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Treating Malnutrition:

We can do it, but where is the will to act?

Treating malnutrition is a medical imperative, yet the world's response is falling desperately short. Dr. Tido von Schoen-Angerer, Director of Médecins Sans Frontières' Access Campaign, looks at our response to another recent medical imperative – the decision, in the face of adversity and sometimes even commonly accepted orthodoxy, to treat patients for HIV/AIDS – and asks whether there is not something that can be learnt. How can we overcome the ambition gap in treating malnutrition?

When I was a field doctor working with MSF in Thailand in 2000, MSF's response to the HIV/AIDS pandemic was one based on a simple medical decision: faced with the urgency of millions dying, the only acceptable response was to treat.

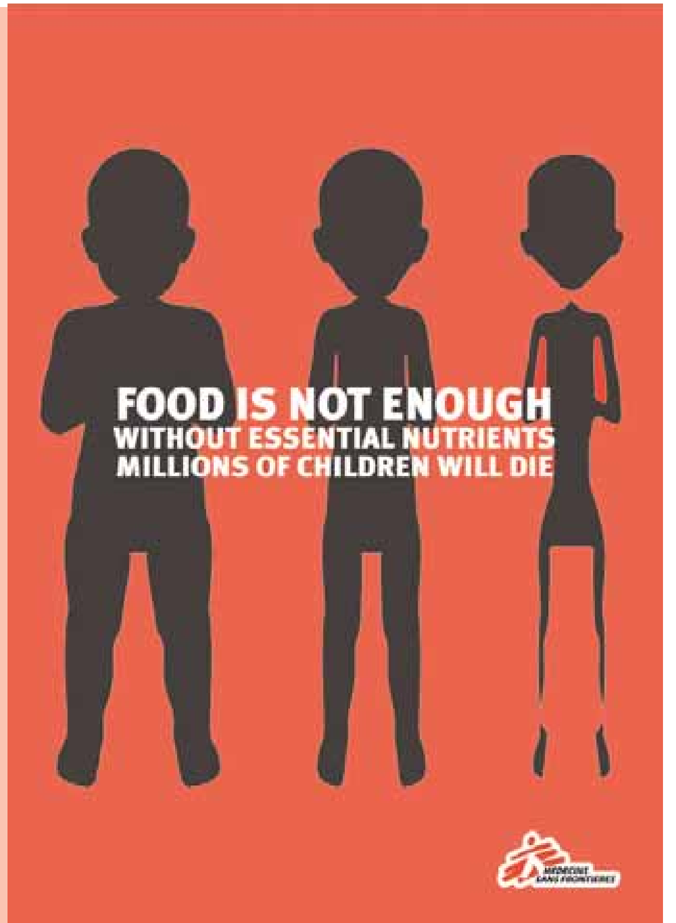
A decision simple to articulate, perhaps, but complex in its ramifications: antiretrovirals could help extend millions of lives, but treating the disease was simply deemed unfeasible in developing countries. Too expensive, too high tech, and too difficult: better to focus on preventing new infections, on distribution of condoms, on information and education, on behaviour change. MSF with others sought to challenge that ambition gap, that lack of will – and eight years later, with more than 100,000 patients on treatment in our programmes, we have shown the successes of that decision.

Today, the world's response to malnutrition is at a similar crossroads, and presents a similar ambition gap. The stakes are just as high: every year, malnutrition contributes to the deaths of five million children under the age of five.

In many ways, we're in a better position than with HIV/AIDS in 2000, because a basic framework for addressing malnutrition is in place. New successful strategies, outlined in the Joint Statement on Community-based Management of Severe Acute Malnutrition, have been endorsed by United Nations agencies as a blueprint for treatment – they enable programmes to reach patients on a scale previously unheard of. Ready-to-use foods make it possible to treat the children most at risk of dying, giving excellent results in MSF projects and beyond. In 2006, in Maradi in southern Niger, MSF was able to treat 65,000 children – of whom 7.5% were severely malnourished – and over 90% of the children recovered.

The potential for great change is there. Yet the ambition gap remains – many agencies continue to focus on prevention of malnutrition, through behaviour change, exclusive breast-feeding, or maternal education. But these interventions can only take us so far. Mothers in Niger do not need advice on how to care for their children; beyond the exclusive breastfeeding period, they need access to highly nutritious foods – what is a mother to do with advice on what to feed her child if the recommended foods are either unavailable or unaffordable? Addressing malnutrition by focusing on breastfeeding and improving hygiene alone is like addressing HIV/AIDS by distributing condoms: woefully insufficient.

Maybe the source of the ambition gap, as it was for HIV/AIDS, is the cost. New, more effective strategies with ready-to-use food will be more expensive, and will require international funding: the price of ready-to-use foods, although comparatively affordable at around 40 euros to save a child's life, may still be a barrier. But experience has shown, including with HIV/AIDS, that when there is political will, financial resources are sure to follow. And considering the exceptional results achieved and the potential to save lives, can we allow our response to a medical imperative to be limited by assumptions about financial feasibility?



Food is Not Enough, MSF's malnutrition campaign is advocating for global scale-up of therapeutic ready-to-use food (RUF) for the most at risk children. The campaign is pushing to ensure that more children under three in malnutrition hotspots receive essential nutrients to avoid becoming seriously malnourished. MSF is also highlighting the need for increased research and development into a range of nutritional products adapted to these children's needs.

Undoubtedly, other challenges remain. Strategies to treat severe acute malnutrition that have proven successful in Africa must be adapted for Asian settings. New products, new ways of delivering essential nutrients, such as sprinkles or spreads, must be developed to suit local tastes and imperatives. The vast potential of local production needs to be tapped and the cost of ready-to-use food must come down further.

This will require ambition. At the moment, only around 3% of severely malnourished children are able to access the treatment they need. Ultimately, implementation of a community-based strategy that delivers essential nutrients to children under the age of three will mean the difference between life and death for millions of children.

Winners and Losers in India:

A major humanitarian crisis in a booming economy

India's tiger economy is the envy of many – the eight lane highways, swanky shopping malls, the luxury cars and the growing affluence of the middle class are all evidence of the country's growing economic clout.

Yet this success masks a very different reality for most of the country's population. South Asia is one of the world's malnutrition 'hot spots' and in particular India carries the largest burden of illness in the region. One half of India's children under five are underweight. So what lies behind these grim figures and what efforts are being made to address the crisis? MSF's Access campaigner in Delhi, Leena Menghaney, sets out some of the main issues defining the debate.

India presents a striking paradox as a country that produces enough food to both feed its own population and to export its produce worldwide, yet every day, 6,000 children are lost to complications resulting from malnutrition. And this is despite the fact that the Indian government runs one of the world's largest child development programmes, the Integrated Child Development Scheme (ICDS).

Malnutrition rooted in marginalisation and inequality
India's malnutrition rate is closely related to destitute poverty in most of its states. Government statistics show that malnutrition is particularly a problem for marginalised communities, such as tribes and the lower castes. Also children living in India's rural areas are worse off than the children that crowd India's growing cities.

Another crucial factor that contributes to early childhood malnutrition is the marginalised status of women in India. Malnutrition among women in India is a manifestation of inequality within the home and society and as many as 83% of women are anaemic. Women who are pregnant and poor are often malnourished and anaemic, giving birth to babies with low birth weight. Poor immunisation coverage and sanitation add to the bleak picture.

India's poor nutrition statistics reflect a public health crisis rooted in hunger. What is most striking in all of this is that unlike Africa, which is also seriously grappling with malnutrition, India is one of the world's largest food producers.

Failing programmes and the 'Right to Food' movement
Nutrition, health and education are key components of the government's Integrated Child Development Scheme (ICDS) that is organised around day care centres in India's villages and towns. In theory, children under five receive education, food and health care in these centres that are managed by community health workers. In practice, however, there are many flaws in the system, which range from poor infrastructure to corruption and discrimination.

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© Right to Food movement

A government scheme aims to offer a midday meal to all children in India.

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Winners and Losers in India:

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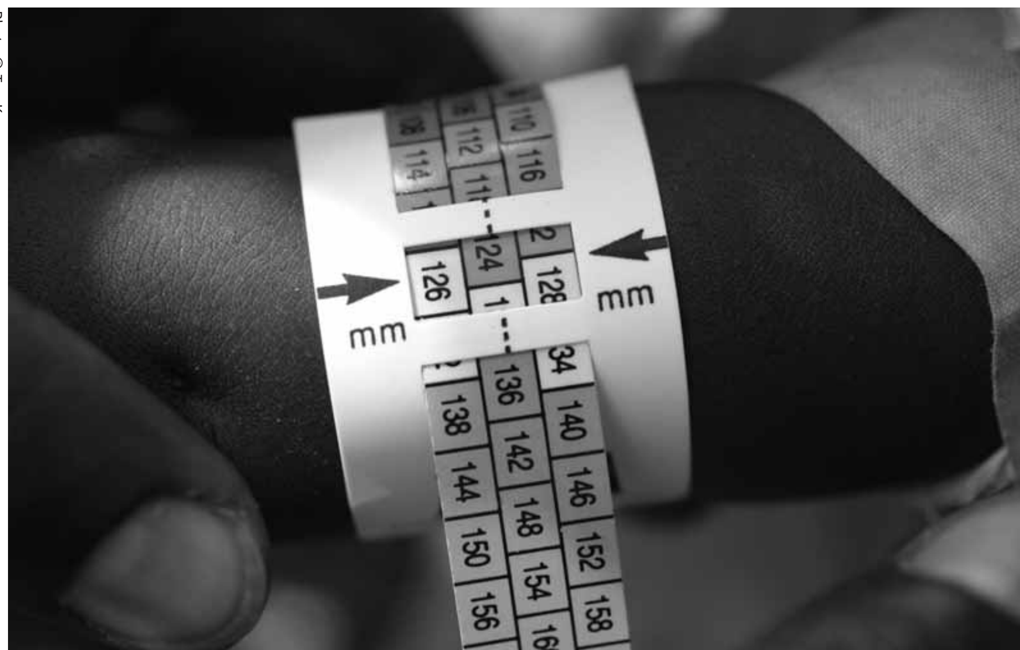
Most importantly, the ICDS system has failed to reach the most vulnerable group of children, namely those under the age of two, despite the fact that malnutrition at this early stage of a child's development will have a life-long impact on its health. In response to failing government programmes, India's civil society – led by the Right to Food movement – has taken a rights-based approach, underlining the fact that every child should have the right to good quality food and holding the government accountable for its failure to deliver.

Right to Food movement activists, nutrition experts and health workers in India believe that the solution lies in ensuring that the government exerts all efforts to seriously implement the ICDS under which community-based kitchens are set up to prepare hot cooked meals rich in micronutrients and using a variety of local ingredients. The aim of these programmes is to provide food to families in need, to improve the quality of food distributed, and provide employment at the same time. Few of the current solutions however, provide short-term relief for those children that are severely malnourished and are at risk of dying.

Heated debate on ready-to-use foods and the approach to treating severe malnutrition
Initiatives to distribute fortified foods and micronutrient supplements under the ICDS have been increasing in India. However, opinions are divided on ready-to-use food products as a means to address malnutrition, because the therapeutic effect and cost-effectiveness of such products have not been proven in India.

The opposition to ready-to-use food products by civil society organisations is also directly related to the fact that it may take employment away from rural communities, and from the over four million women involved in cooking hot meals for the ICDS.

Photo © Ton Koene



The nutritional status of a child is checked by using the MUAC (Middle-Upper-Arm Circumference) bracelet

Civil society is further concerned that the technology involved in producing ready-to-use foods promotes centralised food procurement and allows for corporate domination of the food chain. This in turn affects the local economy and takes away from local autonomy over diets, which is a sensitive issue in India. Most importantly, representatives of the Right to Food movement point out that the discussion on supplementing local diets with ready-to-use food products to improve food quality is moot as long as the poorest children in India continue to have no access to food at all.

Despite diverse opinions, all parties in the nutrition debate in India certainly agree there is a an urgent need to find solutions for children that are severely malnourished and at risk of dying.

India's ICDS scheme

The Integrated Child Development Scheme is perhaps the largest of all food and supplementation programmes in the world and was set up as an institutional response to the problem of malnutrition in India.

Initiated in 1975, the ICDS was mandated with improving the health and nutrition status of children up to the age of six by providing supplementary food and by coordinating with state health departments to ensure delivery of required health inputs.

© Right to Food, India

India's ICDS programme undertakes to provide a cooked midday meal for all children under six.

Under the ICDS, cooked food is provided to children through anganwadi (community) centres. One centre is provided for a population of 1000 (700 in the case of tribal areas). Fifty million children aged six and below are covered under this Rs.45 billion outreach programme.

What is severe acute malnutrition?

A life threatening condition requiring urgent treatment, characterised by severe wasting (emaciation) and/or the presence of nutritional oedema (an accumulation of fluids in the tissues, often giving a bloated appearance to the feet and face).

How is malnutrition identified?

Malnutrition is identified by a weight for height indicator within a given population, or by a measurement of a child's mid-upper arm circumference (MUAC), or by the presence of oedema. If dietary deficiencies are persistent, children will stop growing and become stunted (low height for one's age). This is referred to as chronic malnutrition. If they experience weight loss or 'wasting' (low weight for one's height), they are described as suffering from acute malnutrition.

Children everywhere need a nutritional safety net

Dr. Susan Shepherd is a paediatrician and nutrition consultant for MSF's Access Campaign. She describes how the introduction of ready-to-use food has transformed lives in the projects where she worked in Chad and Niger.

Mothers everywhere know which foods their children need to grow up healthy. In wealthy countries, mothers can rest assured that even if their children live on an unvaried diet, the foods they do eat will be fortified with essential vitamins and minerals – they rely on a nutritional safety net. Where we struggle in many poorer countries is with how to bring highly nutritious foods into the hands of families that can't afford them. On my first assignment in Uganda in a general paediatrics ward, I was shocked at how much sicker children were. I was used to helping children easily through bouts of diarrhoea, but in Uganda, I struggled to keep them alive. The critical difference was pervasive undernutrition. There was no nutritional safety net.

© MSF

A miracle grounded in sound nutritional science
I first treated children with therapeutic ready-to-use food (RUF) during a measles epidemic in Chad in 2005. As a result, we were able to treat over two thousand children suffering from severe acute malnutrition in the aftermath of this epidemic. This was a revolutionary new approach that helped us to treat far more children, far more effectively than with previous interventions.

We came to see just how effective this new product was the same year just a few hundred kilometres away in Niger, when MSF was faced with mounting a rapid response to a massive unfolding nutritional crisis. RUF was the key element in enabling MSF to treat 60,000 children over a six month period. 90% of the children recovered as a result of the treatment. It was nothing short of miraculous – but a miracle grounded in sound nutritional science.
Since these events and other similar emergency situations from Somalia to Sudan, Malawi and Ethiopia, RUF delivered through community-based programmes has become the standard for treating children with severe acute malnutrition.

Catching malnutrition before it gets too severe
Realising that nutritional emergencies tend to flare up in places where children are already vulnerable to acute malnutrition because of permanent inadequate nutrition, the following year, we expanded the use of RUF to include children with less severe forms of acute malnutrition. This resulted in a marked decrease in the number of children who developed severe acute malnutrition during the months of the 'hunger gap' from August through October, before the harvest comes in.

We estimate that in 2006, we treated almost half of all children between six months and three years of age in our intervention zone near the city of Maradi. This suggested that if half of the children were acutely malnourished, then the other half were likely to have nutritional deficiencies too. We wondered what would happen if we could supplement the daily diets of these children – would it prevent them from slipping into a malnourished state in the first place? With this mind, the following year, we undertook a distribution of a supplementary ready-to-use food for all children between six months and three years of age in one district. The daily calorie supplement was only one quarter of what children with acute malnutrition receive, but it contains high quality protein through powdered milk and all the daily recommended intake of those 20 vitamins and minerals needed to promote health.

We are still working on analyzing this intervention, but one thing is clear: mothers believe that this supplemental programme works. Of the 63,000 children receiving the supplement, all but 900 returned to each distribution. Mothers told us that their children's appetites were better, infants were nursing more, and in general, that their children's skins were 'brighter'.

Distribution of a supplementary RUF is but one of myriad possibilities for improving the daily diets of large numbers of children. Already in Niger, a local company has brought to market a lipid-based fortified paste at an affordable price. Another possibility is using nutrient sprinkles for home fortification. The bottom line is that children everywhere need quality food to grow and be healthy. We need to work to ensure all children have a nutritional safety net.

What is RUF?

One way to deliver essential nutrients including milk products to severely malnourished children is through ready-to-use food. These specially formulated products, packaged in individual servings, provide a complete meal which does not require refrigeration for storage and can be eaten without being cooked. As a result, many more acutely malnourished children can be reached through treatment at home.

"We believe that RUF is the most important treatment for severe acute malnutrition ever developed"

Dr. Joia Mukherjee is Medical Director at Partners in Health, which supports projects in four of the world's hungriest countries and among ill, malnourished and food insecure populations in a further five countries.

There has been much research on the benefit of micronutrient replacement and the promotion of breastfeeding as ways to prevent malnutrition and its complications in children. Recently, the medical journal *The Lancet* launched a series on undernutrition, which largely reviews the efficacy of these proven interventions. Yet SAM continues to be an underlying factor in an overwhelming number of child and infant deaths. At Partners In Health, we believe that there are several reasons for the continued morbidity and mortality of children due to under nutrition and particularly SAM, which are not addressed by the data outlined in *The Lancet*.

Firstly, severe acute malnutrition and particularly kwashiorkor, a form of SAM that is a leading cause of death in large parts of central and southern Africa, is not addressed by these preventive strategies of breastfeeding and vitamin supplements. Secondly, hospital-based programmes put children at significant risk for hospital-acquired infection and put stress on mothers who often have no support at home if they need to accompany their children to hospital. Thirdly, vertical interventions aimed at supplementing diets with a single extra nutrient, miss the chance to address malnutrition as part of a comprehensive strategy, integrated within primary health care delivered in the community.

Our practical experience, specifically in Haiti and Rwanda, shows that community-based approaches to the treatment of SAM produce remarkable results. Active case finding of malnourished children, along with community-based, ambulatory use of therapeutic ready-to-use food (RUF), with the support from community health workers, have proven to be a successful intervention. Not only does this accelerate the speed of recuperation from the acute phase of SAM, but crucially, it also shortens – if not altogether removes – the need for a child to stay in hospital.

Reducing the need for hospitalisation is critical to shielding malnourished children from major killers such as tuberculosis and diarrhoeal disease, to which hospitalised children are exposed. While there have been calls for more evidence to prove the efficacy of RUF and the community-based approach to treating SAM, it would be unethical to perform a randomised trial and place these vulnerable children in the hospital if there is an option to treat them at home where the risk of acquiring infection is significantly less. We have learned painfully from the example of extensively drug-resistant tuberculosis that inpatient wards are not safe places for people with suppressed immune systems.

We believe that RUF is the most important treatment for SAM ever developed. This belief stems from our practical experience, as well as from a review of published studies that show significant morbidity and mortality benefit from the use of RUF in a community-based programme, when compared with standard hospital-based therapy. Proving efficacy is of course important, but the benefits of RUF are even more real from a programmatic perspective. RUF given at home can be scaled up rapidly. With a single commodity, the training of providers and recipients is very simple. Additionally, neither hospitalisation nor nursing care – both of which are in very short supply – are needed for its delivery.

Large-scale procurement and dissemination of this single life-saving commodity will enable the highly efficacious, ambulatory treatment of millions of children. We strongly advocate for integrating RUF in the context of primary health programmes, as we have done with the treatment of HIV. We need to stop the debate over whether one micronutrient is better than another when it is a lack of quality food appropriate for children, that is at the root of SAM.

Zaha's Story

Zaha is 27. She has given birth to five children, one of whom died. She returned to Médecins Sans Frontières' nutrition centre in Maradi, Niger, because her youngest child, Rachida, was ill again. In 2005, Rachida developed severe acute malnutrition. She was treated with ready-to-use food and survived. Less than a year later, she was malnourished again. At 16 months old, she weighed only seven kilos. She was admitted into the programme immediately because she risked losing more weight without rapid treatment.

Zaha's husband does not live at home. He is away regularly, spending a few days here and there. Zaha relies on friends with resources and her parents for help to feed her children.

Photo © Anne Yzebe

Photo © Michael Goldfarb

Sahia's Story

Sahia has already lost four children to malnutrition. Now her twins, Hassana and Husseina, are malnourished and she's worried they might die too. Hassana, at six months old, weighs only seven pounds. That is what a newborn should weigh. But after just one week, with two packets of ready-to-use food each day, the little girl has already put on half a kilo.

Zaha and Sahia never have enough to feed their family. The extent of their shortfall depends on the time of year. The youngest children have very specific nutritional needs, so this inadequate diet – both in terms of quantity and quality – can trigger one or multiple episodes of acute malnutrition. Sometimes, the malnutrition is severe. But with an appropriate nutritional product, the children have recovered considerable strength in less than one month. Zaha and Sahia must still struggle every day to obtain the minimum amount of food for their children. Their problem has not been solved.

View from Ethiopia

Malnutrition is no stranger to Ethiopia. Severe drought and famine have afflicted the country for decades. Children and women are significantly affected by malnutrition – it's estimated that around half of all children below the age of five are stunted. Professor Tsinuel Girma Nigatu is a paediatrician with a practice of clinical nutrition. He currently works and teaches at Jimma University and hospital some 350 kilometres away from the Ethiopian capital Addis Ababa. Although his professional duty is predominantly hospital-based, he has been working for the last three years on community-based treatment using therapeutic RUF. He gave this interview to Clio van Cauter .

Q How has the treatment of malnutrition in Ethiopia changed over recent years?
The treatment of severe acute malnutrition in Ethiopia was not given much emphasis despite that it is an 'old' and prevalent disease. Institutions and organisations were using their own protocol with no standardisation and harmonisation. In Jimma hospital, the hospital where I work, the treatment of severe acute malnutrition was not consistent. Locally cooked mixes (called 'Kwash milk') of cow's milk, vegetable oil, sugar and some vitamins were used in different ways. Hospital data showed that mortality was as high as 30% before we introduced the national protocol in 2004. Today at the hospital we have a mortality rate of below 10%. Nationally, too, the situation has improved dramatically since the introduction of national protocols with some facilities reporting death rates as low as 3%.

Q Has the introduction of therapeutic RUF made your work easier? Is there much improvement?
It's helped a great deal. We've introduced it mainly through health centres on an ambulatory basis and this means we can discharge patients from hospital earlier back into the community. It also means we can reach more potential patients by bringing the treatment closer to the villages with our ambulatory centres. This in turn enables us also to increase the community awareness and therefore catch and treat children before they are very sick. Though we haven't done a coverage survey yet, it looks as if the trend is for more people accessing treatment through our ambulatory services. UNICEF is providing most of the supplies like therapeutic diets to the health institutions who are then responsible for delivering the products to their respective health facilities.

Q What are the challenges you are currently facing?
There is great interest and commitment from the government side with regards to scaling-up and improving the quality of care given to patients who are seriously malnourished. But there are still many challenges we face. We still don't have enough health facilities that can give sustainable and quality treatment. Within the family, other members may share the therapeutic RUF intended for the children. Alongside infrastructure weaknesses, there is also the problem that malnutrition treatment is not integrated with other programmes like HIV/AIDS or TB, strongly associated with malnutrition.

Lives Transformed in Niger

In 2006, half of the children aged six months to three years in the Guidan Roumdji district of Maradi, Niger, suffered from acute malnutrition. In the following year Médecins Sans Frontières implemented a new strategy aimed at preventing all children from developing malnutrition in the district and provided nutritional supplements to more than 60,000 vulnerable children during the seasonal 'hunger gap' – the five- to six-month period between harvests, when food stocks are typically leaner.

> *I have no-one to look after my other kids, my oldest girl is only 10 years old, I have no-one to help me. Without this place I wouldn't have sought help, even if my child was very sick, because I can't leave my other children alone for weeks.*
>
> *Mother, Maradi, Niger*

Photo © Michael Goldfarb

1. Mothers and their children line up early in the morning at a MSF distribution point in the Guidan Roumdji district in August 2007. Mothers receive four containers per month of a ready-to-use food called Plumpy'Doz, and add three tablespoons every day to their child's regular diet, enriching it with a complete daily dose of essential nutrients and 250 calories.

> *I prefer to come here once a week rather than staying in a treatment centre, because I have to take care of the fields and my other children – I have three other children at home.*
>
> Mother, Maradi, Niger

Photo © Anne Yzebe

5. In the village of Tiberi, a young boy eats a spoonful of the supplementary ready-to-use food that gives him the essential nutrients missing in his daily diet. Three other under three years old in the house also receive three tablespoons a day. Their mothers says they have noticed an increase in their children's appetites, and that they are proud to see their children eating more and growing stronger.

> *Mothers vote with their feet, they come back again and again for the product. They say their children have better appetites, infants are nursing better and their children have brighter skins.*
>
> Dr. Susan Shepherd on use of supplementary RUF in Maradi, Niger

Photo © Michael Goldfarb

2. An MSF aid worker measures the circumference of a child's mid-upper arm to determine whether he is malnourished. During the hunger gap, the danger of malnutrition is higher; ready-to-use supplements provide enough nutrients to remove that risk.

Photo © Michael Goldfarb

4. Women leave the distribution point, carrying their children's rations home on their heads. MSF brings supplies of the ready-to-use foods to mothers at 50 sites, making it easier for them to continue the programme, as they don't have to travel too far.

Photo © Michael Goldfarb

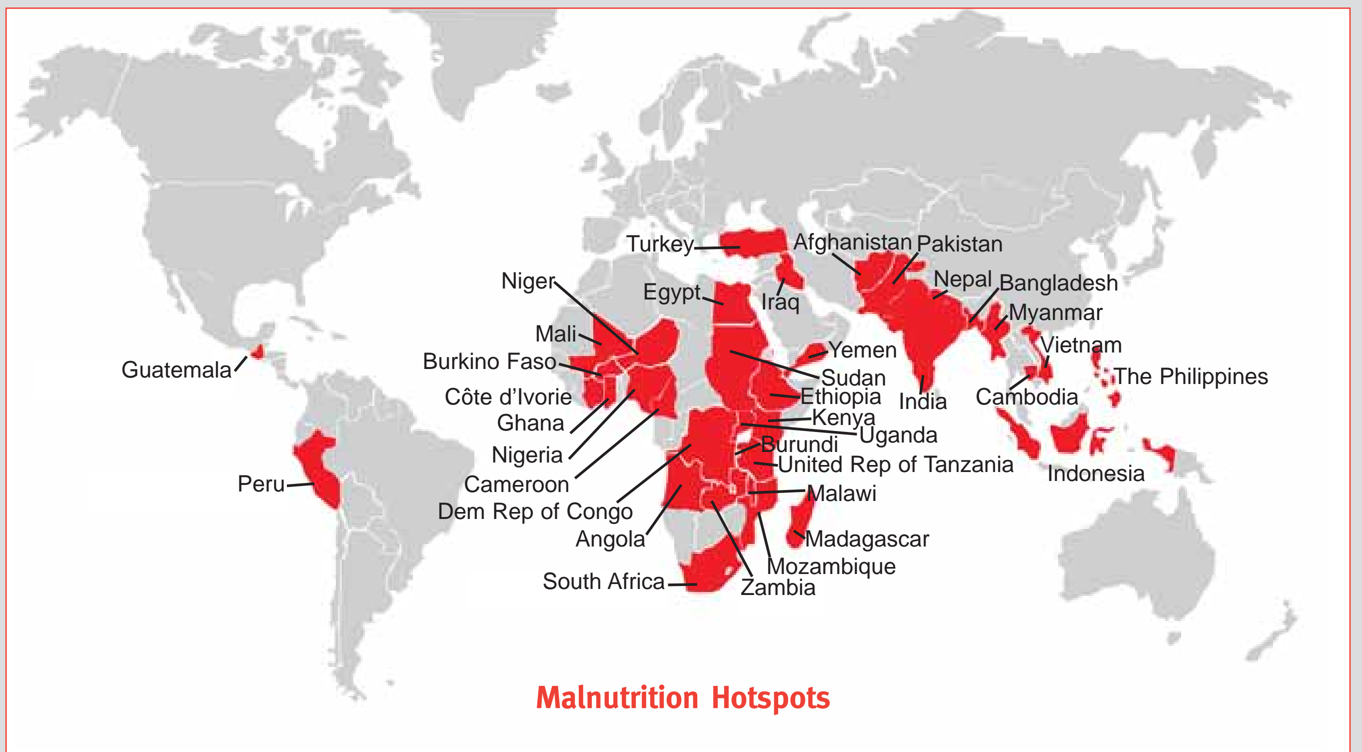
3. This mother displays her ration coupon for the supplementary product while balancing a one-month supply on her head. She will add three table-spoons of the paste to the nutrient-poor millet the child normally consumes in order to stave off malnutrition.

Global Burden of Malnutrition

Malnutrition is associated with half of all deaths in children under the age of five each year. The risk of death is particularly high for children with severe acute malnutrition, up to 20 times higher than a healthy child.

In developing countries 146 million children under the age of five are underweight, as defined by weight for age (one in four children). Sixty million children under the age of five are wasted (almost one in ten children).

To find out the latest about MSF's Malnutrition campaign, Food is not Enough and other Campaign activities, please visit our website: **www.accessmed-msf.org**



This map shows the severe wasting estimates based on WHO standards for 36 countries identified by stunting prevalence 20% and covering 90% of 178 million globally estimated stunted children.
Data from The Lancet Undernutrition series, article one, webtable 4.