Supportive supervision for improving health status and quality of care for malnourished children at out-patient level: cluster randomized trial in Arua district, Uganda

Supplementary file

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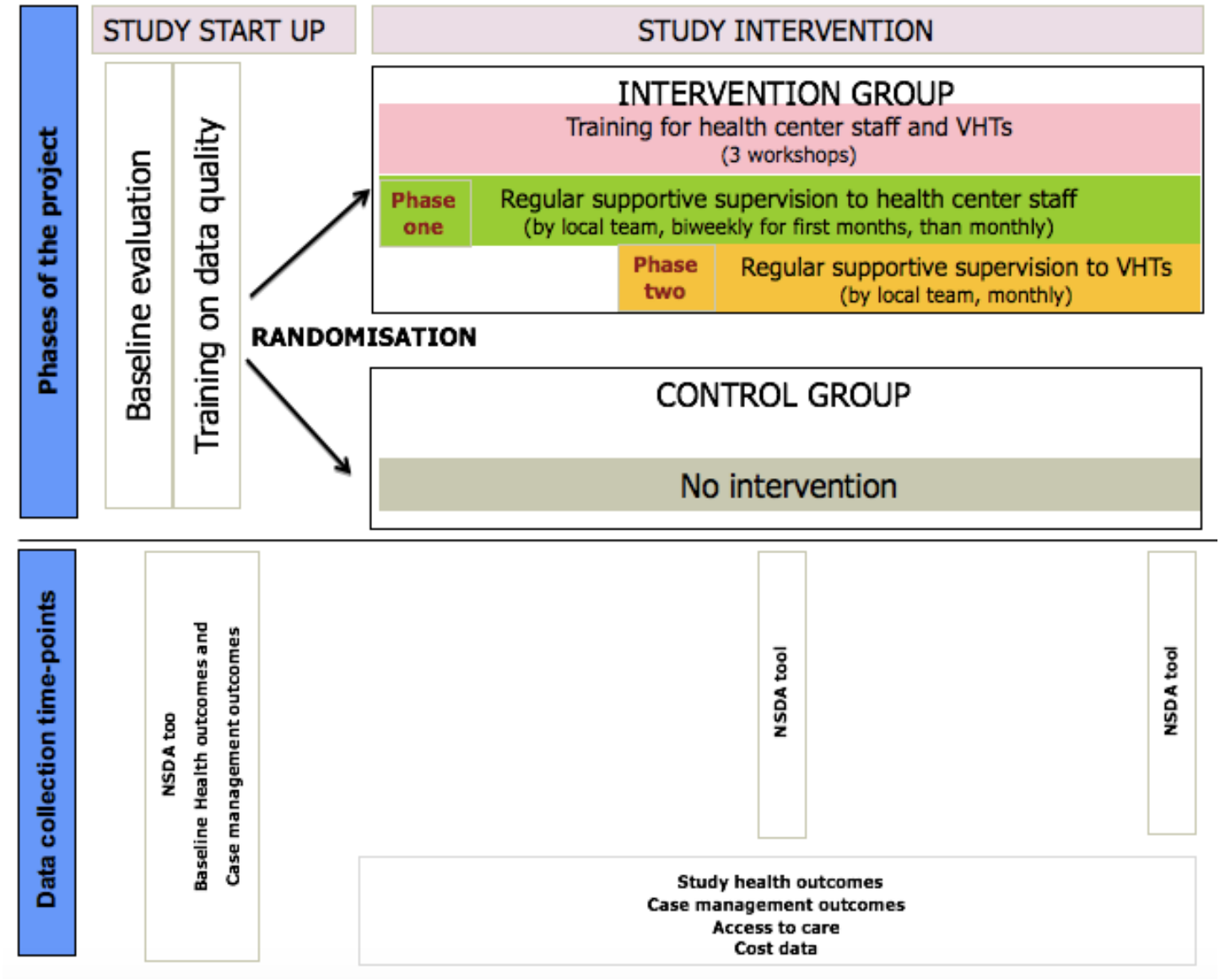
Appendix 1: Study timelines and main activities



Appendix 2: Key characteristics of the health facilities

	Intervention HCs			Control HCs			
	HC 1	**HC 2**	**HC 3**	**HC 4**	**HC 5**	**HC 6**	**Totals**
Health Center level *	IV	III	III	III	III	III	-
Setting	Rural	Rural	Urban	Rural	Rural	Urban	-
Number of staff assigned to the nutritional unit	2	2	3	1	3	2	13

* Levels of primary health care in Uganda is tiered into health center I, II,III and IV.

Appendix 3: Baseline data on health indicators

	Intervention HC				Control HC				
	HC 1 n(%)	HC 2 n(%)	HC 3 n(%)	Mean % (95% CI)	HC 4 n(%)	HC 5 n(%)	HC 6 n(%)	Mean % (95% CI)	**p-value**
Cured	111(54.7)	28(22.1)	49(22.0)	32.9(14.1-51.8)	9(7.2)	8(5.0)	29(28.4)	13.5(0.6-26.5)	0.216
Nonrespondent	4(2.0)	3(2.4)	1(0.5)	1.6(0.6-2.6)	4(3.2)	0	1(1.0)	1.4(-0.2-3.0)	0.863
Defaulters	38(18.7)	53(41.7)	74(33.2)	31.2(19.6-42.8)	62(49.6)	103(64.0)	42(41.2)	51.6(40.1-63.1)	0.100
OTC Transfer	0	0	1(0.5)	0.2(-0.1-0.5)	0	0	0	0	0.312
ITC Transfer	9(4.4)	0	1(0.5)	1.6(-0.8-4.0)	20(16.0)	5(3.1)	2(2.0)	7.0(-0.8-14.8)	0.316
Dead	1(0.5)	0	0	0.2(-0.1-0.5)	0	0	0	0	0.313
Unknown	40(19.7)	43(33.9)	97(43.5)	32.4(20.4-44.3)	30(24.0)	45(28.0)	28(27.5)	26.5(24.3-28.7)	0.450
Total	203(100)	127(100)	223(100)		125(100)	161(100)	102(100)		

Baseline health indicators (cured, non-responders, defaulters, OTC and ITC transfers and deaths) as defined in the national guidelines, were extracted from the HMIS data for the financial year 2016 (July 2015-June 2016).

Appendix 4: Supportive supervision check list

Area of focus
Part 1: Review of Previous Action Plan
Did the responsible personnel follow up on the actions of previous visit?
Have all the actions been resolved?
Has training being conducted as part of the action plan?
Part 2: Health facility management
Is quality improvement team set up?
Is quality improvement team functional?
Is nutritional continuous education conducted?
Does the facility have links with the community (VHT)?
Part 3: Space
Triage area organised and tidy?
Anthropomentry area organised and tidy?
Clinical assessment area organised and tidy?
Registration and counselling area organised and tidy?
Chair for health worker and caretaker?
Nutrition management chart hang in nutritional corner?
Nutritional IEC materials (Growth promotion, IYCF etc)
IMAM guidelines in health facility?
Weight for length/height z-score charts?
Job aids (RUTF appetite test, dosing charts, MUACs)?
Part 4: Nutritional equipment and supplies
Equipment
Availability of hanging weighing scale?
Availability of standing/electronic weighing scale?
Are the weighing scales in good working condition and calibrated?
Availability of length measuring board?
Availability of a height measuring board?
Are the height/length measuring boards in good working condition?
Availability of the children MUAC tape?
Is the tape measure in good condition?
Availability of a functional calculator?
Availability of a functional thermometer?
Availability of a functional clock?
Availability of well-kept scissors?
Supplies
Is storage clean and dry?
Is ventilation and lighting adequate?
Is the storage area free of vermin?
Are stock cards for RUTF, Amoxy, Vit A, mebendazole, measles vaccine, antimalarials, Iron and folic acid being updated in the pharmacy?

	Is RUTF (Plumpy nut) in stock?
	Is Amoxy ,Vit A, mebendazole, measles vaccine, antimalarials, Iron and folic acid in stock?
	Are the nutritional supplements appropriately kept according to storage guidelines?
	Are they stored in order of expiry date?
	Are supportive medicines (Zinc, ORS, ARVs) in stock?
	Availability of safe water and storage jerry can?
	Availability of Jug and cups?
	Availability of sugar or glucose?
	Clean water and soap for hand washing?
	Availability of waste disposal bins?
	Availability of HIV testing kits?
	Availability of Malaria testing?
	Availability of food and cooking demonstration materials?
Part 4: Malnutrition management	
	Have all the staff offering nutritional management services received comprehensive training?
	Conduct group health and nutrition education
Observe health centre staff assess 2- 3 patients for the following	
	Noting down the child's baseline characteristics (age, gender etc)?
	Where child has come from/referred (need to have a referral form) from?
	Gave 50mls of 10% glucose or sugar solution?
	Reviewed previous treatment for patients referred/transferred?
	Child feeding practices?
	Child's other illness and medication history (fever, cough ,diarrhoea, ear problems, TB and HIV)?
	Family circumstances?
	Asked about child's immunization status?
	Taking the child's temperature?
	Examine for severe signs of disease (shock, dehydration, anaemia and Vit A deficiency)?
	Check for bilateral pitting oedema?
	Take the child's weight correctly?
	Take the child's length/weight correctly?
	Take the child's MUAC correctly?
	Estimate the Z-score correctly?
	Examine child for signs of other infections (Pneumonia, diarrhoea, TB, HIV, malaria etc)?
	Did they test for HIV?
	Did they test for TB?
	Conduct a RUTF (plumpy nut) appetite test?
Diagnosis	
	Made a correct malnutrition classification following the IMAM guidelines?
	Estimated the target weight correctly?
	Counselling/communication and client understanding?
Treatment	
	Made correct diet treatment following the IMAM guidelines?
	Prescribed appropriate quantities of RUFT (plumpy nut)?
	Prescribed other treatments correctly (Amoxy, Vit A, Fe-Folic acid, Mebendazole)

	Discussed when client should return for next appointment?
Outcome	
	Are patient outcomes correctly determined following the IMAM guidelines?
	Are complicated cases referred as per IMAM guidelines (review patient files and registers)?
Exit/discharge	
	Are patients discharge criteria correctly determined following IMAM?
Part 5: Data collection	
	Are patient's books appropriately filled with all the required information following the IMAM guidelines (check 2-3 patient files/books)?
	Are patient anthropometric measurements correctly recorded in the patient book?
	Is the integrated nutritional register present?
	Is the data correctly extracted from the patient books in to the register (sample 2-3 patient files to compare to the register)?
	Is all the patient data filled in to the register?
	Is the data consistent over time (compare current visit data with previous visits)?
	Are all those initiated on the program receiving their RUFT (plumpy nut) as per IMAM guidelines
	Are quarterly reports aggregated data compare with that in the registers for the same month?
	Are the health facility registers archived systematically in a safe place?
For study data collectors	
	Are they transcribing data correctly (pick 2-3 study questionnaires and compare to the integrated nutritional registers)?
	Are study data collectors correctly completing the health and cost outcome questionnaire?

Appendix 5: Case definitions

Health status

Exit categories as for the national guideline [9], as follows:

1. Cured: attaining a weight-for-height ≥ -2 standard deviation (SD) from the mean based on the WHO 2006 standards [34] or mid upper circumference (MUAC) of ≥ 12.5 cm, and no bilateral pitting oedema for two weeks, and clinically well.
2. Non-responders: not reaching discharge criteria after three months (four months for the HIV/TB patients)
3. Defaulters: absent for 2 consecutive follow up visits
4. Transferred to in-patient care (ITC): condition has deteriorated and requires in-patient care or not responding to treatment
5. Transferred to another out-patient care facility (OTC): patient transferred to other nearby OTCs or as requested by caregiver
6. Died: patient died while in the program

Quality of case management

1. Correct diagnosis: correct assignment of the category of malnutrition based on weight-for-height Z-score or MUAC as for the national guideline criteria [9], as follows:
   - MAM if weight-for-height Z-score > -3 and < -2 standard deviation or MUAC (6 to 59 months) ≥ 11.5 and < 12.5 cm and no bilateral pitting oedema
   - SAM if weight-for-height Z-score < -3 standard deviation or MUAC (6 to 59 months) < 11.5 cm, bilateral pitting oedema, no medical complications and passes appetite test.
2. Correct RUTF treatment: correct RUTF dosage, based on the weight of the child, as for the national guideline [9]
3. Correct complementary treatment: correct treatment of cases as for the national guideline [9], if complying with all following criteria:
   - Amoxicillin for bacterial infections on first day (only for SAM)
   - Measles vaccination on admission (if > 9 months and not yet received)
   - Vitamin A capsule given once at discharge
   - Iron and folic acid prescribed in presence of anaemia
   - Mebendazole/Albendazole for helminthic infections on second visit
4. Correct evaluation of HIV: HIV test performed on all patients following the national testing algorithm [30]
5. Correct counselling of care givers/patients on key messages: delivery of counselling in any of the following area, as for the national guideline[9]: nutrition, RUTF

administration, hygiene, HIV

6. Correct exit health outcome assigned: correct assignment of the exit criteria as for the national guideline criteria [9], as follows:
    - Cured: weight-for-height Z-score ≥ -2, no bilateral oedema for more than 2 weeks and clinically well
    - Non-respondent: not reached discharged criteria after three months (four months for the HIV/TB patients)
    - Defaulted: absent or lost to follow up for two consecutive visits
    - Transfer to in-patient care (if deteriorating condition or not responding to treatment)
    - Transfer to another OTC (as requested by care giver)
    - Died: died while on the program

Appendix 6: Template for collecting health indicators

Health and Cost Outcomes Questionnaire

Patient ID: |___| -- |___|___|_-- |___|___|___| ___| Patient initials |___|___| Date of enrolment|___|___|/|___|___|/|___|___|

RCT ID HC ID Patient ID First, Last Day Month Year

<table>
<tr><th colspan="12">At enrolment</th></tr>
<tr><th>Child Address</th><th>Sex</th><th>Age (months)</th><th>Vaccination status</th><th>Feeding practice (for children < 5 yrs)</th><th>Mother status: Pregnancy/ Lactating</th><th>Type of Admission</th><th>Type of nutritional management at enrolment</th><th>Nutrition status</th><th>HIV Status</th><th>ART service</th><th>TB status</th></tr>
<tr><td>District code
|___|___|</td><td rowspan="3">|1|M
|2|F</td><td>|___|___|</td><td>|1|Up to date
|2| Not up to date
|2|Never vaccinated</td><td rowspan="3">|1|EB
|2|RF
|3|MF
|4|CF
|5|NLB</td><td rowspan="3">|1|Preg
|2|Lact
|3|Died or Abandoned
|4|Non lact
|5|Unkown</td><td rowspan="3">|1|New admission
|2|Re-admission
Date of Previous admission
|___|___|/|___|___|/|___|___|
day month year</td><td rowspan="3">|1| ITC
|2| OTC
|3| SFP
|4| None</td><td rowspan="3">|1|MAM
|2|Uncomplicated SAM
|3|Complicated SAM
If complicated, indication |___|
(1(Hypoglicemia)2) Hypothermia (3) infections (4(Severe dehydration/shock)5(Very severe anaemia (6)Cardiac failure(7(Severe Dermatosis (8(Corneal ulceration 9) Any Danger sign</td><td rowspan="3">|1|Positive
|2|Negative
|3|Unknown
|4|Exposed</td><td rowspan="3">|1|ART
|2|Pre-ART
|3|NA</td><td rowspan="3">|1|Negative
|2|Positive
|3|Unknown</td></tr>
<tr><td>Sub county code
|___|___|__|</td><td>Entry care point</td><td>Child status</td></tr>
<tr><td>Village code
|___|___|__|___|</td><td>Code:
|___|___|</td><td>|1|Single
|2|Multiple</td></tr>
</table>

<table>
<tr><th>On Admission</th><th>Visit 1</th><th>Visit 2</th><th>Visit 3</th><th>Visit 4</th><th>Visit 5</th><th>Visit 6</th><th>Visit 7</th><th>Exit visit</th></tr>
<tr><td></td><td>|___|___|/|___|___|/|___|___|
day month year</td><td>|___|___|/|___|___|/|___|___|
day month year</td><td>|___|___|/|___|___|/|___|___|
day month year</td><td>|___|___|/|___|___|/|___|___|
day month year</td><td>|___|___|/|___|___|/|___|___|
day month year</td><td>|___|___|/|___|___|/|___|___|
day month year</td><td>|___|___|/|___|___|/|___|___|
day month year</td><td>|___|___|/|___|___|/|___|___|
day month year</td></tr>
<tr><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td><td>Weight (Kg)
|___|___| . |___|</td></tr>
<tr><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td><td>Height/Length (cm)
|___|___|___|</td></tr>
<tr><td>MUAC (cm)
|___|___| . |___|
1	≥ 11.5 – < 12.5 cm (MAM) 	2	< 11.5 cm (SAM) 	3	≥ 12.5 (Normal/cured)</td><td>MUAC (cm) 	___	___	.	___
1	≥ 11.5 – < 12.5 cm (MAM) 	2	< 11.5 cm (SAM) 	3	≥ 12.5 (Normal/cured)</td><td>MUAC (cm) 	___	___	.	___
1	≥ 11.5 – < 12.5 cm (MAM) 	2	< 11.5 cm (SAM) 	3	≥ 12.5 (Normal/cured)</td><td>MUAC (cm) 	___	___	.	___
1	≥ 11.5 – < 12.5 cm (MAM) 	2	< 11.5 cm (SAM) 	3	≥ 12.5 (Normal/cured)</td><td>MUAC (cm) 	___	___	.	___
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1	≥ 11.5 – < 12.5 cm (MAM) 	2	< 11.5 cm (SAM) 	3	≥ 12.5 (Normal/cured)</td><td>MUAC (cm) 	___	___	.	___
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1	≥ 11.5 – < 12.5 cm (MAM) 	2	< 11.5 cm (SAM) 	3	≥ 12.5 (Normal/cured)</td><td>MUAC (cm) 	___	___	.	___
1	≥ 11.5 – < 12.5 cm (MAM) 	2	< 11.5 cm (SAM) 	3	≥ 12.5 (Normal/cured)</td></tr>
<tr><td>Z score code 	___
1	≥ -3 and <- 2 (MAM) 	2	<- 3 (SAM) 	3	≥ -2 (Normal/cured)</td><td>Z score code 	___
1	≥ -3 and <- 2 (MAM) 	2	<- 3 (SAM) 	3	≥ -2 (Normal/cured)</td><td>Z score code 	___
1	≥ -3 and <- 2 (MAM) 	2	<- 3 (SAM) 	3	≥ -2 (Normal/cured)</td><td>Z score code 	___
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1	≥ -3 and <- 2 (MAM) 	2	<- 3 (SAM) 	3	≥ -2 (Normal/cured)</td></tr>
<tr><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td><td>Oedema grade |1|I |2| II |3|III |4| None</td></tr>
<tr><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td><td>History from caretaker |1|Diarrhoea |2|Vomiting |3|Cough |4|Fever |5|Other: ____________ |6|None</td></tr>
<tr><td>Physical examination 	1	Temp:	___	___	.	___
2	Resp/min:	___	___
3	Dehydration 	4	Anaemia 	5	Skin infection 	6	None</td><td>Physical examination 	1	Temp:	___	___	.	___
2	Resp/min:	___	___
3	Dehydration 	4	Anaemia 	5	Skin infection 	6	None</td><td>Physical examination 	1	Temp:	___	___	.	___
2	Resp/min:	___	___
3	Dehydration 	4	Anaemia 	5	Skin infection 	6	None</td><td>Physical examination 	1	Temp:	___	___	.	___
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3	Dehydration 	4	Anaemia 	5	Skin infection 	6	None</td></tr>
</table>

Health and Cost Outcomes Questionnaire

Patient ID: |___| -- |___|___| -- |___|___|___| ___| **Patient initials** |___|___| **Date of enrolment**|___|___|/|___|___|/|___|___|

RCT ID *HC ID* *Patient ID* *First, Last* *Day* *Month* *Year*

<table>
<tr><td>Nutrition Status
|1|MAM
|2|Uncomplicated SAM
|3|Complicated SAM
If complicated, specify:
|1|Hypoglicemia
|2| Hypothermia
|3| infections
|4| Severe dehydr/shock
|5|Very sev anaemia
|6|Cardiac failure
|7| Severe Dermatosis
|8|Corneal ulceration
|9| Any Danger sign</td><td>Nutrition Status
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If complicated, specify:
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|4| Severe dehydr/shock
|5|Very sev anaemia
|6|Cardiac failure
|7| Severe Dermatosis
|8|Corneal ulceration
|9| Any Danger sign</td></tr>
<tr><td>Appetite test:
|1| Passed
|2| Not able to eat
|3| Not done</td><td>Appetite test:
|1| Passed
|2| Not able to eat
|3| Not done</td><td>Appetite test:
|1| Passed
|2| Not able to eat
|3| Not done</td><td>Appetite test:
|1| Passed
|2| Not able to eat
|3| Not done</td><td>Appetite test:
|1| Passed
|2| Not able to eat
|3| Not done</td><td>Appetite test:
|1| Passed
|2| Not able to eat
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|1| Passed
|2| Not able to eat
|3| Not done</td><td>Appetite test:
|1| Passed
|2| Not able to eat
|3| Not done</td><td>Appetite test:
|1| Passed
|2| Not able to eat
|3| Not done</td></tr>
<tr><td></td><td>Amount taken (t/s)
___________</td><td>Amount taken (t/s)
___________</td><td>Amount taken (t/s)
___________</td><td>Amount taken (t/s)
___________</td><td>Amount taken (t/s)
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___________</td><td>Amount taken (t/s)
___________</td></tr>
<tr><td></td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td><td>Sharing foods
|1| yes
|2| no
|3| not asked</td></tr>
<tr><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td><td>Therapy- Suppl foods
|1| Plumpy nut
|2| Other: ________
|3| not prescribed</td></tr>
<tr><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td><td>Dose prescribed per day(sachets)|___|.|___|</td></tr>
<tr><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td><td>Delivered sachets(N):
|___|___|</td></tr>
<tr><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td><td>Plumpy nut available
|1| Yes |2| no</td></tr>
<tr><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td><td>Laboratory tests done
|1|Malaria RDT
|2|HIV
|3|TB: __________
|4|Other: __________
|5|None</td></tr>
<tr><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td><td>Other diagnosis
|1|Malaria
|2|Pneumonia
|3|Diarrhoea
|4|Other: __________
|5|None</td></tr>
</table>

Health and Cost Outcomes Questionnaire

Patient ID: |___| -- |___|___|_-- |___|___|___| ___| **Patient initials** |___|___| **Date of enrolment**|___|___|/|___|___|/|___|___|

RCT ID *HC ID* *Patient ID* *First, Last* *Day* *Month* *Year*

Prescribed med code: |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None	**Prescribed med code:** |1| Vitamin A |2|Iron and Folic acid |3|Meb/Albendazole |4|Amoxillin |5|Other: ________ |6|None
Counselling code:|__|	**Counselling code:**|__|	**Counselling code:**|__|	**Counselling code:**|__|	**Counselling code:**|__|	**Counselling code:**|__|	**Counselling code:**|__|	**Counselling code:**|__|	**Counselling code:**|__|
	If defaulter, VHT contacted |1| Yes |2| No |3|N/A	**If defaulter, VHT contacted** |1| Yes |2| No |3|N/A	**If defaulter, VHT contacted** |1| Yes |2| No |3|N/A	**If defaulter, VHT contacted** |1| Yes |2| No |3|N/A	**If defaulter, VHT contacted** |1| Yes |2| No |3|N/A	**If defaulter, VHT contacted** |1| Yes |2| No |3|N/A	**If defaulter, VHT contacted** |1| Yes |2| No |3|N/A	**If defaulter, VHT contacted** |1| Yes |2| No |3|N/A
	If VHT contacted, feedback from VHT received |1| Yes |2| No |3|N/A	**If VHT contacted, feedback from VHT received** |1| Yes |2| No |3|N/A	**If VHT contacted, feedback from VHT received** |1| Yes |2| No |3|N/A	**If VHT contacted, feedback fro VHT received** |1| Yes |2| No |3|N/A	**If VHT contacted, feedback fro VHT received** |1| Yes |2| No |3|N/A	**If VHT contacted, feedback fro VHT received** |1| Yes |2| No |3|N/A	**If VHT contacted, feedback fro VHT received** |1| Yes |2| No |3|N/A	**If VHT contacted, feedback fro VHT received** |1| Yes |2| No |3|N/A
Date of next visit |__|__|/|__|__|/|__|__| *day month year*	***Date of next visit*** |__|__|/|__|__|/|__|__| *day month year*	***Date of next visit*** |__|__|/|__|__|/|__|__| *day month year*	***Date of next visit*** |__|__|/|__|__|/|__|__| *day month year*	***Date of next visit*** |__|__|/|__|__|/|__|__| *day month year*	***Date of next visit*** |__|__|/|__|__|/|__|__| *day month year*	***Date of next visit*** |__|__|/|__|__|/|__|__| *day month year*	***Date of next visit*** |__|__|/|__|__|/|__|__| *day month year*	**Total days in the program:** |___|___||___| **Target Weight (Kg)** |___|___|-|___| **Exit Outcome** |1| Cured |2| Not cured |3| Defaulted |4| Transferred to IPC |5| Died |6| Transferred to another HC

Appendix 7: Quality of case management data collection tool

Name of the HC _____

Date _____ Data collector_____

Process outcomes	Health facility		
	#	Total	%
Correct diagnosis (at enrollment)			
Correct treatment (at enrollment)			
Correct complimentary treatment			
Correct evaluation of HIV status			
Counselling fo patients			
Correct assignment of exit outcome			

Appendix 8: Key info on the Nutrition Service Delivery Assessment (NSDA) tool

Area assessed

The NSDA tool assesses the following 10 key capacity areas relevant at outpatient level:

1. General information on service implementation
2. Adequate human resources
3. Provision of nutritional services
4. Community linkage
5. Quality improvement activities
6. Materials and supplies
7. Nutrition unit requirements
8. Store management
9. Logistics management for commodities
10. Monitoring and evaluation.

Data sources

Data sources include:

1. Direct observation
2. Documents review
3. Interviews with health staff, village health teams (VHTs) and mothers of children diagnosed with malnutrition.

Scoring system

For each chapter, using strict criteria specified in the tool (similar to checklists), a final judgment on the quality of the services is made and a final scoring is assigned in the form of one of four pre-defined categories: poor, fair, good and excellent.

Appendix 9. Data quality control indicators and procedures

Data Quality Monitoring

Quality of data was regularly monitored on all patient files on a daily basis using the following 3 indicators:

1. *Data completeness:* defined for each single case as "complete" if in information on the following 15 key required fields were filled in: date, patient name, type of nutritional management, nutritional status at enrolment, HIV status at enrolment, anti-retroviral therapy services at enrolment, visit date, oedema, weight, height/length, MUAC colour, Z-score, therapeutic feeds, target exit criteria, exit outcome.
2. *Accuracy:* defined as health facility staff recording the correct data during patient assessment for each single case.
3. *Internal consistency*: defined for each single case as "consistent" if a) the height of the child was consistent over time (ie not decreasing) and b) the date of the visits was consistent over time (ie progressive dates in the register).

Other data quality assurance procedures

- Roles and responsibility were clearly distributed among the research team to ensure that all activities had a responsible team capable of carrying them out efficiently.
- Data were collected using pre-defined pilot tested tools
- Guidance material with clear and comprehensive operational instructions on how to collect data (such as case definition, inclusion/exclusion criteria) were developed and made available, in a user-friendly format.
- Data collection staff were trained, and their knowledge pre-tested, and monitored at fixed intervals throughout the data collection process.
- Data were routinely checked before data entry, for completeness and internal consistency.
- The database for data collection included internal validations rules and queries.
- Data were collected at fixed intervals, and entered in the databases in real time, by dedicated staff trained in data entering

- The databases were monitored at fixed intervals for completeness and internal consistency and any problems (such as missing data) were discussed in real time, and all efforts were made to achieve data completeness and accuracy within the given deadlines.
- Interim data analysis was performed at fixed intervals and checked by an independent analyst.

Appendix 10: Multivariate analysis

Analysis strategy

To evaluate the effect of imbalances in baseline characteristic to the primary outcome (cure rate) crude and adjusted Odds Ratio (OR) and 95%CI were estimated by the forward fitting conditional logistic regression model, taking effect modification into consideration. The outcome was cured/not cured, the main independent variable was receiving SS (intervention arm) or not (control arm) and other covariates included all the other children baseline characteristics.

Results

Table 1 shows that even after controlling for imbalances in baseline characteristics between intervention and control arms, the odds of being cured in the intervention arm were approximately 9.5 times the odds in the control arm [AOR = 9.5 (2.7 - 34.2), p = 0.001]. Children diagnosed with uncomplicated SAM had a lower odd of being cured [AOR =0.4(0.3-0.6), p=0.001)].

Table 1: Multivariate logistics regression results

Characteristics	Patient cure status				
	Cured N=492 n(%)	Not cured N=245 n(%)	Crude OR (95% CI)	Adjusted OR* (95% CI)	p-value
Study arm					
Control	134(43.7)	173(56.4)	1	1	
Intervention	358(83.3)	72(16.7)	7.7(2.74-21.4)	9.5(2.7-34.2)	**0.001**
Age categories (months)					
6 to 12	209(64.3)	116(35.7)	1	1	
12 to 24	174(67.7)	83(32.3)	1.3(0.9-2.0)	1.4(0.9-2.6)	0.183
Above 24	109(70.3)	46(29.7)	1.5(0.9-2.5)	1.6(0.9-2.7)	0.097
Sex					
Male	236(69.0)	106(31.0)	1	1	
Female	256(64.8)	139(35.2)	0.8(0.6-1.2)	0.8(0.5-1.1)	0.149
Vaccination status					
Up to date	419(67.8)	199(32.2)	1	1	
Not up to date	72(61.5)	45(38.5)	0.7(0.5-1.2)	0.9(0.5-1.4)	0.554
Never vaccinated	1(50.0)	1(50.0)	0.1(0.0-1.8)	0.1(0.0-1.0)	**0.049**
Nutritional status					
MAM	171(71.6)	68(28.5)	1	1	
Uncomplicated SAM	321(64.5)	177(35.5)	0.4(0.3-0.6)	0.4(0.3-0.6)	**0.001**

Appendix 11: Results of the data quality indicators

Data quality	Randomisation arm									
	Intervention Health Centers				Control Health Centers					
	HC 1 n(%)	HC 2 n(%)	HC 3 n(%)	**Mean % (SD)**	HC 4 * n(%)	HC 5 n(%)	HC 6 n(%)	**Mean % (SD)**	**Difference in mean %**	**p-value**
Baseline	194	137	228		-	301	134			
Completeness	0	44(32.1)	0	**10.7(-7.8-29.2)**	-	0	0	**0**	10.7	0.373
Consistency	0	120(87.6)	11(4.8)	**30.8(-18.4-80.0)**	-	74(24.6)	1(0.7)	**12.7(-4.2-29.5)**	18.1	0.579
Accuracy	64(33.0)	126(92.0)	9(3.9)	**43.0(-1.9-87.9)**	-	35(11.6)	0	**5.8(-2.4-14.0)**	37.2	0.231
intervention	182	114	134		140	82	84			
Completeness	182(100)	114(100)	134(100)	**100(0)**	140(100)	82(100)	84(100)	**100(0)**	0	-
Consistency	182(100)	114(100)	133(99.3)	**99.8(99.4-100)**	140(100)	80(97.6)	84(100)	**99.2(97.8-100)**	0.6	0.515
Accuracy	182(100)	114(100)	134(100)	**100(0)**	140(100)	82(100)	84(100)	**100(0)**	0	-

* Note: One facility was missing the source of information (patients' records) at baseline