	**Manual for the health care of children in humanitarian emergencies 2008**	recognised but not described in detail	yes	"treatment should include support for BF	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
UNHCR	**The management of Nutrition in Major Emergencies 2000**	non BF infants not recognised	discussed in annex	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IFE Core Group	**Infant Feeding in Emergencies IFE Module 2, version 1.1 2007**	yes	yes	Extensive discussion of BF issues. Breast feeding or expressed breastmilk given as treatment option. Supplementary feeds may be indicated.	F75 or F100 dilute or Infant formula	supplementary suckling	at least 8x /day	volume per kg varies according to weight (tables given)	if infant gaining weight for 2-3days, at least 20g/ day then reduce SS by 1/3 and feed for further 2-3 days. Continue to reduce volumes if infant gaining weight.	if gaining weight, each reduction of BMS volume by 1/3 occurs every 2-3 days	Once gaining weight for 5 days on BF alone	F75 (preferred option) F100dil or formula also OK
ICRC	**Nutrition Manual for Humanitarian Action 2008**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
National guidelines												
Burundi	**Protocole National de Nutrition 2002**	yes	Every 3 hours	~ BF for 20 mins ~ Give BMS one hour after BF	F100 dilute	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/day)	decrease to 50% of maintenance once baby gaining 20g/day	not specified	Once gaining weight for 5 days without SS	F100 dilute OR F75 for marasmus f75 for kwashiorkor
Ethiopia	**Protocol for the Management of Severe Acute Malnutrition 2007**	yes	Every 3 hours	~ BF for at least 20 mins ~ BF more often if infant wants ~ Give BMS 30 to 60min after BF	F100 dilute or commercial formula (F75 for infants with oedema)	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg /day)	decrease to 50% of maintenance once baby gaining 20g/ day, stop completely once gaining >10g/day	"as short as possible"	Once gaining weight on BM alone	F100 dilute (F75 for infants with oedema)

Table 9 cont'd

Country or Organization	Guideline	Division into'breast-fed' and 'non-BF'	Breast feeding	Breastfeeding (details)	Supplemental milks (BF infant)	Supplemental milk route (BF inf.ant)	Supplemental milk feed frequency (BF infant)	Supplemental feed amount (BF infant)	rehab phase (BF infant)	duration of phases (BF infant)	Discharge (BF infant)	No maternal breastfeeding available
International guidelines												
Madagascar	**Depistage et prise en charge de la malnutrition aigue 2007**	Recognised but not detailed	Every 3 hours	~ BF for 20 mins ~ Give BMS one hour after BF	F100 dilute	supplementary suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/day)	decrease to 50% of maintenance once baby gaining 20g/day stop completely once gaining >10g/day	not specified	Once gaining weight for 5 days without SS	Relactation of other female carer (e.g aunt) recommended)
Malawi	**Guidelines for the Management of Severe Acute Malnutrition (book T3) 2007**	yes	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give BMS one hour after BF	F100 dilute	supplementary suckling (described)	9 times per day	130ml/kg/day (=100kcal/kg/day)	decrease F100 dilute by 1/3 the maintenance once baby gaining 20g/day, decrease by a further 1/3 if still gaining weight after 2-3 days, stop F100dilute if still gaining weight	~ "as short as possible" ~ 2-3 days for each reduction of 1/3 F100dilute maintenance	Once gaining weight for 5 days without SS	F75
Mozambique	**Manual de Orientacao para Tratamento da Desnutricao Aguda Grave 2008**	yes	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give supplemental feed one hour after BF	F100 dilute (F75 for infants with oedema)	supplementary suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/day)	decrease to 50% of maintenance once baby gaining 20g/day stop completely once gaining >10g/day	not specified	Once gaining weight for 5 days without SS	F100 dilute (F75 for infants with oedema)
Tanzania	**Management of Acute Malnutrition NATIONAL Guidelines 2008**	no Relactation of other female carer (e.g aunt) recommended)	"assist to breastfeed or express breastmilk"		Give prescribed amount of F-75 in addition to breastmilk	not specified	8 times per day	as per F75 protocol	Encourage mothers to BF. Give additional diluted F-100. As BM production increases, gradually reduce amount diluted F100	not specified	as for older children, >85%WHM or >-1WHZ or MUAC >125mm	not separately detailed
Uganda	**Integrated Management of Acute Malnutrition 2006**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Zambia	**Integrated Management of Acute Malnutrition 2009**	not specified	not specified	not specified	Infant formula OR F100 dilute (F75 dilute for infants with oedema)	not specified	8 times per day	not specified	not specified	not specified	not specified	not specified
Zimbabwe	**Guidelines for the Management of Severe Acute Malnutrition through CTC 2008**	not specified	not specified	not specified	not specified	not specified	not specified	not specified	not specified	not specified	not specified	not specified

Table 9 cont'd

Country or Organization	Guideline	Division into'breast-fed' and 'non-BF'	Breast feeding	Breastfeeding (details)	Supplemental milks (BF infant)	Supplemental milk route (BF inf.ant)	Supplemental milk feed frequency (BF infant)	Supplemental feed amount (BF infant)	rehab phase (BF infant)	duration of phases (BF infant)	Discharge (BF infant)	No maternal breastfeeding available
International guidelines												
DRC	**Protocol National de Prise en Charge de la Malnutrition Aigue 2008**	yes	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give supplemental feed one hour after BF	F100 dilute (F75 for infants with oedema)	supplementary suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg /day)	decrease to 50% of maintenance once baby gaining 20g/day. stop completely once gaining >10g/day	not specified	Once gaining weight on EBF alone	F100 dilute (F75 for infants with oedema)
Sudan (Southern)	**Guidelines for the Management of Severe Acute Malnutrition 2008**	yes	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give supplemental feed one hour after BF	F100 dilute	supplementary suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/ day)	decrease to 50% of maintenance once baby gaining 20g/day stop completely once gaining >10g/day	not specified	Once gaining weight on EBF alone	F100 dilute (F75 for infants with oedema)
Sudan (North)	**National Integrated Manual on the Management of Severe Acute Malnutrition in health facilities and at community level 2008**	yes	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give supplemental feed 30-60 mins after BF	F100 dilute (F75 for infants with oedema)	supplementary suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/ day)	decrease to 50% of maintenance once baby gaining 20g/day stop completely once gaining >10g/day	as short as possible	Once gaining weight on EBF alone	F100 dilute (F75 for infants with oedema)
Botswana	**Guidelines for the Management of Severe Acute Malnutrition in Children 2007**	yes	as often as possible / frequently	"Educate and demonstrate proper BF technique"	F100 dilute	supplementary suckling	8 times per day	140ml/kg/day	70 ml/kg/day	10-15 days intial phase 2 days rehab phase Minimum 4 days final phase	When gaining weight (5 to 10g/kg/day) on EBF alone for 5 consecutive days after SS stopped NB some discrepancy in different sections of guideline as to lengths of stay recommended	F100 dilute (F75 for infants with oedema)
Burkina Faso	**None yet - in draft**	no	Every 3 hours	~ BF for 20 mins ~ Give supplemental feed one hour after BF	diluted F100	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/ day)	decrease to 50% of maintenance once baby gaining 20g/day	Not specified	Once gaining weight for 5 days without SS	not specified
Cote D'Ivoire	**Protocole National de Prise en Charge de la Malnutrition Aigue 2005**	yes	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give BMS 30-60mins after BF	F100 dilute	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/ day)	decrease to 50% of maintenance once baby gaining 20g/day	"as short as possible"	Once gaining weight on EBF alone	F100 dilute (F75 for infants with oedema)

Table 9 cont'd

Country or Organization	Guideline	Division into'breast-fed' and 'non-BF'	Breast feeding	Breastfeeding (details)	Supplemental milks (BF infant)	Supplemental milk route (BF inf.ant)	Supplemental milk feed frequency (BF infant)	Supplemental feed amount (BF infant)	rehab phase (BF infant)	duration of phases (BF infant)	Discharge (BF infant)	No maternal breastfeeding available
National guidelines												
Guinea	**Protocole National de Prise en Charge de la Malnutrition Aigue 2005**	yes	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give BMS 30-60mins after BF	F100 dilute	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg /day)	decrease to 50% of maintenance once baby gaining 20g/day	"as short as possible"	Once gaining weight on EBF alone	F100 dilute (F75 for infants with oedema)
Mali	**Protocole National de la prise en charge de la malnutrition aigue 2007**	yes	Every 3 hours	~ BF for 20 mins ~ Give BMS 60mins after BF	F100 dilute	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/day)	decrease to 50% of maintenance once baby gaining 20g/day, stop completely once gaining >10g/day	not specified	Once gaining weight for 5 days without SS	F100 dilute
Niger	**Protocol National de Prise en Charge de la Malnutrition Aigue 2006**	yes ~ non-BF protocol describes finding wet-nurse if possible	Every 3 hours	~ BF for 20 mins ~ BF more often if infant wants ~ Give supplemental feed 60mins after BF	F100 dilute	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/day)	decrease to 50% of maintenance once baby gaining 20g/day, stop completely once gaining >10g/day	not specified	Once gaining weight for a few days without SS	F100 dilute (F75 for infants with oedema)
Senegal	**Protocole de prise en charge de la malnutrition aigue2008**	no	Every 3 hours	~ BF for 20 mins~ Give supplemental feed 60mins after BF	F100 dilute	supplemental suckling (described)	8 times per day	130ml/kg/day (=100kcal/kg/day)	decrease to 50% of maintenance once baby gaining 20g/day, stop completely once gaining >10g/day	as short as possible to minimise risk of nosocomial infection	Once gaining weight for 5 days without SS	not detailed
Afghanistan	**Community-based Management of Acute Malnutrition programme in Aqcha and Mardyan District of Jawzjan Province Northern Afghanistan (Stabilization Centre Guidelines) 2008**	no	Every 3 hours	~ for at least 20mins ~ more often if child wants	F100 dilute (F75 for infants with oedema)	Supplementary suckling	8 x per day (0.5 to 1 hr after BF)	130ml/kd/day (100kcal/kg/day) (amount NOT increased as infant gains weight)	decrease to 50% of maintenance once baby gaining 20g/day	if weight gain maintained, then stop SS	When gaining weight on EBF alone (no matter what weight or WFL)	F100 dilute (F75 for infants with oedema)
India	**Indian Academy of Paediatrics guidelines on hospital based management of Severely Malnourished Children 2006**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pakistan	**Protocol for the inpatient treat-ment of severely malnourished children in the Pakistan earthquake emergency 2005**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sri Lanka	**Management of Severe Acute Undernutrition: Manual for Health Workers in Sri Lanka 2007**	no	noted that "BF should be continued for all infants & young children"	no other details	not specified. By implication, infant U6 will be treated with F75	n/a	n/a	n/a	n/a	n/a	n/a	n/a

4.4.5 Maternal care, preparation for discharge & follow-up

See Table 10 for overview.

Maternal diet

Many guidelines recommend that lactating mothers receive increased food rations to give a total intake of 2500kcal/day, and increased fluid intake to >2 litres/day. Vitamin A for the mother is recommended by many guidelines as a single large dose if the infant is <2 months old. Mothers of older infants may be pregnant so either it is withheld or a course of low dose Vitamin A is given. A small number of guidelines mention that general maternal micronutrient stores should be replenished though a high quality diet during breastfeeding.

Psychosocial care

Play therapy and psychosocial support of the malnourished child is one of WHO's essential ten treatment steps. It is still recognized in many guidelines, often in dedicated sections, but none focus specifically on infants <6m.

The impact of severe infant malnutrition on feeding-associated interactions and feeding cues between a mother and her infant <6m, e.g. reduced demands for breastfeeding, and how to manage these are not generally addressed. IFE Module 2 does include content on this in the section concerned with breastfeeding support in malnourished infants but not specifically in the SAM chapter.

Specific psychosocial care for the mother/carergiver of either infants <6m or children, including assessment and treatment, is not included in the guidelines apart from general statements about 'being supportive', explaining treatments and avoiding blame for the infant's malnutrition. The exception is IFE Module 2 that gives a more practical description of assessment and care for mothers. Given the relevance of psychosocial aspects of care to MAMI, Chapter 8 of this report undertakes a detailed review.

Follow-up care and supplementary feeding

Follow-up on discharge from a TFP (inpatient or community-based) is almost universally recommended. SFP referral (if available) on discharge is almost universal and, by implication, this includes infants <6m where the mother benefits from supplementary food rations.

Promoting optimal infant and young child feeding

Taking advantage of a captive 'in-programme' audience to work towards prevention of future malnutrition has obvious potential. Many guidelines highlight 'health and nutrition education' as part of the discharge package, but few are specific on what topics should be covered. Very few guidelines take advantage of the large body of IYCF literature available.

Feeding programmes for pregnant & lactating mothers

SFP target groups frequently include pregnant women (in last trimester of pregnancy) and lactating women who are malnourished. However it is often not clear in guidelines whether the mothers of malnourished infants <6m should be admitted to SFPs, independent of the nutritional status of the mother.

Table 10: Maternal care, preparation for discharge and follow-up

Country or Organization	Guideline	Maternal diet	Maternal (caregiver) psycho-social issues	Other	Preparation for discharge (general)	HIV noted	Follow –up visits	Extra home food ration?	Details of any IYCF guidance	Feeds for pregnant &lactating women
International Guidelines										
WHO	**Management of severe malnutrition: a manual for physicians & other senior health workers 1999**	not specified	not specified	not specified	Ensure child fully immunized Ensure mother or carer: ~ able to feed child appropriately ~ able to make appropriate toys & play with child ~ knows how to give home treatment & recognise signs to seek medical assistance	Yes: ~ 'should not be done routinely'; ~ 'HIV status has no role in management'; ~ 'result should be confidential, not revealed to staff	Yes 1 week, 2 weeks, 1 month, 3 months & 6 months after discharge	not noted	none	not described
WHO	**Guidelines for the inpatient treatment of severely malnourished children, 2003**	not specified	not specified		Show parent/carer to: ~ feed frequently with energy and nutrient dense foods ~ give structured play therapy	Yes: "recovery may take longer & treatment failure is more common' ~'treatment same as for HIV neg. child'	Yes "regular follow-up checks" advised	not noted	None	not described
WHO	**Manual for the health care of children in humanitarian emergencies 2008**	not specified	mental health and psychosocial support discussed in separate chapter		not specified	other chapter or manual is devoted to HIV	not specified	not specified	Noted, but reader referred elsewhere for details	not described
WHO	**Pocket book of Hospital care for children 2005**	not specified	importance of psychological factors noted		Show parent/carer to: ~ feed frequently with energy and nutrient dense foods ~ give structured play therapy	Yes Separate chapter of book details HIV issues	yes 1 week, 2 weeks, 1 month, then monthly for 6months	not noted	breastfeeding and young child feeding described ~ WHO IYCF document not referenced	not described
WHO	**Handbook IMCI Integrated Management of Childhood Illness 2005**	n/a	n/a	n/a	n/a	n/a	n/a	n/a	detailed section on infant feeding	not described
ACF	**Assessment & Treatment of Malnutrition in Emergency Situations 2002**	~ Drink ≥ 2l water per day ~ Eat ~ 2600kcal/day ~ Supplement with vitamins & minerals (ensure type 1 nutrient stores adequate)	To support BF: 1) Listen to any problems 2) Assess BF 3) Help during BF		If gaining wt 15days: --> halve milk -->stop BMS aftr 3 days --->keep for 5 more days to ensure progress maintained	Yes notes that: ~ field treatments are generally inadequate ~ re-feeding treatment is same	yes, to ~ weigh infant, ~ provide supplementary food to mother	weekly (1500kcal/day) 1st month; fortnight (700kcal/day) 2nd month; monthly (350kcal/day) 3-6months	ch2.2: Breast milk, The practice of BF; BMS; Assessing feeding practices	Referral to SFP (but evidence of effectiveness discussed)

Table 10 cont'd

Country or Organization	Guideline	Maternal diet	Maternal (caregiver) psycho-social issues	Other	Preparation for discharge (general)	HIV noted	Follow – up visits	Extra home food ration?	Details of any IYCF guidance	Feeds for pregnant & lactating women
International Guidelines										
MSF	**Nutrition Guidelines (1st edition) 1995**	~ mentions need for extra 0.5 to 1 litre fluids/day ~ eligible for SFP if one is available	States "stress is important factor reducing the quantity of breast milk;		Protocol notes: ~ need for psychosocial stimulation	yes ~ noted that this does not alter the treatment strategy	not specified	infants are eligbile for SFP after TFP care	None	SFP (in particular cases of food insecurity)
MSF	**Nutrition Guidelines 2006**	~ Drink ≥ 2l water per day ~ Eat 2500kcal/day	notes psychological support and encouragement to mothers; also the need for privacy and rest		~ stimulate emotional and physical development ~ prepare patient for notmal feeding practices	**1)** Section on HIV/AIDs, focuses on nutrition; **2)** Described in infant feeding & HIV section			part of infant chapter describes support for BF + alternatives to BF	SFP or TFP or supportive feeding (according to situation)
MSF	**Protocol Infants less than 6 months old (Benson) MSF - OCBA 2007**	~ Drink ≥ 2l water per day; ~ Eat 2500kcal per day ~ Supplement with vitamins + minerals (ensure type 1 nutrient stores adequate) ~ Vit A: 200,000 IU (single dose) if infant <2months; else 25,000 (weekly)	~ need to engage mother with treatment programme described ~ need to reassure & support described	Need to nurse infants in quiet, separate room noted	not specified in this chapter	not discussed in this chapter	not specified in this chapter	not specified in this chapter	not specified in this chapter	not described
Valid International	**Community-based Therapeutic Care (CTC), A field manual (first edition) 2006**	notes need for nutritional care of mothers (details not specified)	notes need for psychological care of mothers (details not specified)		n/a	yes section in "future developments" chapter discusses HIV	not specified	SFP if available	IYCF noted, but reader referred elsewhere for details	SFP if: ~ MUAC <210mm & pregnant (3rd trimester) ~ MUAC <210mm & infant <6m
UNHCR	**Handbook for Emergencies (third edition) 2007**	n/s	n/s		n/s	yesdetails about HIV and nutrition described	n/s	SFP for all discharged SAM patients	Has detailed outlining IYCF issues, including use of milk products	targeted SFP if MUAC<22cm; blanket SFP otherwise
UNHCR	**The management of Nutrition in Major Emergencies 2000**	Additional supplementary ration *(not specified)* suggested	Tnotes that mothers/carers may need help and encouragement	Notes: "When a mother is severely malnoursihed or suffering from severe infection or overwork, she may produce inadequate breastmilk, leading to malnutrition of infant. Breastmilk production may also be affected by psychosocial factors	n/a	yes ~ discussed in detail in annex, including issues of BF & HIV	n/a	SFP if available	Guiding Principles for feeding infants and young children during emergencies referenced	SFP details depend on the situation
IFE Core Group	**Infant Feeding in Emergencies IFE Module 2, version 1.1 2007**	~ Drink extra 1l water per day ~ Eat ~ 2500kcal/day	Separate chapter is on "mother traumatised, in emotional crisis or rejecting infant"	several chapters focus on care for mother	When BF well (if BF) Mother trained to give BMS correctly (non-BF infants)	noted in other chapters, but not in section on malnourished infant	at least weekly for a miniumum of 3 month	SFP if available	Many chapters of manual focus on good IYCF practices	reference to other guidelines given

Table 10 cont'd

Country or Organization	Guideline	Maternal diet	Maternal (caregiver) psycho-social issues	Other	Preparation for discharge (general)	HIV noted	Follow –up visits	Extra home food ration?	Details of any IYCF guidance	Feeds for pregnant & lactating women
International Guidelines										
ICRC	**Nutrition Manual for Humanitarian Action 2008**		Section on psychological support focuses on child rather than carer		~ immunizations up to date	yes			Chapter is devoted to feeding infants and small children	according to nutritional state
National Guidelines										
Burundi	**Protocole National de Nutrition 2002**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day ~ Supplement with vitamins & minerals (ensure type 1 nutrient stores adequate) ~ Vit A: 200,000 IU (single dose) if infant <2months; 25,000 (weekly if >2months)	~ need to engage mother with treatment programme described ~ need to reassure & support mother described	importance of good ward environment described	~ has had health education ~ immunizations up to date	no	at least 3 months follow-up at health centre level		Has messages on: EBF; continued BF until 2 years age; appropriate complementary foods; key childcare practices	SF for: pregnant woman in 3rd trimester if MUAC <210mm; also women with infant <6m if MUAC <210mm
Ethiopia	**Protocol for the Management of Severe Acute Malnutrition 2007**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day ~ Supplement with vitamins & minerals (ensure type 1 nutrient stores adequate) ~ Vit A: 200,000 IU (single dose) if infant <2months	~ Explain aim of treatment/what is expected; reassure SS works; be attentive to mother & introduce her to other mothers		no specific details	yes. Details include: 1)Need for testing; 2)TB co-infection 3)ARV & start of ARV	~ monthly follow-up until aged 6 months	Mother in SFP ~ monthly until 6months age	Annex 12 gives 9 key BF messages; Annex 13 gives 7 key messages on nutrition & growth	not described
Madagascar	**Depistage et prise en charge de la malnutrition aigue 2007**	not specified	not specified		~ Health & nutrition education	no	specific infant follow-up not noted	Referral to SFP recommended for all discharged SAM patients	briefly noted in a list of health and nutrition education topics	SFP for: ~ pregnant (3rd trimester) & lactating women with MUAC <210mm
Malawi	**Guidelines for the Management of Severe Acute Malnutrition (book T3) 2007**	~ Drink at least 2l water per day ~ Eat ~ 2500kcal/day ~ If infant <2 months, mother should have Vit A 200,000IU	need to reassure mother noted	If EBF not possible, alternatives listed include: - modified cow or goat milk - infant formula	~ need for loving care, play and stimulation noted ~ If EBF not possible, alternatives listed include: modified cow or goat milk, infant formula	noted in list of causes of failure to respond to treatment	referral for growth monitoring noted	Referral to SFP recommended for all discharged SAM patients	none	SFP for: ~ pregnant & lactating women, up to 6 months after birth, with MUAC <210mm
Mozambique	**Manual de Orientacao para Tratamento da Desnutricao Aguda Grave 2008**	~ Drink at least 2l water per day ~ Eat ~ 2500kcal/day ~ If infant <2 months, mother should have Vit A 200,000IU; if <2months, then 25,000IU/week ~ Need to replenish type I micronutrient stores noted	need to reassure mother and explain treatments noted		~ Has detailed chapter on psycho-social stimulation & care	yes Whole chapter devoted to HIV issues	for 3 months after discharge	Referral to SFP recommended for all discharged SAM patients	has detailed section in annexes outlining IYCF issues	SFP referral for: ~ pregnant & lactating women with MUAC <220mm

Table 10 cont'd

Country or Organization	Guideline	Maternal diet	Maternal (caregiver) psycho-social issues	Other	Preparation for discharge (general)	HIV noted	Follow –up visits	Extra home food ration?	Details of any IYCF guidance	Feeds for pregnant & lactating women
National Guidelines										
Tanzania	**Management of Acute Malnutrition NATIONAL Guidelines 2008**	not specified	not specified	not specified	Protocol describes: ~ Ensure immunizations done ~ Play therapy & sensory stimulation	mentioned in history; HIV screening is "necessary laboratory investigation"	every 2 months for 6 months (continue/ complete any medications; continue BF if child BF)	not specified	None	not described
Uganda	**Integrated Management of Acute Malnutrition 2006**	not specified	not specified		Protocol focuses on RUTF-related messages for older children	yes, Whole chapter devoted to HIV issues, with separate guidelines for HIV+ patients. (NB focused at >6month olds)	not specified	Referral to SFP recommended for all discharged SAM patients	Need to link with other national child health and nutrition programmes noted	SFP referral
Zambia	**Integrated Management of Acute Malnutrition 2009**	not specified	not specified		Protocol notes:~ basic health education messages	yes	not specified	Referral to SFP recommended for all discharged SAM patients	None	SFP for: ~ All pregnant (3rd trimester) & lactating women (with infant <6m & children on PMTCT coming from food insecure households ~ MUAC <225mm
Zimbabwe	**Guidelines for the Management of Severe Acute Malnutrition through CTC 2008**	not specified	not specified		~ Health & nutrition education ~ Links with institutions, organizations & support groups (e.g. social welfare, home based care)	yes details given	n/s	not specified	None	SPF for P&L with MUAC<185mm; OTP for MUAC <185mm
DRC	**Protocol National de Prise en Charge de la Malnutrition Aigue 2008**	~ Eat ~ 2500kcal/day ~ Vit A: 200,000 IU (single dose) if infant <2months	need to reassure and support mother stated		Protocol describes: ~ Health and nutrition education ~ Play therapy & psychosocial support	no	Specific infant follow-up not detailed	Referral to SFP recommended for all discharged SAM patients.	briefly noted in a list of health and nutrition education topics, also notes that feeding bottles and artificial teats should be banned	SFP for: ~ mothers of infants with MAM ~ lactating women with MUAC <210mm
Sudan (Southern)	**Guidelines for the Management of Severe Acute Malnutrition 2008**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day ~ Supplement with micronutrients ~ Vit A 200,000IU if infant <2 months	paragraph on supportive care for mothers mentions mental and emotional support for trauma / depression		Protocol describes: ~ Health and nutrition education ~ Play therapy & psychosocial support ~ Immunizations up-to-date	yes details given	yes "At regular intervals following discharg	Referral to SFP recommended for all discharged SAM patients.	IYCF noted, but reader referred elsewhere for details	not described

Table 10 cont'd

Country or Organization	Guideline	Maternal diet	Maternal (caregiver) psycho-social issues	Other	Preparation for discharge (general)	HIV noted	Follow –up visits	Extra home food ration?	Details of any IYCF guidance	Feeds for pregnant & lactating women
National Guidelines										
Sudan (North)	**National Integrated Manual on the Management of Severe Acute Malnutrition in health facilities and at community level 2008**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day ~ Supplement with micronutrients ~ Vit A 200,000IU if infant <2 months, 25000IU weekly otherwise	need to reassure and support mother stated		~ ensure child is fully re-integrated in family & community ~ fully immunized ~ health and nutrition education	noted in list of multiple causes of treatment failure	~after 1 week, 2 weeks, 1 month, 3 months and 6months	Referral to SFP recommended for all discharged SAM patients. (SFP for mother in case of infant <6m)	None	not described
Botswana	**Guidelines for the Management of Severe Acute Malnutrition in Children 2007**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day ~ Supplement with vitamins & minerals (ensure type 1 nutrient stores adequate)	need to reassure and support mother (e.g. 'be attentive') emphasised Mother should receive medical treatment if needed		~ counselling and heath education completed ~ immunization up-to-date ~ arrangements made for follow-up	noted in list of 6 causes of poor weight gain	~ weekly for 1 month ~ fortnightly next month ~ monthly for next 2 months ~ as needed thereafter	no noted	Says "feed frequently with energy and nutrient dense foods" Feeding bottles and artificial teats should be banned	not described
Burkina Faso	**None yet - in draft**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day ~ Supplement with vitamins & minerals (ensure type 1 nutrient stores adequate) ~ Vit A 200,000IU; Iron&folate (60mg+400mcg) for 3 months after admission	~ need to engage mother with treatment programme described ~ need to reassure & support mother described ~ importance of good environment described ~ need to engage mother with treatment programme described ~ need to reassure & support mother described ~ importance of good environment described		Protocol mentions: ~ Childcare practices ~ Parenting capacity ~ Play therapy	no	follow up noted but not detailed	Referral to SFP recommended for all discharged SAM patients.	None	SFP if MUAC <210mm or if her infant <6m has MAM
Cote D'Ivoire	**Protocole National de Prise en charge de la malnutrition severe 2005**	~ Drink at least 2l water per day ~ Rat ~ 2500kcal/day ~ Mother should be adequately supplemented with vitamins & minerals (type 1 nutrient stores adequate) - Vit A 200,000IU	2 pages of protocol devoted to psychosocial care & support		~ counselling and heath education completed (good childcare practices are described in detail) ~ immunization up-to-date ~ arrangements made for follow-up	yes	follow up for at least 3 months post-discharge	~ Mother should have supplementary feeds to maintain quantity and quality of milk supply	None	not described
Guinea	**Protocole National de Prise en Charge de la Malnutrition Aigue 2005**	~ Eat ~ 2500kcal/day ~ Vit A: 200,000 IU (single dose) if infant <2months	need to reassure and support mother stated		Protocol describes: ~ Health and nutrition education ~ Play therapy & psychosocial support	no	Specific infant follow-up not detailed	Referral to SFP recommended for all discharged SAM patients.	briefly noted in a list of health and nutrition education topics, also notes that feeding bottles and artificial teats should be banned	SFP for: ~ mothers of infants with MAM ~ lactating women with MUAC <210mm

Table 10 cont'd

Country or Organization	Guideline	Maternal diet	Maternal (caregiver) psycho-social issues	Other	Preparation for discharge (general)	HIV noted	Follow –up visits	Extra home food ration?	Details of any IYCF guidance	Feeds for pregnant & lactating women
National Guidelines										
Mali	**Protocole National de la prise en charge de la malnutrition aigue 2007**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day ~ Supplement with vitamins & minerals ~ Vit A 200,000IU if infant <6 weeks	has paragraph on psychosocial environment		Protocol mentions: ~ play therapy ~ health and nutrition education	yes ~ A chapter is devoted to HIV & related issues	as for older children: for 3 months ~ weekly for 1 month ~ fortnightly thereafter	Referral to SFP recommended for all discharged SAM patients.	noted within list of health and education topics for community health workers to cover	SFP if MUAC <210mm
Niger	**Protocol National de Prise en Charge de la Malnutrition Aigue 2006**	~ Drink ≥ 2l water per day; ~ Eat ~ 2500kcal/day ~ Supplement with vitamins & minerals (ensure type 1 nutrient stores adequate) ~ Vit A 200,000IU if infant <2months old; Iron & folate (60mg+400mcg) for 3 months after admission	~ need to engage mother with treatment programme described ~ need to reassure & support mother described		Protocol mentions: ~ play therapy ~ health and nutrition education	yes ~ Details of HIV and related issues discussed	need for regular follow-up emphasised	Referral to SFP recommended for all discharged SAM patients.	None	SFP for pregnant and lactating women (with infant <6m) if MUAC <210mm
Senegal	**Protocole de prise en charge de la malnutrition aigue 2008**	~ Drink ≥ 2l water per day ~ Eat ~ 2500kcal/day	~ need to engage mother with treatment programme described		Protocol mentions:~ play therapy~ nutritional advice to mother~ ensure mother can recognise 'danger signs' of clinical deterioration	yes	not specified	referral to SFP (if available) recommended for all discharged SAM patients	None	SFP for pregnant and lactating women (with infant <6m) if MUAC <210mm
Afghanistan	**Community-based Management of Acute Malnutrition programme in Aqcha and Mardyan District of Jawzjan Province Northern Afghanistan (Stabilization Centre Guidelines) 2008**	Mother should be adequately supplemented with vitamins & minerals (type 1 nutrient stores adequate)	not specified		not specified	no	monthly until aged 6 months		None	not described
India	**Indian Academy of Paeditrics guidelines on hospital based management of Severely Malnourished Children 2006**	not specified	not specified		Protocol describes: ~ Health and nutrition education ~ Play therapy & psychosocial support	no	Specific infant follow-up not detailed	not specified	briefly noted in a list of health and nutrition education topics, also notes that feeding bottles and artificial teats should be banned	not described
Pakistan	**Protocol for the inpatient treatment of severely malnourished children in the Pakistan earthquake emergency 2005**	not specified	not specified		Protocol mentions: ~ completing immunizations ~ sensitizing carers to home care ~ play therapy	yes: ~ noted that "recovery may take longer and treatment failure is more common ~ treatment should be same as for HIV	yes ~ weekly for 1 month ~ fortnightly for 2 months ~ monthly for 3 months	not specified	None	not described
Sri Lanka	**Management of Severe Acute Undernutrition: Manual for Health Workers in Sri Lanka 2007**	not specified	not specified		annex has section on play therapy	no	referral for follow-up noted	guide to family foods for children aged 1 to 5 years given in annex	None	not described

4.5 An 'AGREE' appraisal of current guidelines

Using the 'AGREE' appraisal framework (boxed), these are the common issues identified in this review:

a) Scope and purpose of guidelines in addressing infant <6m malnutrition

1. The overall objective(s) of the guideline should be specifically described.
2. The clinical question(s) covered by the guideline should be specifically described.
3. The patients to whom the guideline is meant to apply should be specifically described.

Guideline objectives to address child malnutrition are generally well stated. Titles alone are often enough to determine whether all types of acute malnutrition or only SAM is the focus.

Guidelines are generally much poorer at explicitly stating the needs of infants <6m. Infant <6m MAM is almost universally neglected (except by Burkina Faso guideline and IFE Module 2). In some guidelines infants <6m are only indirectly addressed, including in the WHO 1999 and 2003 guidelines. Some guidelines usefully state the objective of infant treatment (e.g. "to restore exclusive breastfeeding"). As infant <6m management is different from that of older infants and children it seems sensible that future guidelines deal with it specifically.

b) Stakeholder involvement

4. The guideline development group should include individuals from all the relevant professional groups.

It is not possible to say which professional groups had inputs into guideline writing without detailed probing with guideline sources. Many current guidelines have minimal detail of how to clinically assess infants <6m and focus heavily on supplemental feeds as the core treatment option. This possibly reflects predominantly nutrition-focused writing groups. Other professionals that may be relevant in the writing of future guidelines on infants <6m include dieticians, paediatricians, obstetricians, nurses, midwives, speech & language therapists, HIV specialists, lactation specialists, psychologists and community health workers.

5. The patients' views and preferences should be sought.

IYCF is a family affair and a severely malnourished infant <6m needs involvement of not just the mother or primary caregiver, but the father, family and community to support treatment. It is clearly difficult for international guidelines to include users, however, this should certainly be a feature of national guidelines. Some CMAM guidelines note the importance of 'community engagement' as an essential element of SAM/MAM management. This should be encouraged and made universal. Even basic understanding of local context factors influencing malnutrition may make big differences to acceptance and acceptability of treatments.

6. The target users of the guideline should be clearly defined.

Target users are often not clear in guidelines reviewed. Many guidelines, for example, combine details of clinical management with details of programme management, which can confuse content. Future authors should consider and ideally research the pros and cons of a 'comprehensive' vs. 'targeted' approach. For example, small, clinically focused 'case management' pocket size handbooks are often liked by front line clinical staff. Managers, meanwhile, might appreciate a large file with step-by-step instructions about troubleshooting programme databases.

7. **The guideline should be piloted among end users.**

There is a clear 'evolution' of guidelines, which suggests a process of testing and refining. However, results of piloting and testing are not clearly stated in any of the guidelines reviewed. This would be helpful for users and could be housed in a, probably web-based, repository of guidelines and evaluations for others to learn from.

c) Rigour of Development

8. **Systematic methods should be used to search for evidence.**
9. **The criteria for selecting the evidence should be clearly described.**
10. **The methods used for formulating the recommendations should be clearly described.**
11. **Health benefits, side effects and risks should be considered.**
12. **There should be an explicit link between recommendations & supporting evidence.**
13. **The guideline should be externally reviewed by experts prior to publication.**

Guidelines reviewed are 'end-products'. Separate documents outlining the guideline development process and articulating the underlying evidence base behind individual recommendations were not available. A 2004 WHO consultation to 'Review the literature on Severe Malnutrition'[139] is probably reflective of most current approaches to malnutrition guideline development. Expert consultations and critical reviews are used to identify, interpret and translate available research into policy. Guidelines for the development of guidelines (e.g. GRADE[140] and SIGN[141]) could be used in future.

In considering "health benefits, side effects and risks", it is important to consider the implications of therapeutic treatment of infants <6m amongst the wider infant population. For example, are there risks that 'supplemental' feeding' of malnourished breastfed infants <6m will carry mixed messages to the caregiver and community regarding causes of malnutrition and benefits of exclusive breastfeeding? And, if so, how should these risks be managed? None of the guidelines reviewed address these broader issues of 'spillover' and population impact. Locating strategies to treat SAM and MAM in infants <6m within a broader infant and young child feeding framework (see Chapter 2) can help to identify wider risks and inform risk management.

14. **A procedure for updating the guideline should be provided.**

No guideline noted its 'expiry date'. This probably reflects the short term and uncertain nature of funding in international nutrition. However, for optimal future impact, regular guideline updates are needed and processes for this should be clearly stated.

d) Clarity & presentation

15. **The recommendations should be specific and unambiguous.**
16. **Different options for diagnosis and/or treatment of the condition should be presented.**
17. **Key recommendations should be easily identifiable.**

There were considerable variations in how easy guidelines were to follow and how much detail they contained. Varying formats made guideline comparisons difficult, with some recommendations often hard to find. Management of infants <6m was sometimes explicitly stated, (e.g. antibiotic choice), other times not, e.g. diagnosis of fluid overload. This issue needs to be addressed in future guidelines by stating explicitly when and how infants <6m should be treated differently throughout and when treatment is the same.

18. The guideline should be supported with tools for application.

A key strength of WHO 1999 and its wide acceptance and use is that it was accompanied by a training programme to aid implementation. Limited information was available as to whether reviewed guidelines were actively promoted to target audiences and if tools were given to aid rollout.

Chapter 8 of IFE Module 2 is actually a training resource that has become a guidance material, due to the gap in formal guidance. An evaluation of IFE Module 2 amongst users (2006) found that content on SAM <6m was typically used as reference material for programmes more than a training content[142].

e) Applicability

19. Potential organisational barriers in applying recommendations should be discussed.
20. Potential cost implications of applying the recommendations should be considered.

These were not directly addressed in the majority of guidelines reviewed. This is most probably because all guidelines identified were primarily targeted at front-line field staff rather than policy-makers deciding on whether or not they wanted to implement the programme in the first place.

21. The guideline should presents key review criteria for monitoring and audit purposes

A few recent guidelines (e.g. Tanzania, Zambia, Zimbabwe) include a 'checklist' to help programme managers to ensure that all factors relevant to high quality care were being considered. There is some evidence that 'checklist' strategies can have a positive impact on patient outcomes[143], so this might be useful for other guidelines to replicate in future. Ideally research should be done to develop an evidence-based checklist for infant <6m malnutrition, as well as for child malnutrition.

f) Editorial Independence

22. The guideline should be editorially independent from the funding body.
23. Conflicts of interest of guideline development members should be recorded.

Organizations like WHO and UNICEF often play dual roles as both funders of guideline development and technical experts advising on guideline details. UNICEF also contributes funds and resources to inpatient programmes in some settings. Any risk of conflicts of interest can be minimized by having independent individuals on the guideline writing team. This is currently the case for many national guidelines, which have a variety of authors involved. It would be good practice for future guidelines to name all contributing individuals and organizations.

Future guidelines would be improved by aiming towards AGREE standards at the time of writing. This will require more person-time resources for writing / guideline development but may have positive impacts in terms of individual outcomes.

4.6 Summary findings and recommendations

Summary findings

A total of 37 guidelines (14 international and 23 national) were identified for review. Most share a common origin in the WHO 1999 guideline and describe the 'ten steps' approach to care.

Community-based management of Acute Malnutrition (CMAM) is rapidly being recognised as the 'norm' for the management of acute malnutrition for children aged 6 to59m. The Valid International field manual (2006) is a key reference.

MUAC is frequently used in the guidelines as an independent admission criterion, though in no guidelines is it recommended for use in infants <6m.

There is wide variation in how current guidelines address acute malnutrition in infants <6m and some only implicitly recognise the problem.

There is inconsistency in age, weight and length cut-offs used to identify infants <6m for admission and their subsequent treatment.

All guidelines recommend inpatient care for SAM in infants <6m and focus on nutritional treatments with the aim of restoring exclusive breastfeeding. Very few guidelines give details of the MAM in infants <6m.

Few guidelines include details of IYCF/breastfeeding support. MSF guidelines 2006, ACF Assessment and Treatment of Malnutrition, 2002 and IFE Module 2 are important exceptions.

Summary recommendations

Future guidelines and guideline updates should build on and expand MAMI guidance, both SAM and MAM, and should give more details on IYCF/ breastfeeding support.

The following three guidelines could be considered a good reference/ template for future MAMI guidelines: MSF guidelines 2006, ACF Assessment and Treatment of Malnutrition, 2002 and IFE Module 2

Strategies with potential to improve outcomes of infant <6m SAM include implementation of routine kangaroo care[144] for inpatient 'complicated' cases of SAM.

MAMI strategies should be located within a framework of safe and appropriate IYCF; synergies in programming between <6m and 6 to 24m age groups must be better reflected in the guidelines.

In the context of international rollout of CMAM programmes, it is noteworthy that MAMI is predominantly inpatient-focused. Options for outpatient based care in infants <6m should be considered in future guidelines.

Greater clarity is needed on anthropometric criteria, measurement cut-offs and age assessment for SAM & MAM infants <6m.

More resources should be devoted to future guideline development. Tools such as GRADE and AGREE should be used to better enhance the quality of future guidelines. An open access online 'guideline library' might facilitate development of future documents.

Endnotes

130 http://www.gradeworkinggroup.org/

131 WHO (1999) Management of severe malnutrition: a manual for physicians and other senior health workers. World Health Organisation. Geneva: World Health Organisation.

132 Valid International (2006) Community-based Therapeutic Care (CTC). A Field Manual. Oxford: Valid International.

133 WHO & UNICEF (2009) WHO child growth standards and the identification of severe acute malnutrition in infants and children. A joint statement by the World Health Organization and the United Nations Children's Fund. May 2009.

134 Angood, C. (2006) Weighing scales for young infants: a survey of relief workers. Field Exchange. 2006(29):11-2.

135 IFE Core Group (2007) Chapter 5. Section 5.3 Babies who are visibly thin or underweight. IFE Module 2. Oxford: Emergency Nutrition Network.

136 IFE Core Group (2007) Chapter 5. IFE Module 2. Oxford: Emergency Nutrition Network.

137 SS involves an initial attempt at normal BF. 30 to 60 minutes later the infant tries suckling again. But the breast this time has a small nasogastric tube taped near to the nipple. The idea is that the process of suckling helps stimulate progressively increasing breastmilk production. Acknowledging that this takes time - but that infantU6m nutritional needs are urgent - BMS provides maintenance nutrients at 100kcal/kg/day.

138 WHO (2009) Acceptable medical reasons for use of breast-milk substitutes. WHO/NMH/NDH/09.01. Available via http://www.who.int/nutrition/publications/infantfeeding/WHO_NMH_NHD_09.01_eng.pdf

139 WHO. (2004) Severe malnutrition: Report of a consultation to review current literature. Geneva, Switzerland, 06 - 07 September, 2004.

140 Jaeschke, R., Guyatt, G.H., Dellinger, P., Schunemann, H., Levy, M.M., Kunz, R., et al. (2008) Use of GRADE grid to reach decisions on clinical practice guidelines when consensus is elusive. BMJ. 2008;337:a744.

141 SIGN. Scottish Intercollegiate Guidelines Network. Available from: http://www.sign.ac.uk/.

142 IFE Core Group (2007) Chapter 5. IFE Module 2. Oxford: Emergency Nutrition Network.

143 Haynes, A.B., Weiser, T.G., Berry, W.R., Lipsitz, S.R., Breizat, A-H.S., Dellinger, E.P., et al. (2009) A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. N Engl J Med. 2009 January 29, 2009;360(5):491-9.

144 Kangaroo care consists of skin-to skin contact between mother and infant. Key features are continuous and prolonged skin-to-skin contact between the mother and baby, accomplished by the baby being firmly attached to the mother chest both day and night, allowing frequent and exclusive breastfeeding (or breastmilk substitute if required).