



FOOD IS NOT ENOUGH

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millions of children will die**

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“Eating millet porridge every day is the equivalent of living off bread and water. With luck, toddlers here might have milk once or twice a week. Young children are so susceptible to malnutrition because what they eat lacks essential vitamins and minerals to help them grow, remain strong and fight off infections.”

Dr. Susan Shepherd, MSF Medical Coordinator for the nutritional programme in Maradi, Niger

Persistent high rates of child mortality in sub-Saharan Africa and South Asia will not be reduced if malnutrition is not addressed more aggressively. This is a medical emergency.

MSF teams see the devastating impact of childhood malnutrition every day, having treated more than 150,000 children in 99 programmes in 2006. Malnutrition weakens resistance and increases the risk of dying from pneumonia, diarrhoea, malaria, measles and AIDS, five diseases that are responsible for half of all deaths in children under five.¹ Despite its overwhelming contribution to child mortality and its impact on long-term health, treatment of malnutrition has not been a high enough priority in international and national public health planning and programming.

Deprived of essential nutrients a young child will stop growing. Those that survive are often scarred by long-term consequences that include stunted growth and developmental delays, as well as an increased risk of chronic disease and lower life expectancies as adults.

Severe wasting in early childhood is common in large areas of the Sahel, the Horn of Africa and South Asia, which are the world's "malnutrition hotspots". If nutritional deficiencies become intense a child will begin to waste – to consume its own tissues to obtain needed nutrients. The World Health Organization (WHO) estimates that there are 20 million young children with severe acute malnutrition at any given point in time.²

A new generation of simple, highly nutritious ready-to-use food (RUF) specifically designed for young children has greatly expanded the potential for effective nutritional interventions. Despite accumulated evidence of therapeutic RUF's effectiveness - high cure rates,

low mortality and low default rates – only about 3% of children with severe acute malnutrition have access to therapeutic RUF.³

Inadequate policies increase the risk of childhood deaths

Current national and international policies to address malnutrition have fatal flaws. Many programmes designed to reduce mortality of children under five from malnutrition focus on changing behaviours of mothers, supplying enriched blends of flour and addressing poverty or food security. These strategies are important but do not effectively meet the needs of malnourished children under the age of three.

Mothers in the Sahel, the Horn of Africa or South Asia don't just need advice about how to feed their children. They need access to highly nutritious therapeutic and supplemental foods.

Ready-to-use food to address a medical emergency

In the last five years, the use of therapeutic ready-to-use food has radically changed the approach to the treatment of severe acute malnutrition. It is now possible to treat uncomplicated or stabilised cases of severe malnutrition as outpatients.⁴ The vast majority of malnourished children can now take treatment at home, under the supervision of their mother or other caregiver, instead of in hospital.

There is accumulated evidence of therapeutic RUF's effectiveness. When it comes to the treatment of life-threatening forms of malnutrition in malnutrition hotspots, therapeutic RUF should be considered an essential medicine.

¹ UNICEF Statistics: <http://childinfo.org/areas/childmortality/>

² Community-Based Management of Severe Acute Malnutrition. A Joint Statement by the World Health Organization, the World Food Programme, the United Nations Standing Committee on Nutrition and the United Nations Children's Fund. May 2007. http://www.who.int/child-adolescent-health/New_Publications/CHILD_HEALTH/Severe_Acute_Malnutrition_en.pdf

³ MSF estimate based on RUF needed to treat all cases of Severe Acute Malnutrition (258,000 tons for 20 million children at an average of 12.9 kilos per child) and total estimated consumption in 2007 of 8,500 tons.

⁴ Community-Based Management of Severe Acute Malnutrition. A Joint Statement by the World Health Organization, the World Food Programme, the United Nations Standing Committee on Nutrition and the United Nations Children's Fund. May 2007. http://www.who.int/child-adolescent-health/New_Publications/CHILD_HEALTH/Severe_Acute_Malnutrition_en.pdf

Given their effectiveness, the use of RUF should not be limited to children with severe acute malnutrition. It should be expanded to address malnutrition in young children before it progresses to a life-threatening stage.

While effective RUF alternatives exist, donors and UN agencies are still shipping hundreds of thousands of tons of enriched blended flours to be distributed as supplementary foods, even when the effectiveness of this strategy has proven to be limited for children under the age of three.⁵

Food is Not Enough, MSF's new malnutrition campaign is advocating for a global scale-up of therapeutic ready-to-use food (RUF) for the most at risk children and further efforts to use supplemental RUF to prevent children from becoming dangerously malnourished in the first place. MSF is also highlighting the need for increased research and development into a range of therapeutic products.

What MSF is calling for:

- Ministries of Health and those that support them need to address the critical issues that prevent 97% of children suffering from severe acute malnutrition from getting life-saving treatment.
- Donors need to review the quality of food aid addressed towards malnutrition in children under the age of three, and refocus their efforts away from fortified blended foods towards providing RUF with superior nutrient value, ease-of-use and effectiveness.
- UNICEF and WFP must ensure RUF is available in adequate supplies; this will mean both fundraising and finding solutions for sustainable production.
- WHO must support countries to implement their new growth standards, develop recommendations for effectively treating non-severe malnutrition and promote controlled and operational research to replicate and expand on promising experiences of RUF.
- Ministries of Health, academic nutritionists and other organisations working on malnutrition must implement projects to further document the benefits of therapeutic RUF beyond the treatment for severe malnutrition.
- Researchers, producers and users of RUF must work together to develop new products, adapted for use in the early treatment and prevention of child malnutrition, but also, for other uses such as for maternal nutrition to prevent low birth weight.

What is therapeutic ready-to-use food?

Commercialised therapeutic RUF typically takes the form of a peanut/milk-based paste with all nutrients essential to treat severe acute malnutrition. It comes in individually wrapped airtight foil packets that are resistant to bacterial infection and easy to distribute. The product has a long shelf life, making it easy to store, transport and to use in hot climates as an efficient way to provide milk to children under three.

⁵ A Retrospective Study of Emergency Supplementary Feeding Programmes. Dr. Carlos Navarro-Colarado. June 2007. ENN and SC UK. Available at <http://www.ennonline.net/research/>

UNDERSTANDING MALNUTRITION

What is malnutrition?

Malnutrition is often lost in discussions around the subject of hunger, especially in the context of the discourse to “end world hunger,” or to “feed the world.” These blurred definitions help perpetuate the inadequate response to malnutrition. It is crucial to distinguish between malnutrition and hunger, as malnutrition requires responses that go beyond food aid.

Hunger is usually taken to mean a deficiency in caloric intake – any person whose daily diet gives fewer than the defined minimum of 2,100 kcal is considered suffering from hunger, or undernourished. The typical response to hunger is food aid that supplements a person’s daily caloric intake.

Malnutrition however is not merely the result of too little food. It is a pathology caused principally by a lack of essential nutrients. Most food aid is an inadequate response to malnutrition as it either delivers insufficient amounts of essential nutrients or delivers them in a way that they are destroyed by cooking or not taken up properly by the body.

Who is most at risk?

Malnutrition affects first and foremost children under the age of two, but young children less than five years of age, adolescents, pregnant or lactating mothers, the elderly and the chronically ill (including those with HIV/AIDS and TB) are also vulnerable. Children are especially susceptible to growth failure when foods have to be introduced to complement breastfeeding in the first and second years of life. Wasting and other forms of acute malnutrition often appear among children in seasonal cycles, especially during the ‘hunger gap’ period between harvests.

“When children suffer from acute malnutrition, their immune systems are so impaired that the risks of mortality are greatly increased. A banal children’s disease such as a respiratory infection or gastro-enteritis can very quickly led to complications in a malnourished child and the risks of death are high.”

Dr. Susan Shepherd, MSF Medical Coordinator for the nutritional programme in Maradi, Niger

How is malnutrition identified?

Malnutrition is defined in three ways: by a weight for height indicator with a reference population, or mid-upper arm circumference (MUAC), or by the presence of oedema (a bloated appearance to the feet and face).

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**. Both of these presentations of malnutrition may be further classified as moderate or severe.

Severe acute malnutrition includes two main clinical forms - severe wasting (called marasmus) and nutritional oedema (known as kwashiorkor). It is the clinical analysis that determines if treatment will be in hospital or with therapeutic RUF at home. MSF experience in Niger has been that most children do not have complications and can therefore follow therapeutic RUF treatment at home. Severe acute malnutrition has a case fatality rate of up to 21% without effective intervention.⁶ But any child with malnutrition is at an increased risk of developing complications leading to severe illness and death.

What are the consequences of malnutrition?

Malnutrition is associated with half of all deaths in children under the age of five each year.⁷ The risk of death is particularly high for children with severe acute malnutrition, up to 20 times higher than a healthy child.⁸

What is the global burden of malnutrition?

In developing countries 146 million children under the age of five are underweight, as defined by weight for age (one in four children).⁹ Sixty million children under the age of five are wasted (almost one in ten children).

The “malnutrition hotspots” map below combines rates of underweight prevalence, as well as population density of underweight children. It therefore identifies where scarce resources will have a maximum impact.

South Asia, the Sahel and the Horn of Africa are the most alarming hotspots for child malnutrition and mortality. Half of the deaths in children under five in developing countries occur in these regions.¹⁰

6 Community-Based Management of Severe Acute Malnutrition. A Joint Statement by the World Health Organization, the World Food Programme, the United Nations Standing Committee on Nutrition and the United Nations Children’s Fund. May 2007. http://www.who.int/child-adolescent-health/New_Publications/CHILD_HEALTH/Severe_Acute_Malnutrition_en.pdf

7 UNICEF, The State of the World’s Children 2006

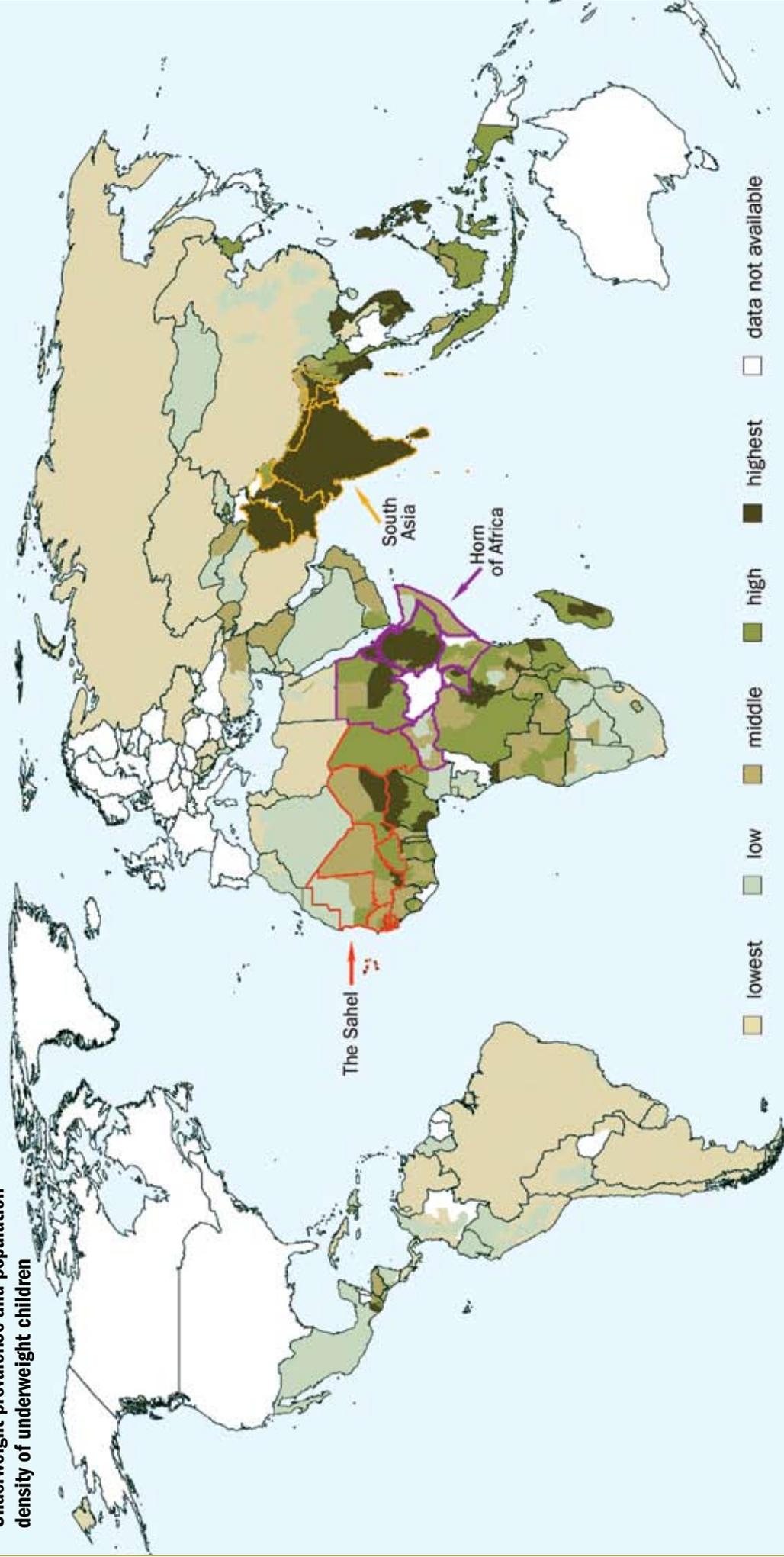
8 Pelletier-DL, The relationship between child anthropometry and mortality in developing countries, implications for policy, programs and future research. The Journal of Nutrition, supplement, 1994. 2047S-2018S.

9 Progress for Children, UNICEF Report on Nutrition, April 2006

10 UNICEF, The State of the World’s Children 2006

Malnutrition Hotspots

Underweight prevalence and population density of underweight children



Index combining normalized rates of underweight prevalence and population density of underweight children.

Adapted from UN Millennium Project 2005. *Halving Hunger: It Can Be Done. Task Force on Hunger.*

TREATING MALNUTRITION: THE RUF REVOLUTION

International food aid today relies heavily on fortified blended foods to improve the quality of children's diets. Over 450,000 tons of such food, mostly in the form of a fortified corn-soy blend (CSB), was distributed in 2006.¹¹

Fortified blended foods however have serious limitations that make them far less effective than RUF at targeting malnutrition in children under the age of three:

- Fortified blended foods are not particularly dense either in calories or in nutrients. Even though the blends are fortified with nutrients, they rarely include all of those needed by a malnourished child, and the levels of fortification are often inadequate or inappropriate. In addition, the cereal and soy components have anti-nutrient factors that reduce the utility of fortification, as they make absorption of nutrients difficult.¹² If any of the 40 essential nutrients are deficient in a young child's diet, it will greatly impact the function of their immune system, and their ability to resist disease.
- In contrast, the **ingredients of RUF are better suited to children's needs**. The nutrient-dense spreads are better able to target as well as safely and effectively deliver the full range of minerals, trace metals, essential amino-acids and lipids and other beneficial nutrient factors required by young fast-growing children. They are tasty, dense in calories, and are ideal for small children with small stomachs.
- RUF **lasts longer, is safer and is easier to use**. The fact that there is no need to prepare a porridge means that with RUF, there is no need to add water, which eliminates the risk of contamination. RUF's packaging also allows it to be stored for significant periods of time without spoiling, even in hot or humid climates. Fortified blended food, on the other hand, requires water and preparation time for cooking, has the risk of under- and over-dosing, has a limited shelf-life and is easily spoiled or infested.
- Experience shows that RUF **makes it easier to target the child** because it comes in individual packages. Distributing amounts of fortified blended food to a family runs the risk that the food is shared by the entire family, and the child not be treated.

- Ready-to-use packages are **easy to store and transport**. RUF is lighter and less voluminous, thus it requires less storage space, and it eases transport from the production site to the child's home.

"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."

"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."

Mothers of children receiving therapeutic RUF outpatient care in Magari, Niger

Results achieved with RUF for moderately malnourished children are far superior to many emergency Supplementary Feeding Programmes (SFPs) implemented with blended flours. A study mainly focusing on children under five reviewing the impact of 82 SFPs, conducted by 16 agencies in 22 countries, showed worrying trends.¹³ Only 41% of programmes met accepted standards with regard to impact at the individual level.¹⁴

Considering the critical advantages and effectiveness of RUF, fortified blended food must be replaced with RUF when targeting the nutritional needs of children under the age of three.

11 WFP in Statistics 2006. World Food Programme 2007.
12 Enhancing the Nutritional Quality of Relief Diets Workshop Proceedings. SUSTAIN 1999 <http://www.sustaintech.org/publications/pubq6.pdf> (accessed October 1st, 2007)

13 A Retrospective Study of Emergency Supplementary Feeding Programmes. Dr. Carlos Navarro-Colarado. June 2007. ENN and SC UK. Available at <http://www.ennonline.net/research/>
14 Field Exchange; Emergency Nutrition Network; Issue 31; September 2007; p. 1

A HISTORY OF THERAPEUTIC RUF & ITS USE BY MSF

Action Contre la Faim, Concern and Valid International have been leading forces behind piloting RUF. Their contributions have been invaluable.

1994: First use of therapeutic milk

Action Contre la Faim (ACF) pioneers the use of the milk formula F100 for the treatment of severe acute malnutrition. The formula is used in therapeutic nutritional centres where children are hospitalised to receive treatment. The milk needs prior preparation as warm clean water has to be added before it can be given to the child.

1997: RUF is invented

Building on ACF field experience, a French medical researcher from the *Institut de Recherche pour le Développement*, Paris, together with the French company Nutriset, succeed in making a nutrient-dense spread for the treatment of severe acute malnutrition. The spread contains milk powder, vegetable fat, peanuts, and sugar and is enriched with vitamins and minerals. The product has the same specifications as the F100 formula, but comes with crucial advantages: it is ready-to-use, it can be stored even in tropical climates, and no preparation is required.

MSF uses a prototype of this therapeutic RUF on an experimental basis in southern Sudan in emergency programmes, where security conditions prevented teams from operating in-patient feeding centres. In this case outpatient treatment was the only option.

1999: A protocol allowing decentralised care is adopted

The aid organisation Concern creates a protocol that allows for treatment at home using the ready-to-use product for malnourished children that don't present medical complications.

2000-2002: Therapeutic RUF becomes an essential tool to treat children during food crises

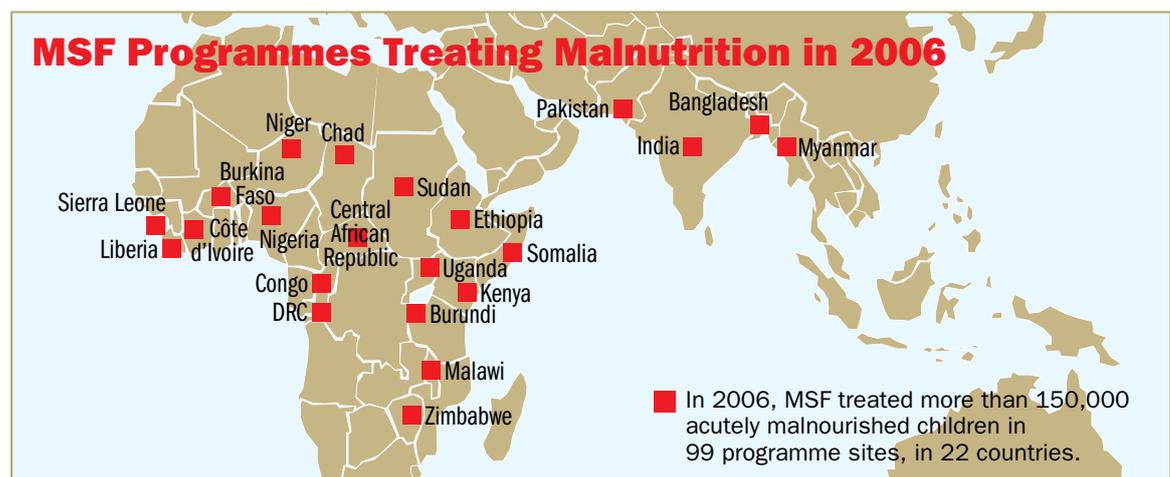
In 2000, therapeutic RUF were used by MSF during the major food crises in the Pool region in Congo, and more than 1,700 children were treated in the Ogaden region in Ethiopia. In 2001, MSF treated 3,000 children in the Karuzi province of Burundi, and in 2002, 8,600 children were treated in Caala, Angola. Each time, therapeutic RUF were used as part of the treatment provided in therapeutic feeding centres.

In some of these cases therapeutic RUF were not yet used in the outpatient phase because MSF teams were uncomfortable about setting up in-home monitoring. The most significant problem facing this new approach was the medical teams' concerns that they would not be in control of monitoring the children and thus would not be present in the event of complications that might occur at home. But with experience teams saw results were excellent and their fears were unfounded.

2001-2007: Outpatient treatment with therapeutic RUF

MSF initiated outpatient treatment in Faryab province, in northern Afghanistan in early 2001. Because mothers could not spend the night away from their homes, the teams had no alternative but to try out new options for treating severe malnutrition at home. The programme involved only a few children, but it marked the launch of the new ambulatory strategy within MSF.

By 2004, thousands of children were treated in Darfur, Sudan as well as Maradi, Niger using outpatient strategies with therapeutic RUF.



MSF EXPERIENCE IN MARADI, NIGER

Scaling up treatment of severe acute malnutrition (2005)

In 2005, a year of exceptional food insecurity in Niger, MSF treated over 60,000 severely malnourished children using therapeutic ready-to-use food. 38,000 severely malnourished children were treated in Maradi alone, with a cure rate above 90%. They were cared for at four hospitals and 17 emergency outpatient feeding centres.¹⁵

Expanding outpatient care to moderately malnourished children (2006)

Given the excellent results on a large scale for severe cases, MSF extended the use of therapeutic RUF through the outpatient strategy to moderately malnourished children. This was done in 11 outpatient centres and two hospitals in two different districts of Maradi region.

Nearly 65,000 children were treated, 92.5% of whom suffered from moderate malnutrition and 7.5% from severe malnutrition. Recovery rates reached 95.5% amongst the moderately malnourished and 81.3% amongst the severely malnourished.¹⁶ The seasonal peak of admissions of severe cases observed every year since 2001 when the programme opened in Maradi, did not occur. This experience suggests that treatment with therapeutic RUF can prevent the development of severe malnutrition in a large cohort of moderately malnourished children.

The results also confirm the efficacy of using therapeutic RUF to treat moderate acute malnutrition. Recorded weight gain (5.28 g/kg/day amongst the moderately malnourished) is markedly higher than that generally obtained in “classic” food supplementation programmes using blended flour (generally below 3 g/kg/day).¹⁷ Similarly, defaulter rates were very low compared to classic programmes, with a 3.4% defaulter rate among the moderately malnourished.

Reaching more children with a two tiered approach (2007)

At the end of 2006, MSF data showed that more than half of the population of children under three years old developed an episode of acute malnutrition in MSF’s two catchment districts in southern Maradi. MSF implemented a new two-tiered approach: earlier access to treatment for severe cases and earlier access to supplemental RUF for all children at risk in the area.

“We saw in 2005 and 2006 that giving mothers the responsibility for treating uncomplicated acute malnutrition produces good results. It is only when a child is ill or severely malnourished that treatment takes place in medical facilities.”

Isabelle Defourny, Deputy Manager of the nutritional programme in Maradi, Niger

MSF began using the World Health Organization’s new growth standards¹⁸ to define admission criteria, which are more “inclusive” (some children formerly considered moderately malnourished based on the former reference are now classified as severe) and therefore include more children at high risk of death. Based on these new standards, children suffering from severe acute malnutrition are treated with therapeutic RUF in outpatient feeding centres. In the case of serious associated illness, they are hospitalised.

The second component of MSF’s new approach involves distribution of supplemental RUF, which does not replace regular meals but compensates for major deficiencies in their regular diet by meeting a child’s daily nutrient needs. In 2007, MSF is distributing supplemental RUF to all 62,000 children from six months to three years of age in one district in Maradi on a monthly basis during the seasonal hunger gap.

¹⁵ Field Exchange. Emergency Nutrition Network. Scaling up the treatment of acute childhood malnutrition in Niger. Issue 28; July 2006.

¹⁶ Field Exchange. Emergency Nutrition Network. Management of moderate acute malnutrition with RUF in Niger. Issue 31; September 2007

¹⁷ A Retrospective Study of Emergency Supplementary Feeding Programmes. Dr. Carlos Navarro-Colarado. June 2007. ENN and SC UK. Available at <http://www.enonline.net/research/>

¹⁸ For details on the new standards see <http://www.who.int/childgrowth/en/>

INCREASING & ENSURING THE SUPPLY OF THERAPEUTIC RUF

If today's UN recommendation of treating severe acute malnutrition with therapeutic RUF is to be realised, there is a need for 258,000 tons of product.¹⁹

Production capacity in 2007 is estimated to be less than 19,000 tons, with orders placed projected to be for only 8,500 tons. Therefore only 3% of severely malnourished children are likely to have access to treatment this year. This enormous production gap does not even take into consideration the requirements for a potential extension of RUF use for moderately malnourished children or as a supplement to populations of vulnerable children.

The market is currently dominated by a single milk and peanut-based product, with few other options available. MSF has been advocating for Nutriset, the patent holder, to offer favourable licensing terms to other producers.

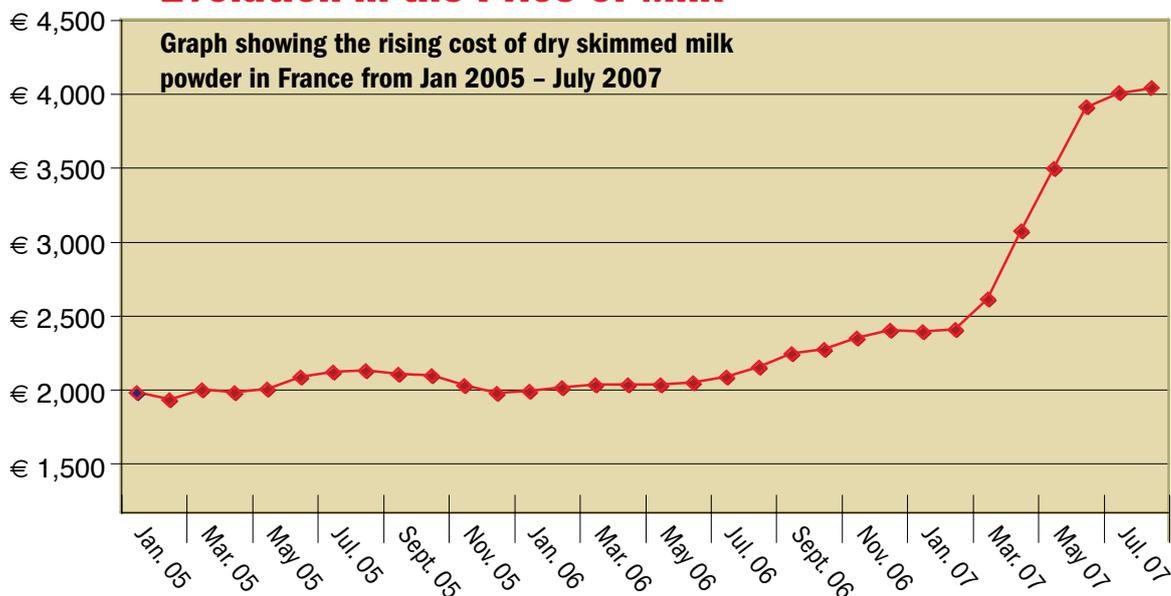
At a current cost of €3 per kilo, total product cost would amount to €750 million to treat the 20 million children that WHO estimates have severe acute malnutrition. However, considering that raw materials account for at least 50% of locally produced product and that the most significant cost is powdered milk, the future cost will be higher.

The price of milk powder increased dramatically in 2006, rising from €2,000 to €4,000 per metric ton. Today there is a worldwide shortage of milk. In June 2007, the average cost to treat one child with therapeutic RUF amounted to €34.2. In January 2008, it is predicted that this figure will rise to €38.7 per treatment. This is still a low cost to save a child's life.

To address the needs of malnourished children in malnutrition hotspots, there will not only be a need for a massive scale up of the production of existing products, but also a need for experimental and operational research to develop additional varieties and formulations of RUF.

There is an urgent need to increase choices and diversify supply of high value nutritional products, and to adapt their use to a variety of clinical situations ranging from the treatment of the most severe forms of malnutrition, to supplementing the diets of vulnerable populations of children subsisting on highly restricted and deficient diets.

Evolution in the Price of Milk



¹⁹ MSF estimate based on RUF needed to treat all cases of Severe Acute Malnutrition (258,000 tons for 20 million children at an average of 12.9 kilos per child).