

Consensus

Under the auspices of the Directorate General of Health Services, a 2007 national consensus meeting on the management of SAM resolved that CMAM along with scaling up facility-based management is essential for Bangladesh but that **a local RUTF should be developed** to ensure cost-effective and sustainable programs.

Research....

Joint ICDDR/UNICEF research has been undertaken for development of new Ready-to-Use Therapeutic Foods (RUTFs) based on local food ingredients

Processes Involved

- Overall development consists of
 - Market survey
 - Identification of suitable food ingredients
 - Development of different RUTF recipes
 - Acceptability testing
 - Efficacy trial in the community
- Dissemination
- Exploring large scale production

Acceptability Testing

- Acceptability of the RUTF by the children as well as by the mothers will be assessed and compared among groups of children, who receive RUTF-1, RUTF-2 or the prototype RUTF (Plumpy'nut)
- To be done in a clinic setting (ICDDR,B Hospital)

Efficacy Trial

- Children with SAM admitted in Dhaka Hospital
- After completion of the initial treatment
 - Appetite test
 - Will be monitored for any possible adverse effects
 - Then the child will be discharged with RUTF ration

Outcome Measures

- Recovery rates
- Time to recovery
- Default rate
- Rate of weight gain
- Resolution of pedal edema

Progress

- Market survey
- Identification of food ingredients
- Establishment of food processing lab
- Nutrient analysis
- Food safety and microbiological tests

Food processing lab



RICE MILLING MACHINE



PERSONAL PROTECTIVE EQUIPMENT



USING AUTOCLAVED UTENSILS



SHELF LIFE

Composition of an Ideal RUTF

Moisture content	2.5% maximum	Vitamin A	0.8 to 1.1 mg/100g
Energy	520-550 Kcal/100g	Vitamin D	15 to 20 µg/100g
Proteins	10 to 12 % total energy	Vitamin E	20 mg/100g minimum
Lipids	45 to 60 % total energy	Vitamin K	15 to 30 µg/100g
Sodium	290 mg/100g maximum	Vitamin B1	0.5 mg/100g minimum
Potassium	1100 to 1400 mg/100g	Vitamin B2	1.6 mg/100g minimum
Calcium	300 to 600 mg/100g	Vitamin C	50 mg/100g minimum
Phosphorus (excluding phytate)	300 to 600 mg/100g	Vitamin B6	0.6 mg/100g minimum
Magnesium	80 to 140 mg/100g	Vitamin B12	1.6 µg/100g minimum
Iron	10 to 14 mg/100g	Folic acid	200 µg/100g minimum
Zinc	11 to 14 mg/100g	Niacin	5 mg/100g minimum
Copper	1.4 to 1.8 mg/100g	Pantothenic acid	3 mg/100g minimum
Selenium	20 to 40 µg	Biotin	60 µg/100g minimum
Iodine	70 to 140 µg/100g	n-6 fatty acids	3% to 10% of total energy
		n-3 fatty acids	0.3 to 2.5% of total energy

Nutrient analysis of candidate recipes

- Nutrient: Energy, protein, carbohydrates, vitamins, minerals, peroxide value (work in progress)
- Aflatoxin: Not detected

Microbiological test

Aerobic plate count

Total coliform

Fecal coliform

E. coli

Bacillus cereus

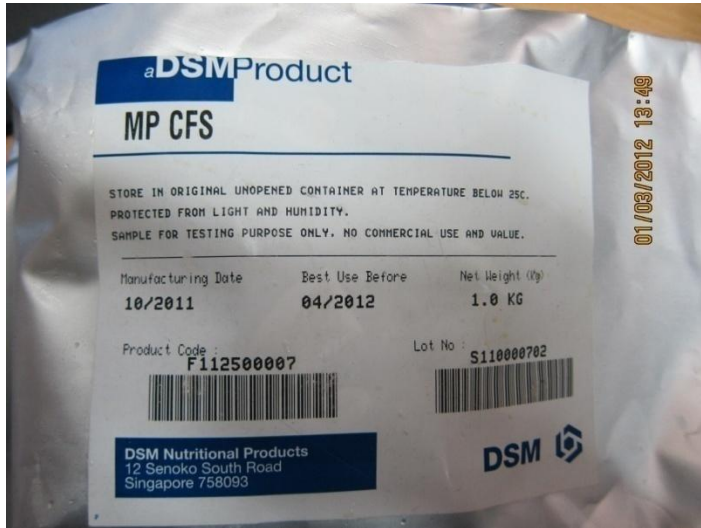
Staphylococcus aureus

Salmonella spp.

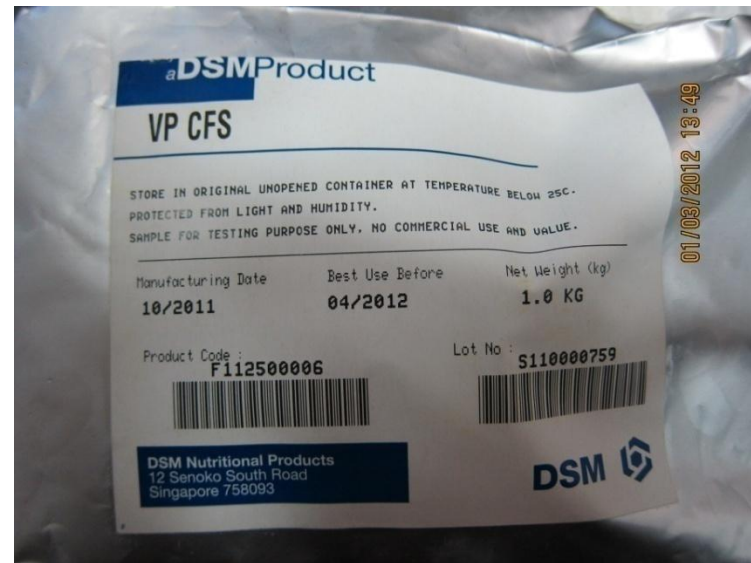
Campylobacter spp.



Micronutrients Premix



Micronutrients mineral powder



Micronutrients vitamin powder

Aflatoxin level:	5 ppb maximum
Microorganism content:	10,000/g maximum
Coliform test:	negative in 1 g
Clostridium perfringens:	negative in 1 g
Yeast:	maximum 10 in 1 g
Moulds:	maximum 50 in 1 g
Pathogenic staphylococci:	negative in 1 g
Salmonella:	negative in 125 g
Listeria:	negative in 25 g

**WHO/UNICEF/WFP/SCN
RUTF SPEC 2007**

At least half of the protein should come from milk products

Training & Teaching Activities





St. George's
Review

310

CE

A nurse preparing F-75 with local ingredients in Kabul





Islamic Republic of Afghanistan
Ministry of Public Health
General Department of Preventive Medicine
Public Nutrition Department

**Operational Guidelines for the
Management of Severe Acute Malnutrition**



National training course on management of childhood malnutrition

Kabul, July 2011

Dr Munirul Islam facilitating the trg



Disconnect between HIV AIDS & Nutrition programs



Training Course for Health Professionals in Myanmar



Training of Associate/Assistant Professors of Government Medical Colleges, September-October 2011



Dr Md Iqbal Hossain of icddr,b and Dr Sayeda Afroza, professor and head of Paediatrics at Sir Salimullah Medical College, demonstrate the clinical features of a child with Severe Acute Malnutrition to course participants

James P Grant School of Public Health
BRAC University

University of Uppsala

University of Queensland

Position Paper on Nutrition & Food Security in Bangladesh and the National Seminar



 UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

National Seminar on Nutrition and Food Security in Bangladesh

Chief Guest: **Dr. Muhammad Abdur Razzaque**, Hon'ble Minister
Ministry of Food and Disaster Management
Government of the People's Republic of Bangladesh

25 October 2011
Sasakawa Auditorium, icddr,b

PLEASE

Dr. Akhter Ahmed

Dr. Abbas Bhuiya

Dr. Akhter Ahmed

Dr. Tahmeed Ahmed

Regional Workshop on Acute Malnutrition, June '11

Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives
Myanmar, Nepal, Sri Lanka, Timor Leste



How do we combat acute malnutrition in Bangladesh?

- Establish a model for large scale CMAM in Bangladesh
- Work with the NNS, involve NGOs
- Treatment of SAM now in the Nutrition OP
- Implement in 10 Upazilas and an urban slum over 3 years
- Different models of Community Clinic
- Preventive component including IYCF, include sanitation & hygiene

How can we reduce stunting?

- Create awareness, make stunting visible
- Scale up direct nutrition interventions
- Improve nutrition of adolescent girls, pregnant & lactating women
- Improve food security & livelihoods
- Bring poor families under social protection
- Invest in indirect, nutrition sensitive interventions
e.g. female literacy, empowerment

How can we reduce stunting?

- Increase number of health workers
- Scale up water, sanitation, hygiene interventions
- Improve caring practices

Hunger and malnutrition are political problems and
therefore need political solutions

Research needs

- Search for evidence-based interventions for management of acute malnutrition
- Develop ready-to-use diets from locally available food ingredients that can prevent and treat severe acute malnutrition
- Thinking out of the box – investigate etiology of childhood malnutrition in terms of genetic predisposition, environmental enteropathy, and effect of the gut microbiome

Research needs

- The cost-effectiveness of package of nutritional interventions at the country level
- How can we improve complementary feeding?
- What can we do about stunting that has already occurred past 3 years of age?
- Research into quality & effectiveness of international aid for improving nutrition