

Proceedings of the WHO, UNICEF, and SCN Informal Consultation on Community-Based Management of Severe Malnutrition in Children

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Introduction

About 10 million children worldwide are estimated to suffer from severe malnutrition (defined by the presence of severe wasting, bipedal edema, or both), which greatly increases the risk of mortality. Severe malnutrition is an important cause of death in infants and young children, but one that is increasingly open to successful management.

Prevention of severe, life-threatening malnutrition remains a priority, but even with expanded programs, a proportion of children will develop severe malnutrition and require treatment in the foreseeable future. Moreover, acute crises leading to high levels of malnutrition are likely to continue, and addressing the threats to survival under these conditions will continue to be a humanitarian concern. Effective interventions for the management of severe malnutrition with adequate coverage of affected populations could prevent hundreds of thousands of child deaths each year, thus contributing to the achievement of the Millennium Development Goals for the reduction of poverty and child mortality. Recently, new approaches to treatment have become available, which led to the meeting held by the World Health Organization (WHO) whose proceedings are published in this issue of the *Food and Nutrition Bulletin*.

The capacity to treat large numbers of severely malnourished children is lacking in most countries, particularly the poorest, where the problems are the

most extensive. Although facility-based (inpatient) treatment has proven effective in reducing case fatality rates, access to suitable health facilities is often limited, especially where it is most needed. This applies particularly to emergencies and is also true for non-emergencies in situations in which health resources are very limited. Furthermore, inpatient care requires the caretaker to stay in the health facility with the child for several weeks, which is often impractical and disruptive for the family.

Recent evidence from field programs has shown that management of severe malnutrition at home (community-based management) can be very effective and achieve high levels of coverage in target populations. This approach is based on early detection and assessment of severely malnourished children in the community and home-based care of those without complications; those with complications (notably evidenced by loss of appetite) will still need facility-based treatment. These procedures are considered to be effective for application both in emergencies and in nonemergencies where there is significant severe malnutrition. They may also have important potential for inclusion in broader health and nutrition programs—which include preventive measures—as a back-up when severe life-threatening malnutrition nonetheless occurs.

The meeting aimed to review recent experience and evidence and to update global recommendations for the management of severe malnutrition as an essential intervention toward achieving the Millennium Development Goals for the reduction of poverty and child mortality. Drawing on the information presented in the five background papers, reviews of these papers, and presentations of additional data from research and programs, the participants in the consultation examined the implications of these new developments for the management of severe malnutrition. The consultation identified areas of consensus that can be translated into evidence-based guidelines, as well as knowledge gaps that should be addressed by research.

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Objectives of the meeting

Overall objectives

1. To identify areas of consensus on the community-based management of severe malnutrition in children that can be translated into evidence-based global guidelines;
2. To identify knowledge gaps that should be addressed by research.

Specific objectives

1. To collect evidence on the feasibility, safety, and effectiveness of community-based approaches for treating severely malnourished children, considering published and unpublished research and field-based experience;
2. To identify areas of consensus that can be translated into global guidelines and knowledge gaps, particularly on the following points:
 - a) Identification of severely malnourished children in the community and their referral;
 - b) Dietary and medical protocols adapted for community-based treatment of severe malnutrition, including situations of high HIV prevalence;
 - c) Sustainability of community-based management of severe malnutrition in children;
 - d) Integration of programs for community-based management of malnutrition into the national health system and their scaling up.

The meeting focused on community-based management of severe malnutrition in children. The meeting did not make recommendations about the primary prevention of malnutrition. It did acknowledge, however, the importance of programs aiming at preventing malnutrition to reduce malnutrition-related mortality. The meeting did not discuss inpatient treatment of severe malnutrition, which has already been described in detail in existing WHO documents [1].

WHO will disseminate the findings widely among relevant stakeholders and develop guidelines for the management of severe malnutrition in children at the community level, as appropriate.

Nomenclature

The term “community-based management of severe malnutrition” was chosen for this meeting to be consistent with the existing WHO nomenclature in the field of child health.

Community-based management refers to treatments that are implemented with some external input, such as that provided by a health worker for diagnosing the condition, instituting treatment, and monitoring the condition of the child at home. For example, in

the community-based management of pneumonia, community workers with specific training are able to identify, prescribe antibiotics for, and monitor the treatment of children with pneumonia and to further identify severe cases for referral. In the treatment of severe malnutrition, a health worker is involved in identifying the severely malnourished child and in providing treatment that may include a mineral and vitamin supplement or a ready-to-use therapeutic food (RUTF).

Facility-based management refers to treatment in a hospital or center that provides skilled medical and nursing care on an inpatient basis.

Severe malnutrition is defined as severe wasting (weight-for-height < 70% or < -3 z-scores of the median National Center for Health Statistics [NCHS]/WHO reference value), the presence of bipedal edema (a sign of kwashiorkor), or both.

RUTF is a ready-to-use therapeutic food with a similar nutrient-to-energy ratio as F-100 (a milk-based therapeutic food).

Summary of presentations and discussions

Identification at the community level of severely malnourished children in need of treatment

As stated above, severe wasting is currently defined in terms of weight-for-height and/or bipedal edema, but the equipment and skills needed to measure weight-for-height may not be available at the community level. The consultation acknowledged that a mid-upper arm circumference (MUAC) of less than 110 mm is a suitable criterion to identify, at the community level, severely wasted children 6 to 59 months of age in need of treatment, since it is a good predictor of the risk of death among these children and is easier to measure than weight and height.

When ages are uncertain, height or length (from 65 to 110 cm) may be used as a proxy for age to identify children in the group from 6 to 59 months of age. A stick with markings at 65 and 110 cm can be used. The major risk of adopting a height or length cutoff is that young stunted children (more than 6 months old but under 65 cm in length) may be considered ineligible for measurement of MUAC. In practice, any severely malnourished child who has enough appetite and the adequate reflexes to eat RUTF is considered very likely to benefit from treatment.

At the facility level, weight-for-height, MUAC, and the presence of bipedal edema can be used independently for detection of severely malnourished children. Any child who has an MUAC less than 110 mm, a weight-for-height < 70% or < -3 z-scores of the median NCHS/WHO reference value, or bipedal edema should be admitted to a program for management

of severe malnutrition. Where growth-monitoring programs identify children with low weight-for-age, MUAC might also be measured, so that only those who have a low MUAC (< 110 mm) are referred to a therapeutic feeding program.

Community-level measurement of MUAC has been successfully employed in several countries, including Ethiopia, where it was used on a large scale. In South Wollo, Ethiopia, errors in MUAC measurements by 2,900 community volunteers leading to bias in admissions to therapeutic feeding programs were rapidly reduced by identifying the volunteers who referred children who did not need treatment and reinforcing the training of these volunteers.

Uncertainties persist regarding anthropometric criteria for admission of children under 6 months of age to a therapeutic feeding program. Low birthweight is often a key determinant of poor anthropometric status of these children. In the absence of information on birthweight, it is sometimes difficult to determine whether a child under 6 months of age is severely malnourished. Until better information becomes available, it was agreed that visible severe wasting and bipedal edema, should be used to determine whether a child under 6 months of age is severely malnourished. Research on the identification and dietary management of severe malnutrition in this age group was seen as a priority.

Management of severe malnutrition in the community

The evidence considered at the meeting was derived primarily from responses to recent emergencies in Sub-Saharan Africa. An important aim of the meeting was to consider how far this generally positive experience could be transferred to nonemergency situations, particularly those in which health resources are very limited.

Substantial experience, mainly in humanitarian emergencies, has been gained in the community-based management of severe malnutrition over recent years. Presentations from Malawi, Sudan, Niger, Ethiopia, and Bangladesh described the successful management of severe malnutrition in large numbers of children in the community, with high recovery rates, low case fatality rates, and high coverage. Malawi also reported a very low relapse rate for children 15 months after their discharge. The efficacy of such programs when basic principles of treatment are followed now seems well established, and there is also indication of high effectiveness. Still, the level of effectiveness would be better assessed if better estimates were available of the risk of mortality among untreated, severely malnourished children. This question should be explored by reexamining past studies of the relationship between nutritional status and survival.

Early detection and minimizing barriers to access in

order to promote early presentation of cases were seen as key to the success of therapeutic feeding programs in the community, because cases of severe malnutrition identified early are easier to treat and less likely to require inpatient treatment. Without active case-finding, many severely malnourished children are never identified because families do not seek care for them. The proportion of children who can be treated exclusively at the community level depends on the local situation and, according to the presentations made, may vary from 60% to 90%. Community-based and facility-based components of the treatment of severe malnutrition should be closely linked, so that children who are too ill to be treated at the community level or who are not responding to treatment can be referred to the facility level, and those receiving facility-based treatment who have regained their appetites can be transferred for continued care in the community.

In addition to the presence of severe edema and acute medical conditions, appetite is a crucial factor for differentiating between children who need care in a facility and those who can be cared for in the community. It was stressed that the conditions of the "appetite test" should be standardized.

RUTFs can be successfully used to treat severely malnourished children in the community. In contrast to milk-based therapeutic foods, RUTFs do not contain water and therefore bacteria cannot grow in them if they are accidentally contaminated; moreover, RUTFs, unlike milk-based foods, do not require refrigeration.

Data presented during the consultation suggest that it is not possible to attain the micronutrient content of F-100, a milk-based therapeutic diet, with local foods only. Nevertheless, studies from Bangladesh show that it is also possible to successfully treat severely malnourished children at home with a carefully designed diet of low-cost family foods together with a supplement of minerals and vitamins. These same mixtures of family foods also make good complementary foods and have the potential to prevent malnutrition in the long term.

The provision of RUTF in countries such as India or Bangladesh, where there are millions of severely malnourished children, will be challenging. In this case, treatment based on nutrient-rich family foods together with a supplement of minerals and vitamins might be an option. However, the consultation emphasized that the efficacy of local therapeutic diets should be tested clinically and that further research on the feasibility of this approach on a large scale is needed, along with research on the cost-effectiveness of nutritional rehabilitation with local diets or RUTF. The antinutrient content of some foods (e.g., phytates) was seen as a factor limiting the adequacy of local diets for nutritional rehabilitation of the severely malnourished.

Some outstanding issues in the community-based management of severe malnutrition remain, such as

provision of systematic antibiotic treatment and the need to provide food-insecure families with a food ration in addition to RUTF. These issues are likely to vary depending on context and need further research.

In order to be successful on a large scale, therapeutic feeding programs should be implemented through existing health-service delivery systems. Concern was expressed as to whether routine health systems have the capacity to implement and sustain such programs. The need was underlined to support the entire health system where health systems are dysfunctional. The creation of volunteer networks to identify severely malnourished children at the community level also raised some practical concerns, including the range of tasks that can be reasonably asked for and incentives that might be provided.

The participants strongly advocated the improvement of nutrition training at medical and nursing schools and the revision of textbooks, which currently give misleading information on the pathology and treatment of severe malnutrition.

The lack of clarity of nomenclature regarding the different types of malnutrition was highlighted as a difficulty that should be resolved. Severe malnutrition, unless clearly defined, is an inclusive term that can refer to a wide range of pathologies from wasting to stunting, obesity, and anemia. The consultation recommended that the issue of the nomenclature of nutrition disorders and nutrition interventions be urgently addressed to promote international consistency and facilitate advocacy.

Community-based management of severe malnutrition in the context of high HIV prevalence

The majority of HIV-positive, severely malnourished children will benefit from community-based treatment. However, experience from Malawi showed that the rates of weight gain and of recovery were lower among these children than among HIV-negative patients and that the case fatality rate was higher. Differences in weight gain were probably more closely related to a higher incidence of infections in HIV-positive patients, which undermined their appetite, than to family sharing of RUTF. The proportions of HIV-positive and HIV-negative children identified as requiring inpatient treatment for severe malnutrition according to the standard criteria did not differ.

Although strong linkages between community-based management of severe malnutrition and HIV/AIDS programs, such as voluntary counseling and testing, prophylactic cotrimoxazole to reduce the risk of *Pneumocystis carinii* pneumonia and other infections, and antiretroviral therapy, were seen as fundamental, it was less clear whether full integration of the programs at the delivery point was desirable.

Caring for HIV-positive people represents an extra

burden for the community, particularly among women and girls, resulting in additional physical, psychological, emotional, economic, and social stress. Assistance to women, such as support for their own health and care and provision of incentives, especially when they are enrolled as community volunteers, was highly recommended.

Sustainability and scaling up

The treatment of severe malnutrition has received increased attention at the national level over the past few years. Several representatives of Ministries of Health aired their interest in scaling up or implementing community-based management of severe malnutrition. Encouraging reports from Ethiopia, Malawi, and Niger illustrated how the capacity to manage severe malnutrition can be scaled up, notably by establishing national protocols, implementing community-based management, providing training and capacity-building for Ministry of Health staff, and providing RUTF.

Small-scale, well-run programs were seen as playing a useful role in demonstrating procedures and their benefits, thereby creating demand for larger-scale programs. UN agencies such as WHO, UNICEF, and the World Food Programme (WFP) should help governments to scale up programs. There is a need to advocate for the sustainability of funds for the treatment of severe malnutrition. The lack of continuity of funding for the treatment of severe malnutrition after an emergency often hampers the scaling up or even the maintenance of existing programs, although a large number of severely malnourished children still need treatment after the emergency is over. Scaling up could also be based on experiences from “learning sites” within research projects. In addition, further documenting the efficacy and effectiveness of community-based treatment of severe malnutrition is a crucial step toward the strengthening of evidence-based advocacy.

Within the process of scaling up, the overall context must be carefully considered. At the family level, underlying determinants of malnutrition, such as food insecurity and environment-related infections, should be taken into account. At the macro level, the functioning of the existing health system, which depends on the resources allocated to it, which in turn are contingent upon bilateral or multilateral support in many countries, will affect the implementation of community-based programs.

The participants discussed the levels of severe malnutrition that might trigger the implementation of community-based management. It was agreed that community-based treatment should be part of the routine health system in most developing countries. Malnutrition levels that trigger large-scale humanitarian interventions should be better defined. In this

regard, the response to a high prevalence of severe malnutrition can be viewed as dependent on the balance between external inputs and the capacity of the health system. In situations in which the capacity of the existing health system is low, external inputs and response would be relatively significant, whereas in an area with a strong health-system capacity, external support would be more limited.

Coordination and clear definition of the roles of the different stakeholders (UN agencies, nongovernmental organizations, and Ministries of Health), joint assessments of nutrition situations, harmonization of policies and guidelines, and development of standards for the production of RUTF were defined as essential factors for advocacy and mainstreaming treatment of severe malnutrition at the global, national, and local levels.

The following were identified as the most challenging issues for scaling up and sustainability:

- » Integration of treatment of severe malnutrition in existing health systems, especially when they function poorly;
- » Training and capacity-building of Ministry of Health staff;
- » Capacity of the Ministry of Health to monitor activities and the nutrition situation;
- » Community participation and mobilization;
- » Access to affordable RUTF or suitable local foods supplemented with vitamins and minerals;
- » Integration with other nutrition components, such as education.

Although the technology to produce RUTF at low cost can be easily developed, even in countries with limited industrial capacity, the cost of the product may still be too high in relation to available resources. Provision of RUTF should therefore be considered as a priority by food-aid projects and external donors. In order to facilitate the sustainability of community-based management of severe malnutrition, there is also a need for greater funding to support the primary health-care system. Cost recovery was seen as a major factor undermining the access of poor families to health care. The consultation recommended that treatment of severe malnutrition should be provided free of charge at both the facility and the community levels.

Conclusions and guiding principles

Treatment of severe malnutrition is critical for reducing child mortality, but despite the known efficacy of existing protocols, it has received insufficient attention as a public health intervention. The overall conclusion of the consultation is that community-based management of severe malnutrition is an effective intervention for the treatment of a large number of children suffering from severe malnutrition. It can achieve a low case fatality rate, provided adequate dietary and medical

treatment is delivered, close follow-up is ensured, and early detection is implemented at the community level. In order for these programs to be successful, efforts must be made to reduce barriers to access. Integration of such programs as part of the routine health system would have a major public health impact and contribute to the achievements of the Millennium Development Goals. This can only be accomplished by mainstreaming the management of severe malnutrition into international, national, and local health and development agendas.

The participants agreed on the following guiding principles for community-based management of severe malnutrition:

Identification of severely malnourished children in the community in order to provide for treatment

1. In addition to weight-for-height $< 70\%$ or < -3 z-scores of the median NCHS/WHO reference values and/or bilateral edema, MUAC < 110 mm can be used independently as a criterion for admission to a therapeutic feeding program for children aged 6 to 59 months. Children with MUAC < 110 mm should be admitted to a program for the management of severe malnutrition, regardless of their weight-for-height.
2. MUAC is a simple and practical tool that should be used by community workers to identify severely malnourished children.
3. In infants less than 6 months of age, it is recommended that "visible severe wasting" and/or edema, in conjunction with difficulties in breastfeeding, be used as criteria for admission to treatment until further studies are undertaken to develop more precise criteria.
4. High coverage (both temporal and spatial) of the programs, achieved through active case-finding activities, as established in the Sphere Project minimum standards [2], must be a key objective for therapeutic feeding programs.

Treatment of severely malnourished children in the community

1. It is desirable for programs for the management of severe malnutrition usually to have a community-based and a facility-based component, so that severely malnourished children with no complications can be treated in the community, while those with complications can be referred to an inpatient treatment facility with trained staff.
2. It is highly desirable to manage the treatment of severely malnourished children with no complications at home without an inpatient phase. These are severely malnourished children who are alert, have a good appetite, are clinically well, are not severely edematous, and have reasonable home-care circumstances.

3. Children with severe malnutrition who have mild or moderate edema and a good appetite but are not severely wasted can also be treated at home without an inpatient phase.
4. Children with severe malnutrition and complications should be referred to an inpatient treatment facility with trained staff. These patients include children who, in addition to being severely malnourished, have anorexia, severe edema, or both severe wasting (MUAC < 110 mm or weight-for-height < 70% or < -3 z-scores of the NCHS/WHO reference) and mild or moderate edema or who are clinically unwell.
5. For those treated as inpatients, after the complications of severe malnutrition are under control, treatment should normally be continued in the community. Children whose condition deteriorates at home should be referred for assessment and further treatment.
6. RUTFs are useful to treat severe malnutrition without complications in communities with limited access to appropriate local diets for nutritional rehabilitation.
7. When RUTF is given to children with severe malnutrition, 150 to 220 kcal/kg/day should be provided.
8. When families have access to nutrient-dense foods, severe malnutrition without complications can be managed in the community without RUTF by carefully designed diets using low-cost family foods, provided appropriate minerals and vitamins are given.
9. The efficacy of local therapeutic diets should be tested clinically.
10. Treatment of young children should include support for breastfeeding and messages on appropriate feeding practices for infants and young children.
11. Children under 6 months of age should not receive RUTF or solid family foods. These children need milk-based diets, and their mothers need support to reestablish breastfeeding. They should not be treated at home.
12. The criteria for the effectiveness of treatment should be a weight gain of at least 5 g/kg/day for severely wasted children (the rate of weight gain

was deliberately changed to a lower level than the Sphere minimum standards [2], which refer to inpatient treatment of severe malnutrition); low rates of case fatalities, defaults, and treatment failures; and lengths of stay during treatment.

Community-based management of severe malnutrition in the context of high HIV prevalence

1. The general principles and guidelines for the care of severely malnourished children in areas of high HIV prevalence do not fundamentally differ from those where HIV is rarely seen.
2. In areas where HIV prevalence is high, there should be unfettered access to HIV services (e.g., voluntary counseling and testing, cotrimoxazole prophylaxis, nutritional counseling, and antiretroviral therapy) and seamless articulation from the onset between levels of care (community, health center, and hospital) and between HIV treatment and malnutrition programs.
3. All therapeutic foods used, including RUTF, should be chosen to be appropriate for HIV-infected, severely malnourished children, on the basis of current scientific evidence.

Next steps

In follow-up of the meeting, WHO will lead a process to develop norms and standards and accompanying guidelines for policymakers and program managers on community-based management of severe malnutrition in children, including specifications of RUTF to facilitate production with local ingredients within countries. Further actions of partners will include the promotion of community-based management in selected countries, including technical assistance to introduce the approach into national health policy and health systems, and careful documentation of experiences in order to refine the implementation approach. The research questions identified in the consultation, such as the need for systematic antibiotic therapy, the identification and dietary management of severe malnutrition in children under 6 months of age, will be followed up.

References

1. World Health Organization. Management of severe malnutrition: a manual for physicians and other senior health workers. Geneva: WHO, 1999. Available at: http://www.who.int/nutrition/publications/en/manage_severe_malnutrition_eng.pdf. Accessed 28 May 2006.
2. Sphere Project. Humanitarian charter and minimum standards in disasters response. Geneva: Sphere Project, 2004. Available at: http://www.sphereproject.org/component?option=com_docman/task/cat_view/gid,70/Itemid,26/lang,English/. Accessed 31 May 2006.

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